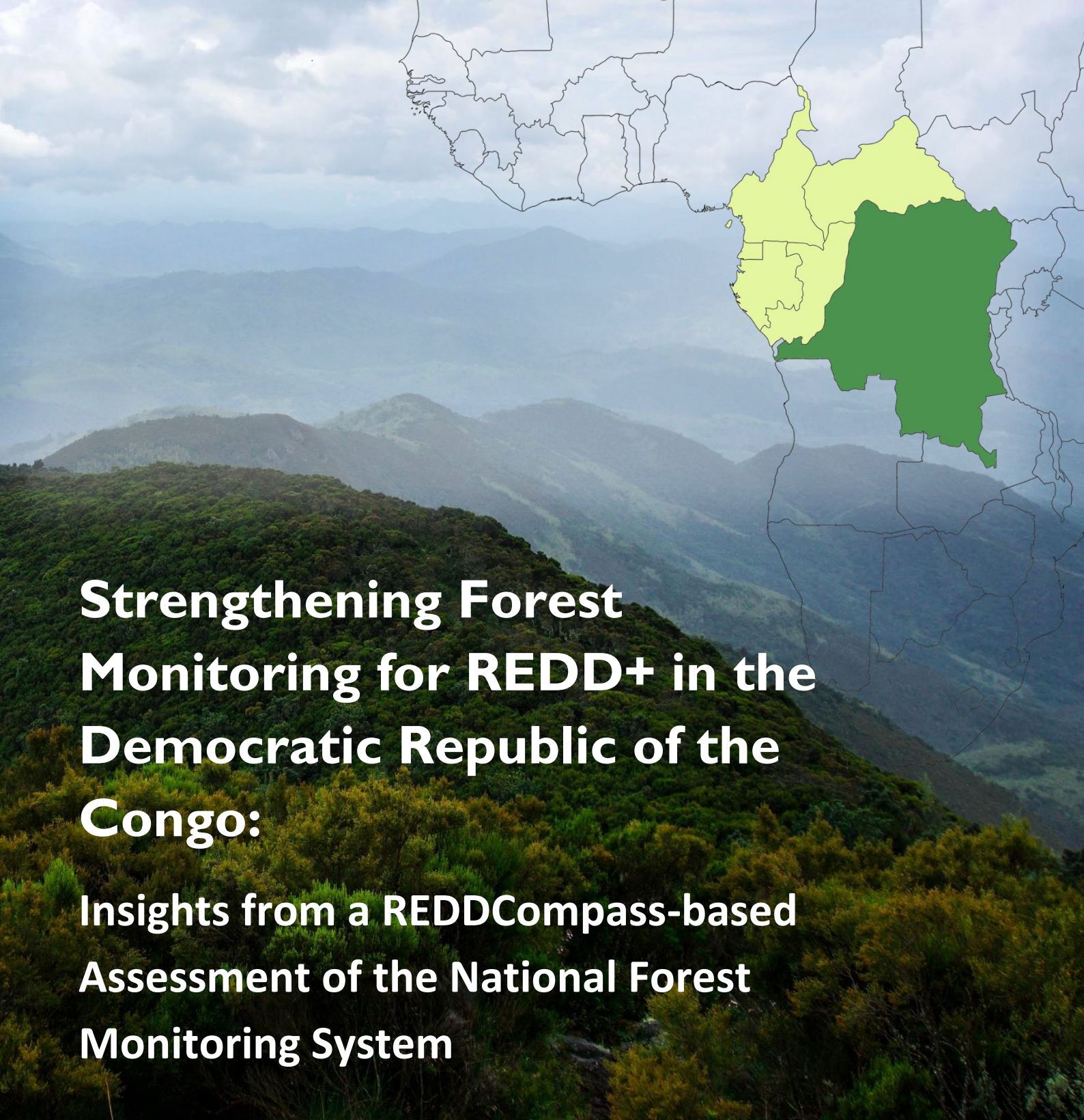




Strengthening Forest Monitoring for REDD+ in the Democratic Republic of the Congo:

**Insights from a REDDCompass-based
Assessment of the National Forest
Monitoring System**



Global Forest
Observations Initiative



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Kahuzi-Biega National Park, Democratic Republic of the Congo. Photo by Olivia Freeman.

TABLE OF CONTENTS

TABLE OF CONTENTS.....	3
ABSTRACT.....	4
ACRONYMS.....	6
1. INTRODUCTION.....	9
1.1. Progress in REDD+ Implementation in the Democratic Republic of the Congo	10
1.2. National Efforts to Establish the National Forest Monitoring System (NFMS) and the REDD+ Institutional Framework in the DRC	15
2. METHODOLOGICAL APPROACH IN ASSESSING PROGRESS IN THE NFMS	19
2.1. The REDDCompass Framework.....	19
2.2. REDDCompass-based Assessment of the NFMS in the DRC.....	24
3. RESULTS AND SUPPORT OPPORTUNITIES.....	26
3.1. Theme (1) Institutional Arrangements	27
3.2. Theme (2), Technical Design Decisions.....	29
3.3. Theme (3), Measurement and Estimation.....	32
3.4. Theme (4), Reporting and Verification	36
4. STRATEGIC RECOMMENDATIONS FOR STRENGTHENING THE NATIONAL FOREST MONITORING SYSTEM IN THE DEMOCRATIC REPUBLIC OF THE CONGO	40
4.1. Institutional Strengthening and Legal Framework	40
4.2. Human Resources and Operational Environment	40
4.3. Data Sharing and Technological Integration.....	42
4.4. Capacity Building and Methodological Harmonization	42
4.5. Linking Emissions to Drivers and Improving the FREL	43
5. DISCUSSION.....	44
6. CONCLUSION.....	46
REFERENCES.....	47



The Botanical Garden of Eala. Photo by Eva McNamara.

ABSTRACT

The Democratic Republic of the Congo (DRC), home to the world's second-largest tropical rainforest, plays a vital role in global climate mitigation through the implementation of the Reducing Emissions from Deforestation and Forest Degradation mechanism (REDD+) under the United Nations Framework Convention on Climate Change (UNFCCC). As part of its REDD+ readiness, the DRC has developed a National Forest Monitoring System (NFMS) to report on emissions from deforestation, forest degradation, and on removals from the enhancement of forest carbon stocks.

This study assesses the current state of the DRC's NFMS using the REDDCompass diagnostic tool, which provides 86 recommended actions for NFMS development organized across four thematic pillars: institutional arrangements, policy integration, measurement and

estimation, and reporting and verification. A participatory self-assessment involving national stakeholders identified substantial progress in measurement and estimation, as illustrated by the recent success of the jurisdictional Mai-Ndombe Emission Reductions Program implemented under the Forest Carbon Partnership Facility (FCPF), which generated the country's first verified emission reductions (ER) using activity data (AD) and emission estimates produced by the NFMS. While this milestone represents a major step forward, the assessment also underscored the need to reinforce legal mandates, harmonize data systems, and improve methodological consistency in order to strengthen the NFMS's readiness for future Article 6 mechanisms.

The findings also highlight the need for institutional strengthening, improved data infrastructure, and closer alignment with Intergovernmental Panel on Climate Change (IPCC) guidelines. Beyond technical issues, financial constraints remain central, particularly the challenge of retaining skilled workforce often working with limited resources, constrained remuneration, and inadequate equipment, and ensuring the continuity and build-up of institutional knowledge. A critical gap remains between the NFMS and emission-reduction verification, as many REDD+ projects still rely on data produced, managed and sold by third parties rather than national baselines and QA/QC protocols. Strengthening the use of nationally generated data and baselines would help operationalize Article 6 mechanisms under the Paris Agreement and reinforce long-term sustainability of the NFMS.

The study also critically reflects on the utilization of the REDDCompass tool to assess NFMS functionality, highlighting its value and limitations. Overall, this assessment provides a practical baseline for tracking future progress and identifying targeted capacity and technical support needs to consolidate a transparent, robust, and country-driven NFMS in the DRC.

Keywords: REDD+, National Forest Monitoring System, MRV, Democratic Republic of the Congo, GFOI, REDDCompass, deforestation, forest degradation

ACRONYMS

Acronym (EN/FR)	Meaning (English)	Signification (Français)
AFOLU / AFAT	Agriculture, Forestry and Other Land Use	Agriculture, Foresterie et Affectation des Terres
BUR	Biennial Update Report	Rapport Biennal Actualisé
CAFI	Central African Forest Initiative	Initiative pour la Forêt de l'Afrique Centrale
CBD	Convention on Biological Diversity	Convention sur la Diversité Biologique
CfRN	Coalition for Rainforest Nations	Coalition pour les Nations à Forêts Tropicales
CN-REDD	National REDD+ Coordination (Unit)	Coordination Nationale REDD+
COP	Conference of the Parties	Conférence des Parties
DDD	Directorate of Sustainable Development	Direction du Développement Durable
DES	Division of Environmental Services	Division des Services Environnementaux
DCC	Climate Change Division	Division Changement Climatique
DIAF	Directorate of Forest Inventory and Management	Direction des Inventaires et Aménagement Forestiers
DIF	Division of Forest Inventory	Division des Inventaires Forestiers
DRC / RDC	Democratic Republic of the Congo	République Démocratique du Congo
EF / FE	Emission Factors	Facteurs d'Émission
ER	Emission Reductions	Réduction des Émissions
ERPA / AARE	Emission Reductions Purchase Agreement	Accord d'Achat de Réductions d'Émissions
FAO	Food and Agriculture Organization of the United Nations	Organisation des Nations Unies pour l'Alimentation et l'Agriculture
FCPF	Forest Carbon Partnership Facility	Fonds de Partenariat pour le Carbone Forestier
FIPE	Environmental Protection Investment Fund	Fonds d'Investissement pour la Protection de l'Environnement

FONAREDD	National REDD+ Fund	Fonds National REDD+
FPIC / CLIP	Free, Prior and Informed Consent	Consentement Libre, Informé et Préalable
FREL, FRL/ NERF, NRF	Forest Reference Emission Level / Forest Reference Level	Niveau d'Émissions de Référence des Forêts / Niveau de Référence des Forêts
GEF / FEM	Global Environment Facility	Fonds pour l'environnement mondial
GFOI	Global Forest Observations Initiative	Initiative Mondiale d'Observation des Forêts
GHG	Greenhouse Gas	Gaz à Effet de Serre
GHGI	Greenhouse Gas Inventory	Inventaire des Gaz à Effet de Serre
GHGMI	Greenhouse Gas Management Institute	Institut de Gestion des Gaz à Effet de Serre
GLAD	Global Land Analysis & Discovery laboratory (University of Maryland)	Laboratoire d'Analyse et de Découverte des Terres à l'Échelle Globale (Université du Maryland)
JICA	Japan International Cooperation Agency	Agence Japonaise de Coopération Internationale
JJ-FAST	JICA–JAXA Forest Early Warning System in the Tropics	Système d'Alerte Précoce Forestier JICA–JAXA pour les Tropiques
LiDAR	Light Detection and Ranging	Télédétection par Laser
MEDD-NEC	Ministry of Environment, Sustainable Development and New Climate Economy	Ministère de l'Environnement, du Développement Durable et de la Nouvelle Économie du Climat
MGD	Methods and Guidance Documentation (GFOI)	Méthodes et Documents d'Orientation (GFOI)
MRV	Measurement, Reporting and Verification	Mesure, Notification et Vérification
NDC / CDN	Nationally Determined Contribution	Contribution Déterminée au niveau National
NFMS / SNSF	National Forest Monitoring System	Système National de Suivi des Forêts
NFI / IFN	National Forest Inventory	Inventaire Forestier National
OSFAC	Observatory for Central African Forests	Observatoire Satellital des Forêts d'Afrique Centrale

PTC	Technical Consultation Platform (of the NFMS)	Plateforme Technique de Concertation (du SNSF)
QA / QC	Quality Assurance / Quality Control	Assurance Qualité / Contrôle Qualité
REDD+	Reducing Emissions from Deforestation and Forest Degradation (plus conservation, sustainable management of forests, and enhancement of forest carbon stocks)	Réduction des Émissions issues de la Déforestation et de la Dégradation des forêts (plus conservation, gestion durable des forêts et augmentation des stocks de carbone forestier)
R-PP	Readiness Preparation Proposal	Document de Préparation à la Préparation (REDD+)
SIS	Safeguards Information System	Système d'Information sur les Sauvegardes
SLMS/SSTS	Satellite Land Monitoring System	Système de Suivi des Terres par Satellites
SOP	Standard Operating Procedure	Procédure Opérationnelle Normalisée
UMD	University of Maryland	Université du Maryland
UNCCD	United Nations Convention to Combat Desertification	Convention des Nations Unies sur la Lutte contre la Désertification
UNDP/PNUD	United Nations Development Programme	Programme des Nations Unies pour le développement
UNFCCC/ CCNUCC	United Nations Framework Convention on Climate Change	Convention-Cadre des Nations Unies sur les Changements Climatiques
UN-REDD	United Nations Collaborative Programme on REDD+	Programme ONU-REDD
USFS	United States Forest Service	Service Forestier des États-Unis
VCS	Verified Carbon Standard	Norme Carbone Vérifiée
VCU	Verified Carbon Units	Unité(s) de Carbone Vérifiée(s)
WICA	Women's Initiative for Climate Action (USFS Central Africa)	Initiative des Femmes pour l'Action Climatique (USFS Afrique Centrale)
WRI	World Resources Institute	Institut des Ressources Mondiales

1. INTRODUCTION

The Democratic Republic of the Congo (DRC) is a globally significant forest country, with approximately 152 million hectares of forest, accounting for nearly 60% of the Congo Basin forests. As a signatory to the United Nations Framework Convention on Climate Change (UNFCCC) and a participant in the REDD+ process, the DRC has committed to reducing emissions from deforestation and forest degradation by 21% below business-as-usual (BAU) levels by 2030 while enhancing forest carbon stocks¹.

Central to REDD+ implementation is the establishment of a National Forest Monitoring System (NFMS) that enables transparent, accurate, and consistent measurement, reporting, and verification (MRV) of emissions and removals from forest-related activities. Since its adherence to the REDD+ process in 2009^{2,3}, the country has benefitted from financial and technical support from technical partners and donors to set up and operationalize its NFMS. As the country intensifies its efforts to access results-based payments through REDD+, the existence of a fully functioning NFMS has become imperative to ensure the credibility and sustainability of the REDD+ process.

In order to assess the level of maturity of its NFMS and identify priority areas for strengthening, the DRC applied the REDDCompass tool developed by the Global Forest Observations Initiative (GFOI)⁴. This tool provides a methodological and diagnostic framework for examining the institutional, technical, and operational readiness of forest monitoring systems through 86 actions grouped into four thematic pillars: (1) Institutional Arrangements, (2) Technical Design Decisions, (3) Measurement and Estimation, and (4) Reporting and Verification.

This study presents the results of this evaluation. Specifically, it:

- summarizes the country's progress in implementing REDD+ and establishing the NFMS/MRV
- describes the participatory approach applied in the assessment

¹ DRC's NDC (UNFCCC submission, 2021); <https://unfccc.int/sites/default/files/NDC/2022-06/CDN%20Revis%C3%A9e%20de%20la%20RDC.pdf>

² Decree No. 09/40/11/2009 of 26 November 2009 issued by the Prime Minister establishing, composing, and organizing the institutional structure for the implementation of the REDD+ process (defining the mandates of the National REDD Coordination – CN-REDD)

³ UN-REDD support to the REDD Readiness Plan (R-PP) of the DRC [UN-REDD/DRC/Phase 2], UN-REDD/PB4/4bi/ENG (submission 2010); https://www.un-redd.org/sites/default/files/2021-10/UN-REDD_PB4_%204bi%20National%20Programme%20Document%20-%20DRC.pdf

⁴ <https://www.reddcompass.org/>

- discusses the strengths and limitations of applying the REDDCompass framework in assessing NFMS progress, and
- provides policy and technical recommendations for strengthening the NFMS to meet national and international reporting and transparency requirements.



The NFMS is the set of institutional, technical, and procedural arrangements a country establishes to generate transparent and consistent information on forest areas, carbon stocks, and GHG emissions/removals.

It forms the backbone of REDD+ MRV systems, typically combining:

- **Satellite Land Monitoring Systems (SLMS)** to track land-use and forest-cover change;
- **National Forest Inventories (NFI)** to assess carbon stocks and changes in forest biomass; and
- **GHG Inventory systems** to report emissions and removals in the Agriculture, Forestry and Other Land Use (AFOLU) sector.

Under the UNFCCC, the requirement for countries to establish a NFMS was formalized in 2010, at COP 16 in Cancún⁵, which state that developing countries undertaking REDD+ activities should develop:

“a robust and transparent National Forest Monitoring System for the monitoring and reporting of REDD+ activities, with, if appropriate, subnational monitoring and reporting as an interim measure.”

Further guidance on NFMS modalities and MRV was adopted in 2013 at COP 19 in Warsaw⁶, which specify that NFMS should build upon existing systems, enable MRV of REDD+ activities, and be flexible to accommodate different national circumstances and capacities.

1.1. Progress in REDD+ Implementation in the Democratic Republic of the Congo

Since 2009, the Democratic Republic of the Congo (DRC) has been actively engaged in the implementation of REDD+ (Reducing Emissions from Deforestation and Forest Degradation), establishing a robust institutional framework to coordinate and regulate national REDD+ efforts (see **Figure 1**). Internally, the process began with the creation of the National REDD+ Coordination Unit (CN-REDD) under the auspices of the Ministry of Environment and Sustainable Development (MEDD, now the Ministry of Environment, Sustainable Development and New Climate Economy, MEDD-NEC). This structure was tasked with

⁵ UNFCCC COP 16 (Cancún 2010), Decision 1/CP.16, paragraph 71(c); <https://unfccc.int/resource/docs/2010/cop16/eng/07a01.pdf>

⁶ UNFCCC COP 19 (Warsaw 2013); <https://unfccc.int/sites/default/files/resource/docs/2013/cop19/fre/10a01f.pdf>

steering REDD+ readiness activities and ensuring alignment with both national priorities and international expectations.

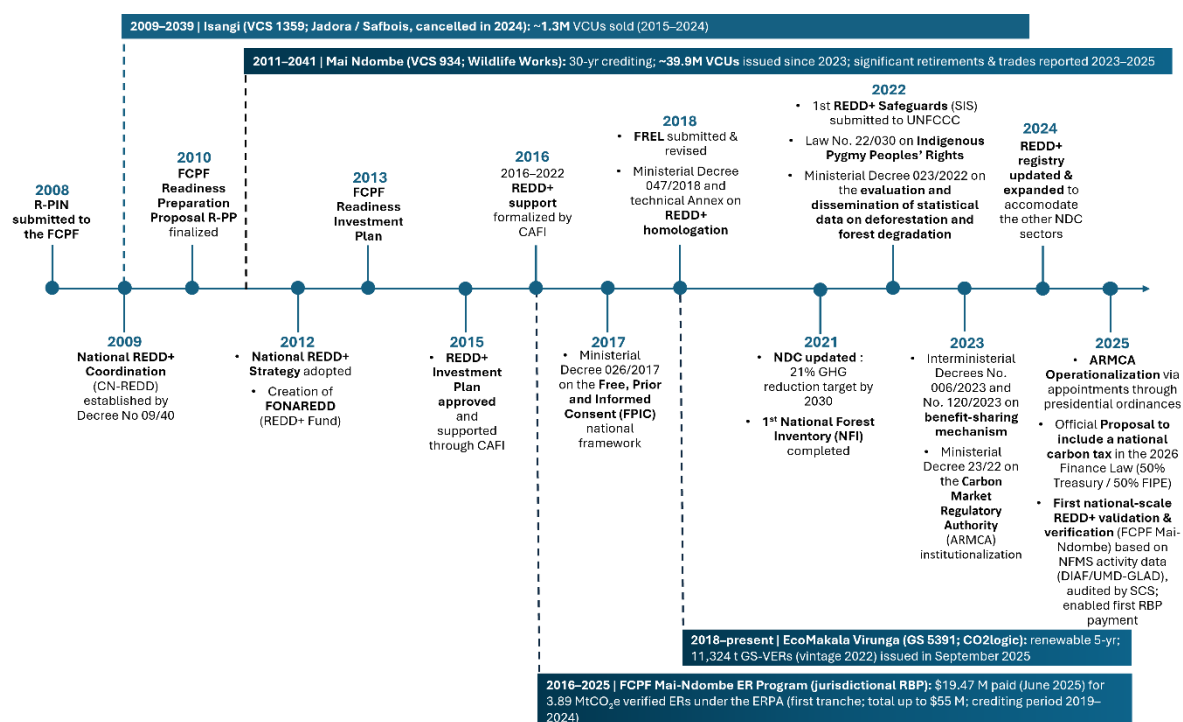


Figure 1 : Key milestones in the DRC's REDD+ implementation (2008–2025). The bars indicate the start and planned end of the three carbon projects in the DRC that have issued or sold credits: Isangi (Jadora/Safbois, 2009, Verified Carbon Standard, VCS 1359, cancelled project), Mai-Ndombe (Wildlife Works, 2011, VCS 934), and EcoMakala Virunga (CO₂logic/WWF, 2018, Gold Standard, GS 5391), the first two having sold Verified Carbon Units (VCU) under Verra and the third having issued Gold Standard Verified Emission Reductions (GS-VER). Credit volumes and their values in US dollars remain uncertain, as registries publish issuances and retirements without disclosing transaction prices. The figure also presents the first national-scale validation and verification of the jurisdictional FCPF Mai-Ndombe Emission Reductions Program, audited by Scientific Certification Systems Global Services (SCS), using activity data from the NFMS generated by DIAF in collaboration with the University of Maryland's Global Land Analysis and Discovery laboratory (UMD-GLAD). This verification enabled the first results-based payment (RBP) under the Emission Reductions Purchase Agreement (ERPA).

As an early participant in the REDD+ process, the DRC finalized and adopted its Readiness Preparation Proposal (R-PP) in 2010, a joint framework supported by the UN-REDD Programme and the Forest Carbon Partnership Facility (FCPF). This proposal, completed prior to the Cancún Agreements and the Warsaw Framework, marked a critical step toward initiating comprehensive analyses of deforestation drivers, identifying key stakeholders, and launching a national awareness campaign on forest and climate issues. Support received during this Phase 1 of REDD+ (Readiness Phase) by the Central Africa Forest Initiative (CAFI) enabled the country to begin setting up its National Forest Monitoring System (NFMS), a foundational tool for evidence-based decision-making to address forest loss and maintain forest cover, which stood at approximately 63.5% of the national territory.



In 2012, the DRC adopted its National REDD+ Framework Strategy, formally endorsed by the Council of Ministers⁷. This strategy articulated both the direct and indirect causes of deforestation and forest degradation. In parallel, and in anticipation of the country exploiting results-based payment opportunities (market and non-market-based), the country established the National REDD+ Fund (FONAREDD) in the same year^{8,9}. This fund was designed as a financial mechanism to implement the national strategy and catalyze investments in forest conservation and sustainable development.

The strategic framework was further operationalized through two successive implementation plans:

- The Readiness Investment Plan (2013)¹⁰, focusing on capacity building, institutional development, and policy preparation
- The REDD+ Investment Plan (2015)¹¹, which deepened the focus on action and results.

⁷ DRC' National REDD+ Framework Strategy; https://redd.unfccc.int/uploads/3262_1_strategie-cadre_nationale_redd_de_la_rdc_1-corps_infographie1.pdf

⁸ UNDP Multi-Partner Trust Fund – FONAREDD Fund Page; <https://mptf.undp.org/fund/3cd00>

⁹ Terms of Reference of the National REDD+ Fund (FONAREDD), revised in 2023: https://mptf.undp.org/sites/default/files/documents/2024-05/tdr_fonaredd_revised_08062023_clean_8nov23.pdf

¹⁰ FONAREDD Investment Plan (2013); https://mptf.undp.org/sites/default/files/documents/15000/plan_investissement_fonds_national_redd_30_aout_2013.pdf

¹¹ National REDD+ Investment Plan, Ministry of Environment (2015); <https://medd.gouv.cd/wp-content/uploads/2022/03/2015-Plan-dInvestissement-National-REDD-RDC.pdf>

In 2015, the DRC joined the Central African Forest Initiative (CAFI), and in 2016 its REDD+ Investment Plan was approved for financing through FONAREDD, marking the shift from readiness (Phase 1) to implementation (Phase 2)¹². The plan targets two impacts: reducing deforestation drivers through sectoral reforms and interventions, and improving livelihoods with co-benefits for women, youth, local communities, and Indigenous Peoples. The first investment cycle (2015–2020) focused on strategy implementation, with a second cycle (2021–2030) extending operational investments. A 2016 Letter of Intent with CAFI secured international support for the plan (2016–2022)¹³, strengthening technical, financial, and institutional capacities.

Furthermore, the legal framework governing REDD+ implementation was strengthened through ministerial decree No 047/2018 and its Technical Annex on REDD+ project Homologation, which formalized the procedures for the approval and registration of REDD+ projects¹⁴, as well as through Inter-ministerial Decrees No. 006/2023 and No. 120/2023 establishing the national benefit-sharing mechanism for REDD+ results-based payments¹⁵.

Parallel technical progress included developing the National Forest Monitoring System (NFMS), producing the Forest Reference Emission Level (FREL, 2000–2014, submitted and approved by UNFCCC¹⁶), and beginning updates with new forest inventory data. The DRC also established a Safeguards Information System (SIS)^{17,18} and submitted its first safeguards summary to UNFCCC in 2022¹⁹, while its revised NDC (2021) embedded REDD+ within the national climate strategy.

The Democratic Republic of the Congo (DRC) has progressively advanced toward results-based payments for REDD+ through a combination of project-level and jurisdictional initiatives. Early projects included the Isangi (Jadora / Safbois, 2009, VCS1359, now

¹²Central African Forest Initiative – DRC REDD+ National Fund Overview; <https://www.cafi.org/countries/democratic-republic-congo/drc-redd-national-fund>

¹³ Letter of Intent between DRC and CAFI (2015); https://www.regjeringen.no/globalassets/departementene/kld/kos/drc/letterofintent_drc_cafi.pdf

¹⁴ Ministerial decree n° 047/CAB/MIN/EDD/AAN/MML/05/2018 of May 2018 on the homologation (approval) of REDD+ projects

¹⁵ Interministerial decree n°006/CAB/MINETAT-MIN/EDD/EBM/TSB/02/2023 and n°120/CAB/ MIN. FINANCES/2023 of 2023 establishing the national benefit-sharing mechanism for REDD+ results-based payments

¹⁶ UNFCCC Registry – DRC REDD+ Documentation; <https://unfccc.int/documents/185488>

¹⁷ Law No. 22/030 of June 2022 on the Protection and Promotion of the Rights of Indigenous Pygmy Peoples

¹⁸ Ministerial Decree n° 26/CAB/MIN/EDD/AAN/KTT/04/0217 November 2017 on the Free, Prior and Informed Consent national framework within REDD+ implementation in the DRC; <https://climat-rdc.com/documents/arrete-ministeriel-n26-du-8-novembre-2017-relatif-au-consentement-libre-informe-et-prealable-clip/>

¹⁹ DRC REDD+ Safeguards Information System – Summary Report (UNFCCC submission, 2022); https://redd.unfccc.int/media/premier_resume_du_sis_en_rdc_30_05_22_version_finale.pdf



Charcoal ready for sale in the village of Ibi. Photo by Olivia Freeman.

cancelled²⁰), the Mai Ndombe (Wildlife Works, 2011, VCS934²¹), and the EcoMakala Virunga (CO₂logic, with support from WWF, 2018, GS5391²²) — the country's only three carbon projects to have successfully issued tradable credits, certified under either the Verified Carbon Standard (Verra) or the Gold Standard. Since then, REDD+ implementation has expanded under national coordination through the FONAREDD. The Forest Carbon Partnership Facility (FCPF) established a jurisdictional Emission Reductions Program in Mai Ndombe Province, whose Emission Reduction Purchase Agreement (ERPA) was finalized in 2024, marking the first large-scale step toward verified RBP in the DRC. Parallel investments by the Central African Forest Initiative (CAFI), the World Bank, UNDP, and the Global Environment Facility (GEF) have supported readiness and policy reforms, notably through the Provincial Integrated REDD+ Programs (PIREDD)²³ and the Forest and Savanna Restoration Investment Program (PIFORES)²⁴. While most programs remain pre-financed to strengthen enabling conditions, initiatives such as PIFORES are structured to transition to

20 "Verra removes troubled REDD carbon project in DRC from registry" (Carbon Pulse, 15 March 2024); <https://carbon-pulse.com/269276/>

21 Mai Ndombe REDD+ Project (VCS934) – Verra Registry; <https://registry.verra.org/app/projectDetail/VCS/934>

22 EcoMakala Virunga Energy Project (GS 5391) – Gold Standard Registry; <https://registry.goldstandard.org/projects/details/1558>

23 Programme Intégré REDD+ (PIREDD) – FONAREDD/CAFI; <https://fonaredd-rdc.org/elementor-8043/>; <https://cafi.org/country/the-democratic-republic-of-the-congo/>

24 World Bank – Procurement details for the Forest and Savanna Restoration Investment Program (PIFORES) in the DRC; <https://projects.worldbank.org/en/projects-operations/procurement-detail/OP00235364>

results-based payments once measurable emission reductions are achieved, reflecting the DRC's ongoing shift from readiness to performance-based REDD+ implementation.

In 2025, the MEDD submitted a request to the Ministry of Finance to include a national carbon tax in the 2026 Finance Law²⁵, allocating 50% of revenues to the Treasury and 50% to the Environmental Protection Intervention Fund (FIPE), for which forest and land-use activities aligned with REDD+ are eligible (e.g., MRV/NFMS, restoration, community forestry, and safeguards/FPIC processes). If adopted, this measure would mark a shift from donor-driven finance (CAFI, FCPF) toward domestic resource mobilization for climate action—one of the strategic priorities under the National REDD+ Strategy (2012) and the updated NDC (2021).

Overall, the DRC has demonstrated strong commitment to REDD+ through institutional reform, international partnerships, and data-driven systems, though sustaining the NFMS and coordination remain key challenges.

1.2. National Efforts to Establish the National Forest Monitoring System (NFMS) and the REDD+ Institutional Framework in the DRC

The Democratic Republic of Congo (DRC) has made steady progress in establishing its NFMS as part of its REDD+ commitments under the United Nations Framework Convention on Climate Change (UNFCCC). The legal foundation for this framework is grounded in Ordinance Law 011/2002 (Forest Code²⁶), Law 11/009²⁷ (environmental protection), and Decree 047/2018²⁸ (procedures for REDD+ investments and benefit-sharing).

To operationalize this framework, the DRC has established a multi-layered institutional architecture linking technical directorates, including the Directorate of Forest Inventory and Management (DIAF) and the Directorate for Sustainable Development (DDD), with national coordination bodies (CN-REDD and FONAREDD) under the overall authority of the MEDD-NEC. To reinforce this institutional architecture, Ministerial Decree No. 023/2022²⁹ established the biennial evaluation and dissemination

²⁵ Press coverage confirming DRC's planned carbon tax starting 2026 (Q-Cintel, 2024); <https://www.qcintel.com/carbon/article/drc-confirms-carbon-tax-to-apply-from-2026-45174.html>

²⁶ Law No. 011/2002 of August 2002 on the Forest Code (RDC)

²⁷ Law No. 11/009 of July 2011 on Fundamental Principles Relating to the Protection of the Environment (RDC); <https://medd.gouv.cd/loi-n-11-009-du-09-juillet-2011-portant-principes-fondamentaux-relatifs-a-la-protection-de-lenvironnement/>

²⁸ Ministerial Decree No. 047/CAB/MIN/EDD/AAN/MML/05/2018 of May 2018 fixing the approval procedure for REDD+ investments and benefit-sharing in the DRC; <https://faolex.fao.org/docs/pdf/Cng189387.pdf>

²⁹ Ministerial Decree No. 023/CAB/VPM-MIN/EDD/EBM/CBM-TSB-PDK/02/02/2022 of 6 May 2022 establishing the evaluation and dissemination of data on deforestation and forest degradation; <https://www.fao.org/faolex/results/details/fr/c/LEX-FAOC211582>

Legend

- Current responsible party as defined in the REDD+ homologation framework
- Mandates assigned to ARMCA by Decree 23/22, overlapping with existing institutional roles
- Process/mechanism
- International/Independent review process

REDD+ Homologation Process Flow:

- REDD+ investment holder** (Current responsible party) submits a **REDD+ project homologation request** (Mandates assigned to ARMCA).
- registration admissibility control, legal & fiscal control** (Mandates assigned to ARMCA) reviews the request. If **required adjustments** (Mandates assigned to ARMCA) are needed, the process loops back. If **honorability/validity of the project holder failed: project rejected** (Mandates assigned to ARMCA), the process ends. If **complaints/appeal** (Mandates assigned to ARMCA) are received, the process loops back to step 1.
- Registry holder: CN-REDD (DDD)** (Current responsible party) receives the request.
- registration, certification CN-REDD (DDD)** (Current responsible party) issues the certification.
- Regulator's review for all national REDD+ obligations (safeguards, benefit-sharing, tenure, ES compliance)** (Current responsible party) is conducted.
- homologation request examination** (Mandates assigned to ARMCA) is performed by the **Program Review Committee MEDD-NEC + CTE/Scientific Council** (Current responsible party).
- approval** (Mandates assigned to ARMCA) is granted by the **Program Review Committee (MEDD-NEC)** (Current responsible party).
- REDD+ project validation and approval for FONAREDD** (Mandates assigned to ARMCA) is completed, resulting in **FONAREDD** (Current responsible party).
- register C credit transaction** (Mandates assigned to ARMCA) is recorded by **MEDD-NEC & MFIN** (Current responsible party).
- internal verification of AD & EF** (Mandates assigned to ARMCA) is conducted by **DIAF** (Current responsible party) and **NFMS** (Current responsible party). **NFMS** receives input from **DIF (DIAF)** (Current responsible party) and **SLMS** (Current responsible party). **geomatic division (DIAF)** (Current responsible party) also provides input to **NFMS**.
- Independent AD & EF verification & validation process** (International/Independent review process) is conducted.
- GHGI, national C accounting** (Current responsible party) is performed, resulting in **DCC (DDD)** (Current responsible party).
- UNFCCC reporting (FREL, NC, NDC, BTR, GHGI)** (Current responsible party) is submitted, resulting in **DCC (DDD)** (Current responsible party).
- review process** (International/Independent review process) is conducted by **UNFCCC** (Current responsible party).

Figure 2 : Institutional architecture of REDD+ and the NFMS in the DRC, illustrating the main information flows and the project approval, verification, review, and reporting processes. The figure identifies the institutions currently responsible for each step, as defined in the official REDD+ project homologation framework. The color legend distinguishes: (i) current responsible entities (blue); (ii) the mandates assigned to ARMCA (but not yet functional) under Decree No. 23/22 overlapping with the responsibilities of existing institutions, including its designated role as national registry holder (yellow); (iii) process/mechanism boxes (black); and (iv) international/independent review processes (green).

The figure also highlights the emerging mandate of the Autorité de Régulation du Marché Carbone (ARMCA), established by Decree n°22/23³⁰ and formally operationalized in July 2025³¹, though its functions are not yet implemented. As defined in its 2023 mandate, the ARMCA is expected to regulate carbon transactions in the DRC, oversee the validation and approval of carbon initiatives, and supervise benefit-sharing and safeguards compliance. While these functions position the ARMCA as a central actor for transparency, accountability, and alignment of carbon activities with national priorities, several responsibilities currently overlap with those of existing institutions involved in REDD+ oversight and MRV. As the Authority is newly operational and undergoing a governmental review of its modalities and roles, its effective coordination with established bodies, including CN-REDD, DIAF, DDD, and FONAREDD, will be critical to avoid duplication and ensure coherent implementation.

Within the MEDD-NEC, specific directorates are assigned responsibility for carrying out the duties associated to each of the three core pillars of the NFMS/MRV system:

- **The Satellite Land Monitoring System (SLMS)** is managed by the Geomatics Unit in the Directorate of Forest Inventory and Management (DIAF). It provides activity data on forest cover and land-use change;
- **The National Forest Inventory (NFI)**, led by the Forest Inventory Unit within DIAF, provides emission factors through biomass and carbon stock measurements.
- **The Greenhouse Gas Inventory (GHGI)** is managed by the Climate Change Unit in the Directorate of Sustainable Development (DDD). It estimates emissions and removals in the Agriculture, Forestry and Other Land Use (AFOLU) sector and is responsible for the compilation of GHG estimates and reporting across all sectors.

With support from the Food and Agriculture Organization of the United Nations (FAO), the Japan International Cooperation Agency (JICA), the United States Forest Service (USFS), the University of Maryland, and the World Resources Institute (WRI), the DRC has developed forest cover maps, annual deforestation estimates, and a biomass map. The National Forest Inventory (2016–2021) has strengthened biomass and carbon stock estimates, though permanent remeasurement of plots is still pending.

³⁰ Decree No. 23/22 of June 2023 establishing, organizing, and defining the functioning of the Carbon Market Regulatory Authority (ARMCA) ; https://www.droitcongolais.info/files/72.06.23-Decret-du-14-juin-2023_ARMCA.pdf

³¹ Appointment of ARMCA leadership through presidential ordinances announced on national television (RTNC) on 23 July 2025; confirmed by press reporting ; <https://deskeco.com/2025/07/24/rdc-tshisekedi-cree-lautorite-de-regulation-du-marche-du-carbone>

The Greenhouse Gas Inventory has advanced with technical support from the Coalition for Rainforest Nations (CfRN) and the Greenhouse Gas Management Institute (GHGMI), but needs expansion beyond land use to waste, energy, and industrial sectors.

On safeguards, the DRC developed a Safeguards Information System (SIS) and submitted its first REDD+ safeguards summary to the UNFCCC in 2022.

Internationally, the DRC has submitted three National Communications³² (the fourth underway), while its Forest Reference Emission Level (FREL³³), first submitted in 2018 and evaluated the same year, is currently being revised based on new National Forest Inventory and land-use data, with a new version expected for publication.

Finally, the DRC has developed complementary digital systems that reinforce the NFMS and enhance transparency, reporting, and verification across the land-use sector. The NFMS web portal (<https://snsf.medd.gouv.cd/>) provides public access to forest monitoring data, land-use change indicators, and technical documentation generated through the NFMS. The National REDD+ Registry (<https://imagis-group.com/rdc/>) supports traceability of REDD+ interventions and has recently been restructured, with support from the U.S. Forest Service, to improve its integration with the NFMS architecture and expand beyond the forest sector, thereby supporting future interoperability with Article 6 mechanisms under the Paris Agreement. While both systems strengthen transparency and access to information, ensuring routine updates and long-term maintenance remains essential for sustained functionality.

Overall, measurement and estimation are relatively advanced, but verification remains only moderately developed due to limited capacity to link emissions with drivers such as degradation and fire.

³² UNFCCC – Repository of country’s official reports and submissions; <https://unfccc.int/reports>

³³ Report on the Technical Assessment of the proposed Forest Reference Emission Level (FREL) of the Democratic Republic of the Congo (UNFCCC submission, December 2018) ; <https://unfccc.int/documents/185488>

2. METHODOLOGICAL APPROACH IN ASSESSING PROGRESS IN THE NFMS

To evaluate the level of REDD+ implementation, specifically the establishment of the NFMS in the Democratic Republic of the Congo (DRC), the country applied the **REDDCompass framework**. Grounded in IPCC Good Practice Guidance and GFOI's Methods and Guidance Documentation (MGD), this tool provided a structured diagnostic approach to assess institutional, technical and methodological aspects of the NFMS, while highlighting both achievements and remaining improvements and gaps.

2.1. The REDDCompass Framework



The REDDCompass tool³⁴ is a diagnostic and planning framework created by the Global Forest Observations Initiative (GFOI) in 2015 to help countries design, assess, and improve National Forest Monitoring Systems (NFMS) for REDD+.

Relevance: It provides a stepwise, country-led approach that ensures NFMS systems evolve toward transparency, consistency, and credibility — key for accessing results-based payments under REDD+.

Structure: The tool is organized around four core components or **key themes**, each representing a critical dimension for the operationalization of a NFMS: (1) Institutional Arrangements, (2) Technical Design Decisions, (3) Measurement & Estimation, and (4) Reporting & Verification. Each theme is further structured into **concepts**, which are then broken down into **concrete actions**.

The REDDCompass framework results in a total of 86 recommended actions that serve as **benchmarks or guiding checkpoints** that countries can use to assess the maturity and completeness of their National Forest Monitoring System, highlighting strengths and gaps rather than strict requirements.

However, not all the 86 recommended actions fall neatly within a single concept. Several actions overlap multiple thematic areas, reflecting the interlinked nature of institutional, technical, and procedural aspects of forest monitoring. The REDDCompass framework is therefore intentionally flexible, allowing countries to interpret and group actions according to their national circumstances and institutional configurations.

Evaluation levels / attributes of each action: In REDDCompass, each of the 86 recommended actions is accompanied by qualitative levels or attributes such as Minimum, Advanced, Refined, Collation & Processing, Process, Instruction, QA/QC, and Record Keeping. These represent the **level, steps or milestones that can be achieved** for a given action and help the countries interpret how the action can evolve over time — from basic establishment (minimum) toward more refined and higher quality implementation. Rather than a single “yes/no” status, they allow for a nuanced assessment of maturity — for example, whether processes exist, whether they are documented, whether quality checks are in place, and whether records are archived).

³⁴ GFOI – REDDCompass Diagnostic Tool; <https://www.reddcompass.org/actions/fr-3/filter>



Theme (I), Institutional arrangements refer to the definition and institutionalization of basic mandates and responsibilities across the full range of stakeholders, together with the human, financial, material, and technical resources required for REDD+

implementation. It also covers the communication channels, coordination mechanisms, and operational processes that ensure institutions function effectively and transparently.

Institutional arrangements play a critical role in enabling countries to translate complex technical data—such as greenhouse gas (GHG) emissions and carbon stock changes—into methodological and policy-relevant information that can guide the implementation of REDD+ activities. Within this theme, actions are designed to build progressively on one another as follows:

- Establishing *Forest policy and governance frameworks* provides the legal and institutional foundation for REDD+;
- The *Identification of institutions responsible for Measurement, Reporting, and Verification (MRV)* ensures that roles and responsibilities are clearly defined and supported with resources.
- the *Definition of institutional and operational processes*, allows these institutions and policies to function in a coordinated, transparent, and accountable way, and
- The *Development of methods and tools* builds on these processes, enabling the application of technical instruments, guidelines, and procedures necessary for credible and transparent REDD+ implementation.

Effective institutional arrangements ensure that REDD+ is implemented in a coordinated, transparent, and accountable manner, strengthening the credibility and impact of national climate actions.



Theme (2), Technical Design Decisions

encompasses the methodological and strategic choices involved in establishing a NFMS. While each country's NFMS reflects its own objectives and national circumstances, certain design elements are essential for ensuring that the system is operational, sustainable, and aligned with REDD+ requirements. A NFMS must be capable of systematically collecting, processing, and integrating data in order to generate reliable information on both the current state and historical trends of key forest variables relevant to national objectives.

Core actions within this theme include the development and adoption of:

- *A definition of forest*, to establish the basic scope for what is being monitored;
- *A representation of the REDD+ system*, to clarify which activities are included and how they are tracked;
- *The identification of carbon pools*, to ensure completeness in emissions and removals coverage
- *Land use and land cover stratification models*, to support consistent measurement across space and time;
- *The selection of approaches, methods, and measurement levels*, to tailor the system to national capacities and reporting needs; and
- *The determination of spatial and temporal application objectives*, to define the resolution and frequency at which information will be generated.

Together, these design decisions create a coherent framework that allows countries to generate credible and policy-relevant forest monitoring system under REDD+.



Theme (3), Measurements and estimations

focus on the acquisition, processing, and management of data needed to estimate emissions and removals. These estimates depend on baseline information drawn from both field-based measurements and model predictions as well as spatial data from remote sensing and related models. Once collected, the data must be processed using statistical methods in line with IPCC Good Practice Guidance, including the estimation of areas, carbon stock changes, and associated uncertainties — while also accounting for carbon pool dynamics following disturbances.

Within this theme, actions build progressively to ensure that estimates are scientifically robust and suitable for REDD+ reporting:

- *Collecting field and remote sensing observations* provides the raw data for monitoring;
- *Data processing* and analysis transforms observations into usable information;
- *Quantification and management of uncertainties* ensures transparency and scientific credibility;
- *Integration of observations and estimation* methods strengthens consistency and reliability
- *Preservation and storage of information* secures long-term usability and institutional memory.

This theme ensures that emission estimates are scientifically robust, transparent, and suitable for national reporting under REDD+.



Theme (4), Reporting and verification cover both the internal and external processes required under the UNFCCC to ensure that greenhouse gas (GHG) data reported by Parties are reliable, transparent, and comprehensive.

Robust reporting and verification systems are essential for transparency, good governance, accountability, and credibility of results, while also building trust in the effective use of resources.

To account for each nation's efforts in estimating emissions and removals, the UNFCCC has established international procedures for the review and verification of reported data, including GHG inventories and REDD+ submission (such as FRELs/FRLs). These must be supported by strong national systems of internal verification, aligned with the methodologies and outcomes used to generate estimates.

The key actions under this theme to ensure data credibility include:

- *Reporting of the AFOLU (Agriculture, Forestry, and Other Land Use) sector within the national GHG inventory* provides the foundation for REDD+ consistency with national reporting;
- *Non-carbon reporting* (e.g. co-benefits, safeguards, governance-related data) broadens the scope to include sustainable development aspects, as well as their impacts on the well-being and livelihoods of forest-dependent communities;
- *REDD+ specific reporting* ensures alignment with FRELs/FRLs and results-based payment requirements;
- *Internal and external analysis* and verification processes strengthen credibility, comparability, and trust in reported results.

This theme ensures that reported data are credible, scientifically sound, transparent, and meets international standards for REDD+ recognition and support.



A tree nursery in Kalemie. Photo by Semenyo Nyakokpa.

2.2. REDDCompass-based Assessment of the NFMS in the DRC

The assessment was conducted through a country-led participatory approach, engaging over 30 members of the NFMS Technical Consultation Platform (PTC), including representatives from the ministry of environment and sustainable development (MEDD, now MEDD-NEC), civil society and academia. Participants were organized into groups corresponding to the four thematic components of the REDDCompass framework: (1) Institutional Arrangements, (2) Technical Design Decisions, (3) Measurement and Estimation, and (4) Reporting and Verification. Each group evaluated the actions within its theme.

An Excel-based evaluation matrix was prepared to guide and facilitate the process. For each of the 86 actions, the groups reached consensus on progress, choosing among three categories: *finalized*, *in progress*, or *not initiated*. Each rating was substantiated with a

written justification or supporting evidence (e.g., technical reports, ministerial decrees, etc.). Once completed, the groups' findings were presented in plenary for collective review; amendment, discussion, and final validation by the Technical Consultation Platform.

To ensure robustness and comparability of findings, a parallel assessment was carried out with the FAO NFMS Assessment Tool, which is conceptually derived from the REDDCompass framework³⁵. This triangulation helped verify the coherence of results and provided additional insight into the NFMS implementation status.

The consolidated findings classified the 86 actions into three categories: (i) actions already completed, (ii) actions in progress, and (iii) actions not yet initiated. Incomplete and ongoing actions were further disaggregated into specific activities, then prioritized and mapped to REDD+ pillars to guide implementation.

A key outcome of this process was the development of a revised NFMS roadmap, identifying priority actions to strengthen the REDD+ architecture in the DRC. However, the successful execution of this roadmap remains contingent on the availability of financial and technical support. Mobilizing adequate resources will be essential to implement the priority activities and to sustain the progress achieved thus far.

Overall, this assessment provided a structured diagnosis of the NFMS and enabled strategic planning grounded in participatory evaluation and stakeholder consensus. The strength of the approach lies in translating diagnostic insights into an actionable, prioritized roadmap for REDD+ implementation. Importantly, the participatory process allowed stakeholders to share their perspectives on the REDDCompass framework itself, providing useful feedback on its applicability and relevance in the national context.

³⁵ FAO – National Forest Monitoring System (NFMS) Tool under the “Boosting Transparency in Forest Data” initiative (available in English and French); <https://www.fao.org/in-action/boosting-transparency-forest-data/nfms-tool/en>; <https://www.fao.org/in-action/boosting-transparency-forest-data/nfms-tool/fr>



Une rizière expérimentale développée dans le cadre d'un programme pilote REDD+ utilisant les techniques du Système de riziculture intensive (SRI) dans la province de l'Équateur. Photo par Eva McNamara.

3. RESULTS AND SUPPORT OPPORTUNITIES

The following subsections present a synthesis of the assessment results across the four REDDCompass themes (Institutional Arrangements, Technical Design Decisions, Measurement and Estimation, and Reporting and Verification), covering a total of 86 actions. Each theme is summarized through a table indicating actions completed, in progress, and priority actions still required to consolidate the National Forest Monitoring System (NFMS) in the Democratic Republic of the Congo (DRC). This analysis provides a structured overview of institutional, technical, and procedural progress made under the REDD+ Measurement, Reporting and Verification (MRV) framework and can serve as a practical baseline for tracking future developments and identifying targeted support needs to strengthen the system.

3.1. Theme (1) Institutional Arrangements

The institutional framework for REDD+ in DRC has evolved over several years and includes essential governance and operational structures. The National REDD+ Coordination (CN-REDD), the National REDD+ Fund (FONAREDD), and the NFMS Technical Consultation Platform are all established and functioning. Institutions responsible for supporting the three key pillars of the NFMS are also operational: DIAF for satellite land monitoring systems (SLMS) and national forest inventory (NFI); and DDD for the national GHG inventory. The UNFCCC Focal Point ensures regular liaison with the UNFCCC. Other important achievements include the elaboration of the REDD+ national strategy and investment plan, the existence of safeguard information systems (SIS), the establishment of a benefit-sharing mechanism (e.g. Mai Ndombe).

Identified challenges: **Inter-institutional collaboration** is recognized but remains weak in practice, with inconsistent information-sharing protocols and incomplete legal instruments to formalize mandates. The integration of **provincial-level actors** and **cross-sectoral stakeholders** is still limited, undermining national coherence. **Non-carbon aspects** are not yet fully integrated into the NFMS, and **key reforms such as land tenure** processes remain incomplete. In addition, the **lack of sustainable financing and incentives** has led to irregular or complete absence of remuneration and limited career development opportunities, putting at risk the retention of skilled professionals trained in forest monitoring.

Support opportunities: expanding community forestry in provinces not yet covered; producing technical guides to support community forestry implementation; establishing and sustaining participatory monitoring protocols; integrating lessons learned into a continuous NFMS and REDD+ evaluation framework (including QA/QC); and securing predictable state and donor financing to ensure the long-term sustainability of the system.

Table 1 summarizes key institutional achievements, ongoing reforms, and priority actions required to fully operationalize NFMS governance and REDD+ coordination in the DRC.

Table 1 : REDDCompass Assessment for Theme (1): Institutional Arrangements. Progress, completed actions, and remaining priorities related to the institutional framework for REDD+ in the DRC, including coordination, governance, benefit-sharing mechanisms, and NFMS operationalization.

Theme (1) Institutional Arrangements (27 recommended REDDCompass actions)	
Completed 	National REDD+ coordination & reporting entity established — CN-REDD & DDD mandated (3) Roles of SLMS, NFI, and GHG inventory pillars defined, operational and recognized as robust in one jurisdictional ER Program (FCPF Mai Ndombe) under FCPF/ISO criteria (4) National REDD+ strategy and investment plan adopted and tested through the jurisdictional Mai Ndombe ER Program (27) Put in place MRV project development & NFMS operational plans (10, 11) Implemented national capacity-building plans for SLMS, NFIS, and MRV, including QGIS for the IFN and application of GIEC 2006 and 2019 guidelines (with the support of USFS, World Bank and University of Maryland, UMD); & for forest governance and institutional capacity (GIZ) (8, 26) Benefit-sharing and ER transfer processes defined by decree and in strategy documents (15, 16) Established national data acquisition/storage/QC procedures — SLMS & NFMS QA/QC workflows validated; data integration procedures in use (17, 18, 19, 20, 21) Identified REDD+ key activities at national level — mitigation actions prioritized in strategy & FREL (22) Drivers of deforestation assessed; mitigation/REDD+ actions initiated (23, 24) Operationalized coordination mechanisms — CN-REDD, DIAF, DDD, PTC and IPCC focal points collaborating (9, 13, 14)
In Progress 	Identification/installation of REDD+ stakeholders: provincial focal points & committees identified in Provinces with REDD+ projects (1) Define NFMS scope (national/jurisdictional/project level & REDD+/AFOLU reporting): National-level NFMS scope defined; provincial REDD+ programs (PIREDD) collect sub-national data to feed national system (2) Community monitoring framework: under development by WWF, to be handed to the CN-REDD (5) Non-carbon benefit entity roles and mechanisms: exist through national (e.g. “Coco” strategy of the ICCN) and private initiatives (e.g. Lola ya Bonobo), but not yet integrated into the NFMS framework (6) Define roles/responsibilities for benefit-sharing & results-based payment protocols: Community forestry (Local Community Forest Concession) strategy validated; draft for the national strategy for the access and benefit-sharing related to the use of genetic resources (ABS) developed (7)

	Establishment of permanent NFMS government financing: No dedicated government budget line yet; discussions ongoing to secure a permanent NFMS financing allocation within national accounts (12) Harmonize anti-deforestation measures with land-use programs & policies: Land-use reform process launched (Ministry of Land Affairs and Ministry of Land Use Planning), but harmonization across forestry, land-use, and sectoral programs still ongoing (25)
Priority Actions 	Complete provincial REDD+ institutional setup & focal point deployment, including provincial assessment and focal points; stakeholder outreach; targeted capacity-building (1) Harmonize collected data at provincial level - Provincial Integrated REDD+ Programs (PIREDD) with the national NFMS (2) Complete Local Community Forest Concession expansion and focal point deployment; assess community MRV tools and formalize a national integration & improvement plan (5) Map existing initiatives; define integration pathway into NFMS; develop guidance/tools for tracking non-carbon benefits nationally (6) Finalize technical guides on Local Community Forest Concession & access and benefit-sharing related to the use of genetic resources (ABS); validate and disseminate benefit-sharing tools; formalize transfer of non-carbon data and community monitoring protocols from existing actions (e.g. WWF) to CN-REDD/NFMS for centralization and operationalization (7) Secure a dedicated government budget line for NFMS through high-level advocacy and integration into annual finance law (ministerial & parliamentary engagement) (12) Accelerate cross-ministerial land-use reform coordination and formalize NFMS/REDD+ alignment with national land-use planning frameworks (25)

3.2. Theme (2), Technical Design Decisions

The DRC has made important progress in establishing the methodological basis for its NFMS (see **Table 2**). A national forest definition has been adopted, along with a forest stratification system and typology used in the National Forest Inventory (NFI). The National REDD+ Strategy has been finalized, with priority activities and spatial and temporal parameters of the FREL identified. Analyses have been carried out to identify and understand the drivers of deforestation, assess forest carbon stocks, and establish a historical forest reference emissions level (FREL).

Identified challenges: The existing **forest stratification and typology do not yet align with IPCC** definition and classifications standards, reducing comparability and credibility of DRC's data at the international level. A clear **operational definition for forest** degradation is lacking, and consequently both degradation and carbon stock enhancement activities are excluded from the FREL. **Updates to stratification to reflect temporal and spatial changes**

are needed, and **ecological and climatic parameters are not sufficiently integrated** into classification schemes, limiting its utility for long-term monitoring and reporting. Furthermore, while the national REDD+ strategy outlines a broad framework for action, **capacity gaps persist in specialized domains** and its **legal integration and implementation across sectors** remain incomplete.

Support opportunities: Technical and financial support to finalize definitions, upgrade outdated equipment, strengthen specific capacities, carry out peatland inventories, and develop land-use zoning maps. Institutional support is also needed to assess investment, capacity, and data needs and to identify integration pathways for REDD+ approaches.

Table 2 : REDDCompass Assessment for Theme (2): Technical Design Decisions. Status of methodological and strategic choices underpinning the design of the NFMS, including forest definition, stratification, carbon pool identification, REDD+ activity selection, and emission estimation parameters.

Theme (2) Technical Design Decisions (20 recommended REDDCompass actions)	
Finalized 	Identified key stakeholders for the national forest definition across sectors; FREL document and validation workshop minutes finalized (28) Documented and applied the national forest definition agreed with stakeholders: definition & stratification framework documented in FREL; emission factors & estimation methodology published and applied; biomass mapping (LiDAR + field plots IFN) available and used as part of the emission factor assessment (30) Documented Land-use stratification model through FREL, IFN field manual, and Technical Consultation Platform (PTC) approval of land-use classes by DIAF (33) Documented and justified selected REDD+ activities using key-category analysis; phased (step-wise) approach applied (35) Documented forest carbon pool data (above/belowground biomass, litter, deadwood, soil in final NFI report) and published national biomass map using LiDAR data (36) Analyzed key categories & carbon pools to determine most important reservoirs for REDD+ activities, using national inventory & pre-identified Tier 1/2 data; justified methodological choices for reporting (37) Selected & applied methodological approach for sampling design and data integration based on available resources and emission-factor needs; aligned with IPCC good practice & national capacity constraints (38) Determined additional datasets needed for carbon estimation by combining NFI field data, remote-sensing sources, and partner data to fill gaps in carbon pool information (39) Defined temporal reference period for Forest Reference Emission Level (FREL), aligning with national circumstances and available multi-year activity data; applied consistent time series for deforestation estimates (40)

	Documented spatial extent of FREL (national scale) and sector boundaries; harmonized land-use classifications & reporting units across national REDD+ jurisdictions (41) Established criteria for methodological selection including choice of activity data sources, uncertainty treatment, historical disturbance consideration, and reference period justification; aligned with i) the 2006 IPCC Guidelines for GHG Inventories and 2019 refinements, ii) the GFOI 2020 Methods and Guidance Document, and iii) the FCPF guidance (42) Documented methodological approach & quality-control procedures for REDD+ reporting, including transparency provisions, data sources, and internal validation steps (43) Assessed investment needs for continued NFMS operations and identified requirements for sustained financing of data collection (including maintaining SLMS time series and complete IFN cycles), QA/QC, and reporting systems; linked to NFMS governance framework (44) Ensured consistency between historical estimates & future projections, harmonizing deforestation and forest-carbon estimates across time series to minimize methodological discontinuities (45) Used scenario analysis & sensitivity checks to support long-term NFMS planning and reporting improvements, incorporating uncertainty analysis and iterative model refinement (46)
In progress 	Define national forest definition through stakeholder consultation: National definition exists; discussions on degradation & related categories advanced but not yet validated and standardized nationwide (29) Deepen forest stratification to improve emission/removal estimates: Historical stratification exists; needs update due to anthropogenic & natural changes, and due to reduced IFN sampling (32) Identify priority REDD+ activities in the national strategy/plan: Historically, only deforestation prioritized in FREL; but degradation & regeneration now incorporated into recent analyses (3/5 REDD+ activities operationalized) (34) Evaluate data needs & integration options: Planned 1,508 sampling units reduced to 321 (44) Hierarchized data-acquisition plan: Initial planning discussions underway; needs identified to strengthen permanent-plot network and address gaps in degradation data (47) Evaluate capacity needs & develop tools to support data collection & integration: Capacity building ongoing; significant NFMS data already collected (NFI & SLMS), but continued training needed in specialized topics (48)
Priority Actions 	Validate national forest definition including degradation component via the Technical Consultation Platform (PTC); conduct national multi-stakeholder workshop and formalize forest definition through competent authority (29) Develop and operationalize national forest stratification for managed vs. unmanaged lands: finalize and disseminate macro-zoning guide; issue decree

	establishing macro-zoning framework; implement zoning and area delineation; harmonize classification with IPCC land-use categories—<i>action not yet initiated</i> (31) Update annual land-cover monitoring & stratification; publish revised stratification maps (32) Operationalize conservation & sustainable forest management within the NFMS and achieve full coverage of all REDD+ activities (34) Reduce uncertainty by adding inventory plots at ~55 km intervals (vs. 111 km currently) to better capture species variation between existing sampling units; cross-validate SLMS AD interpretations to improve reference data quality; Apply a three-interpreter consensus review for reference sample interpretation in AD (44) Develop permanent-plot methodology (including peatlands); increase sampling density; complete 2016–18 & 2018–20 degradation data series; ensure regional-level interpretation & biannual updates (47) Identify & address targeted capacity gaps; develop specific tools to support data collection, integration & land-use tracking (48)
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3.3. Theme (3), Measurement and Estimation

Measurement and estimation are the NFMS components in the DRC that have received the most sustained technical and financial support.

The country has access to appropriate multi-date remote sensing data and methodologies for monitoring forest cover changes and estimating uncertainties (see **Table 3**). Cross-checking among multiple data sources (FAO, UMD, DIAF, and OSFAC), combined with strengthened QA/QC procedures, including multi-interpreter analysis, field verification, and technical guides, supports the credibility of the MRV system. Forest cover maps and forest cover change estimates spanning from 2000 to 2022 at national and subnational levels, supported by data from various platforms, including Collect Earth, GLAD alerts, JJ-FAST, and others. Annual deforestation data have been produced through collaborations with the University of Maryland and the US Forest Service, providing valuable insights into forest dynamics.

On the ground, a National Forest Inventory (NFI) was successfully completed in 2021 with FAO and JICA technical support. It combined permanent and temporary plots, producing data on aboveground biomass, forest structure, and species composition across several ecological zones. The NFI results are currently being analysed and incorporated into the greenhouse gas inventory. A biomass map of the DRC was also produced using LiDAR, and sampling intensity was increased to improve precision.

The greenhouse gas inventory (GHGI) system has also seen progress, with DRC submitting multiple national communications to the UNFCCC and developing an operational platform



for emission calculations. Technical capacity has been enhanced through support from partners such as the Coalition for Rainforest Nations (CfRN) and the US Forest Service Central Africa Women’s Initiative for Climate Action (WICA), which trained over 70 women from the DRC on GHG MRV.

Identified challenges: The vast and ecologically diverse terrain of the DRC, coupled with poor infrastructure, lack of means and remuneration, as well as frequent cloud cover, hampers satellite data acquisition and field validation. Issues with the Landsat satellite’s SLC-off problem, unreliable internet access, and inconsistencies in the application of methodologies contribute to discrepancies in deforestation estimates. Notably, methodologies for detecting forest degradation and emissions from forest fires are still in early stages of development and are not yet incorporated into the official monitoring framework. Web infrastructure, especially the NFMS portal, needs upgrading to ensure effective data management and sharing.

Support opportunities: Technical and financial assistance to produce updated activity data and emission factors, validate high-resolution image data through fieldwork, analyse burned biomass, standardize methodological approaches, and enhance the national REDD+ data platform and safeguards information system.

Table 3 : REDDCompass Assessment for Theme (3): Measurement and Estimation. Achievements, ongoing activities, and priority actions for data collection, uncertainty management, and emission estimation under the NFMS, encompassing remote sensing, field inventories, QA/QC, and uncertainty integration.

Theme (3) Measurement and Estimation (25 recommended REDDCompass actions)	
Finalized 	Assessed capacity needs to collect & integrate priority data: FREL submitted/validated; NFI & SLMS teams trained on field data collection, QA/QC, and reporting protocols, with functional in-house capacity (49) Identified & justified remote-sensing data sources for REDD+ design & MRV: FRL/FREL submitted; >12,500 Landsat scenes (TM, ETM+, OLI) used for baseline; added dense time-series from Landsat 7 & 8, Sentinel-2, and Planet (30m/10m/4m) to operationalize forest-cover change detection (50) Generated coherent multi-date activity data & uncertainty estimates for forest-area change: FRL/FREL submitted and validated; applied Olofsson et al. (2014) good-practice framework; activity data continuously updated and reported through 2018–2020 (51) Documented MRV/REDD+ processes to ensure transparency & guide future research: Activity-data production reports describe methods & results, with activity data workflows replicable and independently reconstructible; institutional framework in place for process documentation (52) Applied QA/QC procedures for activity data: FRL/FREL validated; QA/QC strengthened using Olofson (2014) method, Collect Earth Online protocol, Standard Operating Procedures (SOPs), 3-interpreter cross-checks & field verification (replaced by spatially distributed high-resolution validation where security constraints limit field access) (53) Implemented QA/QC procedures for field observations: QA/QC manuals established (NFI), cross-checking with DIAF, validation reports produced using crossing-over method (57) Documented processes and identified future research & development needs: Methodology guides and technical manuals produced (floristic inventories, deforestation estimates, GHG estimation tools); institutional documentation established; identified research include advanced allometric equations (volume-biomass links, including for swamp forests/peatlands) and degradation quantification procedures (58) Identified software & hardware needs based on selected methods and levels: Tools validated through FREL; systems updated in line with evolving technology and methodologies, including AD estimation improvements (2000–2018 SSTs); continuously update software, hardware & data-processing workflows as technology evolves (59) Adopted/developed integration tools to support selected MRV approaches & data needs: Use of OpenForis Arena, Collect Earth Online, and SEPAL platforms operationalized for data integration and reporting (60) Implemented systems & procedures to compare and integrate multiple data sources for estimations: cross-verification methodology applied using multi-source interpretation (UMD, FAO, DIAF internal, OSFAC) to ensure consistency of estimates (61) Applied QA/QC procedures to integration & estimation processes: quality control ensured at all stages; 10% sample re-checks with FAO; cross-over interpretation with UMD; QA/QC aligned with IPCC procedures (62) Generated emission estimates meeting national reporting requirements, consistent with national FREL methods: national-scale deforestation estimates; forest cover change data; emission factors validated through reports; QA/QC applied (63)

	Conducted precision assessment to quantify uncertainty in activity data: documented in FRL/FREL and national activity reports (2014–2016, 2016–2018) (64) Identified errors and conducted uncertainty analysis for field observations used to derive emission/removal factors: results documented in FRL and National Forest Inventory (NFI) 2021 report; procedures codified in NFI field manual (65) Established approaches to reduce uncertainty and guide data collection & analysis processes: uncertainty procedures documented in FRL and comprehensive methodological guide, covering all MRV pillars (69) Systematic documentation of approaches, methods, data sources, and QA/QC procedures across all MRV pillars completed: included in FRL and comprehensive methodological guide (70) Transparent documentation and justification of REDD+ design decisions completed: Technical REDD+ Annex 2021 and FREL documentation (71)
In progress 	Collect field data on forest carbon stock variation: Field datasets exist (WWF carbon model, IFN plots, degradation verification plots); additional ground-truthing on degradation initiated but not yet systematic or national in scope; lack of permanent plots, causing limited long-term emission factor tracking (54) Collected field data on fire-related emissions for emission factor development: National Collect Earth campaign (>4,000 samples) supported by USFS, OSFAC & UMD support at the provincial level (burn-area analyses underway using Collect Earth Online datasets) (55) Assemble field data to include fire-related emission factor in identified strata: fire reference data collected through DIAF/USFS and OSFAC using Collect Earth & high-resolution imagery; fire maps produced; emission calculations pending (56) Combined uncertainty estimates for REDD+ reporting : began integrating uncertainty from activity data & emission factors; AD uncertainty combined, but methodological levels vary and must align with IPCC requirements (66) Used key-category analysis to identify priority sectors for uncertainty reduction: emission reduction improvement reports support prioritization; uncertainty assessment ongoing, missing recent reporting cycles (67) Document errors, assumptions & approaches used in uncertainty analysis: applied in the FREL; process needs to be replicated for recent AD cycles and integrated into NFMS uncertainty improvement workplan (68) Established centralized data/document storage system: NFMS/SNSF portal created and operational (72) Ensured documentation access for key staff: communication guidelines address available for staff (73)
Priority Actions 	Reach consensus & operationalize forest degradation definition; apply it operationally across provinces; update & harmonize existing field datasets referenced against the agreed definition (54) Conduct field verification to validate remote-sensing burned area data with targeted ground-truth missions using high-resolution imagery (55) Conduct field validation & complete fire-emission estimation: verify burned peat depth & carbon loss, finalize algorithms for fire-emission quantification in peatlands & upland forests, publish fire-related EF & AD integration into NFMS (56)

	Finalize uncertainty integration across AD & EF following latest IPCC guidance; harmonize uncertainty thresholds, rerun uncertainty analysis for most recent AD cycles (66) Complete uncertainty data for recent periods and update key-category assessment with latest NFMS & NDC reporting cycles; document prioritization decisions for uncertainty reduction in future GHG inventory cycles (67) Extend uncertainty documentation to latest AD cycles and systematically record error sources, assumptions, and methodological steps in updated uncertainty assessment sheets; integrate into routine NFMS QA/QC and NDC transparency reporting (68) Ensure sustainable long-term hosting for the portal and define a regular data-update schedule: budgetary and operational planning for the NFMS (72) Develop missing technical manuals to finalize and centralize SOPs & data-access protocols (73)
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3.4. Theme (4), Reporting and Verification

DRC has initiated multiple processes to ensure transparency and accountability in REDD+ implementation. It has submitted three national communications to the UNFCCC³⁶, and a fourth is underway. It has also submitted one FREL³⁷, a Nationally Determined Contribution¹, as well as a biennial update report (BUR³⁸). A second NDC (version 3.0) is currently under development. In April 2022, DRC submitted its first REDD+ Safeguards Summary, marking a significant step in aligning with international reporting requirements.

At the national level, important milestones have been achieved (see **Table 4**), including

- the establishment of tools and platforms that strengthen reporting and verification, such as the NFMS web portal³⁹ and the REDD+ registry⁴⁰.
- the development and validation of a Safeguards Information System (SIS), marking progress toward meeting REDD+ safeguard reporting requirements, though its public accessibility remains limited^{41,42}.

³⁶ UNFCCC – Repository of National Communications from non-Annex I Parties; <https://unfccc.int/non-annex-I-NCs>

³⁷ Final submission of the DRC's Forest Reference Emission Level (FREL) (Submission UNFCCC in November 2018); https://redd.unfccc.int/media/rdc_documentnerf_soumissionfinale_29112018.pdf

³⁸ DRC' biennial update report (Submission UNFCCC December 2022); <https://unfccc.int/documents/624762>

³⁹ National Forest Monitoring System portal; <https://snsf.medd.gouv.cd/portal/>

⁴⁰ National Register REDD+ website; <https://imagis-group.com/rdc/>

⁴¹ CIFOR-ICRAF – « Examining support for the rights of Indigenous Peoples and local communities in the context of REDD+ in the Democratic Republic of the Congo » (Flyer #4, series on social safeguards standards); https://www.cifor-icraf.org/publications/pdf_files/Flyer/REDD-Safeguards-4.pdf

⁴² Safeguards Information System (SIS) of the DRC; <http://rdc-snsf.org/sis>

- benefit-sharing plan, operationalized based on the jurisdictional Mai-Ndombe Emission Reductions Program (developed by the Government of the DRC with the support of the FCPF under the ERPA), including initial assessments and mapping of REDD+ co-benefits to inform equitable distribution and multiple-benefit monitoring.
- the first national-scale verification⁴³ and validation of the jurisdictional Mai-Ndombe Emission Reductions Program (FCPF, ERPA). This process, audited by Scientific Certification Systems Global Services (SCS), relied on NFMS activity data generated by DIAF and the UMD-GLAD laboratory (University of Maryland – Global Land Analysis and Discovery), thereby improving alignment with national forest monitoring standards and UNFCCC reporting requirements. This verification resulted in the first results-based payment (RBP) for the program (3.89 MtCO₂e verified; USD 19.47 million disbursed in June 2025). With this milestone, the DRC achieved a major advancement for its MRV system, demonstrating its ability to generate verified emission reductions and mobilizing international climate finance.
- the national REDD+ Registry, enhanced with support from the USFS, was updated in 2024 to integrate not only activities from the forest sector but also from other sectors of the DRC's NDC. This evolution represents an essential step toward multisectoral interoperability and toward alignment with the mechanisms of Article 6 of the Paris Agreement.

Identified challenges: Difficulties remain in ensuring the **timeliness, consistency, and completeness of reporting**. Many reports depend heavily on **data inputs from other government entities, which are often delayed or inconsistent in quality**. The **institutional role and mandate of the NFMS** in preparing the Biennial Transparency Report (BTR) is not yet clearly defined, particularly with regard to providing activity data, emission factors, and methodological documentation for the AFOLU sector, which undermines coordination across institutions and efficiency in data reporting. Emission **estimates currently exclude deforestation drivers or degradation data**, which limits the comprehensiveness of the reports and their utility for policymaking and verification. Several of the tools and repositories developed to enhance transparency — including the NFMS web portal, the Safeguards Information System (SIS), and the national REDD+ Registry — are not consistently available online. **Periodic server outages and limited resources** for maintenance, hosting, and continuous updating of registry information and data undermine

⁴³ Verification Report of the Jurisdictional Mai-Ndombe Emission Reductions Program (developed by the Government of the DRC with the support of the FCPF under the ERPA) (April 2025); https://www.forestcarbonpartnership.org/sites/default/files/documents/fcpf_wb_drc_verificationreport_v2-5_040725_0.pdf

system reliability, reduce stakeholder confidence, complicate verification processes, and risk weakening the credibility of the country's REDD+ reporting architecture if not addressed.

Support opportunities: the formulation of a capacity-building plan to strengthen national expertise in internal and external verification, alongside continued assistance to maintain and upgrade the NFMS web portal and SIS and to integrate verification recommendations into official reports. Additional support is needed to institutionalize monitoring of non-carbon benefits and designate structures responsible for their evaluation, as well as to ensure the interoperability of other sectors with the now finalized REDD+ Registry and alignment with Article 6 mechanisms. Finally, targeted support would help to integrate REDD+ actions more fully into future NDC updates, particularly in the energy sector.

Table 4 : REDDCompass Assessment for Theme (4): Reporting and Verification. Progress and remaining actions related to REDD+ and GHG reporting, verification procedures, benefit-sharing, and continuous improvement mechanisms ensuring transparency and compliance with UNFCCC requirements.

Theme (4) Reporting and Verification (11 recommended REDDCompass actions)	
Finalized 	Coordinated REDD+ and GHG inventory reporting: ensured coherence between REDD+ and AFOLU GHG reports through the FREL, biennial report, and REDD+ technical annex; applied consistent approaches and levels for estimating land-use emissions (74) Ensured completeness of FREL/FRL submission: FREL includes full methodological transparency and meets UNFCCC Decision 13/CP.19 requirements; documented the technical evaluation process and validation criteria; FREL officially submitted and approved (75) Completed national and international evaluation of the FREL officially submitted and validated; national evaluation workshop held; technical review workshop organized to assess UNFCCC evaluation findings; final validation workshop conducted, confirming full compliance with national and international review procedures (76) Integrated REDD+ results into the Biennial Update Report: all required elements for REDD+ reporting included in the 2021 Biennial Update technical annex; results-based actions and emission reduction outcomes documented in line with UNFCCC reporting standards (77) Implemented pilot benefit-sharing mechanism planned in the FCPF programme: ERPA Mai-Ndombe benefit-sharing plan developed and operationalized as the pilot provincial model (79) Strengthened institutional and technical verification expertise: institutional capacities and national verification framework reinforced through targeted trainings and technical coordination under the PTC (Plateforme Technique de Coordination) (81) Established national procedures for internal verification: implementation of standardized verification procedures ensured through the creation and operationalization of the Plateforme Technique de Coordination (PTC) (82)

	Validated REDD+ technical annex and reporting documents: REDD+ technical annex, BUR, and FREL finalized and validated through multi-stakeholder review under the NFMS framework; endorsed by all institutional partners before official submission to the UNFCCC Secretariat (83) Integrated findings from internal and external review processes: key recommendations and conclusions from verification analyses consolidated into PTC meeting reports (84) Linked verification results to continuous improvement process: findings and recommendations from verification reviews documented in PTC reports (85)
In progress 	Verification capacity strengthened and tied to QA/QC: delivered trainings for internal/external verification leads on all QA/QC steps (86)
Priority Actions 	Reporting on non-carbon benefits: No reporting system yet in place for non-carbon benefits linked to NDC and ER Program safeguards under NFMS/REDD+ (biodiversity, livelihoods, governance, tenure rights, ecosystem services); methodological framework, data collection system and institutional responsibilities pending (<i>action not yet initiated</i>) (80) Continue and expand capacity-building sessions for verification actors at each process level aligned with ISO14064-3, including mock verification exercises and experience-sharing with UNFCCC review experts; formalize SOPs and feedback loops for internal/external verification (86)



4. STRATEGIC RECOMMENDATIONS FOR STRENGTHENING THE NATIONAL FOREST MONITORING SYSTEM IN THE DEMOCRATIC REPUBLIC OF THE CONGO

The Democratic Republic of the Congo (DRC) has made commendable progress in establishing its National Forest Monitoring System (NFMS), providing a strong foundation for REDD+ implementation. Yet several opportunities remain to further operationalize and enhance the system's functionality, effectiveness, and institutional integration in order to maximize the benefits of REDD+.

4.1. Institutional Strengthening and Legal Framework

A priority step is the formal institutionalization of the NFMS governance through clear legal instruments. In particular, the Technical Consultation Platform (PTC), which currently lacks formal recognition, should be established by ministerial decree defining its creation, composition, and functioning. This would secure its authority, legitimacy, and sustainability.

The institutional framework should also be broadened to include stakeholders from other sectors involved in forest and land management, especially at the provincial level, ensuring stronger links between national and sub-national monitoring and governance.

Improved coordination mechanisms are equally critical. The CN-REDD currently plays a diminished role in certain aspects of the REDD+ implementation, and its mandate should be clarified and reinforced. An institutional diagnosis could help identify overlaps, clarify responsibilities, and optimize coordination across the system.

Enhancing inter-agency collaboration and establishing mechanisms for systematic data exchange between NFMS stakeholders will be vital for consistent and harmonized data flow.

4.2. Human Resources and Operational Environment

The effectiveness of the NFMS depends heavily on the working conditions of its personnel, particularly those engaged in Measurement, Reporting, and Verification (MRV). Ensuring staff retention and high performance requires well-structured programs for professional development, career progression, and competitive remuneration, since many technical staff are currently compensated below market levels and unable to dedicate sufficient focus to critical tasks such as data collection and analysis.

In addition, logistical and environmental constraints, including limited internet connectivity, inadequate data processing capacity, and insufficient storage infrastructure, undermine productivity. NFMS teams increasingly require relocation to dedicated facilities with the necessary infrastructure to produce and manage high-quality data. Sustained investment in infrastructure and professional work environments is essential, and the government should consider reinvesting proceeds from emission reduction credits to strengthen and maintain the NFMS.

Furthermore, a structural gap persists between the NFMS and emission-reduction verification, as most REDD+ projects still rely on project-specific data generated, managed, and sold by third parties (e.g., Verra, Gold Standard, and their contractors), rather than national baselines or QA/QC procedures. This situation limits potential revenue streams from nationally verified emission reductions. A key priority at both the international and national levels should therefore be to operationalize NFMS-based baselines and establish them as the reference for verification under REDD+ and Article 6 mechanisms, enabling countries to leverage systems already required by the UNFCCC as a prerequisite for REDD+ implementation as a long-term source of domestic revenue. The government should also consider reinvesting proceeds from emission reduction credits and supporting the operationalization of national baselines as a way to strengthen staff capacity and ensure the NFMS's long-term financial sustainability.



A peat sample taken in Mbandaka. Photo by Eva McNamara.

4.3. Data Sharing and Technological Integration

To facilitate improved data sharing, it is recommended that a formalized mechanism for information exchange between the NFMS and other entities within the Ministry of Environment, Sustainable Development and New Climate Economy (MEDD-NEC). While a central server currently exists at the DIAF to host the NFMS web portal, it must be complemented by data gateways and interoperable digital infrastructure to connect with other stakeholders' systems, for example safeguards, FREL, and NDC tracking.

Key priorities include:

- Ensuring interoperability between the REDD+ Registry, the Safeguards Information System (SIS), the FREL database, and NDC tracking systems.
- Establishing protocols for inter-database communication.
- Developing a centralized metadata portal for MRV data.
- Publishing all NFMS outputs under open data licenses to enhance transparency and accessibility.

4.4. Capacity Building and Methodological Harmonization

Despite substantial international support, capacity building remains fragmented. The impact of past trainings has not been systematically assessed, and many acquired skills are not retained or applied in practice. Priority should be given to developing advanced expertise in carbon accounting and statistical estimation, which remain underrepresented in national training curricula.

In addition, emerging technologies such as artificial intelligence (AI) and machine learning offer major potential for improving forest monitoring, particularly for automated classification, change detection, and uncertainty estimation. However, expertise in these tools remains limited within national institutions. Integrating AI into NFMS workflows would not only improve the precision and efficiency of analysis but also reduce long-term costs associated with manual processing. Building institutional capacity to apply and govern these technologies should therefore be considered a strategic training priority.

A key technical challenge is the lack of methodological harmonization. The SLMS pillar, often working with partners, has produced multiple estimates using divergent approaches, from pixel-counting methods to stratified sampling techniques inspired by Olofsson's best practices. Although methodological evolution has reduced bias over time, the lack of consistency has led to significant variation in statistical results, often sparking controversy among data users. There is an urgent need to harmonize methodologies, develop national reference guidelines, and establish quality control standards to ensure comparability and credibility of estimates.

To further strengthen accuracy, the use of very high-resolution satellite imagery should be expanded, complemented by robust ground-truthing missions. The National Forest Inventory (NFI) should be reinforced by expanding both permanent and temporary sample plots to improve emission factor data. Finally, it is essential to finalize definitions and detection systems for degradation and fire-related emissions, and to build capacity for assessing other greenhouse gases and carbon-enhancing REDD+ activities.

4.5. Linking Emissions to Drivers and Improving the FREL

To better support REDD+ policy and implementation, the NFMS should link emission estimates directly to the drivers of deforestation and degradation. Disaggregating emissions by driver and region would provide clearer insights into sectoral and geographic contributions, increasing the policy relevance of monitoring data. Currently, this level of granularity is limited, and the capacity to quantify emissions by driver remains weak.

At the same time, the availability of new and more accurate datasets from the SLMS and NFI offers a strong basis to update and strengthen the national FREL. The first FREL submitted to the UNFCCC was based on pre-inventory data and covered only CO₂ emissions from deforestation. With current datasets now including inventory-based biomass estimates, and the possibility of adding degradation and carbon stock enhancement as REDD+ activities, the DRC is well positioned to submit a revised FREL that is more robust, comprehensive, and aligned with international best practice.



5. DISCUSSION

The country-led, participatory REDDCompass-based assessment provided valuable insights into the status of the DRC's National Forest Monitoring System (NFMS), helping to identify strengths in forest mapping and inventory while also exposing significant gaps in institutional arrangements, methodological consistency, and policy integration. The participatory process fostered national ownership and dialogue among stakeholders.

However, several limitations in both the NFMS and the assessment framework itself must be recognized to ensure that future actions are based on a realistic appraisal of national readiness and capacity.

Strengths of the REDDCompass-based Assessment

- **Comprehensiveness:** REDDCompass covers a wide spectrum of actions, from technical MRV procedures to legal and institutional frameworks, providing a holistic view of forest monitoring systems.
- **Participatory Nature:** The tool encourages in-country leadership and stakeholder engagement, which increases ownership and relevance of results.
- **Diagnostic Utility:** By identifying which components are lagging, it supports strategic planning and prioritization of investments.
- **Global Alignment:** The framework is grounded in IPCC Good Practice Guidelines and the GFOI's Methods and Guidance Documentation (MGD), ensuring coherence with REDD+ reporting standards.
- **Flexibility:** It is adaptable to different national contexts and REDD+ stages.

Structural Limitations of the Framework

Despite these advantages, the REDDCompass framework presents several structural shortcomings for the assessment of NFMS functionality:

- **Subjectivity in Self-Assessment:** The assessment relies heavily on national expert judgment, which can lead to overly optimistic scores, especially in politically sensitive areas. This risk is partly mitigated by requiring tangible proof (documents, reports, workshop minutes, etc.) documented in the Excel table to justify scores, a significant advantage over the FAO online assessment tool.
- **Uniform Weighting:** All actions are treated as equally important, though some (e.g., national FRELs, QA/QC systems) are far more critical for MRV integrity.

- **Static Architecture:** The framework does not automatically adapt to recent IPCC or UNFCCC updates, requiring manual interpretation of evolving guidance, a task that should be addressed by the GFOI community.
- **Lack of External Verification:** Most assessments rely solely on national documentation, with limited opportunities for third-party review or ground-truthing. Nonetheless, external verification can be enhanced through access to the Excel worksheet.

Operational Limitations

In addition to structural issues, operational limitations of the REDDCompass approach are especially relevant in contexts such as the DRC:

- **Assumption of Institutional Functionality:** The approach assumes that the existence of an institution responsible for developing the NFMS equates to that system being operational. However, interviews with national experts reveal that while institutional frameworks exist on paper, weak administrative capacity, lack of technical resources, and poor inter-agency coordination obstruct real implementation.
- **Neglect of Performance and Capacity Issues:** The framework does not explicitly assess organizational performance, human resource capacity, or budgetary constraints — often the most critical bottlenecks in operationalizing REDD+ systems.
- **Disconnection Between Documentation and Reality:** Evaluations are typically conducted internally, often by the MRV unit, drawing upon national strategies, reports, and inventories. Without external consultation or field verification, there is a risk of overestimating progress. Interviews with field-level implementers suggest that many documented actions remain only partially implemented or not integrated into practice. Dissemination of results is also uneven: in some cases, although documentation existed, many NFMS stakeholders were still unaware of the reported progress.
- **Limited Capture of Cross-Institutional Dynamics:** Challenges related to multi-level governance (national vs. provincial) and inter-agency competition are insufficiently addressed by the framework, even though these dynamics significantly affect data sharing, consistency, and accountability.

These limitations suggest that while the REDDCompass-based approach is a valuable starting point for structured assessment, it should be complemented with field validation, independent review, and explicit metrics for institutional functionality and implementation fidelity.

6. CONCLUSION

The participatory REDDCompass assessment provided the DRC with a structured mechanism to evaluate its NFMS and foster national dialogue. It shows that the country has made meaningful progress in developing its technical components, notably forest mapping, forest cover change estimation and inventory, in line with global good practices and with strong national ownership.

Yet persistent institutional and legal gaps continue to threaten the system's sustainability and credibility. Unclear mandates, weak inter-agency coordination, and inadequate funding for staff retention remain critical obstacles. The absence of standardized methodologies across datasets and emissions categories further limits transparency and comparability.

Addressing these gaps is not only a technical concern but a strategic imperative. Through stronger partnerships, targeted investments, policy reforms, and improved coordination, the DRC can consolidate its leadership in tropical forest conservation and fully capitalize on opportunities for results-based climate finance.

As the country progresses toward full REDD+ implementation, the credibility of its NFMS will come under closer international scrutiny, making institutional strengthening, human capacity development, and robust legal frameworks essential for long-term success.

While the REDDCompass-based approach applied in this study is not without limitations, its application has proven valuable in guiding national priorities for REDD+ readiness and implementation. To unlock the full mitigation potential of its forest, the DRC must now move from planning to institutional consolidation and technical scaling anchored in transparency, coherence, and sustained investment.

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