



Forest Carbon Partnership Facility (FCPF) Carbon Fund ER Monitoring Report (ER-MR)	
ER Program Name and Country:	Dominican Republic
Reporting Period covered in this report:	01-03-2021 to 31-12-2021
Number of FCPF ERs:	836,147
Quantity of ERs allocated to the Uncertainty Buffer:	184,444
Quantity of ERs to allocated to the Pooled Reversal Buffer:	209,036
Number of FCPF ERs from enhanced removals through afforestation/ reforestation:	0
Date of Submission:	06-08-2025
Version	4

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

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

Progress on the actions and interventions under the ER Program (including key dates and milestones);

The Dominican Republic (DR) is simultaneously going through a REDD+ Readiness Preparation process and implementing the ER Program. As part of the REDD+ Readiness Preparation process, the Government of DR (GoDR) is developing a National REDD+ Strategy (ENREDD+ per its acronym in Spanish). ENREDD+ includes a set of mitigation and adaptation measures that will contribute to reducing deforestation and forest degradation and promote productivity of the forest sector. The ENREDD+ is developed by the Climate Change Directorate of the Ministry of the Environment based on the results of several analytical studies funded by the Forest Carbon Partnership Facility (FCPF) REDD+ Readiness Preparation grant. The REDD+ Program is expected to become the first step towards implementing the ENREDD+. REDD Program activities are based on three strategic pillars comprising 22 strategic actions:

- a) Strengthening of the legal and institutional framework and enforcement of the law, for the conservation of natural heritage and the sustainable use of natural resources.
- b) Establishing, strengthening, and applying public policies to limit and/or contain the expansion of the agricultural and cattle ranching frontiers and infrastructure into forest areas.
- c) Promoting natural resource management models that contribute to sustainable and productive uses, including the growth of local and small and medium forest enterprises, as well as the conservation of forests.

Whereas pillars a) and b) include strategic actions aimed at strengthening the environment favorable to the implementation of REDD+ Program; pillar c) refers to strategic actions and training programs that promote sustainable forest management. More specifically, pillar a) groups activities targeting collaboration with institutions to improve the existing legal frameworks that do not promote the emissions reduction or act as a perverse incentive that expands deforestation. It also aims at establishing the appropriate enforcement mechanisms to counteract deforestation and forest degradation. Activities grouped in pillar b) include establishing areas for sustainable forest management, and the zoning of areas for agricultural and livestock production compatible with forest conservation. Actions grouped in component c) will promote sustainable forest conservation and management, as well as the establishment of sustainable productive systems based on agroforestry and sustainable livestock farming. The first two strategic options or pillars will generate legal and institutional conditions to meet the established reduction goals, while the third includes actions to be carried out in the field through successful plans, programs and projects being developed in the country

REDD+ activities is implemented through various public and private entities including government agencies such as the Ministry of the Environment and the Ministry of Agriculture or the private sector such as San Ramón Foresters Association referred to as Executing Entities (EEs). REDD+ activities are linked to EE plans, projects, and programs. EEs will sign an inter-institutional agreement with the Ministry of the Environment to comply with the conditions stipulated in the REDD+ Program and in this document, following which participating EEs will be registered. EEs identified to date include the following: (a) Vice- Ministries of Forest Resources, Protected Areas and Biodiversity, (b) the Technical Implementing Unit of the Presidency for Agroforestry Development Projects (UTEPDA), (c) the Cocoa Department of the Ministry of Agriculture, (d) Dominican Coffee Institute (INDOCAFÉ), (e) General Livestock Directorate (DIGEGA) / the National Board for Regulation and Development of the Milk Industry (CONALECHE), (f) San Ramón Foresters Association, and (g) the Sustainable Forest Development Association from the Municipality of Restauracion (ASODEFOREST).

During 2021, the Executing Entities presented the contents of the REDD+ program, its importance, benefits, co-benefits and how they can participate to the producers they serve. Due to the COVID19 pandemic in 2021, EEs had difficulties executing their activities, such as technical assistance, delivery of supplies, and delay in producing seedlings in their nurseries. Some EEs made efforts to strengthen their technical support monitoring strategy, such

as the Dominican Coffee Institute (INDOCAFE), which is working on registration and monitoring software, and the Ministry of Agriculture, which works on another registration system for livestock and cocoa activities. Despite the difficulties of seedling production, plants were delivered for planting, both for establishing Agroforestry Systems and for forest restoration and reforestation. In this sense, it is worth mentioning the work of the Associations of Silviculturists San Ramón de San José de Las Matas (25 ha of reforestation), the Sustainable Forest Restoration Development, INDOCAFE (this EE established around 33 ha of new hectares and 692 ha of renewed AFS), the Ministry of Agriculture (this Ministry reported seedlings distribution for planting new areas and renewing around 943 hectares of Cocoa AFS) and the Reforestation Program (258 ha of reforestation).

The Vice Ministry of Forestry Resources established 6,399 ha of Forest plantations in 2021. The area planted in the Agroforestry Projects reached 2,918 ha and 2,509,868 trees in 7 sites in the country's southern region. Likewise, 22 natural forest management operational plans were approved for logging 7,513 m³. Also, cutting authorizations were issued for 1,254 hectares of forest plantations (35,534 m³), including 72 plantation certificates with the right to cut granted to these beneficiaries in 591 ha, where 460,321 trees were planted¹.

Finally, the technicians of the Institutions were trained in sustainable or environmentally friendly livestock. Reforestation tasks continued to be carried out, although reduced, on private and public lands, with the local brigades of the Vice Ministry of Forest Resources.

Updates on the assumptions in the financial plan and any changes in circumstances that positively or negatively affect the financial plan and the implementation of the ER Program.

Assumptions in the financial plan have not changed. The estimated budget was elaborated based on the predefined components and activities of the National REDD+ Strategy EN-REDD+ predefined by the Government. Activities were classified into two types: (i) Enabling environment activities; and (ii) Direct investment activities. Enabling environment activities (also referred as costs) are classified into 2 types: Institutional, and transaction activities. Enabling activities are expected to be financed with resources from the Environment's existing programs, budget and other REDD+ cooperation programs.

Direct investment activities on the other hand, also referred as implementation activities, are expected to contribute to carbon emissions reductions and consider working closely with private actors (e.g. individuals or associations) in the implementation of actions that will contribute to the protection of forests, restoration of degraded forest areas and the transformation of agricultural and agroforestry areas.

A budget analysis exercise was used for estimating the cost of the ER-Program. This analysis indicates that \$153.9 million USD will be required for the ER-Program and that \$166.9 million USD has been identified as potential sources of funding. Thus, preliminary results indicate a positive net balance of \$13 million USD in the financing of the Program after receiving ER payments. Activities envisioned in the ER-Program are expected to be complemented with private sector actions that will contribute to the protection/preservation of current forests, restoration of areas, and transformation of agricultural land. This economic analysis estimates that US \$ 94,7 million would be required for the implementation of these activities during the first five years (2020-2024) of the Program. For the first 5 years, it is projected that in aggregated terms the benefits will grow up to \$104,5 million USD.

This economic analysis will be used to develop a business plan that will include a strategy to engage the private sector. The business plan is intended to be discussed with a roundtable of international cooperation donors that the World Bank office in Dominican Republic put together, as well as with the roundtable of international cooperation that the Ministry of Economy, Planning and Development (MEPyD) has set up. The business plan will aim at attracting: private investors for the three main commodities (livestock, cocoa, coffee), international cooperation donors, and a path towards the use of public revenues to establish climate smart agriculture in selected areas.

¹ Viceministerio de Recursos Forestales, 2021. Memoria Institucional 2021-Memoria anual Viceministerio de Recursos Forestales.

Table 1-1: Implementation costs and sources of funding of the ER-Program

Total financing Gap Public Sector						
constant \$ thousands 2018						
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Total cost REDD+ Government actions (i)	28,385	34,994	38,454	28,992	23,115	-
<i>Total contributions of the Dominican Republic Government</i>	25,471	31,861	34,361	25,084	19,025	-
<i>Total Income from the sale of Emissions Reductions (ii)</i>	-	-	11,319	-	-	19,816
Total public sources for REDD+ implementation*	25,471	31,861	45,679	25,084	19,025	19,816
Financial gap	-2,914	-3,133	7,226	-3,908	-4,090	19,816
Financial gap – Cumulative (iii)	-2,914	-6,047	1,179	-2,729	-6,819	12,998
* Calculations include ER-Payments						
i.Total cost REDD+ Government Actions in 5 years = US\$153,940						
ii.Total income from the sale of ER= US\$31,135						
iii.Positive Net Balance in the financing of the program after ER Payments =US\$12,998						

1.2 Update on major drivers and lessons learned

The principal direct causal factors of deforestation are commercial livestock farming and the illegal logging of the natural forest, both identified as extremely high priority, followed by commercial and shifting/subsistence agriculture, catalogued as high priority causal factors. The agri-food sector is considered one of country's engines of growth, it includes agricultural, livestock, forestry, and fishing activities. This sector contributed to 5.6 percent of the national GDP in 2017. Slash and burn agriculture, and extensive livestock production practices in upper watersheds have been identified as the main direct activities driving deforestation in recent years.

Degradation and deforestation resulting from poor management and unsustainable use of forest land, could be divided in two: i) Illegal logging, driven by the value of the products (timber, poles, firewood, and charcoal, ii) area involved under the forest management plan, in which sustainable extraction from the forest does not take place. Wildfires, mining, pests and diseases, infrastructure (including urban, road and tourism infrastructure) have also been identified important drivers of deforestation and forest degradation. Weak forest management institutions, the absence of an adequate regulatory framework for the forest sector, transboundary migration pressure and poverty constitute the main underlying drivers of deforestation and degradation.

It is essential to highlight that the displacement risk of deforestation is low. Agricultural activity in the country is primarily pursued by smallholders. The intensive breeding of livestock and agriculture for self-consumption and sale in local markets represent the main livelihood of rural families and they are practices strongly rooted in their traditions. The rural exodus, the slow-down in agricultural development and the growing importance of the remittances in the rural economy have transformed livestock rearing into the dominant land-use. The REDD+ strategy takes account of the establishment, strengthening and application of public policies to limit and/or contain the expansion of the agricultural and livestock frontier in forested areas. It is considered unlikely that these regulations will oblige smallholders to displace their agricultural activities to the neighboring country.

The displacement risk of degradation is also considered low. Even though Haiti imports a large proportion of the coal production of the Dominican Republic, the country is significantly reducing coal production. The impact caused by the use of forests for coal and firewood production has reduced significantly, due to the incentive for the use of liquefied petroleum gas. There has been a radical change over the last two decades, declining from 1,595,877 75-

pound sacks in 1982 to just 75,000 sacks in 2003. It is estimated that some 265,067 Dominican households (10% of all households) use firewood and coal for food cooking.

Figure 1-1 shows that significant deforestation drivers identified for the Reference Period in the ER Accounting Area have not changed. Croplands and Grasslands are related with the highest deforestation rates. Also, it is essential to highlight that the deforestation rate has increased between 13% and 126% during the monitoring periods (2016-2018 and 2019-2021).

Figure 1-2 shows that emissions from forest degradation have also increased significantly during the monitoring periods (between 253% and 899%). However, forest gain and canopy recovery removals have also increased (Permanent Forest canopy cover recovery -117% and 591%; Reforestation removals 17%-22%). Further analysis will be required to understand this critical change in the carbon flux of permanent forest lands. Finally, a positive balance of emission reductions is obtained when comparing the net emissions with the FREL/FRL for the reporting period (March 1st – December 31st 2021). These ERs are produced because changes in the rate of removals exceeded the changes in the rate of emissions.

Update on the strategy to mitigate and/or minimize potential Displacement.

The strategy to mitigate potential Displacement has not changed. The ER-Program includes the following Strategic Actions aimed at preventing and minimizing possible internal displacement of activities within the country (although not considered displacement of emissions, in accordance with the Methodological Framework).

Intensify agriculture and cattle farming, by setting up AFS (Strategic actions 3.2 and 3.4): Those who incorporate agroforestry systems (AFS) into their production units – rather than experiencing a production drop – will enjoy better agricultural yields in those areas where intensification is appropriate, without having to multiply their production units or move their business. Those areas where ASF are not appropriate may see their forests restored. Farms' remaining woodland areas can be turned into conservation ventures where money is received in exchange for environmental services.

Some players in the agricultural sector have started to modify cultural practices, integrating some level of woodland cover in their production systems in order to intensify production (increase productivity per unit area). Some institutions have also taken measures. The Directorate-General for Cattle Farming is promoting the introduction of trees on cattle farms in order to reduce temperature-related stress and improve pastureland growth. The Ministry of Agriculture, via the Cocoa Department, encourages agricultural systems where cocoa is grown in the shade. Furthermore, INDOCAFE is responsible for fostering agricultural systems where coffee is grown in the shade. In both cases, the aim is to improve nutrient recycling and control erosion, which in turn will lead to a reduction in the need for fertilisers as well as stable or even greater productivity.

Sustainable wood and charcoal production (Strategic actions 3.4 and 3.6): The idea is to guarantee that domestic and foreign demand for charcoal is satisfied, in order to avoid business going elsewhere. As well as strengthening forest protection and monitoring, sustainable management of natural woodland and forest plantations will be promoted in all five frontier communities where charcoal production is unsustainable.

The Dominican Republic has had several successful experiences with sustainable forest management, including: i) the Sabana Clara management project, ii) the La Celestina project, and iii) woodland management the ASODEFOREST. The Vice-ministry for Forest Resources is in charge of the Sabana Clara project. It started operating in 2003. Its objectives include: i) replanting in damaged areas in order to guarantee the sustainable production of water from the Río Artibonito basin, ii) setting up sustainable natural woodland management to foster a model forestry industry, where woodland product yields are maximised. The San Ramón Association of Woodland Farmers is in charge of the La Celestina project. It was set up in the context of an agreement with El Plan Sierra. Operations started in 1983. Its main objectives are the protection, improvement, conservation and restoration of natural woodland and established plantations, via culling operations, thereby making sustainable use of forest resources.

Shifting industrial and tourism development (Strategic actions 3.6, 3.8 y 3.9): Ecosystem restoration plans will be promoted in order to avoid having industrial and tourism-related activities move to other countries. Restoring woodland ecosystems will favour appropriate infrastructure developments (mostly industry and tourism-related) and compliance with environmental norms.

All necessary links will be established between the different restoration initiatives that are currently being implemented and the industrial and tourism-related developments that may have an impact on forest resources. Setting up resource transfers will allow us to restore the affected resource in a cost effective and permanent manner.

Forestry legislation foresees that any woodland thinning implies a duty to replant. Furthermore, where industrial expansion leads to clearing woodland, there is a duty to replant the cleared area. Flood-causing hydroelectric dams, electrical transmission lines, new highways, and new industrial complexes are just some examples. As a result, reforestation of culled areas will occur in previously woodless areas, whilst the net woodland loss should be nil.

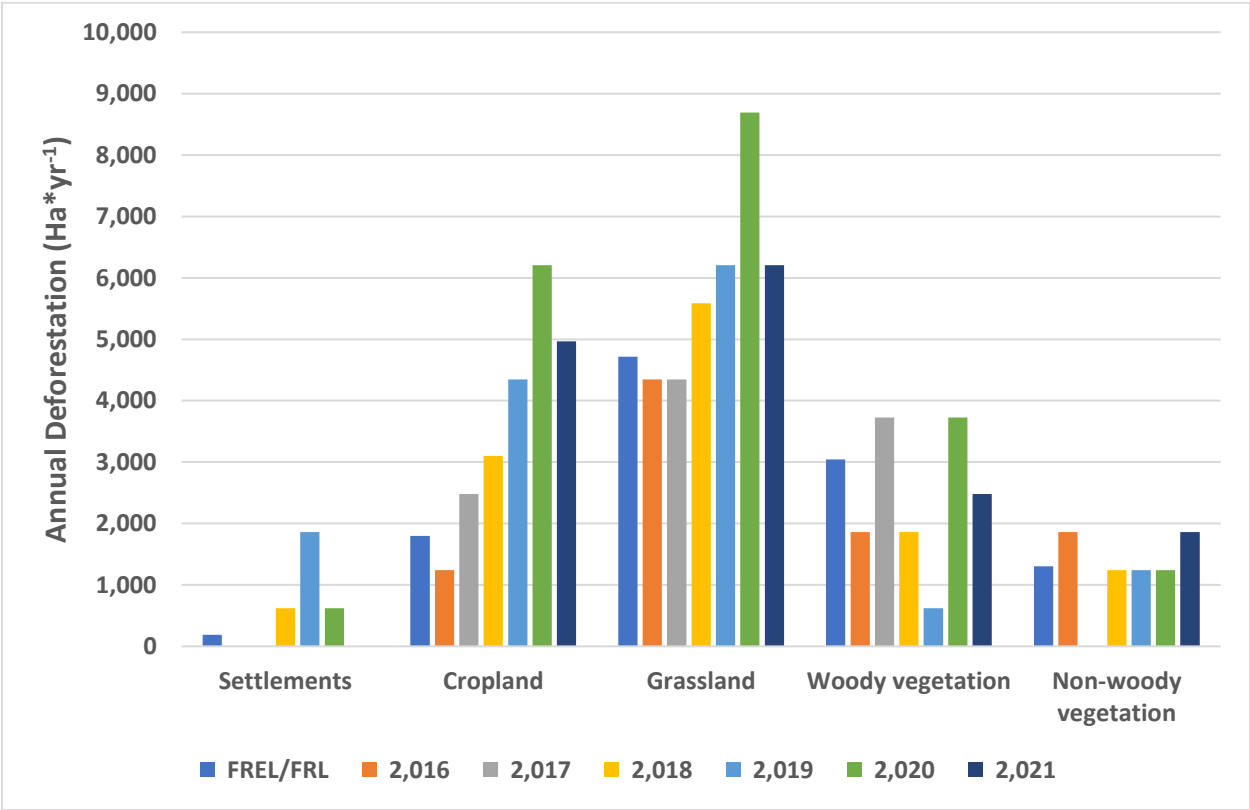


Figure 1-1: Distribution of the deforested area during the monitoring periods 2016-2018 and 2019-2021.

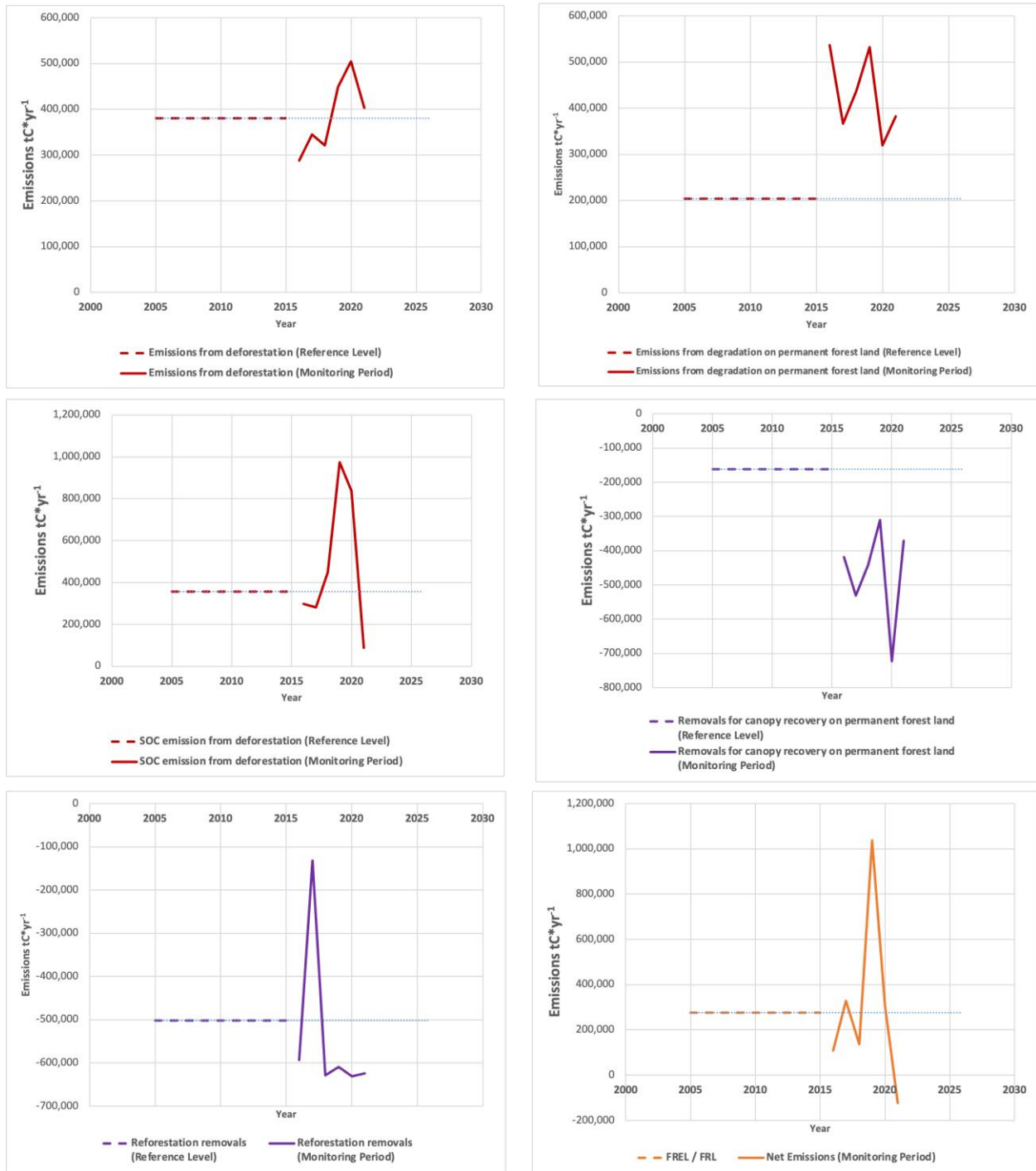


Figure 1-2: Monitoring results of the REDD+ activities included in the carbon accounting of the ER Program during the 2016-2018 and 2019-2021 monitoring periods.

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

2.1 Forest Monitoring System

Organizational structure, responsibilities, and competencies.

The Ministry of Environment and Natural Resources is the designated national authority and focal point for climate change. The organizational structure of the Emission Reduction Monitoring Report (ER-MR) is made up primarily of agencies of the Ministry of Environment: Department of Climate Change, Department of Environmental Information and Natural Resources (DIARENA), Forest Monitoring Unit "FMU", Department of Biodiversity and Wildlife and the Department of Social Participation. Figure 2-1 and Table 2.1 present roles and responsibilities of each of these agencies for collecting, processing, consolidating, and reporting GHG data and information.

Consistency with the National Forest Monitoring System

The institutional procedures and arrangements established for ER-MR will be used as the basis for the design and establishment of the National Forest Monitoring System, which will use the same methodologies; in fact, the MRV system of the ERPD is based on the national forest monitoring system.

Standard Operating Procedures and QA/QC procedures of the Forest Monitoring System:

Land use biomass density estimate: Three sources of data were used to estimate total biomass in each of the land uses and the emission factors in the land-use change categories: a. The National Forest Inventory (NFI)², b. Assessment of Biomass and Carbon Content in Non-Forest Cover in the Dominican Republic" (ISNB)³, and c. Collection of information required for the technical correction of the Forest Reference Level of the Dominican Republic, 2006-2015 (Technical Correction Inventory)⁴. For each of these biomass estimation plot surveys, SOPs were prepared.

- **NFI:** The MMARN's Forest Monitoring Unit (UMF) developed a Field Manual⁵ and QA/QC⁶ procedures to reduce non-sampling errors. Since the beginning of the planning phase, courses on basic forest inventory techniques were given to 68 forestry technicians, half of them MMARN officials and the other half personnel who work outside the Ministry. Then, three-day training workshops were held on INF-RD Field Manual, with the participation of 97 technicians selected. Subsequently, the crews responsible for the field survey were designated and received rigorous training in the Field Manual and the Quality Control Manual.
- **ISNB:** The MMARN's Forest Monitoring Unit (UMF) developed a Field Manual⁷ to reduce non-sampling errors. The crew members for the fieldwork received training for implementing inventory methodology and

² Ministry of the Environment. 2015. Inventario nacional forestal de la República Dominicana: Measure and assess forests in order to understand their diversity, composition, volume and biomass. Field Manual. Forest Monitoring Unit. REDD7CCAD-GIZ. Regional Project 48 pages

³ Ministry of the Environment. 2017. Assessment of the biomass and carbon content in non-forest systems in the Dominican Republic. Field Manual. Forestry Monitoring Unit REDD+ Preparation Project. 54 pages

⁴ Núñez, J.A.; Milla, F.; Navarrete, E. and Duarte, F. 2021. Collection of information required for the technical correction of the Forest Reference Level of the Dominican Republic, 2006-2015. LUKINVESTMENT SRL. Final Report.
<https://app.box.com/s/xfy8dkfil8c20gikcup3yf9846fifyt6>

⁵ MMARN-GIZ. 2014. Manual de Campo del Inventario Nacional Forestal de la República Dominicana. Unidad de Monitoreo Forestal. Programa REDD CCAD GIZ. Santo Domingo, R.D. 61p.
<https://app.box.com/s/e0jf1lb49wpbd2981f9iwwvo2gvbf0av>

⁶ MMARN-GIZ. 2018. Protocolo para el control de calidad del Inventario Nacional Forestal de Republica Dominicana 2018. Unidad de Monitoreo Forestal y Unidad de Gestión del Proyecto de Preparación REDD+ de la República Dominicana. 9p. <https://app.box.com/s/b9uoly8bpn5n4b8xivhtv2ob3z2gslub>

⁷ MMARN, 2017. Manual de Campo: Evaluación del contenido de biomasa y carbono en sistemas de No Bosque en la Republica Dominicana. Unidad de Monitoreo Forestal. Proyecto de Preparación de REDD+. 54p.
<https://app.box.com/s/056lacpm9rwyw2uh7a0aqz4a5yye9ol4>

QA/QC procedures. The inventory methodology was explained, and field practices were carried out, including measurements and sampling exercises. During this training, the crew leaders were confirmed according to their abilities and capacities.

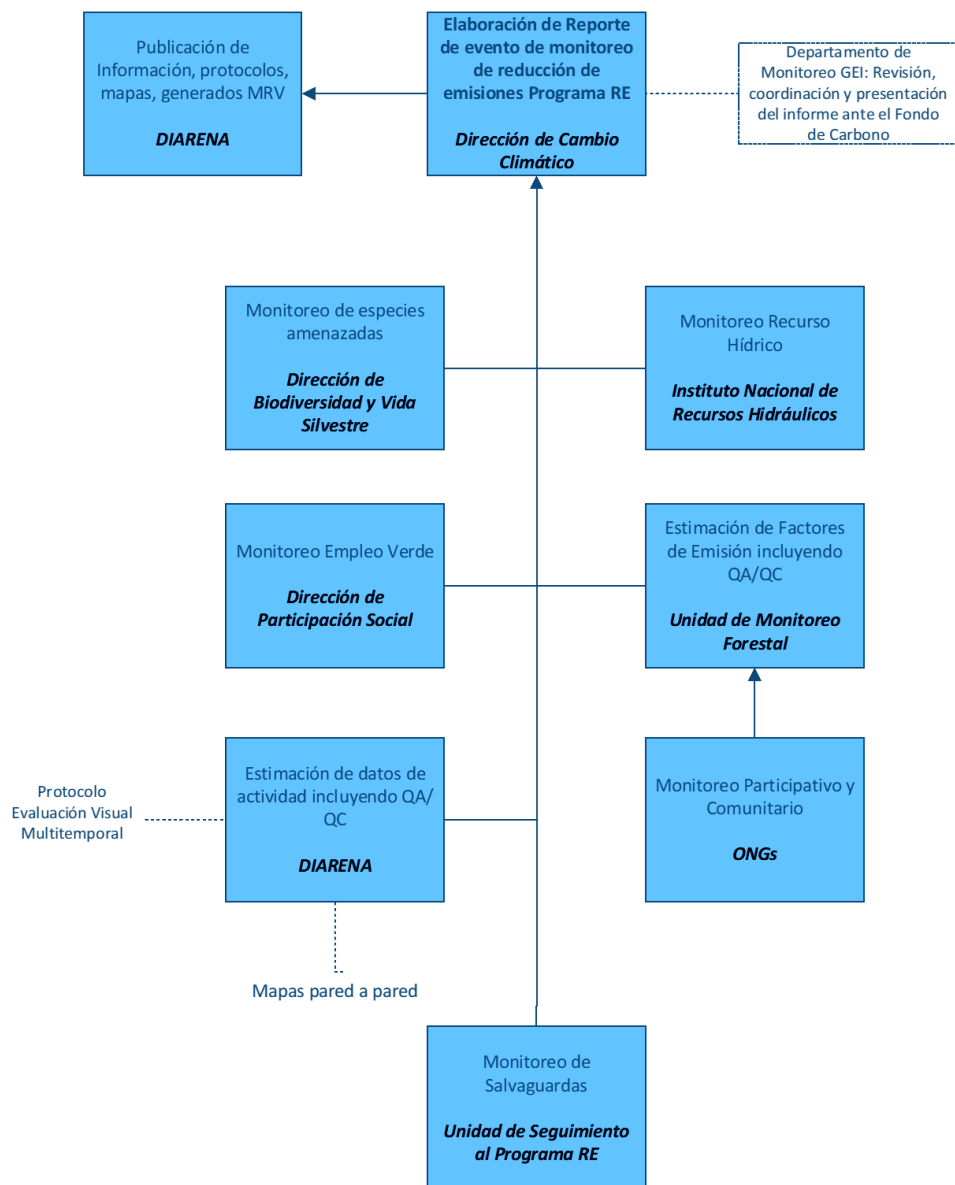
- **Technical Correction Inventory:** The quality control procedures during the implementation of the survey of the 32 additional plots have been made following the NFI's Field Manual and QA/QC procedures prepared by the Ministry of Environment and Natural Resources. The Forest Monitoring Unit of the Ministry has formed a quality control brigade that applied the QA/QC procedures in these additional plots; Likewise, the MMARN QA/QC team and fieldwork crews were trained. Both teams worked together for two days, putting the inventory QA/QC protocol into practice.

Deforestation, Regeneration and Degradation activity data: The Dominican Republic MRV team prepared a Standard Operation Procedure (SOP) for the sample-based REDD+ activity data estimation⁸. This SOP includes a quality control and quality assurance (QA/QC) procedure and a visual interpretation decision tree for high-resolution and low-resolution imagery to ensure the analysts used the best imagery dataset during the photo-interpretation of the land-use class in the sampling point.

Soil Organic Carbon estimate: SOC Estimate for each forest type and non-forest class is based on the Collection of information required for the technical correction of the Forest Reference Level of the Dominican Republic, 2006-2015 (**Technical Correction Inventory**). Description of QA/QC procedures are included in section 3.2 of the consultancy report of the Technical Correction Inventory⁹.

⁸ MIMARENA, 2019. Revisión de la propuesta de Protocolo de Evaluación Visual multitemporal para la obtención de datos de referencia para la estimación de la incertidumbre de los datos de actividad para el proceso REDD+. Programa Regional REDD+. GIZ. 26 p. <https://app.box.com/s/l7f9k83zf5ssgutwtkc7w8a0hex834x8>

⁹. Núñez, J.A.; Milla, F.; Navarrete, E. and Duarte. F. 2021. Collection of information required for the technical correction of the Forest Reference Level of the Dominican Republic, 2006-2015. LUKINVESTMENT SRL. Final Report. <https://app.box.com/s/xfv8dkfil8c20gikcup3yf9846fifyt6>



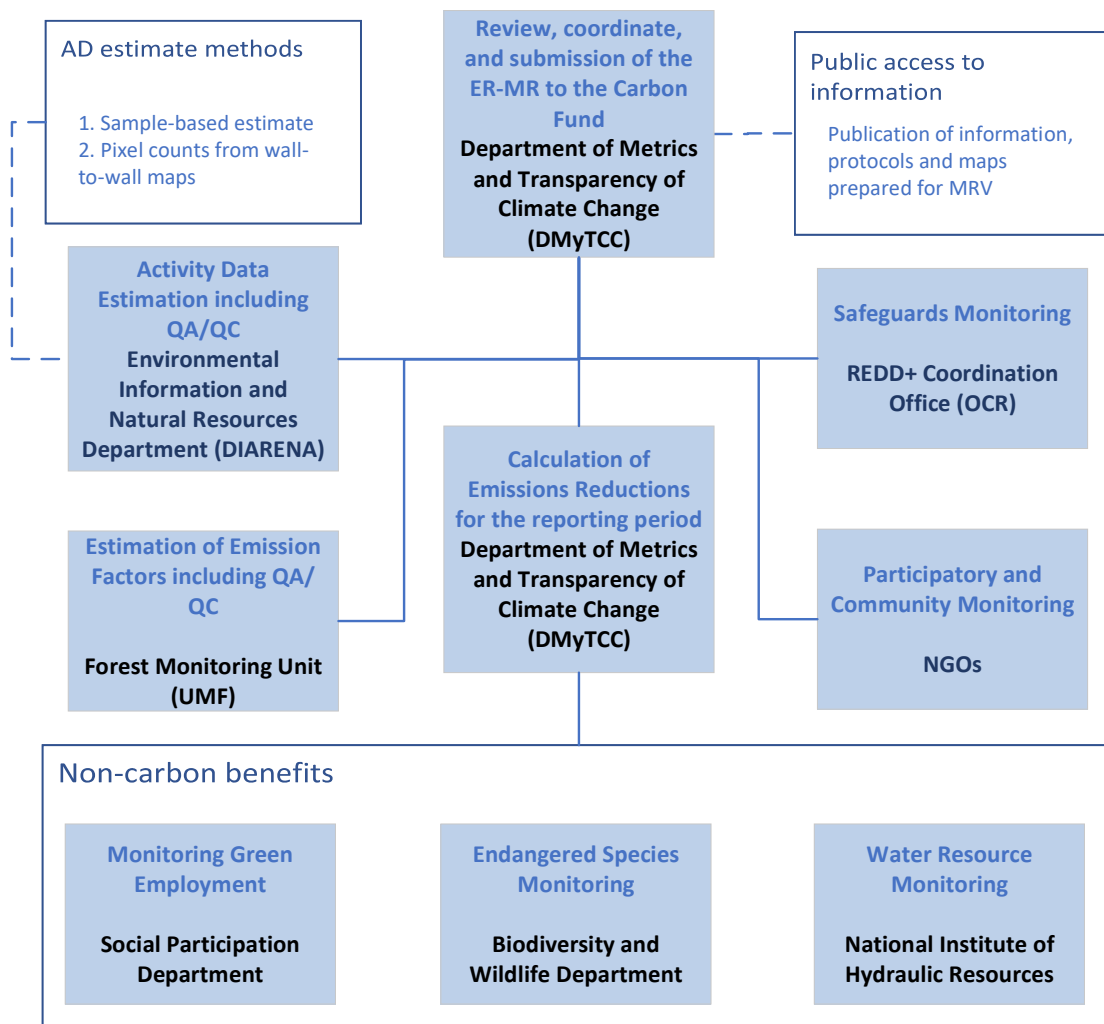


Figure 2-1: Organizational structure for ER-MR measurement, monitoring, and reporting in the Dominican Republic.

Table 2-1: Institutions in charge of the monitoring and reporting of the Emissions Reduction Program.

Monitoring function	Institution	Department	Technical team
Emissions reduction monitoring (Forest Monitoring system)			
Official reporting of emissions reduction to the Carbon Fund	The Ministry of Environment is the designated national authority and focal point for climate change	Coordinated by the Department of Climate Change of the Ministry of Environment	GHG Department (Revision, coordination and presentation of the ER Report to the Carbon Fund)
Publication of the information, protocols and maps generated in the monitoring system for the estimation of forest emissions reduction	Ministry of Environment	Environmental Information System, creation of REDD+ sub-portal operated by DIARENA (technical manager)	1 technical specialist
Estimation of emission and removal factors (including quality control and assurance and the management and estimation of uncertainty)	Ministry of Environment	Vice-Ministry of Forest Resources, Forest Monitoring Unit Estimation of rates of growth of secondary forest, forest fires, management plans	Forest Monitoring Unit 2 forest specialists, strengthening required (3 additional specialists). This team carries out the estimation of forest emissions for each monitoring event.
Estimation of activity data (including quality control and assurance and the management and estimation of uncertainty)	Ministry of Environment	DIARENA Generation of activity data and estimation of uncertainty, QA/QC	Technical team (3 remote sensing and GIS specialists). The technical team requires strengthening; a needs assessment is currently in progress.
Participatory and community monitoring	Non-Governmental Organizations Ministry of Environment	Forest Monitoring Unit (FMU)	NGO personnel Communities: monitoring hot spots jointly with FMU 1 technician designated as Forest Monitoring liaison in 37 local offices, trained and equipped (instruments and equipment). (Office of the Minister of Environment)
Monitoring of multiple benefits			
Biodiversity (endangered species of flora)	Ministry of Environment	Department of Biodiversity and Wildlife	Ongoing monitoring programs
Water (INDRHI monitoring system)	INDRHI		63 telemetric water flow monitoring networks
Green Jobs	Ministry of Environment	Coordination by the Department of Social Participation	This requires institutional strengthening, and the Ministry of Labor must include this statistic
Monitoring of safeguards			
Natural habitats	Ministry of Environment	Monitoring Unit at the ERP.	Specialists from the Department of Social Participation
Forest			1 Social Specialist with responsibility for monitoring and following up on the MGAS and IRPF
<i>Involuntary resettlement</i>			
Natural and cultural resources			
<i>Local communities</i>			Support of the Technical Advisory Committee

2.2 Updates to the monitoring approach

This section is not applicable as this is the first monitoring report.

2.3 Measurement, monitoring, and reporting approach

Table 2.2 describes the set of tools developed by the Dominican Republic to estimate emissions and removal from deforestation, degradation, and forest regeneration. Also is provided a step-by-step description of the monitoring parameters used to establish the Reference Level and estimate Emissions and Emissions reductions during the Monitoring Period for the Carbon Pools and greenhouse gases selected in the ER-PD. The set of tools for emission and removal estimation can be accessed at the following link:

<https://app.box.com/s/vwwmn6vhrd3z591q5li7gt8ar65736r2>

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

Monitoring parameters and Data Integration tools	Step	Description of the measurement and monitoring approach
Monitoring parameters	Step 0	The input dataset used to estimate net emissions for the reference and monitoring period include the following databases: • Forest and Non-Forest SOC sampling plots database¹⁰ • Visual interpretation of hi-res imagery¹¹ • Forest biomass sampling plots database (National Forest Inventory (NFI)¹² and Additional sampling plots¹³) • Non-Forest biomass sampling plots database¹⁴ • Forest cover maps time series 1984-2021¹⁵. The World Bank provided technical and financial support to develop the annual forest cover maps to prepare the FREL and the Emission Reduction estimated for the present monitoring report. This support includes preparing annual canopy cover maps required to assess forest degradation for the subsequent monitoring reports, following the same methods used to prepare the yearly maps for 1984-2021.
DatosDeActividad_PR.xlsx and DatosDeActividad_PM.xlsx	Step 1	The visual interpretation of hi-res imagery to determine land-use change used to estimate activity data for the Reference Period is included in the “ <i>DatosReferencia</i> ” sheet. This dataset is imported in CSV format from the database of interpreted points in Collect Earth Desktop.
	Step 2	Land-use change, degradation, deforestation, and regeneration analyses are included in the “ <i>DatosReferencia</i> ” sheet. These analyses are based on

¹⁰ The original database of soil organic carbon sampling plot data used to estimate the SOC linear decreasing rate estimate can be accessed at this link: <https://app.box.com/s/tfu8h53kx7wtg7lyll5wff153h9q8itu>

¹¹ The original database of visual interpretation of hi-res imagery to determine land-use change activity data during the reference and monitoring periods can be accessed at this link: <https://app.box.com/s/tvfhjxaa5o9vdkpak8cbivwjccce5be>

¹² The original NFI database used to estimate carbon densities can be accessed at this link:

<https://app.box.com/s/f6b71lxsdq7w2h1xwhh8ln3m0z6b95nl>

¹³ The original database of the 32 additional sampling plots used to estimate carbon densities can be accessed at this link:

<https://app.box.com/s/g6dq2i6yf5cdl2tqkye23m8srwkn6su>

¹⁴ The original Non-Forest Biomass Inventory database used to estimate carbon densities can be accessed at this link:

<https://app.box.com/s/po29pfhgq28co6ni054do7y56sys8rk8>

¹⁵ The time series of forest cover maps used to stratify the forest biomass sampling plot according to forest age and category of canopy cover can be accessed at this link: <https://app.box.com/s/yxb2jxnt3cf3r67gouyd26n9n7e67qdg> and

<https://app.box.com/s/bkfw90ic4y58s8htpkxw8s287n04q5m>

Monitoring parameters and Data Integration tools	Step	Description of the measurement and monitoring approach
		classification tables included in the “TablasClasification” sheet. Based on land-use change analyses, the calculation of deforestation, regeneration, and forest degradation is made in two activity data tools, one for Reference Period (PR) and another for the Monitoring Periods (PM). The activity data tool for PR includes the estimates for 1984-2000, 2001-2005, 2006-2015, and 2016-2018. PM tool includes 2016-2018, 2019-2021, 2022-2023, and 2024. Both tools are organized as follows: a. Deforestation: “TF-OT” sheet. b. Forest degradation: “TF-TF” sheet. c. Regeneration: “OT-TF” sheet. d. SOC change associated with deforestation: “SOC TF-OT” sheet.
COS_EF.xlsx	Step 3	Soil Organic Carbon linear decreasing rate estimate is in the “ SOCEF ” sheet of the SOC emission factor tool.
CarbonDensities_Tool.xlsx	Step 4	The estimate of different emission factors for the secondary and permanent forest is made in the “ CarbonDensities ” sheet. The calculation is based on the datasets included in the “ Non-Forest Biomass Plots Data ” and “ Forest Biomass Plots Data ” sheets.
“Deforestacion y Degradacion” Sheet in CalculoReduccionEmisionesRD.xlsx	Step 5	The estimate of emissions from deforestation and degradation is made in the “Deforestacion y Degradacion” sheet. The calculation is based on “ TF-OT ” and “ TF-TF ” sheet estimates made in the activity data tools (DatosDeActividad_PR.xlsx and DatosDeActividad_PM.xlsx) and “ CarbonDensities ” sheet in CarbonDensities_Tools.xlsx.
EmisionesHeredadasSOC Sheet in CalculoReduccionEmisionesRD.xlsx	Step 6	Estimate of change in the soil organic carbon pool in mineral soils associated with deforestation is based on the “ SOC TF-OT ” sheet calculation made in the activity data tools (DatosDeActividad_PR.xlsx and DatosDeActividad_PM.xlsx) and Soil Organic Carbon linear decreasing rate estimate in the “ SOCEF ” sheet of the SOC emission factor tool (COS_EF.xlsx).
“RemocionesHeredadas” Sheet in CalculoReduccionEmisionesRD.xlsx	Step 7	The estimate of carbon removal associated with natural and artificial regeneration is made in the “ Remociones Heredadas ” sheet. The calculation is based on the “ OT-TF ” sheet calculation made in the activity data tool (DatosDeActividad.xlsx) and Removal Factors in the “ CarbonDensities ” sheet of the Emission factor tool (FREL-RD_FOREST-CarbonDensities_Tool.xlsx).
CalculoReduccionEmisionesRD.xlsx	Step 8	The estimate of net emissions from deforestation, degradation and forest carbon stocks enhancement over the Reference and Monitoring Periods is made in “ Calculo RE ” based on “ Deforestacion y Degradacion ”, “ EmisionesHeredadas ” y “ RemocionesHeredadas ” sheets.
	Step 9	Emission reduction is also calculated in “ Calculo RE ” sheet. It is essential to clarify that a Pro-rata factor was applied to estimate the volume of ERs for the Reporting Period. The pro-rata factor corresponds to the fraction of the year 2021 between March 1 st and December 31 st .
EstimacionIncertidumbre.xlsx	Step 10	A results summary of the uncertainty estimates, and sensitivity analysis is in the “ Calculo RE ” sheet of EstimacionIncertidumbre.xlsx. This tool is based on the CalculoReduccionEmisiones.xlsx tool. This excel file was modified to calculate 10,000 iterations for the Emission Reduction estimate. The

Monitoring parameters and Data Integration tools	Step	Description of the measurement and monitoring approach
		dataset with iterations for the different REDD+ activities considered in Emission calculation is included in the “ <i>Iteraciones</i> ” sheet. Emission Reduction Uncertainty consider the pro-rata factor application.

2.3.1 Line Diagram

Figure 2.2 shows a line diagram with relevant monitoring points, parameters, and data integration until reporting.

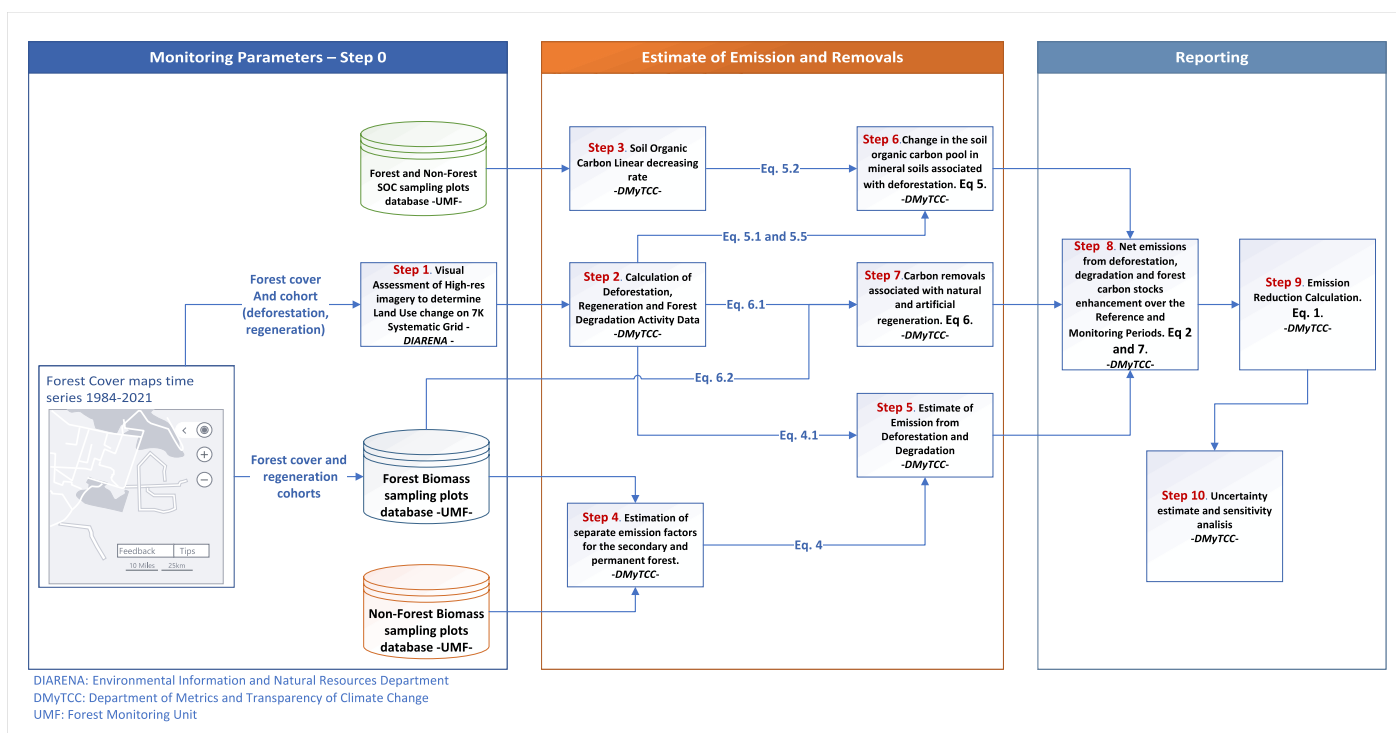


Figure 2-2: Line diagram with monitoring parameters, equations, and the integration of data until reporting.

2.3.2 Calculation

Equations and parameters used to calculate GHG emissions and removals are listed below. These equations show the steps from the measured input to the aggregation into final reported values. Changes to the original calculation described in the ER-PD have been highlighted. Description of the parameters may be found in Annex 4 – Section 8.3.

Emission reduction calculation ($ER_{ERP,t}$)

$$ER_{ERP,t} = (RL_t - GHG_t) \times \frac{44}{12} \quad \text{Equation 1}$$

Where:

$ER_{ERP,t}$	=	Emission Reductions under the ER Program in year t; tCO ₂ e*year ⁻¹ .
RL_t	=	Net emissions of the RL from over the Reference Period; tCO ₂ e*year ⁻¹ . This is sourced from Annex 4 to the ER Monitoring Report and equations are provided below.
GHG_t	=	Monitored net emissions at year t; tCO ₂ e*year ⁻¹ ;
$\frac{44}{12}$	=	Conversion of C to CO ₂

Reference Level (RL_t)

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

$E(RL_t)$ are estimated as the net change in total biomass carbon stocks and organic carbon pool in mineral soils during the reference period.

$$RL_t = \frac{\Delta C_{BRP} + \Delta C_{DegBRP} + \sum_t^{RP} \Delta C_{RBt} + \sum_t^{RP} \Delta C_{Mineralt}}{RP} \quad \text{Equation 2}$$

Where:

ΔC_{BRP}	=	Change in total biomass carbon stocks in forest lands converted to other land-use category during the Reference period, in tC;
ΔC_{DegBRP}	=	Change in total biomass carbon stocks in forest lands that remains as forest during the reference period, in tC;
$\Delta C_{Mineralt}$	=	Annual change in the soil organic carbon pool in mineral soils associated with deforestation; tC*year ⁻¹ ;
ΔC_{RBt}	=	Annual change in total biomass carbon stocks in non-forest lands converted to forest lands categories at year t; tC*year ⁻¹ ;
RP	=	Reference period; years.

Change in total biomass carbon stocks in forest lands converted to other land-use (Deforestation):

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

$$\Delta C_{Bt} = \Delta C_G + \Delta C_{CONVERSION} - \Delta C_L \quad \text{Equation 3}$$

Where:

ΔC_{B_t}	Annual change of total biomass carbon stocks during the period, in tC*year ⁻¹ ;
ΔC_G	Increase in carbon stocks in biomass due to growth on land converted to another land-use category, in tC per hectare per year;
$\Delta C_{CONVERSION}$	Initial change in carbon stocks in biomass on land converted to another land-use category, in tC per hectare; and
ΔC_L	Decrease in biomass carbon stocks due to losses from harvesting, fuel wood gathering and disturbances on land converted to other land-use category, in tC per hectare per year.

Following the recommendations set in chapter 2.2.1 of the GFOI Methods Guidance Document for applying IPCC Guidelines and guidance in the context of REDD+¹⁶, the above equation will be simplified, and it will be assumed that the change in total biomass carbon stocks (ΔC_B) is equal to the initial change in carbon stocks ($\Delta C_{CONVERSION}$). Considering equation 2.16 of the 2006 IPCC GL for estimating ($\Delta C_{CONVERSION}$) the change of biomass carbon stocks during the Reference Period was calculated with the following equation:

$$\Delta C_{B_{RP}} = \sum_{j,i} (B_{Before,j} - B_{After,i}) \times A(j,i)_{RP} \quad \text{Equation 4}$$

Where:

$\Delta C_{B_{RP}}$	Change of biomass carbon stocks during the Reference Period, in tC.
$A(j,i)_{RP}$	Area converted from forest type j to non-forest type i during the Reference Period, in hectares per year.

$$A(j,i)_{RP} = \frac{P(j,i)_{RP}}{N} \times AA \quad \text{Equation 4.1}$$

$P(j,i)_{RP}$: Number of points converted from forest type j to non-forest type i during the Reference Period, dimensionless.

N: Total of sampling point in the Systematic Grid used for the visual assessment of High-res imagery to estimate activity data.

AA: Emission Reduction Program accounting area (in hectares)

In this case, ninety-six forest land conversions are possible resulted from the combinations of the following forest and non-forest types:

Forest type	Non-forest types
Four forest types (forest present before 1984): • Wet broadleaf forest. • Dry broadleaf forest. • Pine forest, and • Mangrove forest. Three canopy cover categories: • Intact forest (>85%). • Degraded forest (60-85%), and • Very degraded forest (30-60%) Two cohorts of secondary forest • Cohort 4-21 years, and • Cohort 22-44 years.	Five types of non-forest land are considered: • Cropland. • Grassland. • Settlement; and • Woody vegetation.

¹⁶ https://www.reddcompass.org/documents/184/0/MGD2.0_English/c2061b53-79c0-4606-859f-ccf6c8cc6a83

Technical corrections applied this parameter: The deforestation activity data was updated with a new visual assessment on high-res imagery using a 2.5 x 2.5 km grid instead of the original 5 x 5 km grid, thus reducing the standard error in uncommon transitions.

$B_{\text{Before},j}$ Total biomass of forest type j before conversion/transition, in tons of C per ha. This is equal to the sum of aboveground biomass (AGB_{before}) of trees with a diameter at breast high (dbh) higher than 2 cm, belowground biomass (BGB_{before}), litter (L_{before}) and death wood (DW_{before}) and it is defined for each forest type. In all inventories, the factor that is used to convert biomass to carbon content is the IPCC's default value (0.47).

Technical corrections applied to this parameter: The original calculation of change in biomass carbon stock only considered biomass density of the forest type, ignoring the forest's degradation condition. Also, this calculus did not consider the stand age. Carbon density in secondary forests varies with age, and primary forests usually present carbon densities higher than secondary. Ignoring forest degradation and forest age in the measure of change in biomass carbon stock overestimates the emission from deforestation. Therefore, total biomass was recalculated for each canopy cover category (>85%, 60-85%, and 30-60%) into each permanent forest type. Also, total biomass was calculated for each forest cohort.

$B_{\text{After},i}$ Total biomass of non-forest type i after conversion, in tons C per ha. This is equal to the sum of aboveground biomass (AGB_{after}) of trees with a diameter at breast high (dbh) higher than 2 cm, belowground biomass (BGB_{after}), litter (L_{after}) and death wood (DW_{after}) and it is defined for each of the five non-forest IPCC Land Use categories. In all inventories, the factor that is used to convert biomass to carbon content is the IPCC's default value (0.47).

Technical corrections applied to this parameter: Total biomass of non-forest land uses did not consider the same carbon pools included in the $B_{\text{before},j}$. Carbon densities for non-forest IPCC Land Use Categories were recalculated to ensure carbon pools consistency between $B_{\text{after},i}$ and $B_{\text{before},j}$.

Change in the soil organic carbon pool in mineral soils associated with deforestation:

The total carbon stock change estimated in the ERPD was incorrect. It was assumed an EF of only 1/20 of SOC stock for the Reference Period (RP). The Dominican Republic ERPD did not include emissions from SOC of deforested areas before the reference period. A 20-year default legacy period was not used to estimate emissions from SOC of each deforested area during the Reference Period either.

The annual change in the SOC pool was technically corrected. The updated estimate of SOC pool change was made according to the following:

- SOC change was calculated based on Equation 2.25 from the 2006 IPCC Guidelines, Volume 4, Chapter 2.
- SOC emissions associated with deforestation now include the land-use changes occurring in the Reference Period and the emissions resulting from land-use changes that occurred in previous years ("legacy emissions"). Full implementation of this approach was possible since it was available a long time series of deforestation activity data that let going back at least 20 years before the start of the Reference Period to correctly estimate legacy emissions.
- It was assumed that the Soil organic C stock change during the transition to a new equilibrium SOC occurs in a linearly over a period of 20 years.
- The Land Units represent yearly classes from the land use change analysis used in setting the reference level.
- Land Units maintain the same forest types as the ones used in the land use change analysis provided in the ER-PD.

In accordance with the approach provided in the 2006 IPCC Guidelines, the following matrices and Equation 5 were used for determining the annual change in the soil organic pool associated with deforestation:

Land use change matrix

Land Unit	Year 1	...	Year n	...	Year 20	...	Year 20+n
LU₁	$A(j, i)_{1,1}$	...	$A(j, i)_{1,n}$	...	$A(j, i)_{1,20}$	...	
$\vdots$			$\vdots$	$\vdots$	$\vdots$	$\vdots$	
LU_n			$A(j, i)_{n,n}$	...	$A(j, i)_{n,20-n}$	...	$A(j, i)_{n,20+n}$
Stable Forest	SF_j		$SF(j)_{n-1} - \sum_{LU=1}^n A(j, i)_n$	...	$SF(j)_{19} - \sum_{LU=1}^n A(j, i)_{20}$	...	$SF(j)_{19+k} - \sum_{LU=1}^n A(j, i)_{20+n}$

×

SOC Value for each LU in a particular year

Land Unit	Year 1	...	Year n	...	Year 20	...	Year 20+n
LU₁	$SOC_j - S(j, i)$	...	$SOC_{j,1,n-1} - S(j, i)$	...	$SOC_{j,1,19} - S(j, i)$	...	
$\vdots$		$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	
LU_n			$SOC_j - S(j, i)$	...	$SOC_{j,n,19-n} - S(j, i)$	...	$SOC_{j,n,19+n} - S(j, i)$
Stable Forest	SOC_j	...	SOC_j	...	SOC_j	...	SOC_j

=

Multiplying the two tables leads to the following results for the application in Equation 2.25 to the Reference Level

Land Unit	Year 1	...	Year n	...	Year 20	...	Year 20+n
LU₁	$TS(j, i)_{1,1}$	...	$TS(j, i)_{1,n}$	...	$TS(j, i)_{1,20}$	...	
$\vdots$			$\vdots$	$\vdots$	$\vdots$	$\vdots$	
LU_n			$TS(j, i)_{n,n}$	...	$TS(j, i)_{n,20-n}$	...	$TS(j, i)_{n,20+n}$
Stable Forest	$TS(j)_1 + \sum_{LU=1}^n TS(j, i)_1$	...	$TS(j)_n + \sum_{LU=1}^n TS(j, i)_n$	...	$TS(j)_{20} + \sum_{LU=1}^n TS(j, i)_{20}$	...	$TS(j)_{20+n} + \sum_{LU=1}^n TS(j, i)_{20+n}$

Applying the IPCC approach, annual changes in the Soil Organic Carbon pool are calculated as total SOC for year 0 – total SOC for the previous year (0-1), using the Equation 5.

$$AC_{Mineral_t} = \left[TS(j)_{n-1} + \sum_{LU=1}^n TS(j, i)_{n-1} \right] - \left[TS(j)_n + \sum_{LU=1}^n TS(j, i)_n \right] \quad \text{Equation 5}$$

Where:

$A(j,i)_{LU}$ Area converted/transited from forest type j to non-forest type i of the Land Unit LU, in hectares per year.

$$A(j,i)_{LU} = \frac{P(j,i)_{LU}}{N} \times AA \quad \text{Equation 5.1}$$

$P(j,i)_{LU}$: Number of points converted from forest type j to non-forest type i in the Land Unit LU, dimensionless.

N: Total of sampling point in the Systematic Grid used for the visual assessment of High-res imagery to estimate activity data.

AA: Emission Reduction Program Accounting Area (in hectares)

In this case, four forest land conversions are possible resulted from the combinations of the following forest and non-forest types:

Forest type	Non-forest types
Four forest types (forest present before 1984): - Wet broadleaf forest. - Dry broadleaf forest. - Pine forest, and - Mangrove forest.	One type of non-forest land is considered: Non-forest land use

Technical corrections applied to this parameter: The deforestation activity data was updated with a new visual assessment on high-res imagery using a 2.5 x 2.5 km grid instead of the original 5 x 5 km grid, thus reducing the standard error in uncommon transitions.

$S(j,i)$ Soil Organic Carbon Linear decreasing rate for transition j to i, in tons of C per ha per year.

$$S(j,i) = \frac{SOC_j - SOC_i}{D} \quad \text{Equation 5.2}$$

SOC_j Soil Organic Carbon of forest type j before conversion/transition, in tons of C per ha.

SOC_i Soil Organic Carbon of non-forest type i after conversion, in tons of C per ha.

Technical corrections applied to these parameters: The SOC values (before and after forest transition) were technically corrected to replace the original estimates sourced from National Forest Inventory. The soil organic carbon pool estimates in the NFI of the Dominican Republic presented errors and methodological limitations.

NFI soil samples were collected from the upper 15 cm of soil. However, the soil organic carbon stock was calculated from the upper 30 cm. Generally, the SOC decreases with sampling depth. Also, the gravel content was ignored during the SOC pool calculation. Rock fragments do not have organic carbon, and the coarse stone percentage is sometimes very high. Calculate SOC at 30 cm using soil values taken at 15cm, and without considering the coarse volumetric ratio, overestimate the pool of SOC and, consequently, the deforestation emission factor.

To avoid the overestimation of SOC, two hundred sixty paired plots were established (130 in forest lands and 130 in non-forest use) to measure Soil Organic Carbon before and after deforestation, comparing the SOC between pairs by type of vegetation.

D Time in years where SOC_j decrease linearly to a new equilibrium SOC_i . A period of twenty years is assumed for all types of forest to non-forest conversions.

$TS(j, i)$ Soil organic carbon remaining in the Land Unit in the transition j to i, in tons of C.

$$TS(j, i)_{n,n} = A(j, i)_{n,n} \times (SOC_j - S(j, i)) \quad \text{Equation 5.3}$$

$TS(j)$ Soil organic carbon remaining in the Stable Forest type j, in tons of C.

$$TS(j)_{n,n} = A(j)_{n,n} \times SOC_j \quad \text{Equation 5.4}$$

$A(j)$ Area of Stable Forest type j, in hectares.

$$A(j) = \frac{P(j)}{N} \times AA \quad \text{Equation 5.5}$$

$P(j)$: Number of points from forest type j, dimensionless.

N : Total of sampling point in the Systematic Grid used for the visual assessment of High-res imagery to estimate activity data.

AA : Emission Reduction Accounting Area (in hectares)

Technical corrections applied to this parameter: The Stable Forest area estimate was updated with a new visual assessment on high-res imagery using a 2.5 x 2.5 km grid instead of the original 5 x 5 km grid, thus reducing the standard error in uncommon transitions.

Carbon removals associated with natural and artificial regeneration, including plantations (Enhancement of forest carbon stocks):

Equation 6 is used to calculate annual carbon removals associated with regeneration. The net annual carbon removals are computed using equations 2.15 and 2.16 from the 2006 IPCC Guidelines, Volume 4, Chapter 2 (Equations 3 and 4). These equations are simplified by assuming that the conversion from non-forest to forest occurs during a period from average carbon stocks in non-forest to average carbon stocks in secondary forests and is equal to the net annual increase in total biomass ($\Delta C_G - \Delta C_L$). The removal estimate considers changes in carbon stocks in above- and below-ground biomass, dead organic matter, and litter. SOC in mineral soils is omitted.

The dataset used to estimate the annual change in carbon stocks in biomass on land converted to forest includes carbon densities of secondary forests. Secondary forest's age ranges from 4 to 42 years. Stands' age was determined with change detection maps based on a 37-year time series of 30-m, annual-resolution estimates of forest probability in each pixel. Forest losses and gains were detected by applying a two-sample z-test in a moving kernel over time, registering the year of change detection (see the map in figure 2-3). Considering the range of age of the secondary forest sampling plots, for all forest types, a period of 44 years is assumed for the stand to grow from the carbon stock levels of non-forest to the average biomass and litter pools of the secondary forest.

Land units have been created to track the area converted to forest land in a specific year and remains as forest during the reference and crediting period, considering deforestation in the secondary forest cohort. The Removals are calculated by multiplying the area of land planted with the tons of C per hectare.

Land Unit	Year 1	...	Year n	...	Year 44	...	Year 44+n
LU_1	$R(j, i)_{1,1} \times \Delta C_{RB_i}$	...	$R(j, i)_{1,n} \times \Delta C_{RB_i}$	...	$R(j, i)_{1,44} \times \Delta C_{RB_i}$		
$\vdots$			$\vdots$	$\vdots$	$\vdots$	$\vdots$	

$$\begin{array}{c}
LU_n \\
\text{Stable Forest} \quad \sum_{LU=1}^n R(j,i)_n \times \Delta C_{RB_i} \quad \dots \quad \sum_{LU=1}^n R(j,i)_n \times \Delta C_{RB_i} \quad \dots \quad \sum_{LU=1}^n R(j,i)_{44} \times \Delta C_{RB_i} \quad \dots \quad \sum_{LU=1}^n R(j,i)_{20+n} \times \Delta C_{RB_i}
\end{array}
\left| \begin{array}{c}
A(j,i)_{n,n} \times \Delta C_{RB_i} \quad \dots \quad A(j,i)_{n,44-n} \times \Delta C_{RB_i} \quad \dots \quad A(j,i)_{n,44+n} \times \Delta C_{RB_i}
\end{array} \right|$$

$$\Delta C_{RB_t} = \sum_{LU=1}^n R(j,i)_n \times \Delta C_{RB_i} \quad \text{Equation 6}$$

Where:

$R(j,i)_{LU}$ Area converted from non-forest type j to forest type i of the Land Unit LU , in hectares per year.

$$R(j,i)_{LU} = \frac{P(j,i)_{LU}}{N} \times AA \quad \text{Equation 6.1}$$

$P(j,i)_{LU}$: Number of points converted from non-forest type j to forest type i in the Land Unit LU , dimensionless.

N : Total of sampling point in the Systematic Grid used for the visual assessment of High-res imagery to estimate activity data.

AA : Emission Reduction Program Accounting Area (in hectares)

In this case, four forest land conversions are possible resulted from the combinations of the following forest and non-forest types:

Non-forest types j	Forest type i
One type of non-forest land is considered: Grasslands	Four forest types: - Wet broadleaf forest. - Dry broadleaf forest. - Pine forest, and - Mangrove forest.

Technical corrections applied to this parameter: The area estimate of other land converted to the forest was updated with a new visual assessment on high-res imagery using a 2.5 x 2.5 km grid instead of the original 5 x 5 km grid, thus reducing the standard error in uncommon transitions.

$$\Delta C_{RB_i} = \frac{B_{non-forest} - B_{forest_i}}{m} \quad \text{Equation 6.2}$$

ΔC_{RB_i} Annual change in carbon stocks in biomass on land converted to forest i , in tC per ha per year;

$B_{non-forest}$ Total biomass of non-forest type before conversion/transition, in tons of C per ha. This is equal to the sum of aboveground biomass of trees with a diameter at breast high (dbh) higher than 2 cm, belowground biomass, litter and death wood. In all inventories, the factor that is used to convert biomass to carbon content is the IPCC's default value (0.47);

B_{forest_i} Total biomass of forest type i after conversion, in tons of C per ha. This is equal to the sum of aboveground biomass of trees with a diameter at breast high (dbh)

higher than 2 cm, belowground biomass, litter and death wood. In all inventories, the factor that is used to convert biomass to carbon content is the IPCC's default value (0.47);

m Time elapsed to reach B_{forest_i} , in years.

Technical corrections applied to these parameters: The ΔC_{RB_i} values were technically corrected to replace the original estimates sourced scientific literature. Now the net annual carbon removals are computed using equations 2.15 and 2.16 from the 2006 IPCC Guidelines, Volume 4, Chapter 2. These equations are simplified by assuming that the conversion from non-forest to forest occurs during a period from average carbon stocks in non-forest to average carbon stocks in secondary forests and is equal to the net annual increase in total biomass ($\Delta C_G - \Delta C_L$).

Based on FC maps, a forest cover change analysis was prepared, and secondary forest cohorts were mapped into two categories: i. Secondary Forest cohort 4-22 years, and ii. Secondary Forest cohort 22-44 years. All forest inventory plots in forest and tree-shaded crops were classified into these two categories. By forest type, carbon content was directly derived from the biomass sampling plots database (average and 90%CI). In secondary forest types with less than ten sampling plots, additional forest plots were inventoried. A series of 32 secondary sampling units were inventoried in 2021, and age was determined from different sources: interviews and satellite information and secondary data.

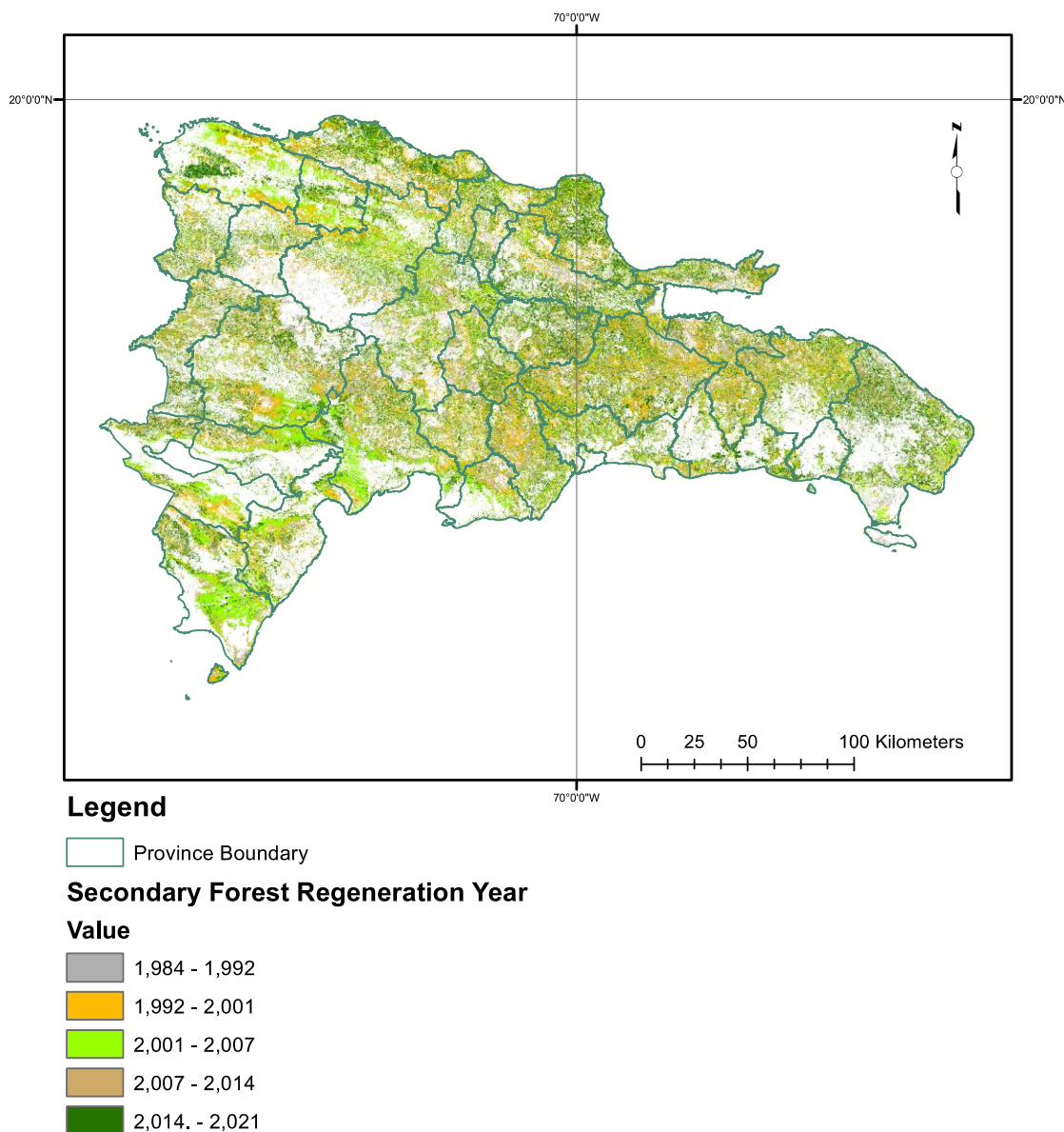


Figure 2-3: Regeneration year of native forest in the Dominican Republic during 1984-2021. Forest cover gain map developed by terraPulse (www.terrapulse.com) based on the analysis of annual stacks of Landsat imagery. Stands' age was determined with change detection maps based on a 37-year time series of 30-m, annual-resolution estimates of forest probability in each pixel. Forest losses and gains were detected by applying a two-sample z-test in a moving kernel over time, registering the year of change detection

Change in total biomass carbon stocks in forest lands that remains as forest (Forest Degradation):

Following the recommendations set in chapter 2.2.1 of the GFOI Methods Guidance Document, for applying IPCC Guidelines and guidance in the context of REDD+, the equation 2.16 of the 2006 IPCC GL can be simplified by assuming that the change in total biomass carbon stocks (ΔC_B) is equal to the initial change in carbon stocks ($\Delta C_{\text{CONVERSION}}$). Thus, the change of biomass carbon stocks in forest lands that remains as forest during the Reference Period was calculated with the **Equation 4**:

$$\Delta C_{\text{DegBRP}} = \sum_{j,i} (B_{\text{Before},j} - B_{\text{After},i}) \times \text{Deg}(j,i)_{\text{RP}} \quad \text{Equation 7.2}$$

Where:

ΔC_{DegBRP} Change in total biomass carbon stocks in forest lands that remains as forest during the reference period, in tC.

$\text{Deg}(j,i)_{\text{RP}}$ Area converted from forest with canopy cover j to forest with canopy cover i during the Reference Period, in hectares.

$$\text{Deg}(j,i)_{\text{RP}} = \frac{P(j,i)_{\text{RP}}}{N} \times \text{AA} \quad \text{Equation 4.3}$$

$P(j,i)_{\text{RP}}$: Number of points converted from forest with canopy cover j to forest with canopy cover i during the Reference Period, dimensionless.

N : Total of sampling point in the Systematic Grid used for the visual assessment of High-res imagery to estimate activity data.

AA : Emission Reduction Program accounting area (in hectares)

Activity data for degradation and carbon enhancement in the permanent forest were derived with a systematic sampling procedure (7,697 Permanent Sampling Units) and Forest Cover (FC) annual maps. Twenty-eight canopy cover transitions were identified resulting from the combinations of the following forest types and canopy cover categories:

Forest type	Canopy cover category
Four forest types (forest present before 1984): • Wet broadleaf forest. • Dry broadleaf forest. • Pine forest, and • Mangrove forest. • Agricultural tree-shaded crops	Three canopy cover categories: • Intact forest (>85%). • Degraded forest (60-85%), and • Very degraded forest (30-60%) • Agricultural tree-shaded crops

Technical corrections applied this parameter: FC maps were used to determine the canopy cover class or secondary forest's age of all biomass inventory plots used to estimate carbon content by forest type and degradation class. With FC maps information was possible to assign each Biomass plot the canopy cover class 30-60%, 60-85%, and >85%. Canopy cover activity data (degradation/enhancement) was also estimated from canopy cover maps to ensure coherence between activity data and carbon density estimates. Sample-based area estimation method was used to calculate activity data. Forest cover and its probability were extracted from FC maps for each sampling point in a systematic grid. A denser sampling grid was used, 2.5 x 2.5 km, instead of the original 5 x 5 km grid. This 2.5 x 2.5 km sampling grid is also used to visually assess land-use change over high-res imagery.

$B_{\text{Before},j}$ Total biomass of forest type j before transition, in tons of C per ha. This is equal to the sum of aboveground biomass ($\text{AGB}_{\text{before}}$) of trees with a diameter at breast high (dbh) higher than 2 cm, belowground biomass ($\text{BGB}_{\text{before}}$), litter (L_{before}) and death wood ($\text{DW}_{\text{before}}$) and it is defined for each forest type.

$B_{\text{After},i}$ Total biomass of forest type i after transition, in tons of C per ha. This is equal to the sum of aboveground biomass ($\text{AGB}_{\text{after}}$) of trees with a diameter at breast high (dbh) higher than 2 cm, belowground biomass ($\text{BGB}_{\text{after}}$), litter (L_{after}) and death wood (DW_{after}) and it is defined for each forest type.

Technical corrections applied to this parameter: The original calculation of emissions and removals resulting from canopy cover loss and gain was based on AGB-canopy cover linear regression models for broadleaf, dry, and pine forests. These models were applied to estimate the loss and gain of biomass during the reference period. Total biomass was recalculated for each canopy cover category (>85%, 60-85%, and 30-60%) for each forest type (omitting secondary forests). All forest inventory plots in forest lands were classified into four categories based on terraPulse data. By forest type and degradation class, carbon content was directly derived from the biomass sampling plots database (average and 90%CI).

Monitored emissions (GHG_t)

Annual gross GHG emissions over the monitoring period in the Accounting Area (GHG_t) are estimated as the in total biomass carbon stocks and organic carbon pool in mineral soils during the monitoring period.

$$GHG_t = \frac{\Delta C_{BMP} + \Delta C_{DegBMP} + \sum_t^{MP} \Delta C_{RB_t} + \sum_t^{MP} \Delta C_{Mineral_t}}{T} \quad \text{Equation 8}$$

Where:

- ΔC_{BMP} = Change in total biomass carbon stocks in forest lands converted to other land-use category during the monitoring period, in tC;
- ΔC_{DegBMP} = Change in total biomass carbon stocks in forest lands that remains as forest during the monitoring period, in tC;
- $\Delta C_{Mineral_t}$ = Annual change in the soil organic carbon pool in mineral soils associated with deforestation; tC*year⁻¹;
- ΔC_{RB_t} = Annual change in total biomass carbon stocks in non-forest lands converted to forest lands categories at year t; tC*year⁻¹;
- T = Number of years during the monitoring period; dimensionless.

Change in total biomass carbon stocks in forest lands converted to other land-use (Deforestation):

Following the 2006 IPCC Guidelines, the annual change in total biomass carbon stocks forest land converted to other land-use category (ΔC_B) is estimated through **Equation 3 4** above. Making the same assumptions as described above for the RL the change of biomass carbon stocks could be expressed with the following equation:

$$\Delta C_{BMP} = \sum_{j,i} (B_{Before,j} - B_{After,i}) \times A(j, i)_{MP} \quad \text{Equation 9}$$

Where:

- $A(j, i)_{MP}$ Area converted from forest type j to non-forest type i during the Monitoring Period, in hectares per year.

$$A(j, i)_{MP} = \frac{P(j, i)_{MP}}{N} \times AA \quad \text{Equation 9.1}$$

$P(j, i)_{MP}$: Number of points converted from forest type j to non-forest type I during the Monitoring Period, dimensionless.

N: Total of sampling point in the Systematic Grid used for the visual assessment of High-res imagery to estimate activity data.

AA: Emission Reduction Program accounting area (in hectares)

In this case, ninety-six forest land conversions are possible resulted from the combinations of the following forest and non-forest types:

Forest type	Non-forest types
Four forest types (forest present before 1984): - Wet broadleaf forest. - Dry broadleaf forest. - Pine forest, and	Five types of non-forest land are considered: - Cropland. - Grassland. - Settlement; and

• Mangrove forest. Three canopy cover categories: • Intact forest (>85%). • Degraded forest (60-85%), and • Very degraded forest (30-60%) Two cohorts of secondary forest • Cohort 4-21 years, and • Cohort 22-44 years.	• Woody vegetation.

$B_{Before,j}$ Total biomass of forest type j before conversion/transition, in tons of C per ha. This is equal to the sum of aboveground biomass (AGB_{before}) of trees with a diameter at breast high (dbh) higher than 2 cm, belowground biomass (BGB_{before}), litter (L_{before}) and death wood (DW_{before}) and it is defined for each forest type. In all inventories, the factor that is used to convert biomass to carbon content is the IPCC's default value (0.47);

$B_{After,i}$ Total biomass of non-forest type i after conversion, in tons C per ha. This is equal to the sum of aboveground biomass (AGB_{after}) of trees with a diameter at breast high (dbh) higher than 2 cm, belowground biomass (BGB_{after}), litter (L_{after}) and death wood (DW_{after}) and it is defined for each of the five non-forest IPCC Land Use categories. In all inventories, the factor that is used to convert biomass to carbon content is the IPCC's default value (0.47).

Change in the soil organic carbon pool in mineral soils associated with deforestation:

The matrices and **Equations 5, 5.1, 5.2, 5.3, 5.4, and 5.5** used for determining the annual change in the soil organic pool associated with deforestation in the reference period were also used for the monitoring period.

Carbon removals associated with natural and artificial regeneration, including plantations (Enhancement of forest carbon stocks):

The matrices and **Equations 6, 6.1, and 6.2** used to calculate annual carbon removals associated with regeneration in the reference period were also used for the monitoring period.

Change in total biomass carbon stocks in forest lands that remains as forest (Forest Degradation):

Following the recommendations set in chapter 2.2.1 of the GFOI Methods Guidance Document, for applying IPCC Guidelines and guidance in the context of REDD+, the equation 2.16 of the 2006 IPCC GL can be simplified by assuming that the change in total biomass carbon stocks (ΔC_B) is equal to the initial change in carbon stocks ($\Delta C_{CONVERSION}$). Thus, the change of biomass carbon stocks in forest lands that remains as forest during the Monitoring Period was also calculated with the **Equation 4**:

$$\Delta C_{DegBRP} = \sum_{j,i} (B_{Before,j} - B_{After,i}) \times Deg(j,i)_{MP} \quad \text{Equation 9.2}$$

Where:

ΔC_{DegBRP} Change in total biomass carbon stocks in forest lands that remains as forest during the Monitoring period, in tC.

$Deg(j,i)_{MP}$ Area converted from forest with canopy cover j to forest with canopy cover i during the Monitoring Period, in hectares per year.

$$Deg(j,i)_{MP} = \frac{P(j,i)_{MP}}{N} \times AA \quad \text{Equation 9.3}$$

$P(j, i)_{RP}$: Number of points converted from forest with canopy cover j to forest with canopy cover i during the Monitoring Period, dimensionless.

N : Total of sampling point in the Systematic Grid used for the visual assessment of High-res imagery to estimate activity data.

AA: Emission Reduction Program accounting area (in hectares)

In this case, twenty-eight canopy cover transitions forest are possible resulted from the combinations of the following forest and canopy cover categories:

Forest type	Canopy cover category
Four forest types (forest present before 1984): • Wet broadleaf forest. • Dry broadleaf forest. • Pine forest, and • Mangrove forest. • Agricultural tree-shaded crops	Three canopy cover categories: • Intact forest (>85%). • Degraded forest (60-85%), and • Very degraded forest (30-60%) • Agricultural tree-shaded crops

$B_{Before,j}$ Total biomass of forest type j before transition, in tons of C per ha. This is equal to the sum of aboveground biomass (AGB_{before}) of trees with a diameter at breast high (dbh) higher than 2 cm, belowground biomass (BGB_{before}), litter (L_{before}) and death wood (DW_{before}) and it is defined for each forest type. In all inventories, the factor that is used to convert biomass to carbon content is the IPCC's default value (0.47);

$B_{After,i}$ Total biomass of forest type i after transition, in tons of C per ha. This is equal to the sum of aboveground biomass (AGB_{after}) of trees with a diameter at breast high (dbh) higher than 2 cm, belowground biomass (BGB_{after}), litter (L_{after}) and death wood (DW_{after}) and it is defined for each forest type. In all inventories, the factor that is used to convert biomass to carbon content is the IPCC's default value (0.47).

>>

3 DATA AND PARAMETERS

3.1 Fixed Data and Parameters

Carbon densities of forest and non-forest types, and annual change in carbon stocks are calculated from the same sources and were measured at the time of the ERPD and will remain fixed during the Crediting period.

Parameters:	$B_{Before,j}$; $B_{After,i}$; ΔC_{RB_i}
Description:	$B_{Before,j}$: Total biomass of forest type j before conversion, Equation 4. $B_{After,i}$: Total biomass of non-forest type i after conversion, Equation 4. ΔC_{RB_i}: Annual change in carbon stocks in biomass on land converted to forest i, Equation 6.2.
Data units:	$B_{Before,j}$; $B_{After,i}$ tons of C per ha ΔC_{RB_i} tons of C per ha per year
Source of data or description of the method for developing the data including the spatial level of the data (local, regional, national, international):	Spatial level of data: National Sources of data: Three sources of data were used to estimate total biomass in each of the land uses and the emission factors in the land-use change categories: a. The National Forest Inventory (NFI)¹⁷, b Assessment of Biomass and Carbon Content in Non-Forest Cover in the Dominican Republic" (ISNB)¹⁸, and c. Collection of information required for the technical correction of the Forest Reference Level of the Dominican Republic, 2006-2015 (Technical Correction Inventory)¹⁹. Methods: The inventories were compiled using the same methodology, sampling unit, and nested plots in order to determine carbon density for each component recognized as a sink. Each carbon pool is estimated using the database at the tree level, taking the area of the sampling units into account. Allometric models used to estimate the above-ground biomass of the components recorded in these three inventories are listed above. Due to there being no specific allometric equations for broadleaf forests in the Dominican Republic, above-ground biomass (AGB) calculations are carried out using the allometric equations of Chave et al. (2014)²⁰ in the three inventories. For pine trees, a local allometric equation is used. Allometric equations developed in Nicaragua and Costa Rica are used for coffee, cocoa, coconut, mango, avocado, and guava. The Cairns et al. (1997)²¹ equation is used to quantify below-ground biomass roots.. With these three surveys a total of 573 plots²² were collected, with estimations of the above-ground biomass (AGB), dead material (DM) and litter (L). Total biomass of forest types and non-forest types is equal to the sum of aboveground biomass (AGB_{before}) of trees with a diameter at breast high (dbh) higher than 2 cm, belowground biomass (BGB_{before}), litter (L_{before}) and death wood (DW_{before}) and it is defined for each forest type.

¹⁷ Ministry of the Environment. 2015. Inventario nacional forestal de la República Dominicana: Measure and assess forests in order to understand their diversity, composition, volume and biomass. Field Manual. Forest Monitoring Unit. REDD7CCAD-GIZ. Regional Project 48 pages

¹⁸ Ministry of the Environment. 2017. Assessment of the biomass and carbon content in non-forest systems in the Dominican Republic. Field Manual. Forestry Monitoring Unit REDD+ Preparation Project. 54 pages

¹⁹ Núñez, J.A.; Milla, F.; Navarrete, E. and Duarte, F. 2021. Collection of information required for the technical correction of the Forest Reference Level of the Dominican Republic, 2006-2015. LUKINVESTMENT SRL. Final Report. <https://app.box.com/s/xfy8dkfil8c20gikcup3yf9846fityt6>

²⁰ Chave, J., Réjou-Méchain, M., Búrquez, A., Chidumayo, E., Colgan, M. S., Delitti, W. B. C., ... Vieilledent, G. (2014). Improved allometric models to estimate the aboveground biomass of tropical trees. *Global Change Biology*, 20(10), 3177–3190. <https://doi.org/10.1111/gcb.12629>

²¹ Cairns, M. A., Brown, S., Helmer, E. H., Baumgardner, G. A., Cairns, M. A., Brown, S., ... Baumgardner, G. A. (1997). Root Biomass Allocation in the World's Upland Forests. *Oecologia*, 111(1), 1–11. <http://doi.org/10.1007/s004420050201>

²² A copy of the database used to estimate carbon densities can be obtained by following this link: <https://app.box.com/s/yqco9h0olhg5ub1cjr7ii8vylznb16wm>

Table 3-1. Allometric models used to estimate the above-ground biomass of the components recorded in three biomass inventories (NFI, ISNB and Technical Correction Inventory).

Component	National Forestry Inventory (NFI) and Additional 32 biomass sampling plots	Evaluating the Biomass and Carbon Content in Non-Forest Cover (ISNB)
Trees (DBH ≥ 5 cm) all species	$AGB = (0.0673 * (GE * dap^2 * H_t)^{0.976})^{23}$ Pantropical	
Trees of (2 > DBH < 5 cm) all species	$\ln(AGB) = -9.37673 + 2.30119 \ln(dap) + 0.30297 \ln(H_t)^{24}$ Petén, Guatemala	
Trees of <i>P. occidentalis</i> and <i>P. caribaea</i> . (>2 cm DBH)	$\ln(AGB) = 1.17 + 2.119 * \ln(dap)^{25}$ Dominican Republic	Not applicable
Coffee crop - <i>Coffea arabica</i>	$\ln(AGB) = -2.39287 + 0.95285 * LN(dap) + 1.2693 * LN(H_t)^{26}$ (dap 0,3 - 7,5 cm; HT 0.31 - 3.40 m)	$\log(AGB) = -1.181 + 1.991 * \log(d15)^{27}$ Matagalpa, Nicaragua
Other crops: Cocoa - <i>Theobroma cacao</i> ; Avocado - <i>Persea americana</i> ; Guava - <i>Psidium guajaba</i> ; Seville orange - <i>Citrus aurantium</i> , <i>C. Sinensis</i> ; Mango - <i>Mangifera indica</i> .	Not applicable	$\log(AGB) = -1.11 + 2.64 * \log(dap)^{28}$ Talamanca, Costa Rica
Coconut - <i>Cocos nucifera</i>	Not applicable	$\log(AGB) = 6.8414 * dap^{2.086} + 2.7340 * dap^{2.1837} + 2.7402 * dap^{1.9408}^{29}$ Costa Rica

TerraPulse developed annual forest cover maps based on the canopy cover and probability of change in forest cover from one year to another. This information offers long-term and consistent mapping and monitoring of forest cover. It allows the retrieval of historical reference scenarios from the satellite records and the detection of deforestation, degradation, and growth over time. Based on FC maps, a forest cover change analysis was prepared considering only pixels with > 90% probability of having a forest cover higher than 30%, 60% and 85%. Subsequently, forest degradation classes and secondary forest cohorts were mapped into four categories: i. Intact Forest (>85% crown cover), ii. Degraded forest (60-85% crown cover), iii. Highly degraded forest (30-60% crown cover) and iv. Secondary Forest.

All forest inventory plots in forest and tree-shaded crops were classified into these four categories based on terraPulse data. By forest type and degradation class, carbon content was directly derived from the biomass

²³ Chave, J., Réjou-Méchain, M., Búrquez, A., Chidumayo, E., Colgan, M. S., Delitti, W. B. C., ... Vieilledent, G. (2014). Improved allometric models to estimate the aboveground biomass of tropical trees. *Global Change Biology*, 20(10), 3177–3190. <http://doi.org/10.1111/gcb.12629>

²⁴ Arreaga, W. 2002. Almacenamiento de carbono en bosques con manejo forestal sostenible en la Reserva de Biosfera Maya, Petén, Guatemala. CATIE. Escuela de Postgrado. Tesis. 73p.

²⁵ Márquez (2000) citado por Brown (1996)

²⁶ Suarez (2002)

²⁷ Segura, M.; Kanninen, M.; Suárez, D. 2006. Allometric models for estimating aboveground biomass of shade trees and coffee bushes grown together. *Agroforestry Systems* 68(2): 143-150

²⁸ Andrade, H.J.; Segura, M.; Somarriba, E.; Villalobos, M. 2008. Valoración biofísica y financiera de la fijación de carbono por uso del suelo en fincas cacaoteras indígenas de Talamanca, Costa Rica.

²⁹ Ares, A., Boniche, J., Quesada, J., Yost, R., Molina, E. and Smyth, T. 2002. Estimacion De Biomasa Por Metodos Alometricos, Nutrientes Y Carbono En Plantaciones De Palmito En Costa Rica. *Agronomia Costarricense*, (26): 19-30.

sampling plots database (average and 90%CI). The mean annual carbon change in secondary forest and tree-shaded crops (tC/ha/yr.) was estimated by dividing the carbon change between non-forest and secondary forest land use by the time elapsed to reach the maximum biomass of the secondary forest type determined from the forest cover change maps.

Value applied:

Table 3-2. Total forest biomass and non-forest land uses.

Land uses			Total Biomass (AGB+BGB+L+DW) tC*ha ⁻¹		n
Permanent Forest	Pine	Intact forest	69.79 ± 9.2		13
		Degraded forest	62.42 ± 11.07		25
		Very degraded forest	54.19 ± 15.46		7
	Dry Broadleaf Forest	Intact forest	43.43 ± 7.85		6
		Degraded forest	38.86 ± 10.52		7
		Very degraded forest	34.28 ± 7		24
	Wet Broadleaf Forest	Intact forest	83.02 ± 30.76		15
		Degraded forest	64.93 ± 8.58		105
		Very degraded forest	48.02 ± 10.94		62
	Agricultural tree crops		64.93 ± 10.32		58
Secondary Forest	Pine	4-22yr	37.97 ± 23.15		9
		22-44yr	57.49 ± 14.33		14
	Dry Broadleaf Forest	4-22yr	27.62 ± 7		19
		22-44yr	30.2 ± 4.81		33
	Wet Broadleaf Forest	4-22yr	25.04 ± 4.24		39
		22-44yr	47.59 ± 8.69		59
Non-forest lands	Wet broadleaf shrubland		23.02 ± 10.67		17
	Dry broadleaf shrubland		18.54 ± 8.28		25
	Coconut		35.1 ± 10.97		12
	Grassland		9.68 ± 4.25		24
	Annual crops		14.85 ± 0.27 ^[1]		-
	Human settlements		9.68 ± 4.25		24

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^[1] Agricultural and Food Science Vol 18 (2009):347-365.

Table 3-3. Annual change in carbon stocks in biomass on land converted to forest

Type of Forest			Average of C Removal (AGB+BGB+L+DW) tg C/ha/yr		Error
Secondary Forest	Pine	8-22yr	1.29		49%
		22-44yr	1.09		22%
	Dry Broadleaf Forest	8-22yr	0.82		22%
		22-44yr	0.47		16%
	Wet Broadleaf Forest	4-22yr	0.70		17%
		22-44yr	0.86		17%
	Agricultural Tree Crops	4-22yr	1.75		22%
		22-44yr	1.13		17%

QA/QC procedures applied	NFI: The MMARN's Forest Monitoring Unit (UMF) developed a Field Manual³⁰ and QA/QC³¹ procedures to reduce non-sampling errors. Since the beginning of the planning phase, courses on basic forest inventory techniques were given to 68 forestry technicians, half of them MMARN officials and the other half personnel who work outside the Ministry. Then, three-day training workshops were held on INF-RD Field Manual, with the participation of 97 technicians selected. Subsequently, the crews responsible for the field survey were designated and received rigorous training in the Field Manual and the Quality Control Manual. ISNB: The MMARN's Forest Monitoring Unit (UMF) developed a Field Manual³² to reduce non-sampling errors. The crew members for the fieldwork received training for implementing inventory methodology and QA/QC procedures. The inventory methodology was explained, and field practices were carried out, including measurements and sampling exercises. During this training, the crew leaders were confirmed according to their abilities and capacities. Technical Correction Inventory: The quality control procedures during the implementation of the survey of the 32 additional plots have been made following the NFI's Field Manual and QA/QC procedures prepared by the Ministry of Environment and Natural Resources. The Forest Monitoring Unit of the Ministry has formed a quality control brigade that applied the QA/QC procedures in these additional plots; Likewise, the MMARN QA/QC team and fieldwork crews were trained. Both teams worked together for two days, putting the inventory QA/QC protocol into practice. FC maps and forest datasets: TerraPulse implemented the following QA/QC procedures for the preparation of FC maps³³: Image selection: Landsat 5, 7 and 8 Collection-2 level 1 images acquired between 1984 and 2021 were selected to provide time-series satellite multi-spectral representation of forest activity. The repeat cycle for each for each Landsat satellite is 16 days. The number of available Landsat images per WRS-2 tile for each year ranges from 22 to 66, where the data density increases with overlap in data acquisition between two satellites. For this project a total of 3008 scenes were used, which amounts to about 1.9 terabytes of data volume. The images to provide time-series satellite representation of forest were selected according to the following criteria: • A maximum of four Landsat images within the growing season of each year were selected. • The criteria for scene selection included cloud condition, sensor types, and season to minimize the effects of cloud contamination, forest phenology variation, and Landsat sensor quality (such as age of sensor and SLC-OFF issues). • Landsat images with more than 80% cloud cover and images acquired during the leaf-off season were excluded from the selection as well. A score was calculated for each Landsat image to represent the suitability for estimating tree cover. Several metrics were considered in the calculation, including 1)

³⁰ MMARN-GIZ. 2014. Manual de Campo del Inventario Nacional Forestal de la República Dominicana. Unidad de Monitoreo Forestal. Programa REDD CCAD GIZ. Santo Domingo, R.D. 61p. <https://app.box.com/s/e0jf1lb49wpbd2981f9iwwvo2gvbf0av>

³¹ MMARN-GIZ. 2018. Protocolo para el control de calidad del Inventario Nacional Forestal de Republica Dominicana 2018. Unidad de Monitoreo Forestal y Unidad de Gestión del Proyecto de Preparación REDD+ de la República Dominicana. 9p. <https://app.box.com/s/b9uoly8bpn5n4b8xivhtv2ob3z2gslub>

³² MMARN, 2017. Manual de Campo: Evaluación del contenido de biomasa y carbono en sistemas de No Bosque en la Republica Dominicana. Unidad de Monitoreo Forestal. Proyecto de Preparación de REDD+. 54p. <https://app.box.com/s/056lacpm9rwyw2uh7a0agz4a5yve9ol4>

³³ Terrapulse, 2022. Appendix IV: Quality Assessment for TCC and forest datasets. In Technical Document: Estimation of Activity Data on Deforestation, Forest Degradation and Enhancement of Forest Carbon Stocks of Dominican Republic using Annual Time Series Analysis of Landsat data. 19p. <https://app.box.com/s/hubmaeleboslxwuldev3gv5941dzcrbg>

	percent of cloud cover 2) $100 * (Dt - D0/183)$, where Dt and D0 are the image acquisition date and July 1 of the year on Julian day, and 3) sensor type: where sensors were ranked based on their age and sensor issues based on the time window. 100 for OLI images, 50 for ETM+ images before 2004 and 10 for ETM images after 2004 (due to the SLC-off issues), and 30 for TM images. The four images with the highest scores were selected as the final image set for a year. Up to 148 images could be selected for a WRS-2 tile for the entire Landsat record to ensure complete temporal coverage. Image composite: After the scene selection step is completed, data is processed to TCC. Once TCC per Landsat tile is generated, a per-pixel compositing rule is applied to mosaic Landsat images with overlapping area for the country. This results in the most inclusive sample set, increasing the likeliness of filtering out anomalous estimates, such as contamination by residual clouds, SLC-OFF issues etc. The TCC estimates belonging to a year were then aggregated to produce the final annual estimate at each pixel for a given year, where the median operator was used to select the final pixel estimate from the selected TCC estimate group, and per pixel RMSE was calculated from the group to measure the uncertainty of the TCC estimate for the year. Visual Assessment: After the completion of TCC mosaicking, the next step entails processing of time serial forest cover and change estimates using the globally calibrated TCC estimates. The globally calibrated TCC and forest activity assessment were then put on terraView (https://www.terrapulse.com/terraView/dr/) for the local partners at DR to visually assess the data for glaring and large-scale issues. No issues were reported and TCC did not need to be calibrated based on the validation exercise. The final TCC and post processed forest change datasets were visualized in an interactive map interface for assessment and were also validated using DR provided land cover maps. The high-resolution satellite images were also loaded into the interface as a reference during the examination. Although the high- resolution satellite map may not provide the exact representation of the forest at a given point in time of the evaluated TCC or forest changes, it could still provide the knowledge that is valuable for understanding the general pattern and distribution of forests in the region. Scene boundaries and large errors in the TCC process or forest change detection processes could be picked up by the visual examination by evaluating the spatial and temporal consistency as well as the consistency with the reference map. Additionally, internally the team at terraPulse used a time-series NDVI profile for selected regions to understand the phenological dynamics of the forests and forest activity.																																											
Uncertainty associated with this parameter:	The uncertainty associated with Total Forest biomass and non-forest land uses and Annual change in carbon stocks in biomass on land converted to forest are listed above in Tables 3-4 and 3-5. Annual change in carbon stocks in biomass on land converted to the forest was calculated by combining uncertainties of land-use carbon densities before and after conversion, following IPCC approach 1 (addition and subtraction Eq 3.2). Table 3-4: Uncertainty of total forest biomass and non-forest land uses <table><tr><th colspan="2">Land uses</th><th>Total Biomass (AGB+BGB+L+DW) tC*ha⁻¹</th><th>n</th></tr><tr><td rowspan="9">Permanent Forest</td><td>Intact forest</td><td>69.79 ± 9.2</td><td>13</td></tr><tr><td>Pine</td><td></td><td></td></tr><tr><td>Degraded forest</td><td>62.42 ± 11.07</td><td>25</td></tr><tr><td>Very degraded forest</td><td>54.19 ± 15.46</td><td>7</td></tr><tr><td></td><td>43.43 ± 7.85</td><td>6</td></tr><tr><td>Intact forest</td><td></td><td></td></tr><tr><td>Dry Broadleaf Forest</td><td>38.86 ± 10.52</td><td>7</td></tr><tr><td>Degraded forest</td><td></td><td></td></tr><tr><td>Very degraded forest</td><td>34.28 ± 7</td><td>24</td></tr><tr><td></td><td></td><td></td></tr><tr><td>Wet Broadleaf Forest</td><td>Intact forest</td><td>83.02 ± 30.76</td><td>15</td></tr><tr><td></td><td>Degraded forest</td><td>64.93 ± 8.58</td><td>105</td></tr></table>	Land uses		Total Biomass (AGB+BGB+L+DW) tC*ha ⁻¹	n	Permanent Forest	Intact forest	69.79 ± 9.2	13	Pine			Degraded forest	62.42 ± 11.07	25	Very degraded forest	54.19 ± 15.46	7		43.43 ± 7.85	6	Intact forest			Dry Broadleaf Forest	38.86 ± 10.52	7	Degraded forest			Very degraded forest	34.28 ± 7	24				Wet Broadleaf Forest	Intact forest	83.02 ± 30.76	15		Degraded forest	64.93 ± 8.58	105
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Secondary Forest	Pine	4-22yr	37.97 ± 23.15	9
		22-44yr	57.49 ± 14.33	14
	Dry Broadleaf Forest	4-22yr	27.62 ± 7	19
		22-44yr	30.2 ± 4.81	33
	Wet Broadleaf Forest	4-22yr	25.04 ± 4.24	39
		22-44yr	47.59 ± 8.69	59
Non-forest lands	Wet broadleaf shrubland		23.02 ± 10.67	17
	Dry broadleaf shrubland		18.54 ± 8.28	25
	Coconut		35.1 ± 10.97	12
	Grassland		9.68 ± 4.25	24
	Annual crops		14.85 ± 0.27 ^[1]	-
	Human settlements		9.68 ± 4.25	24
				573

Table 3-5: Uncertainty of Annual change in carbon stocks in biomass on land converted to forest

Type of Forest			Error
Secondary Forest	Pine	8-22yr	49%
		22-44yr	22%
	Dry Broadleaf Forest	8-22yr	22%
		22-44yr	16%
	Wet Broadleaf Forest	4-22yr	17%
		22-44yr	17%
	Agricultural Tree Crops	4-22yr	22%
		22-44yr	17%

Any comment:

Total biomass was recalculated for each canopy cover category (>85%, 60-85%, and 30-60%) into each permanent forest type and forest cohort. Also, the ΔC_{RB_i} values were calculated from biomass sampling plots to replace the original estimates sourced scientific literature.

Parameters:	$A(j, i)_{RP}$; $A(j, i)_{LU}$, $A(j)$ and $R(j, i)_{LU}$
Description:	$A(j, i)_{RP}$: Area converted from forest type j to non-forest type i during the Reference Period, in hectares. Equation 4.1. $A(j, i)_{LU}$: Area converted from forest type j to non-forest type i of the Land Unit LU, in hectares. Equation 5.1. $A(j)$: Area of Stable Forest type j, in hectares Equation 5.5 $R(j, i)_{LU}$: Area converted from non-forest type j to forest type i of the Land Unit LU, in hectares. Equation 6.1.
Data units:	Hectares
Source of data or description of the method for developing the data including the spatial level of the data (local, regional, national, international):	Spatial level of data: National Sources of data: Sampling-based estimates and associated uncertainties were used to calculate the activity data. Annual activity data for deforestation and forest regeneration were derived from the systematic sampling procedure (7,697 Permanent Sampling Units). Methods: Activity data estimate was made by applying the good practices and procedures identified by Olofsson et al. (2014)³⁴, GFOI (2016)³⁵ and GFOI (2021)³⁶. The Dominican Republic MRV team prepared a Standard Operation Procedure for the sample-based REDD+ activity data estimation³⁷. Although good practice recommends a stratified sampling to ensure a minimum number of plots in small strata, a systematic 2.5 x 2.5 km grid was used to generate activity data. Stratified sampling was not implemented due to the low accuracy of the non-permanent categories of the land-use change map for the period 2006-2015 (see Table A4.1) and because the use of independent surveys and temporary sample units does not enable the consistent and explicit tracking of land use spatially and temporally. The density of the systematic grid was estimated from the analysis of 474 systematic sampling points collected by Ovalles (2018)³⁸. According to this analysis, with a sample size of 1942, it is possible to achieve a standard error of global precision of $S(\hat{\theta}) = 0.01$. However, DIARENA established a 2.5 x 2.5 km grid with 7,697 sampling points to reduce the standard error in uncommon transitions. Permanent Sample Units (PSU) of one hectare (100 x 100 meters) with a single evaluation point corresponding to the plot centroid was defined for the first phase³⁹. PSUs were visually interpreted through time to ensure the temporal tracking of land use. Land-use assessments were made for 2000, 2005, 2015, and 2018. The land-use class was interpreted with context and recorded for the individual pixel or point for t_1 and t_2. Using the land-use type at t_1 and t_2, the change class was determined for the pixel or point. Using single point Land-use change class

³⁴ Olofsson, P., Foody, G. M., Herold, M., Stehman, S. V., Woodcock, C. E., & Wulder, M. A. (2014). Good practices for estimating area and assessing accuracy of land change. *Remote Sensing of Environment*, 148, 42–57.

<https://doi.org/10.1016/j.rse.2014.02.015>

³⁵ GFOI. (2016). Integración de las observaciones por teledetección y terrestres para estimar las emisiones y absorciones de gases de efecto invernadero en los bosques. Métodos y orientación de la Iniciativa Mundial de Observación de los Bosques (Edición 2.). Roma: Organización de las Naciones Unidas para la Alimentación y la Agricultura.

³⁶ GFOI. (2021). Issues and good practices in sample-based area estimation.

³⁷ MIMARENA, 2019. Revisión de la propuesta de Protocolo de Evaluación Visual multitemporal para la obtención de datos de referencia para la estimación de la incertidumbre de los datos de actividad para el proceso REDD+. Programa Regional REDD+. GIZ. 26 p. <https://app.box.com/s/l7f9k83zf5ssgutwtkc7w8a0hex834x8>

³⁸ Ovalles, P. (2018). Elaboración de mapa de Uso y Cobertura del Suelo 2015. Análisis de Cambios y Mapa de Deforestación en la República Dominicana. Informe Final. Santo Domingo, República Dominicana.

³⁹ A 7x7 points SU was planned to be used for a second phase to assess canopy cover only at permanent forest areas identified in the first phase. However, the country did not complete this analysis because canopy cover maps were used as the source of data to estimate the carbon fluxes in the permanent forest lands.

	information, areas of change were calculated for the population. Interpreters also collected the <i>transition year</i> in the PSUs with a land-use change registered between assessments. The Collect Earth Desktop (CED)⁴⁰ tool was used to perform the Multitemporal Visual Interpretation (MVI). Using Collect Earth Online⁴¹ (CEO) was discarded. Unlike the CEO, CED provides access to high-resolution images from Google Earth, Bing Maps, and Planet, including medium (Sentinel) and low-resolution (Landsat) imagery from 2000 to 2018.																																																										
Value applied:	More than 400 activity data were estimated for the calculation of annual net emissions from deforestation and forest regeneration: Deforestation (96 land conversion types), SOC change transitions (160 Land Units), Permanent Forest types (5 types), and Forest regeneration (160 transitions). A summary of activity data values by forest type is shown in the below tables. All values can be consulted in the Activity Data tool (TF-OT, TF-TF, OT-TF, and SOC TF-OT sheets)⁴². Table 3-6: Deforested and Permanent Forest areas for the Reference Period 2006-2015. <table><tr><th>Forest type</th><th>Deforested Area (ha) 2006-2015 (TF-OT) Total Biomass emissions</th><th>Permanent forest (ha) 2006-2015 (TF-TF)</th></tr><tr><td>Wet Broadleaf Forest</td><td>62,689</td><td>517,027</td></tr><tr><td>Dry Broadleaf Forest</td><td>31,655</td><td>358,753</td></tr><tr><td>Pine Forest</td><td>6,827</td><td>238,962</td></tr><tr><td>Agricultural Tree Crops</td><td>9,310</td><td>163,860</td></tr><tr><td>Mangroves</td><td>0</td><td>19,862</td></tr></table> Table 3-7: Deforested Area (ha) (TF-OT) for SOC inherited emissions calculation*. <table><tr><th>Forest type</th><th>1984-2000**</th><th>2001-2005</th><th>2006-2015</th></tr><tr><td>Wet Broadleaf Forest</td><td>269,375</td><td>16,758</td><td>49,654</td></tr><tr><td>Dry Broadleaf Forest</td><td>44,068</td><td>8,069</td><td>21,724</td></tr><tr><td>Pine Forest</td><td>0</td><td>4,345</td><td>3,724</td></tr><tr><td>Agricultural Tree Crops</td><td>0</td><td>621</td><td>8,069</td></tr><tr><td>Mangroves</td><td>0</td><td>0</td><td>0</td></tr></table> <i>*Activity data used to estimate SOC emissions does not include secondary forest loss area</i> <i>** Deforested Area between 1984-2000 was obtained using the annual canopy cover maps 1984-2021 as reference data to define the year of the forest loss.</i> Table 3-8: Forest Gain 2006-2015 (ha) (OT-TF) for inherited removals calculation. <table><tr><th>Forest type</th><th>1984-2000*</th><th>2001-2005</th><th>2006-2015</th></tr><tr><td>Wet Broadleaf Forest</td><td>209,790</td><td>230,273</td><td>338,892</td></tr><tr><td>Dry Broadleaf Forest</td><td>103,654</td><td>122,895</td><td>153,929</td></tr><tr><td>Pine Forest</td><td>60,206</td><td>64,551</td><td>85,033</td></tr></table>	Forest type	Deforested Area (ha) 2006-2015 (TF-OT) Total Biomass emissions	Permanent forest (ha) 2006-2015 (TF-TF)	Wet Broadleaf Forest	62,689	517,027	Dry Broadleaf Forest	31,655	358,753	Pine Forest	6,827	238,962	Agricultural Tree Crops	9,310	163,860	Mangroves	0	19,862	Forest type	1984-2000**	2001-2005	2006-2015	Wet Broadleaf Forest	269,375	16,758	49,654	Dry Broadleaf Forest	44,068	8,069	21,724	Pine Forest	0	4,345	3,724	Agricultural Tree Crops	0	621	8,069	Mangroves	0	0	0	Forest type	1984-2000*	2001-2005	2006-2015	Wet Broadleaf Forest	209,790	230,273	338,892	Dry Broadleaf Forest	103,654	122,895	153,929	Pine Forest	60,206	64,551	85,033
Forest type	Deforested Area (ha) 2006-2015 (TF-OT) Total Biomass emissions	Permanent forest (ha) 2006-2015 (TF-TF)																																																									
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⁴⁰ <https://openforis.org/tools/collect-earth/>

⁴¹ <https://collect.earth/>

⁴² DatosDeActividad-PR.xlsx tool can be accessed at the following link:

<https://app.box.com/s/3f82u0f27w0zbbx9g541cfmrufko98c6>

	<table><tr><td>Agricultural Tree Crops</td><td>76,344</td><td>78,826</td><td>98,688</td></tr><tr><td>Mangroves</td><td>1,862</td><td>1,862</td><td>2,483</td></tr></table> <i>* Forest Gain Area between 1984-and 2000 was obtained using the annual canopy cover maps 1984-2021 as reference data to define the year of change to new forest areas.</i>	Agricultural Tree Crops	76,344	78,826	98,688	Mangroves	1,862	1,862	2,483																
Agricultural Tree Crops	76,344	78,826	98,688																						
Mangroves	1,862	1,862	2,483																						
QA/QC procedures applied	The Dominican Republic MRV team prepared a Standard Operation Procedure (SOP) for the sample-based REDD+ activity data estimation⁴³. This SOP includes a quality control and quality assurance (QA/QC) procedure and a visual interpretation decision tree for high-resolution and low-resolution imagery to ensure the analysts used the best imagery dataset during the photo-interpretation of the land-use class in the sampling point. Analysts received training to calibrate the observations and make clear the procedures to collect accurate data. After completing the training, the analysts interpreted a sample of 50 points. An analysis of differences between analysts was made, and no significant differences (95% significance) were found between them. Thus, the consistency between analysts was ensured. During the MVI process, a specialist with extensive experience supervised the work of the analysts. The supervisor did the quality control of the land use visual interpretations in two phases: a. During the visual interpretation of the sampling points, the analysts had to make monthly deliveries of the evaluated points. The supervisor reviewed each monthly delivery to identify and correct errors and check transition consistency and the years of change registered. b. Finally, according to QA/QC procedures, the minimum level of consistency between the analysts and the supervisor should be 90% on land-use interpretation. Once all sampling points were assessed, the supervisor randomly selected 100 plots per assessment (year) for consistency verification. The land use definition for the whole period (2000-2118) had 95% consistency between analysts and the supervisor (see table 3-7). Table 3-9: General consistency between analysts and the supervisor on land-use interpretation. <table><tr><th>Assessment</th><th>Points interpreted consistently</th><th>n</th><th>%</th></tr><tr><td>2000</td><td>82</td><td>97</td><td>85%</td></tr><tr><td>2006</td><td>82</td><td>95</td><td>86%</td></tr><tr><td>2015</td><td>84</td><td>91</td><td>92%</td></tr><tr><td>2018</td><td>90</td><td>96</td><td>94%</td></tr><tr><td>Total</td><td>360</td><td>379</td><td>95%</td></tr></table>	Assessment	Points interpreted consistently	n	%	2000	82	97	85%	2006	82	95	86%	2015	84	91	92%	2018	90	96	94%	Total	360	379	95%
Assessment	Points interpreted consistently	n	%																						
2000	82	97	85%																						
2006	82	95	86%																						
2015	84	91	92%																						
2018	90	96	94%																						
Total	360	379	95%																						
Uncertainty associated with this parameter:	Table 3-10: Estimation error of Deforested and Permanent Forest areas for the Reference Period 2006-2015. <table><tr><th>Forest type</th><th>Estimation error of Deforested Areas 2006-2015 (TF-OT) Total Biomass emissions</th><th>Estimation error of Permanent Forest areas 2006-2015 (TF-TF)</th></tr></table>	Forest type	Estimation error of Deforested Areas 2006-2015 (TF-OT) Total Biomass emissions	Estimation error of Permanent Forest areas 2006-2015 (TF-TF)																					
Forest type	Estimation error of Deforested Areas 2006-2015 (TF-OT) Total Biomass emissions	Estimation error of Permanent Forest areas 2006-2015 (TF-TF)																							

⁴³ MIMARENA, 2019. Revisión de la propuesta de Protocolo de Evaluación Visual multitemporal para la obtención de datos de referencia para la estimación de la incertidumbre de los datos de actividad para el proceso REDD+. Programa Regional REDD+. GIZ. 26 p. <https://app.box.com/s/l7f9k83zf5ssgutwtkc7w8a0hex834x8>

Wet Broadleaf Forest	20%	6%
Dry Broadleaf Forest	28%	8%
Pine Forest	66%	10%
Agricultural Tree Crops	55%	12%
Mangroves	NA	39%

Table 3-11: Estimation error of Deforested Area (ha) (TF-OT) for SOC inherited emissions calculation.

Forest type	1984-2000	2001-2005	2006-2015
Wet Broadleaf Forest	9%	39%	22%
Dry Broadleaf Forest	24%	60%	34%
Pine Forest	NA	89%	100%
Agricultural Tree Crops	NA	1271%	60%
Mangroves	NA	NA	NA

Table 3-12: Estimation error of Forest Gain Area (ha) (OT-TF) for inherited removals calculation.

Forest type	1984-2000*	2001-2005	2006-2015
Wet Broadleaf Forest	11%	10%	8%
Dry Broadleaf Forest	16%	14%	12%
Pine Forest	21%	19%	17%
Agricultural Tree Crops	18%	17%	16%
Mangroves	184%	184%	139%

Any comment:

Activity data estimate for reference and monitoring periods is based on land-use tracking from 2000 to 2024. The activity data includes two data sets: i. Reference Level consists of three subperiods 2000-2005, 2005-2015, and 2015-2018; ii. Monitoring Periods consist of tree subperiods, 2018-2021, 2021-2023 and 2023-2024. The 2018 measurement is common to both activity data sets (Reference Level and Monitoring Periods), 2018 was reassessed in the monitoring period. Once the visual assessment was completed, the 2018 land-use of 985 points (13% of the 7,697 sampling points in the systematic grid), were not consistent between the two data sets. The availability of new high-resolution images in the 2022 measurement improved the interpretation of land use in the Monitoring Period dataset. The updated 2018 measurement affected the transitions and land-use assessments made in the Reference Period dataset. Therefore, it was necessary to revise the land-use interpretations and the transitions of the 985 inconsistent points in the two data sets (2000-2018 and 2018-2024).

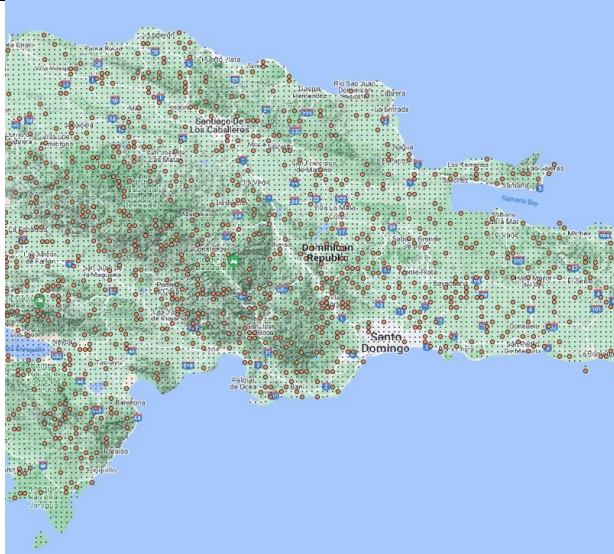


Figure 3-1: Spatial distribution of 985 inconsistent points.

Parameter:	$\text{Deg}(j, i)_{\text{RP}}$
Description:	$\text{Deg}(j, i)_{\text{RP}}$: Area converted from forest with canopy cover j to forest with canopy cover i during the Reference Period, in hectares per year. Equation 4.3.
Data unit:	Hectares
Source of data or description of the method for developing the data including the spatial level of the data (local, regional, national, international):	Spatial level of data: National Sources of data: Sampling-based estimates and associated uncertainties were used to calculate the activity data. Forest cover annual maps were used as reference information to determine the canopy cover categories for each sampling point. Methods: Annual activity data for degradation and carbon enhancement in permanent forest were derived from the systematic sampling procedure (7,697 Permanent Sampling Units) and Forest Cover (FC) annual maps. FC maps were used to determine the canopy cover class or secondary forest's age of all biomass inventory plots used to estimate carbon content by forest type and degradation class. With FC maps information was possible to assign each Biomass plot the canopy cover class 30-60%, 60-85%, and >85%. Canopy cover activity data (degradation/enhancement) was also estimated from canopy cover maps. FC data was used to estimate activity data for three reasons: a. The FC maps provide a consistent stratification of biomass plots for different forest types, canopy density categories, and forest age, b. The use of TCC maps to calculate changes in canopy cover ensures consistency between activity data and carbon densities, and c. With this approach, it was possible to include the bias in estimating the canopy cover of the FC maps. The bias was estimated by comparing the values of the TCC map concerning the visual interpretation of the percentage of canopy cover. Sample-based area estimation method was used to calculate activity data. Forest cover and its probability were extracted from FC maps for each sampling point in a systematic grid. One pixel was assigned to a canopy cover class if the probability of having a canopy cover is higher than 90%. A denser sampling grid was used, 2.5 x 2.5 km, instead of the original 5 x 5 km grid. This 2.5 x 2.5 km sampling grid is also used to visually assess land-use change over high-res imagery. Tree-canopy cover was estimated through an automatic learning algorithm based on a model f of remotely sensed variables X in any location i, $\hat{C}_i = f(X; \hat{\beta}) + \varepsilon$. $\hat{C}_i$ is the percentage of a pixel (i)'s area covered by trees; $\hat{\beta}$ is a set of empirically estimated parameters; ε is residual error or uncertainty; and X is a set of measurements of surface reflectance, derived indices (NDVI, NDWI, and MNDWI) and metadata describing acquisition and sensor characteristics (Sexton et al.2013)⁴⁴. This algorithm was applied to the stack of Landsat images available for each year, to prepare the Dominican Republic annual canopy cover wall-to-wall raster maps from 1984 to 2021, with 30*30 m resolution; each pixel has a canopy cover value and the probability estimate. Additionally, multiple high-resolution data sources such as Meta tree height data and NASA's GEDI data were combined to produce high-quality tree cover reference data. The process includes data collection, preprocessing, and standardization, resulting in a robust and comprehensive dataset. This integration addresses issues like uneven satellite observations, noise, and data gaps by employing temporal interpolation, noise-resistant algorithms, and data

⁴⁴ Sexton, JO, X-P Song, M Feng, P Noojipady, A Anand, C Huang, D-H Kim, KM Collins, S Channan, C DiMiceli & JR Townshend. 2013a. Global, 30-m resolution continuous fields of tree cover: Landsat-based rescaling of MODIS continuous fields and lidar-based estimates of error. International Journal of Digital Earth 6: 427-448

gap-filling techniques. These methods ensure a seamless time series for accurate forest monitoring in tree cover data production.

Further information on the preparation methods of canopy cover maps is detailed in Consultancy Report^{45, 46}.

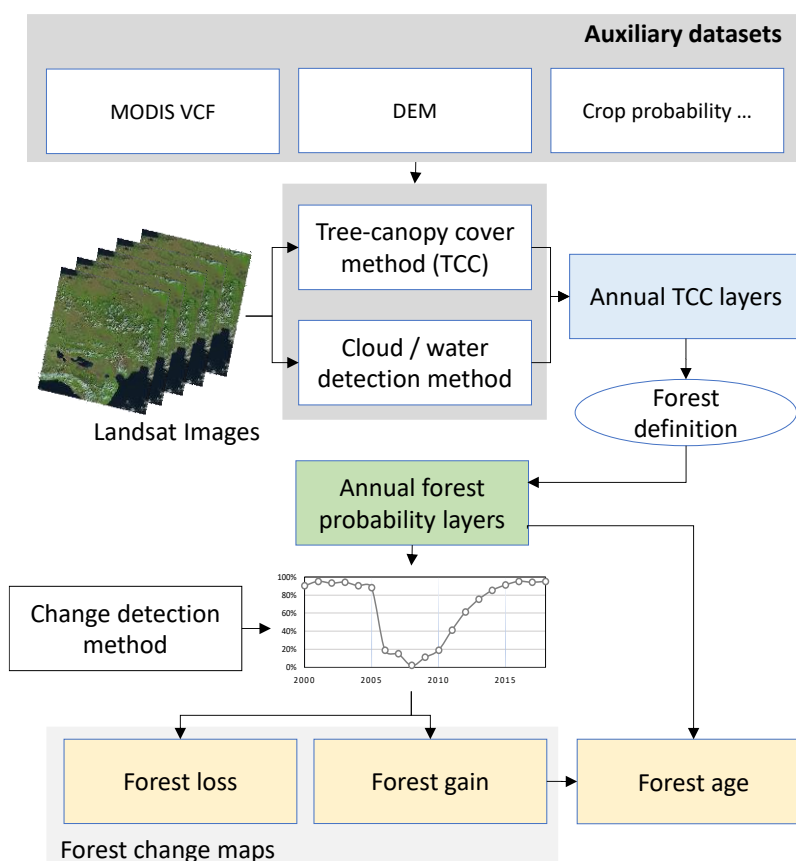


Figure 3-2. Estimation of percent-tree cover as a standard normal distribution of cover (mean) and uncertainty (standard deviation) in each pixel (Sexton et al. 2015)⁴⁷.

⁴⁵ terraPulse, 2018. Estimation of Activity Data on Deforestation, Forest Degradation and Enhancement of Forest Carbon Stocks of Dominican Republic using Annual Time Series Analysis of Landsat data. Technical Document. 12 p. <https://app.box.com/s/0i7wl8wss4l40mjl3299gfwpo4i7djoz>

⁴⁶ terraPulse, 2025. DR tree cover methodology improvements. <https://app.box.com/s/c2tyvr6fdfflybyhnwn9ui3c28xglfan>

⁴⁷ Sexton, JO, P Noojipady, A Anand, X-P Song, C Huang, SM McMahon, M Feng, S Channan & JR Townshend. 2015. A model for the propagation of uncertainty from continuous estimates of tree cover to categorical forest cover and change. Remote Sensing of Environment 156: 418-425

Value applied:	More than 48 activity data were estimated for the annual emission of degradation and carbon enhancement in permanent forest. A summary of activity data values by forest type is shown in the following table. All values can be consulted in the Activity Data tool (TF-TF sheets) ⁴⁸. Table 3-13: Canopy cover transition areas in permanent forest lands - 2006-2015 <table><tr><th colspan="2">Canopy cover transition in permanent forest lands</th><th>Area 2006-2015 (ha)</th></tr><tr><td rowspan="2">Wet Broadleaf Forest</td><td>Enhancement</td><td>71,378</td></tr><tr><td>Degradation</td><td>81,309</td></tr><tr><td rowspan="2">Dry Broadleaf Forest</td><td>Enhancement</td><td>16,758</td></tr><tr><td>Degradation</td><td>11,793</td></tr><tr><td rowspan="2">Pine Forest</td><td>Enhancement</td><td>38,482</td></tr><tr><td>Degradation</td><td>46,551</td></tr><tr><td>Agricultural Tree Crops</td><td>Native forest</td><td>621</td></tr><tr><td>Native forest</td><td>Agricultural Tree Crops</td><td>1,862</td></tr><tr><td rowspan="2">Mangroves</td><td>Enhancement</td><td>-</td></tr><tr><td>Degradation</td><td>4,965</td></tr></table>	Canopy cover transition in permanent forest lands		Area 2006-2015 (ha)	Wet Broadleaf Forest	Enhancement	71,378	Degradation	81,309	Dry Broadleaf Forest	Enhancement	16,758	Degradation	11,793	Pine Forest	Enhancement	38,482	Degradation	46,551	Agricultural Tree Crops	Native forest	621	Native forest	Agricultural Tree Crops	1,862	Mangroves	Enhancement	-	Degradation	4,965
Canopy cover transition in permanent forest lands		Area 2006-2015 (ha)																												
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Agricultural Tree Crops	Native forest	621																												
Native forest	Agricultural Tree Crops	1,862																												
Mangroves	Enhancement	-																												
	Degradation	4,965																												
QA/QC procedures applied	Permanent forest areas estimate: The same QA/QC procedures for deforestation and regeneration were applied to the estimate of degradation activity data. In this case, QA/QC procedures were focused on the interpretation of permanent forest areas. FC maps and forest datasets: TerraPulse implemented the following QA/QC procedures for the preparation of FC maps⁴⁹: Image selection: Landsat 5, 7 and 8 Collection-2 level 1 images acquired between 1984 and 2021 were selected to provide time-series satellite multi-spectral representation of forest activity. The repeat cycle for each for each Landsat satellite is 16 days. The number of available Landsat images per WRS-2 tile for each year ranges from 22 to 66, where the data density increases with overlap in data acquisition between two satellites. For this project a total of 3008 scenes were used, which amounts to about 1.9 terabytes of data volume. The images to provide time-series satellite representation of forest were selected according to the following criteria: • A maximum of four Landsat images within the growing season of each year were selected.																													

⁴⁸DatosDeActividad-PR.xlsx tool can be accessed at the following link:

<https://app.box.com/s/3f82u0f27w0zbbx9g541cfmrufko98c6>

⁴⁹ TerraPulse, 2022. Appendix IV: Quality Assessment for TCC and forest datasets. In Technical Document: Estimation of Activity Data on Deforestation, Forest Degradation and Enhancement of Forest Carbon Stocks of Dominican Republic using Annual Time Series Analysis of Landsat data. 19p. <https://app.box.com/s/hubmaeleboslxwuldev3gv5941dzcrbg>

- The criteria for scene selection included cloud condition, sensor types, and season to minimize the effects of cloud contamination, forest phenology variation, and Landsat sensor quality (such as age of sensor and SLC-OFF issues).
- Landsat images with more than 80% cloud cover and images acquired during the leaf-off season were excluded from the selection as well. A score was calculated for each Landsat image to represent the suitability for estimating tree cover. Several metrics were considered in the calculation, including 1) percent of cloud cover 2) $100 * (Dt - D0/183)$, where Dt and D0 are the image acquisition date and July 1 of the year on Julian day, and 3) sensor type: where sensors were ranked based on their age and sensor issues based on the time window. 100 for OLI images, 50 for ETM+ images before 2004 and 10 for ETM images after 2004 (due to the SLC-off issues), and 30 for TM images.
- The four images with the highest scores were selected as the final image set for a year. Up to 148 images could be selected for a WRS-2 tile for the entire Landsat record to ensure complete temporal coverage.

Image composite: After the scene selection step is completed, data is processed to TCC. Once TCC per Landsat tile is generated, a per-pixel compositing rule is applied to mosaic Landsat images with overlapping area for the country. This results in the most inclusive sample set, increasing the likeliness of filtering out anomalous estimates, such as contamination by residual clouds, SLC-OFF issues etc. The TCC estimates belonging to a year were then aggregated to produce the final annual estimate at each pixel for a given year, where the median operator was used to select the final pixel estimate from the selected TCC estimate group, and per pixel RMSE was calculated from the group to measure the uncertainty of the TCC estimate for the year.

Visual Assessment: After the completion of TCC mosaicking, the next step entails processing of time serial forest cover and change estimates using the globally calibrated TCC estimates. The globally calibrated TCC and forest activity assessment were then put on terraView (<https://www.terrapulse.com/terraView/dr/>) for the local partners at DR to visually assess the data for glaring and large-scale issues. No issues were reported and TCC did not need to be calibrated based on the validation exercise. The final TCC and post processed forest change datasets were visualized in an interactive map interface for assessment and were also validated using DR provided land cover maps. The high-resolution satellite images were also loaded into the interface as a reference during the examination. Although the high-resolution satellite map may not provide the exact representation of the forest at a given point in time of the evaluated TCC or forest changes, it could still provide the knowledge that is valuable for understanding the general pattern and distribution of forests in the region. Scene boundaries and large errors in the TCC process or forest change detection processes could be picked up by the visual examination by evaluating the spatial and temporal consistency as well as the consistency with the reference map. Additionally, internally the team at terraPulse used a time-series NDVI profile for selected regions to understand the phenological dynamics of the forests and forest activity.

Uncertainty associated with this parameter:	Canopy cover estimates in FC maps are considered biased. The bias was assessed by comparing the map canopy cover estimates with tree cover reference data. Canopy cover estimate is based on the visual interpretation of high-resolution imagery using Collect Earth Desktop. DIARENA analysts collected tree canopy cover with a 1 ha sampling plot (with 3 x 3 subpoint inside) systematically distributed in permanent forest land with a 5 x 5 km sampling grid. Canopy cover reference data collected by the Dominican Republic team was overlaid with coincident terraPulse canopy cover estimates. The reference data and terraPulse estimates were subtracted to calculate the bias of each terraPulse data point. The estimated bias of the canopy cover in Forest Cover maps is -1.05%, with a standard deviation of 61.865. The probability distribution function of the bias was fitted with the scipy open-source python package (https://scipy.org), obtaining a normal distribution of the canopy cover bias. Maximum Likelihood was used to estimate the mean and variance parameters. The uncertainty determination of the total sampling point assigned to each canopy cover change class was made with the bootstrap method, with 1000 simulations based on the bias estimate⁵⁰. The sampling error of estimating the areas of the canopy cover class change was also calculated (table below). Both uncertainties are included in error propagation made with Monte Carlo analysis for the uncertainty estimate of the reference emission level. Table 3-14: Sampling error of canopy cover transition areas in permanent forest lands -2006-2015																															
	<table><tr><th colspan="2">Canopy cover transition in permanent forest lands</th><th>Area 2006-2015 (ha)</th></tr><tr><td rowspan="2">Wet Broadleaf Forest</td><td>Enhancement</td><td>18%</td></tr><tr><td>Degradation</td><td>17%</td></tr><tr><td rowspan="2">Dry Broadleaf Forest</td><td>Enhancement</td><td>39%</td></tr><tr><td>Degradation</td><td>48%</td></tr><tr><td rowspan="2">Pine Forest</td><td>Enhancement</td><td>25%</td></tr><tr><td>Degradation</td><td>23%</td></tr><tr><td>Agricultural Tree Crops</td><td>Native forest</td><td>1271%</td></tr><tr><td>Native forest</td><td>Agricultural Tree Crops</td><td>184%</td></tr><tr><td rowspan="2">Mangroves</td><td>Enhancement</td><td>NA</td></tr><tr><td>Degradation</td><td>81%</td></tr></table>			Canopy cover transition in permanent forest lands		Area 2006-2015 (ha)	Wet Broadleaf Forest	Enhancement	18%	Degradation	17%	Dry Broadleaf Forest	Enhancement	39%	Degradation	48%	Pine Forest	Enhancement	25%	Degradation	23%	Agricultural Tree Crops	Native forest	1271%	Native forest	Agricultural Tree Crops	184%	Mangroves	Enhancement	NA	Degradation	81%
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Native forest	Agricultural Tree Crops	184%																														
Mangroves	Enhancement	NA																														
	Degradation	81%																														
Any comment:	There are no comments.																															

⁵⁰ The Excel tool used to estimate the canopy cover change category determination uncertainty by the bootstrap method can be accessed at the following link: <https://app.box.com/s/jdrs1h7quvi4ay1rauug1hg2wyyo2wvi>

Parameter:	$SOC_j, SOC_i, S(j, i)$
Description:	SOC_j : Soil Organic Carbon of forest type j before conversion Equation 5.2 SOC_i: Soil Organic Carbon of non-forest type i after conversion Equation 5.2 $S(j, i)$: Soil Organic Carbon Linear decreasing rate for transition j to i Equation 5.2
Data unit:	SOC_j and SOC_i tons of C per ha $S(j, i)$ tons of C per ha per year
Source of data or description of the method for developing the data including the spatial level of the data (local, regional, national, international):	Spatial level of data: National Sources of data: SOC Estimate for each forest type and non-forest classes is based on the Collection of information required for the technical correction of the Forest Reference Level of the Dominican Republic, 2006-2015 (Technical Correction Inventory)⁵¹. Methods: For the determination of the organic carbon balance of the soil after deforestation in the main types of soil, 260 plots were established in paired forest – non-forest plots. Sampling Plots were located ensuring at least five paired plots in each of the main transitions by soil type that add up to 80% of the area of change observed during the reference period (2006-15). The following samples were obtained in each of these plots: a. SOC sample 0-15 cm, b. SOC sample 15-30 cm, c. Unaltered sample Bulk Density 0-15 cm and d. Unaltered samples' Bulk Density of 15 - 30 cm. 520 samples (altered samples) were taken for laboratory analysis to determine the SOC. Likewise, 520 unaltered samples were analyzed to determine the Bulk Density and the volumetric fraction of coarse fragments⁵². Organic Carbon Concentration (OCC) was estimated with the Walkley-Black colorimetric method under the NVN 575 standard. Bulk density (BD) was determined by relating the soil sample's dry weight (105°C) and the soil's volume. The soil organic carbon stock was calculated as the product of organic carbon concentration (OCC), bulk density (BD), and the proportion of the volumetric fraction of coarse fragments (S). $SOC = OCC \times BD \times D(1 - S)$. OCC is in $g \times 100 g^{-1}$, BD is in $g \times cm^{-3}$, D is the thickness of the layer (30 cm) and S is in $g \times g^{-1}$. The Soil Organic Carbon Linear decreasing rate was calculated based on the estimate of SOC before and after conversion with Equation 2.25 from the 2006 IPCC Guidelines, Volume 4, Chapter 2. Average SOC before and after conversion was estimated by forest types. The determination of the year of land-use conversion in the SOC sampling plot is based on an analysis of time series of high-resolution satellite images and Landsat imagery repositories available on the Google Earth platform. The average SOC after conversion includes grasslands, annual crops, and shrublands. Only samples with a SOC decrease after conversion was considered (64 samples)⁵³.

⁵¹ Núñez, J.A.; Milla, F.; Navarrete, E. and Duarte, F. 2021. Collection of information required for the technical correction of the Forest Reference Level of the Dominican Republic, 2006-2015. LUKINVESTMENT SRL. Final Report.

<https://app.box.com/s/xfy8dkfil8c20gikcup3yf9846fifyt6>

⁵² A copy of the original database of SOC before and after conversion can be accessed at the following link:

<https://app.box.com/s/a2ic2wqvrxqg36d3633poe8ziv1zdi8s>

⁵³ A copy of the final database used to estimate average SOC before and after conversion can be accessed at the following link:

<https://app.box.com/s/07poveih5s7ifxjcryv7ciaqu20weg03>

Value applied:	Table 3-15: Average SOC before and after conversion and SOC linear decreasing rate by forest types <table><tr><th>Forest type</th><th>Soil Organic Carbon by forest type before conversion tC*ha⁻¹</th><th>Soil Organic Carbon by forest type after conversion tC*ha⁻¹</th><th>Soil Organic Carbon Linear decreasing rate tC*ha⁻¹*yr⁻¹</th><th>Number of sampling plots</th></tr><tr><td>Wet Broadleaf Forest</td><td>23.10</td><td>11.31</td><td>0.48</td><td>34</td></tr><tr><td>Dry Broadleaf Forest</td><td>34.37</td><td>22.45</td><td>0.67</td><td>15</td></tr><tr><td>Pine Forest</td><td>29.26</td><td>12.02</td><td>1.18</td><td>10</td></tr><tr><td>Agricultural Tree Crops</td><td>24.49</td><td>10.85</td><td>0.45</td><td>5</td></tr></table> Values for Wet Broadleaf Forest were used for Mangrove transitions.	Forest type	Soil Organic Carbon by forest type before conversion tC*ha ⁻¹	Soil Organic Carbon by forest type after conversion tC*ha ⁻¹	Soil Organic Carbon Linear decreasing rate tC*ha ⁻¹ *yr ⁻¹	Number of sampling plots	Wet Broadleaf Forest	23.10	11.31	0.48	34	Dry Broadleaf Forest	34.37	22.45	0.67	15	Pine Forest	29.26	12.02	1.18	10	Agricultural Tree Crops	24.49	10.85	0.45	5
Forest type	Soil Organic Carbon by forest type before conversion tC*ha ⁻¹	Soil Organic Carbon by forest type after conversion tC*ha ⁻¹	Soil Organic Carbon Linear decreasing rate tC*ha ⁻¹ *yr ⁻¹	Number of sampling plots																						
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Pine Forest	29.26	12.02	1.18	10																						
Agricultural Tree Crops	24.49	10.85	0.45	5																						
QA/QC procedures applied	The QA/QC procedure applied for the collection of SOC samples includes the following: a. Field check that the sampling site corresponds to the type of transition to be sampled. b. A field manual was prepared and implemented to collect 200 g soil samples at a depth of 0 to 15 cm and from 15 to 30 cm deep, as well as for the bulk density sample. c. All samples were labeled and stored. For further detail on QA/QC procedures, see section 3.2 of the consultancy report of the Technical Correction Inventory⁵⁴.																									
Uncertainty associated with this parameter:	Estimation error of SOC linear decreasing was calculated combining uncertainties of average SOC before and after conversion, following IPCC approach 1 (addition and subtraction Eq 3.2) Table 3-16: Estimation error of Average SOC before and after conversion and SOC linear decreasing rate by forest types <table><tr><th>Forest type</th><th>Estimation error of Soil Organic Carbon by forest type before conversion</th><th>Estimation error of Soil Organic Carbon by forest type after conversion</th><th>Estimation error of Soil Organic Carbon Linear decreasing rate (*)</th></tr><tr><td>Wet Broadleaf Forest</td><td>28%</td><td>30%</td><td>21%</td></tr><tr><td>Dry Broadleaf Forest</td><td>25%</td><td>28%</td><td>19%</td></tr><tr><td>Pine Forest</td><td>62%</td><td>34%</td><td>45%</td></tr><tr><td>Agricultural Tree Crops</td><td>73%</td><td>46%</td><td>52%</td></tr></table>	Forest type	Estimation error of Soil Organic Carbon by forest type before conversion	Estimation error of Soil Organic Carbon by forest type after conversion	Estimation error of Soil Organic Carbon Linear decreasing rate (*)	Wet Broadleaf Forest	28%	30%	21%	Dry Broadleaf Forest	25%	28%	19%	Pine Forest	62%	34%	45%	Agricultural Tree Crops	73%	46%	52%					
Forest type	Estimation error of Soil Organic Carbon by forest type before conversion	Estimation error of Soil Organic Carbon by forest type after conversion	Estimation error of Soil Organic Carbon Linear decreasing rate (*)																							
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Any comment:	There are no comments.																									

⁵⁴. Núñez, J.A.; Milla, F.; Navarrete, E. and Duarte, F. 2021. Collection of information required for the technical correction of the Forest Reference Level of the Dominican Republic, 2006-2015. LUKINVESTMENT SRL. Final Report.
<https://app.box.com/s/xfv8dkfil8c20gikcup3yf9846fifyt6>

3.2 Monitored Data and Parameters

Parameters:	$A(j, i)_{MP}$; $A(j, i)_{LU}$, $A(j)$ and $R(j, i)_{LU}$
Description:	$A(j, i)_{MP}$: Area converted from forest type j to non-forest type i during the Reference Period, in hectares. Equation 9.1. $A(j, i)_{LU}$: Area converted from forest type j to non-forest type i of the Land Unit LU, in hectares. Equation 5.1. $A(j)$: Area of Stable Forest type j, in hectares Equation 5.5 $R(j, i)_{LU}$: Area converted from non-forest type j to forest type i of the Land Unit LU, in hectares. Equation 6.1.
Data units:	Hectares
Source of data or description of the method for developing the data including the spatial level of the data (local, regional, national, international):	Spatial level of data: National Sources of data: Sampling-based estimates and associated uncertainties were used to calculate the activity data. Annual activity data for deforestation and forest regeneration were derived from the systematic sampling procedure (7,697 Permanent Sampling Units). Methods: Activity data estimate was made by applying the good practices and procedures identified by Olofsson et al. (2014)⁵⁵, GFOI (2016)⁵⁶ and GFOI (2021)⁵⁷. The Dominican Republic MRV team prepared a Standard Operation Procedure for the sample-based REDD+ activity data estimation⁵⁸. The same methods used to generate activity data for the reference level are used for the monitoring period, including the systematic 2.5 x 2.5 km grid, and the use of Permanent Sample Units (PSU) of one hectare (100 x 100 meters) with a single evaluation point corresponding to the plot centroid. PSUs are visually interpreted through time to ensure the temporal tracking of land use. For the monitoring periods, land-use assessments are made for 2018, 2021, 2023, and 2024. The 2018 assessment has the same land-use interpretation collected in the time series analysis for the reference level estimation (2000-2018). The Collect Earth Desktop (CED)⁵⁹ tool is used to perform the Multitemporal Visual Interpretation (MVI) during the monitoring period.
Value applied:	More than 400 activity data are estimated for the calculation of annual net emissions from deforestation and forest regeneration: Deforestation (96 land conversion types), SOC change transitions (160 Land Units), Permanent Forest types (5 types), and Forest regeneration (160 transitions). A summary of activity data values by forest type is shown in the below tables. All values can be consulted in the Activity Data tool (TF-OT, TF-TF, OT-TF, and SOC TF-OT sheets) ⁶⁰ .

⁵⁵ Olofsson, P., Foody, G. M., Herold, M., Stehman, S. V., Woodcock, C. E., & Wulder, M. A. (2014). Good practices for estimating area and assessing accuracy of land change. Remote Sensing of Environment, 148, 42–57.

<https://doi.org/10.1016/j.rse.2014.02.015>

⁵⁶ GFOI. (2016). Integración de las observaciones por teledetección y terrestres para estimar las emisiones y absorciones de gases de efecto invernadero en los bosques. Métodos y orientación de la Iniciativa Mundial de Observación de los Bosques (Edición 2.). Roma: Organización de las Naciones Unidas para la Alimentación y la Agricultura.

⁵⁷ GFOI. (2021). Issues and good practices in sample-based area estimation.

⁵⁸ MIMARENA, 2019. Revisión de la propuesta de Protocolo de Evaluación Visual multitemporal para la obtención de datos de referencia para la estimación de la incertidumbre de los datos de actividad para el proceso REDD+. Programa Regional REDD+. GIZ. 26 p. <https://app.box.com/s/l7f9k83zf5ssgutwtkc7w8a0hex834x8>

⁵⁹ <https://openforis.org/tools/collect-earth/>

⁶⁰ DatosDeActividad-PM.xlsx tool can be accessed at the following link:

<https://app.box.com/s/xmkk4o87uuj8ohlinz5wp7xe5gdc8g>

Table 3-17: Deforested and Permanent Forest areas for the Reference Period 2006-2015.

Forest type	Deforested Area (ha) 2019-2021 (TF-OT) Total Biomass emissions	Permanent forest (ha) 2021 (TF-TF)
Wet Broadleaf Forest	28,551	495,924
Dry Broadleaf Forest	14,276	341,374
Pine Forest	1,862	237,100
Agricultural Tree Crops	5,586	158,894
Mangroves	0	19,241

Table 3-18: Deforested Area (ha) (TF-OT) for SOC inherited emissions calculation*.

Forest type	1984-2000**	2001-2005	2006-2015	2016-2018	2019-2021
Wet Broadleaf Forest	269,375	16,758	49,654	10,552	11,172
Dry Broadleaf Forest	44,068	8,069	21,724	8,069	9,310
Pine Forest	0	4,345	3,724	0	1,241
Agricultural Tree Crops	0	621	8,069	2,483	2,483
Mangroves	0	0	0	0	0

*Activity data used to estimate SOC emissions does not include secondary forest loss area

** Deforested Area between 1984-2000 was obtained using the annual canopy cover maps 1984-2021 as reference data to define the year of the forest loss.

Table 3-19: Forest Gain 2006-2015 (ha) (OT-TF) for inherited removals calculation.

Forest type	1984-2000*	2001-2005	2006-2015	2016-2018	2019-2021
Wet Broadleaf Forest	209,790	230,273	338,892	373,029	376,753
Dry Broadleaf Forest	103,654	122,895	153,929	165,101	172,549
Pine Forest	60,206	64,551	85,033	89,999	89,999
Agricultural Tree Crops	76,344	78,826	98,688	101,792	101,792
Mangroves	1,862	1,862	2,483	2,483	3,103

* Forest Gain Area between 1984-and 2000 was obtained using the annual canopy cover maps 1984-2021 as reference data to define the year of change to new forest areas.

QA/QC procedures applied

The same SOP for the sample-based REDD+ activity data estimation⁶¹ was used to collect the land-use change for the 2019-2021 monitoring period. The same analysts that interpreted land use for the reference period performed the land-use change assessment for the 2019-2021 monitoring period. For this reason, it was not necessary to provide additional training to ensure consistency between analysts. During the MVI process, a specialist with extensive experience supervised the work of the analysts. The supervisor reviewed weekly

⁶¹ MIMARENA, 2019. Revisión de la propuesta de Protocolo de Evaluación Visual multitemporal para la obtención de datos de referencia para la estimación de la incertidumbre de los datos de actividad para el proceso REDD+. Programa Regional REDD+. GIZ. 26 p. <https://app.box.com/s/l7f9k83zf5ssgutwtkc7w8a0hex834x8>

	deliveries of photo-interpreted points. This review focused on identifying and correcting errors and checking transition consistency and the years of change registered.																																																																																										
Uncertainty associated with this parameter:	The uncertainty associated with Total Forest biomass and non-forest land uses and Annual change in carbon stocks in biomass on land converted to forest are listed above in Tables 3-20, 3-20 and 3-2. The Probability Distribution Function has been fitted for each Land-use carbon density class. Annual change in carbon stocks in biomass on land converted to the forest was calculated by combining uncertainties of land-use carbon densities before and after conversion, following IPCC approach 1 (addition and subtraction Eq 3.2). Table 3-20: Estimation error of Deforested and Permanent Forest areas for the Reference Period 2006-2015. <table><tr><th>Forest type</th><th>Estimation error of Deforested Areas 2019-2021 (TF-OT) Total Biomass emissions</th><th>Estimation error of Permanent Forest areas 2021 (TF-TF)</th></tr><tr><td>Wet Broadleaf Forest</td><td>30%</td><td>7%</td></tr><tr><td>Dry Broadleaf Forest</td><td>43%</td><td>8%</td></tr><tr><td>Pine Forest</td><td>184%</td><td>10%</td></tr><tr><td>Agricultural Tree Crops</td><td>75%</td><td>12%</td></tr><tr><td>Mangroves</td><td>NA</td><td>36%</td></tr></table> Table 3-21: Estimation error of Deforested Area (ha) (TF-OT) for SOC inherited emissions calculation. <table><tr><th>Forest type</th><th>1984-2000</th><th>2001-2005</th><th>2006-2015</th><th>2016-2018</th><th>2019-2021</th></tr><tr><td>Wet Broadleaf Forest</td><td>9%</td><td>39%</td><td>22%</td><td>51%</td><td>49%</td></tr><tr><td>Dry Broadleaf Forest</td><td>24%</td><td>60%</td><td>34%</td><td>60%</td><td>55%</td></tr><tr><td>Pine Forest</td><td>NA</td><td>89%</td><td>100%</td><td>NA</td><td>304%</td></tr><tr><td>Agricultural Tree Crops</td><td>NA</td><td>1271%</td><td>60%</td><td>139%</td><td>139%</td></tr><tr><td>Mangroves</td><td>NA</td><td>NA</td><td>NA</td><td>NA</td><td>NA</td></tr></table> Table 3-22: Estimation error of Forest Gain Area (ha) (OT-TF) for inherited removals calculation. <table><tr><th>Forest type</th><th>1984-2000*</th><th>2001-2005</th><th>2006-2015</th><th>2016-2018</th><th>2019-2021</th></tr><tr><td>Wet Broadleaf Forest</td><td>11%</td><td>10%</td><td>8%</td><td>8%</td><td>8%</td></tr><tr><td>Dry Broadleaf Forest</td><td>16%</td><td>14%</td><td>12%</td><td>12%</td><td>12%</td></tr><tr><td>Pine Forest</td><td>21%</td><td>19%</td><td>17%</td><td>16%</td><td>16%</td></tr><tr><td>Agricultural Tree Crops</td><td>18%</td><td>17%</td><td>16%</td><td>15%</td><td>15%</td></tr><tr><td>Mangroves</td><td>184%</td><td>184%</td><td>139%</td><td>139%</td><td>115%</td></tr></table>	Forest type	Estimation error of Deforested Areas 2019-2021 (TF-OT) Total Biomass emissions	Estimation error of Permanent Forest areas 2021 (TF-TF)	Wet Broadleaf Forest	30%	7%	Dry Broadleaf Forest	43%	8%	Pine Forest	184%	10%	Agricultural Tree Crops	75%	12%	Mangroves	NA	36%	Forest type	1984-2000	2001-2005	2006-2015	2016-2018	2019-2021	Wet Broadleaf Forest	9%	39%	22%	51%	49%	Dry Broadleaf Forest	24%	60%	34%	60%	55%	Pine Forest	NA	89%	100%	NA	304%	Agricultural Tree Crops	NA	1271%	60%	139%	139%	Mangroves	NA	NA	NA	NA	NA	Forest type	1984-2000*	2001-2005	2006-2015	2016-2018	2019-2021	Wet Broadleaf Forest	11%	10%	8%	8%	8%	Dry Broadleaf Forest	16%	14%	12%	12%	12%	Pine Forest	21%	19%	17%	16%	16%	Agricultural Tree Crops	18%	17%	16%	15%	15%	Mangroves	184%	184%	139%	139%	115%
Forest type	Estimation error of Deforested Areas 2019-2021 (TF-OT) Total Biomass emissions	Estimation error of Permanent Forest areas 2021 (TF-TF)																																																																																									
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Mangroves	NA	NA	NA	NA	NA																																																																																						
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Mangroves	184%	184%	139%	139%	115%																																																																																						
Any comment:	Activity data estimate for reference and monitoring periods is based on land-use tracking from 2000 to 2024. The activity data includes two data sets: i. Reference Level consists of three subperiods 2000-2005, 2005-2015, and 2015-2018; ii. Monitoring Periods consist of tree subperiods, 2018-2021, 2021-2023 and 2023-2024. The 2018 measurement is common to both activity data sets (Reference Level and Monitoring Periods), 2018 was reassessed in the monitoring period. Once the visual assessment was completed, the 2018 land-use of 985 points (13% of the 7,697 sampling points in the systematic grid), were not consistent between the two data sets. The																																																																																										

	availability of new high-resolution images in the 2022 measurement improved the interpretation of land use in the Monitoring Period dataset. The updated 2018 measurement affected the transitions and land-use assessments made in the Reference Period dataset. Therefore, it was necessary to revise the land-use interpretations and the transitions of the 985 inconsistent points in the two data sets (2000-2018 and 2018-2024).

Parameter:	$\text{Deg}(j, i)_{\text{MP}}$:
Description:	$\text{Deg}(j, i)_{\text{MP}}$: Area converted from forest with canopy cover j to forest with canopy cover i during the Monitoring Period, in hectares per year. Equation 9.3.
Data unit:	Hectares
Source of data or description of the method for developing the data including the spatial level of the data (local, regional, national, international):	Spatial level of data: National Sources of data: Sampling-based estimates and associated uncertainties were used to calculate the activity data. Forest cover annual maps were used as reference information to determine the canopy cover categories for each sampling point. Methods: Annual activity data for degradation and carbon enhancement in permanent forest were derived from the systematic sampling procedure (7,697 Permanent Sampling Units) and Forest Cover (FC) annual maps. Activity data estimate was made by applying the good practices and procedures identified by Olofsson et al. (2014)⁶², GFOI (2016)⁶³ and GFOI (2021)⁶⁴. The Dominican Republic MRV team prepared a Standard Operation Procedure for the sample-based REDD+ activity data estimation⁶⁵. FC maps provide a more robust determination of Canopy Cover than high-resolution imagery interpretation. Therefore, forest cover and its probability were extracted from FC maps for each sampling point located in a permanent forest in the systematic grid to assign the canopy cover class 30-60%, 60-85%, and >85% for the later analysis of canopy cover change. One pixel was assigned to a canopy cover class if the probability of having a canopy cover above the threshold C was higher than 90%. Tree-canopy cover was estimated through an automatic learning algorithm based on a model f of remotely sensed variables X in any location l, $\hat{C}_l = f(X; \hat{\beta}) + \varepsilon$. $\hat{C}_l$ is the percentage of a pixel (l)'s area covered by trees; β is a set of empirically estimated parameters; ε is residual error or uncertainty; and X is a set of measurements of surface reflectance, derived indices (NDVI, NDWI,

⁶² Olofsson, P., Foody, G. M., Herold, M., Stehman, S. V., Woodcock, C. E., & Wulder, M. A. (2014). Good practices for estimating area and assessing accuracy of land change. *Remote Sensing of Environment*, 148, 42–57.

<https://doi.org/10.1016/j.rse.2014.02.015>

⁶³ GFOI. (2016). Integración de las observaciones por teledetección y terrestres para estimar las emisiones y absorciones de gases de efecto invernadero en los bosques. *Métodos y orientación de la Iniciativa Mundial de Observación de los Bosques* (Edición 2.). Roma: Organización de las Naciones Unidas para la Alimentación y la Agricultura.

⁶⁴ GFOI. (2021). Issues and good practices in sample-based area estimation.

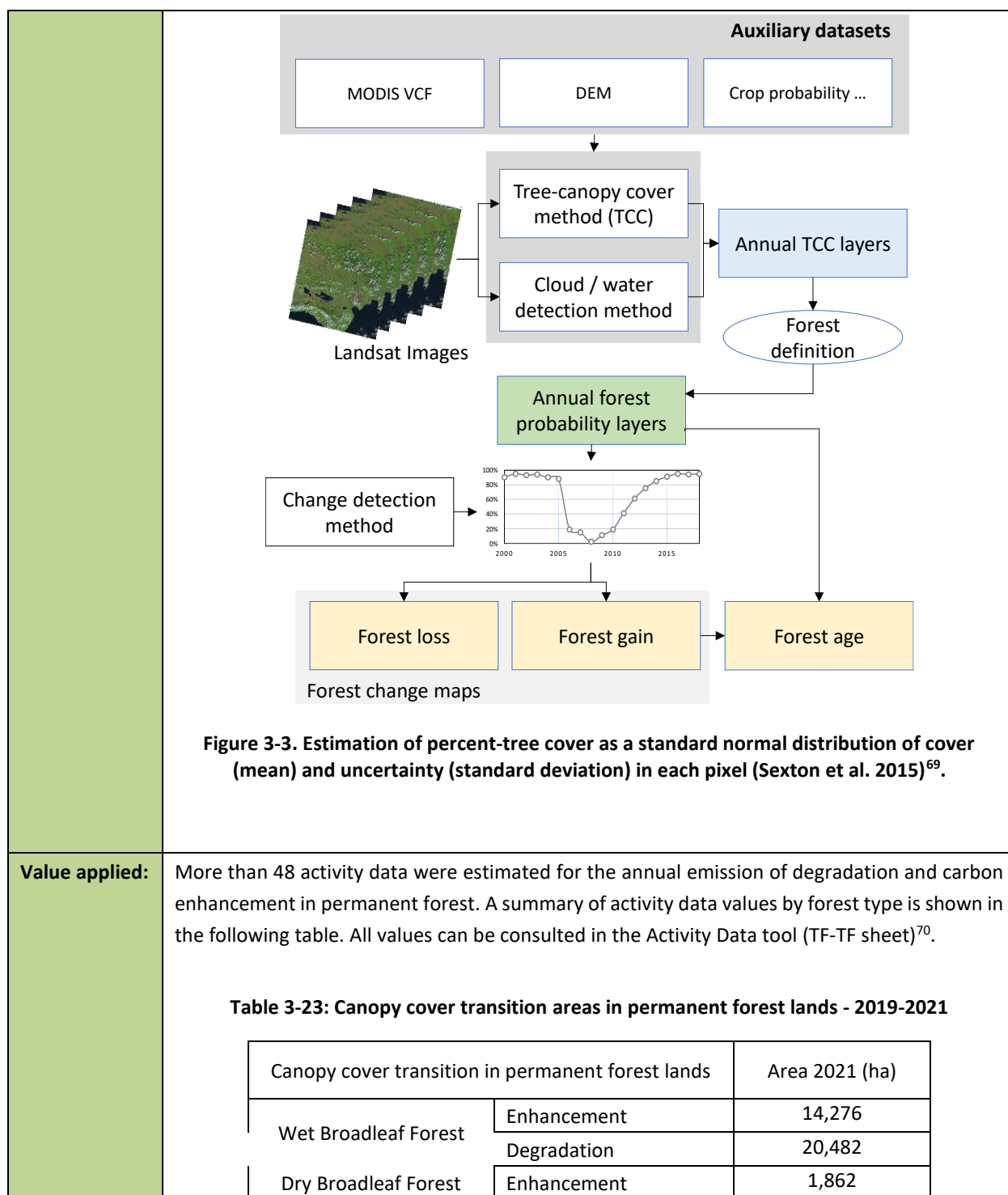
⁶⁵ MIMARENA, 2019. Revisión de la propuesta de Protocolo de Evaluación Visual multitemporal para la obtención de datos de referencia para la estimación de la incertidumbre de los datos de actividad para el proceso REDD+. Programa Regional REDD+. GIZ. 26 p. <https://app.box.com/s/l7f9k83zf5ssgutwtkc7w8a0hex834x8>

	and MNDWI) and metadata describing acquisition and sensor characteristics (Sexton et al.2013)⁶⁶. This algorithm was applied to the stack of Landsat images available for each year, to prepare the Dominican Republic annual canopy cover wall-to-wall raster maps from 1984 to 2021, with 30*30 m resolution; each pixel has a canopy cover value and the probability estimate. Additionally, multiple high-resolution data sources such as Meta tree height data and NASA's GEDI data were combined to produce high-quality tree cover reference data. The process includes data collection, preprocessing, and standardization, resulting in a robust and comprehensive dataset. This integration addresses issues like uneven satellite observations, noise, and data gaps by employing temporal interpolation, noise-resistant algorithms, and data gap-filling techniques. These methods ensure a seamless time series for accurate forest monitoring in tree cover data production. Further information on the preparation methods of canopy cover maps is detailed in Consultancy Report^{67, 68}.

⁶⁶ Sexton, JO, X-P Song, M Feng, P Noojipady, A Anand, C Huang, D-H Kim, KM Collins, S Channan, C DiMiceli & JR Townshend. 2013a. Global, 30-m resolution continuous fields of tree cover: Landsat-based rescaling of MODIS continuous fields and lidar-based estimates of error. International Journal of Digital Earth 6: 427-448

⁶⁷ terraPulse, 2018. Estimation of Activity Data on Deforestation, Forest Degradation and Enhancement of Forest Carbon Stocks of Dominican Republic using Annual Time Series Analysis of Landsat data. Technical Document. 12 p. <https://app.box.com/s/Oi7wl8wss4l40mjl3299gfwpo4i7djoz>

⁶⁸ terraPulse, 2025. DR tree cover methodology improvements. <https://app.box.com/s/c2tyvr6fdfflybyhnwn9ui3c28xglfan>



⁶⁹ Sexton, JO, P Noojipady, A Anand, X-P Song, C Huang, SM McMahon, M Feng, S Channan & JR Townshend. 2015. A model for the propagation of uncertainty from continuous estimates of tree cover to categorical forest cover and change. Remote Sensing of Environment 156: 418-425

⁷⁰ DatosDeActividad-PM.xlsx tool can be accessed at the following link:

<https://app.box.com/s/xmkk4o87uuj8ohlinzzu5wp7xe5gdc8g>

	Pine Forest	Degradation	621
		Enhancement	12,414
	Agricultural Tree Crops	Degradation	3,724
		Native forest	-
	Native forest	Agricultural Tree Crops	-
	Mangroves	Enhancement	1,241
		Degradation	-
QA/QC procedures applied	Permanent forest areas estimate: The same QA/QC procedures for deforestation and regeneration were applied to the estimate of degradation activity data. In this case, QA/QC procedures were focused on the interpretation of permanent forest areas. FC maps and forest datasets: TerraPulse implemented the following QA/QC procedures for the preparation of FC maps⁷¹: Image selection: Landsat 5, 7 and 8 Collection-2 level 1 images acquired between 1984 and 2021 were selected to provide time-series satellite multi-spectral representation of forest activity. The repeat cycle for each for each Landsat satellite is 16 days. The number of available Landsat images per WRS-2 tile for each year ranges from 22 to 66, where the data density increases with overlap in data acquisition between two satellites. For this project a total of 3008 scenes were used, which amounts to about 1.9 terabytes of data volume. The images to provide time-series satellite representation of forest were selected according to the following criteria: • A maximum of four Landsat images within the growing season of each year were selected. • The criteria for scene selection included cloud condition, sensor types, and season to minimize the effects of cloud contamination, forest phenology variation, and Landsat sensor quality (such as age of sensor and SLC-OFF issues). • Landsat images with more than 80% cloud cover and images acquired during the leaf-off season were excluded from the selection as well. A score was calculated for each Landsat image to represent the suitability for estimating tree cover. Several metrics were considered in the calculation, including 1) percent of cloud cover 2) $100 * (Dt - D0/183)$, where Dt and D0 are the image acquisition date and July 1 of the year on Julian day, and 3) sensor type: where sensors were ranked based on their age and sensor issues based on the time window. 100 for OLI images, 50 for ETM+ images before 2004 and 10 for ETM images after 2004 (due to the SLC-off issues), and 30 for TM images.		

⁷¹ Terrapulse, 2022. Appendix IV: Quality Assessment for TCC and forest datasets. In Technical Document: Estimation of Activity Data on Deforestation, Forest Degradation and Enhancement of Forest Carbon Stocks of Dominican Republic using Annual Time Series Analysis of Landsat data. 19p. <https://app.box.com/s/hubmaeleboslxwuldev3gv5941dzcrbg>

	• The four images with the highest scores were selected as the final image set for a year. Up to 148 images could be selected for a WRS-2 tile for the entire Landsat record to ensure complete temporal coverage. Image composite: After the scene selection step is completed, data is processed to TCC. Once TCC per Landsat tile is generated, a per-pixel compositing rule is applied to mosaic Landsat images with overlapping area for the country. This results in the most inclusive sample set, increasing the likeliness of filtering out anomalous estimates, such as contamination by residual clouds, SLC-OFF issues etc. The TCC estimates belonging to a year were then aggregated to produce the final annual estimate at each pixel for a given year, where the median operator was used to select the final pixel estimate from the selected TCC estimate group, and per pixel RMSE was calculated from the group to measure the uncertainty of the TCC estimate for the year. Visual Assessment: After the completion of TCC mosaicking, the next step entails processing of time serial forest cover and change estimates using the globally calibrated TCC estimates. The globally calibrated TCC and forest activity assessment were then put on terraView (https://www.terrapulse.com/terraView/dr/) for the local partners at DR to visually assess the data for glaring and large-scale issues. No issues were reported and TCC did not need to be calibrated based on the validation exercise. The final TCC and post processed forest change datasets were visualized in an interactive map interface for assessment and were also validated using DR provided land cover maps. The high-resolution satellite images were also loaded into the interface as a reference during the examination. Although the high- resolution satellite map may not provide the exact representation of the forest at a given point in time of the evaluated TCC or forest changes, it could still provide the knowledge that is valuable for understanding the general pattern and distribution of forests in the region. Scene boundaries and large errors in the TCC process or forest change detection processes could be picked up by the visual examination by evaluating the spatial and temporal consistency as well as the consistency with the reference map. Additionally, internally the team at terraPulse used a time-series NDVI profile for selected regions to understand the phenological dynamics of the forests and forest activity.
Uncertainty associated with this parameter:	The canopy cover change category determination uncertainty for each sampling plot in the systematic grid was calculated at 6% for degradation and canopy cover recovery classes⁷². This uncertainty was calculated by the bootstrap method, with 1000 simulations based on the bias estimate. The bias of the canopy cover in Forest Cover maps is 4.34%, with a standard deviation of 61.691. Tree canopy cover reference data collected by the Dominican Republic team was overlaid with coincident terraPulse tree canopy cover estimates. The reference data from the terraPulse estimates were subtracted to calculate the bias of each terraPulse data point. The scipy open-source python package (https://scipy.org) was used to fit a Normal distribution of the terraPulse bias using Maximum Likelihood to estimate the mean and variance parameters.

⁷² The Excel tool used to estimate the canopy cover change category determination uncertainty by the bootstrap method can be accessed at the following link: <https://app.box.com/s/ex2otzvkk4u32armla8rory8as9iu7ti>

	The sampling error of estimating the areas of the canopy cover class change was also calculated (table below). Both uncertainties are included in the propagation error of the reference emission level.																															
	Table 3-24: Sampling error of canopy cover transition areas in permanent forest lands -2019-2021																															
	<table><tr><th colspan="2">Canopy cover transition in permanent forest lands</th><th>Area 2006-2015 (ha)</th></tr><tr><td rowspan="2">Wet Broadleaf Forest</td><td>Enhancement</td><td>43%</td></tr><tr><td>Degradation</td><td>35%</td></tr><tr><td rowspan="2">Dry Broadleaf Forest</td><td>Enhancement</td><td>184%</td></tr><tr><td>Degradation</td><td>1271%</td></tr><tr><td rowspan="2">Pine Forest</td><td>Enhancement</td><td>47%</td></tr><tr><td>Degradation</td><td>100%</td></tr><tr><td>Agricultural Tree Crops</td><td>Native forest</td><td>NA</td></tr><tr><td>Native forest</td><td>Agricultural Tree Crops</td><td>NA</td></tr><tr><td rowspan="2">Mangroves</td><td>Enhancement</td><td>304%</td></tr><tr><td>Degradation</td><td>NA</td></tr></table>			Canopy cover transition in permanent forest lands		Area 2006-2015 (ha)	Wet Broadleaf Forest	Enhancement	43%	Degradation	35%	Dry Broadleaf Forest	Enhancement	184%	Degradation	1271%	Pine Forest	Enhancement	47%	Degradation	100%	Agricultural Tree Crops	Native forest	NA	Native forest	Agricultural Tree Crops	NA	Mangroves	Enhancement	304%	Degradation	NA
Canopy cover transition in permanent forest lands		Area 2006-2015 (ha)																														
Wet Broadleaf Forest	Enhancement	43%																														
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Agricultural Tree Crops	Native forest	NA																														
Native forest	Agricultural Tree Crops	NA																														
Mangroves	Enhancement	304%																														
	Degradation	NA																														
Any comment:	There are no comments.																															

4 QUANTIFICATION OF EMISSION REDUCTIONS

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

The following table shows the Reference Level for the ER Program for the Reporting Period covered in this report. This Reference level was technically corrected according to the Technical and Methodological proposal submitted by the Dominican Republic responding to the conditions pointed out in resolution CFM/20/2019/5. A pro-rata's factor was applied to adjust the Emission Reductions presented in this Monitoring Reporting. The Reporting Period starts on March 1st and ends on December 31st, 2021; therefore, the pro-rata's factor is 0.84.

Year of Monitoring t	Average annual historical emissions from deforestation over the Reference Period (tCO _{2-e} /yr)	If applicable, average annual historical emissions from forest degradation over the Reference Period (tCO _{2-e} /yr)	If applicable, enhanced removals from afforestation/reforestation (AR) (tCO _{2-e} /yr)	If applicable, enhanced removals from other activities besides A/R (tCO _{2-e} /yr)	Adjustment, if applicable (tCO _{2-e} /yr)	Reference level (tCO _{2-e} /yr)
2021	2,703,708	745,945	-1,840,160	-595,042	0	1,014,451
Total	2,703,708	745,945	-1,840,160	-595,042		1,014,451

Technical Corrections applied to the Reference Level.

The provisional inclusion of the Dominican Republic's Emission Reductions Program Document (ER-PD) into the portfolio of both Tranche A and Tranche B of the Carbon Fund was deemed approved upon fulfillment of the submission of a document to the Facility Management Team (FMT) detailing any proposed additional technical corrections to be made to the Reference Level before the first verification. In September 2019, the Dominican Republic presented a technical and methodological proposal responding to the conditions pointed out in resolution CFM/20/2019/5⁷³. The Technical Corrections Proposal addressed the following improvements:

1. Biennial data on deforestation of primary and secondary forest, degradation, restoration, deforestation, all data on a pixel basis wall-to-wall.
2. Monitoring and emission factors of soil organic carbon using a considerably improved methodological approach, especially given the significance of soil carbon in mangroves; and
3. Estimation of separate emission factors for the secondary and primary forest.

In response to the comments of the Chair summary report, a stepwise approach was used to update the reference level for the period 2006-2015. The technical corrections applied to the original Reference Level have been made following this technical and methodological proposal. All the technical modifications are in line with paragraph 2 of the "Guideline on the application of the methodological framework Number 2: Technical corrections to GHG emissions and removals reported in the reference period". Technical corrections do not compromise the consistency of GHG emissions and removals estimates between the Reference Period and monitoring periods, as both calculations apply the improvements. None of the improvements relate to a change in policy and design decisions

⁷³ The Technical and Methodological Proposal Responding to the Conditions Pointed out in Resolution CFM/20/2019/5 can be accessed at the following link:

https://www.forestcarbonpartnership.org/system/files/documents/DR_Technical%20note%20Responding%20to%20the%20Conditions%20Pointed%20out%20in%20Resolution%20CFM2020195.pdf

affecting the Reference Level. Carbon pools and gases, GHG sources, reference period, forest definition, REDD+ activities, Accounting Areas, forest types remain unchanged.

Activity data on deforestation of primary and secondary forests and restoration: Corrections to historical activity data result from the use of reference data of higher spatial and temporal resolution than the one used at the time of submission of the final ER-PD. The methods used to estimate activity data are aligned with IPCC and GFOI guidance and guidelines.

Before deciding on using sampling-based estimates, deforestation and regeneration activity data based on pixel-based wall-to-wall was assessed. It was evaluated the option of using activity data calculated from the geographic comparison of biennial Forest Cover (FC) maps produced by TerraPulse for the Dominican Republic. TerraPulse developed biennial satellite-derived (FC) maps applying data extraction and automatic learning algorithms to large volumes of satellite images to monitor deforestation, reforestation, degradation, and forest recovery.

Based on biennial FC maps, a land-use change map was prepared for the Reference Period 2005 to 2015. This map was validated following Olofsson's (2014) guidelines⁷⁴. A systematic grid of 7,697 sampling points (2.5*2.5 km) was used to obtain reference data for the validation process. The land-use change map includes the following categories: Lakes and other water bodies (CUERPOSAGUA), Forest land remaining as forest since 2001 (B2001), Non-Forest converted to forest lands (BSEC), Forest land converted to non-forest lands (DEFOB2001), Secondary Forest converted to non-forest lands (DEFOBSEC), and Non-Forest lands remaining as non-forest lands (NOBOSQUE).

All estimates of Land-use transitions and stable classes based on TerraPulse data fell outside the confidence intervals of the sampling-based estimates. According to the land-use change validation (see Table 4.1), deforestation and regeneration activity data based on pixel-based wall-to-wall maps present significant bias. The bias is above 47% for all land-use transitions except for permanent forests (B2001). Therefore, option 3 of the Technical and Methodological Proposal responding to the conditions in Resolution CFM/20/2019/5 was used to estimate stable land-use classes and land-use transitions.

Only sampling-based estimates and associated uncertainties were used to calculate the activity data. Annual activity data for deforestation and forest regeneration were derived from the sampling procedure (7,697 sampling grid), where years of transitions were recorded for each point.

Table A4.1: Validation of the land-use change map 2006-2015.

Category of land-use change for the period 2006-2015	code	Number of samples	Producers' accuracy	Users' accuracy	Map pixel count area (ha)	Sampling random estimate (ha)	90% Confidence interval (ha)	Map area fall inside CI	Bias
Lakes and other bodies of water	CUERPOSAGUA	113	0.88	0.85	72,130	70,834	10,881	Yes	1.80%
Forest land remaining as forest since 2001	B2001	2759	0.68	0.73	1,639,993	1,729,469	43,378	No	-5.46%
Non-Forest converted to forest lands	BSEC	406	0.36	0.14	642,975	254,500	20,222	No	60.42%
Forest land converted to non-forest	DEFOB2001	160	0.26	0.06	460,947	100,295	12,907	No	78.24%
Secondary Forest converted to non-forest lands	DEFOBSEC	3	0.67	0.01	204,890	1,881	1,786	No	99.08%
Non-Forest lands remaining as non-forest lands	NOBOSQUE	4253	0.59	0.86	1,802,019	2,665,977	44,972	No	-47.94%

Forest degradation activity data: Activity data used to calculate emissions and removals due to degradation and canopy recovery in forest remaining forests were also determined with sampling-based estimates (7,697 systematic grid). Canopy cover category maps for 2005 and 2015 were prepared, including three classes: 30-60%, 60-85%, and >85%. Canopy cover change map 2006-2015 was prepared from terraPulse FC maps considering only pixels with

⁷⁴ Olofsson, P., Foody, G. M., Herold, M., Stehman, S. V., Woodcock, C. E., & Wulder, M. A. (2014). Good practices for estimating area and assessing accuracy of land change. *Remote Sensing of Environment*, 148, 42–57. <https://doi.org/10.1016/j.rse.2014.02.015>

canopy cover probability of 90% or above. Both maps were geographically compared to obtain the canopy cover change map 2005-2015, including the following classes: i. Lakes and other bodies of water, ii. Stable Forest, iii. Forest with degraded canopy cover, iv. Forest with canopy cover recovery and v. non-Forest lands and Secondary Forest.

Table A4.2 compares the pixel count area of the canopy cover change map with the random sampling estimate based on 2,083 sampling points reference data. Reference data were based on the interpretation of high-resolution imagery. The canopy cover change map overestimates canopy cover transitions (more than 52% bias). However, the Stable Forest bias is 14%.

Considering that data based on pixel-based wall-to-wall could overestimate activity data, sampling-based estimates were used to determine degradation and canopy recovery (using 7,697 systematic grid). Also, considering that FC maps provide a more robust determination of Canopy Cover than high-resolution imagery interpretation, forest cover and its probability were extracted from FC maps for each sampling point located in a permanent forest in the systematic grid. This information made it possible to assign each point the canopy cover class 30-60%, 60-85%, and >85% for the later analysis of canopy cover change.

Table A4.2. Validation of the canopy cover change map 2006-2015.

Category of canopy cover change for the period 2006-2015	code	Number of samples	Producers' accuracy	Users' accuracy	Map pixel count area (ha)	Sampling random estimate (ha)	90% Confidence interval (ha)	Map area fall inside CI	Bias
Lakes and other bodies of water	CUERPOSAGUA	9	0.78	0.78	71,824.50	21,238.81	11,620.27	No	70%
Stable forest	ESTABLE	355	0.42	0.46	733,270.41	837,753.05	66,484.40	No	-14%
Forest with degraded canopy cover	DEGRADADO	40	0.15	0.06	249,131.97	94,394.71	24,310.27	No	62%
Forest with canopy cover recovery	RECUPERACION	97	0.24	0.12	477,467.91	228,907.17	37,314.42	No	52%
Non-forest lands and Secondary Forest	NOBOSQUEYRE GENERACION	1542	0.82	0.91	3,289,515.03	3,638,916.08	75,488.44	No	-11%

Revised methodological approach for estimating the annual stock change of Soil Organic Carbon (SOC): The annual change in the SOC pool estimate was technically corrected. The updated SOC pool change calculation is now based on Equation 2.25 from the 2006 IPCC Guidelines, Volume 4, Chapter 2. SOC emissions associated with deforestation now include the land-use changes occurring in the Reference Period and the emissions resulting from land-use changes in previous years ("legacy emissions"). Full implementation of this approach was possible since a long time series of deforestation activity data was available based on 1984-2021 annual FC maps that let going back at least 20 years before the start of the Reference Period to estimate legacy emissions correctly.

It was assumed that the Soil Organic Carbon stock change during the transition to a new equilibrium SOC occurs linearly over 20 years. The Land Units represent yearly classes from the land-use change analysis used in setting the reference level. Also, Land Units maintain the same forest types as those used in the land-use change analysis provided in the ER-PD.

Additionally, new SOC values (before and after forest transition) were collected to replace the original estimates sourced from National Forest Inventory. The soil organic carbon pool estimates in the NFI of the Dominican Republic presented errors and methodological limitations. NFI soil samples were collected from the upper 15 cm of soil. However, the soil organic carbon stock was calculated from the upper 30 cm. Generally, the SOC decreases with sampling depth. Also, the gravel content was ignored during the SOC pool calculation. Rock fragments do not have organic carbon, and the coarse stone percentage is sometimes very high. Calculate SOC at 30 cm using soil values taken at 15cm, and without considering the coarse volumetric ratio, overestimate the pool of SOC and, consequently, the deforestation emission factor.

To avoid the overestimation of SOC, two hundred sixty paired plots were established (130 in forest lands and 130 in non-forest use) to measure Soil Organic Carbon before and after deforestation, comparing the SOC between pairs by type of vegetation. Inventory plots were evenly distributed in landscape units according to soil type and land use. The soil was sampled at 15 cm and 30 cm depth in paired plots established for each landscape unit. Soil organic

carbon stock (SOCS) was computed as the product of three variables, organic carbon content (SOC), bulk density (BD), and stoniness (S). Soil organic carbon stock (SOCS) was calculated with the following equation:

$$SOCS_i = SOC_i \times BD_i \times D(1 - S_i) \quad \text{Equation A4.1}$$

Where SOC is the soil organic carbon concentration percentage ($\text{g } 100\text{g}^{-1}$), BD is bulk density (g cm^{-3}), D is the thickness of the layer (30 cm), and S is the proportion of the volumetric coarse fragments fraction (g g^{-1}).

Finally, SOC stocks were compared between paired plots (forest cover and non-forest land-use) to estimate the carbon stock change for each transition. The exchange rate of SOC was also calculated, considering the time elapsed from deforestation based on the land-use history of the plot determined by interviewing the landowner and, where possible, validated with time-series satellite imagery.

Estimation of separate emission factors for the secondary and permanent forest:

TerraPulse developed annual forest cover maps based on the canopy cover and probability of change in forest cover from one year to another. This information offers long-term and consistent mapping and monitoring of forest cover. It allows the retrieval of historical reference scenarios from the satellite records and the detection of deforestation, degradation, and growth over time. Based on FC maps, a forest cover change analysis was prepared considering only pixels with > 90% probability of having a forest cover higher than 30%, 60% and 85%. Subsequently, forest degradation classes and secondary forest cohorts were mapped into four categories: i. Intact Forest (>85% crown cover), ii. Degraded Forest (60-85% crown cover), iii. Highly degraded forest (30-60% crown cover) and Secondary Forest.

All forest inventory plots in forest and tree-shaded crops were classified into four categories based on terraPulse data. By forest type and degradation class, carbon content was directly derived from the biomass sampling plots database (average and 90%CI; see table below). The mean annual increment of secondary forest and tree-shaded crops (tC/ha/yr.) was estimated by dividing standing biomass by the age determined from the forest cover change maps. In secondary forest types additional forest plots were inventoried. A series of 32 secondary sampling units were inventoried in 2021, and age was determined from different sources: interviews and satellite information and secondary data. The standing biomass of these plots was divided by age to estimate mean annual increment rates (tC/ha/yr.).

Table 4-1. Total forest biomass and non-forest land uses.

Land uses			Total Biomass (AGB+BGB+L+DW) tC*ha^{-1}	n
Permanent Forest	Pine	Intact forest	69.79 ± 9.2	13
		Degraded forest	62.42 ± 11.07	25
		Very degraded forest	54.19 ± 15.46	7
	Dry Broadleaf Forest	Intact forest	43.43 ± 7.85	6
		Degraded forest	38.86 ± 10.52	7
		Very degraded forest	34.28 ± 7	24
	Wet Broadleaf Forest	Intact forest	83.02 ± 30.76	15
		Degraded forest	64.93 ± 8.58	105
		Very degraded forest	48.02 ± 10.94	62
	Agricultural tree crops		64.93 ± 10.32	58
Secondary Forest	Pine	4-22yr	37.97 ± 23.15	9
		22-44yr	57.49 ± 14.33	14
	Dry Broadleaf Forest	4-22yr	27.62 ± 7	19
		22-44yr	30.2 ± 4.81	33

Wet Broadleaf Forest	4-22yr	25.04 ± 4.24	39
	22-44yr	47.59 ± 8.69	59
495			

4.2 Estimation of emissions by sources and removals by sinks included in the ER Program's scope

The Emission Reduction Calculation is made with the Equation 1. The quantification of emissions and removals during the Reporting Period was done following the measurement and monitoring procedures described in section 2.2.1-Figure 2-2, the equations described in section 2.2.2 of this Monitoring Report and applying the approaches to determine activity data and emission, or removal factors included in the data and parameter tables on section 3 above. Table 2.2 describes the set of tools developed by the Dominican Republic to estimate emissions and removal from deforestation, degradation, and forest regeneration. The set of tools for emission and removal estimation can be accessed at the following link:

<https://app.box.com/s/vwwmn6vhrd3z591q5li7gt8ar65736r2>

Emission reduction calculation ($ER_{ERP,t}$)

$$ER_{ERP,t} = (RL_t - GHG_t) \times \frac{44}{12} \quad \text{Equation 10}$$

Where:

$ER_{ERP,t}$	=	Emission Reductions under the ER Program in year t; tCO ₂ e*year ⁻¹ .
RL_t	=	Net emissions of the RL from over the Reference Period; tCO ₂ e*year ⁻¹ . This is sourced from Annex 4 to the ER Monitoring Report and equations are provided below.
GHG_t	=	Monitored net emissions at year t; tCO ₂ e*year ⁻¹ ;
$\frac{44}{12}$	=	Conversion of C to CO ₂

Emissions by sources and removals by sinks from the ER Program during the Monitoring Period.

Year of Monitoring Period	Emissions from deforestation (tCO ₂ -e/yr)	If applicable, emissions from forest degradation (tCO ₂ -e/yr)*	If applicable, enhanced removals from afforestation/reforestation (AR) (tCO ₂ -e/yr)	If applicable, enhanced removals from other activities besides A/R (tCO ₂ -e/yr)	Net emissions and removals (tCO ₂ -e/yr)
2021	1,796,239	1,401,051	-2,287,467	-1,362,085	-452,262
Total	1,796,239	1,401,051	-2,287,467	-1,362,085	-452,262

4.3 Calculation of emission reductions

The Reporting Period does not coincide with the Monitoring Period. Monitoring period starts January 1st and ends December 31st, 2021. The Monitoring Period starts March 1st and ends December 31st, 2021. A pro-rata allocation was needed by multiplying the net ERs during the Monitoring Period by the ratio of the Length of the Reporting Period and the Length of the Monitoring Period.

	Deforestation	If applicable, forest degradation	If applicable, enhanced removals from afforestation/ reforestation (A/R)	If applicable, enhanced removals from other activities besides A/R	Total (tCO _{2-e})
Emission or removals in the Reference Level (tCO _{2-e})	2,703,708	745,945	-1,840,160	-595,042	1,014,451
Emissions or removals under the ER Program during the Monitoring Period (tCO _{2-e})	1,796,239	1,401,051	-2,287,467	-1,362,085	-452,262
Emission Reductions during the Monitoring Period (tCO _{2-e})	907,469	-655,106	447,307	767,043	1,466,713
Length of the Reporting period / Length of the Monitoring Period (# days/# days)	For 2021: 0.83835616				
Emission Reductions during the Reporting Period (tCO _{2-e})	760,782	-549,212	375,002	643,055	1,229,627

* ENREDD+ includes a set of mitigation and adaptation measures that will contribute to reducing deforestation and forest degradation and promote the productivity of the forest sector. The REDD+ Program is expected to become the first step towards implementing ENREDD+. REDD Program activities are based on three strategic pillars comprising 22 strategic actions:

- a) Strengthening the legal and institutional framework and enforcement of the law for the conservation of natural heritage and the sustainable use of natural resources.
- b) Establishing, strengthening, and applying public policies to limit and/or contain the expansion of the agricultural and cattle ranching frontiers and infrastructure into forest areas.
- c) Promoting natural resource management models that contribute to sustainable and productive uses, including the growth of local and small and medium forest enterprises and the conservation of forests.

Pillars a) and b) include strategic actions to control forest degradation. Specifically, pillar a) groups activities targeting collaboration with institutions to improve the existing legal frameworks to prevent forest degradation. Actions grouped in component c) will promote sustainable forest conservation.

5 UNCERTAINTY OF THE ESTIMATE OF EMISSION REDUCTIONS

A Pro-rata factor was applied to estimate the volume of ERs for the Reporting Period. The pro-rata factor corresponds to the fraction of the year 2021 between March 1st and December 31st. The uncertainty of the estimate of emission reductions for the Reporting Period and Monitoring Period are very similar (112% for Reporting Period and 112% Monitoring Period).

5.1 Identification, assessment and addressing sources of uncertainty

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

Source of uncertainty	Systematic	Random	Analysis of contribution to overall uncertainty	Contribution to overall uncertainty (High / Low)	Addressed through QA/QC?	Residual uncertainty estimate
Activity Data						
Measurement	✓	✓	Land-use photo-interpretation: Land-use visual assessment uncertainty is associated with the photo-interpretation consistency and the quality of the imagery dataset used for the assessment. Bias in the photo-interpretation of land use was mitigated by employing criteria standardization and decision trees for visual evaluation of high- and low-resolution images. Before each monitoring event, training exercises were carried	High	Yes	No

Source of uncertainty	Systematic	Random	Analysis of contribution to overall uncertainty	Contribution to overall uncertainty (High / Low)	Addressed through QA/QC?	Residual uncertainty estimate
			out using common samples until satisfactory consistency is achieved to reduce variability between photo interpreters. During the land-use visual interpretation process, a specialist with extensive experience supervised the work of the analysts. The supervisor reviewed monthly deliveries of photo-interpreted points. This review focused on identifying and correcting errors and checking transition consistency and the years of change registered. According to QA/QC procedures, the minimum level of consistency between the analysts and the supervisor should be 90% on land-use interpretation. Regarding imagery quality, Planet images on Collect Earth Online (http://collect.earth/) provided 100% availability of high-res cloud-free images for all sampling points on the systematic grid.			
Measurement	✓	✓	Canopy cover determination: Canopy Cover was extracted from Tree Canopy Cover maps developed by terraPulse for each sampling point located in the permanent forest class in the systematic grid. TCC maps were used to mitigate the potential errors in canopy cover determination due to analyst interpretation bias or lack of hi-res imagery in the sampling plot. The uncertainty determination of the total sampling point assigned to each canopy cover change class was made with the bootstrap method, with 1000 simulations based on the bias estimate ⁷⁵ . The bias of the canopy cover in Forest Cover maps is 4.34%, with a standard deviation of 61.691. Tree canopy cover reference data collected by the Dominican Republic team was overlaid with coincident terraPulse tree canopy cover estimates. The reference data from the terraPulse estimates were subtracted to calculate the bias of each terraPulse data point to estimate the bias. The scipy open-source python package (https://scipy.org) was used to fit a normal distribution of the terraPulse bias using Maximum Likelihood to estimate the mean and variance parameters.	Low	Yes	Yes
Representativeness	✓	✓	Sampling-based estimates and associated uncertainties were used to calculate the activity data. Annual activity data for deforestation, degradation, and forest regeneration were derived from the systematic sampling procedure (7,697 Permanent Sampling Units) to ensure the representativeness of the activity data estimate.	Low	Yes	No
Sampling		✓	The density of the systematic grid was estimated from the analysis of 474 systematic sampling points collected by Ovalles (2018) ⁷⁶ . According to this analysis, with a sample size of 1942, it is possible to achieve a standard error of global precision of $S(\hat{\theta}) = 0.01$. However, DIARENA established a 2.5 x 2.5 km grid with 7,697 sampling points to reduce the standard error in uncommon transitions.	High	Yes	Yes
Extrapolation	✓		Annual activity data for deforestation, degradation, and forest regeneration were derived from the systematic sampling procedure (7,697 Permanent Sampling Units). Activity Data were estimated with no stratification. No extrapolation of the AD estimate was necessary.	NA	NA	NA

⁷⁵ The Excel tool used to estimate the canopy cover change category determination uncertainty by the bootstrap method can be accessed at the following link: <https://app.box.com/s/ex2otzvkk4u32armla8rory8as9iu7tj>

⁷⁶ Ovalles, P. (2018). Elaboración de mapa de Uso y Cobertura del Suelo 2015. Análisis de Cambios y Mapa de Deforestación en la República Dominicana. Informe Final. Santo Domingo, República Dominicana.

Source of uncertainty	Systematic	Random	Analysis of contribution to overall uncertainty	Contribution to overall uncertainty (High / Low)	Addressed through QA/QC?	Residual uncertainty estimate
Approach 3	✓		Permanent Sample Units (PSU) of one hectare (100 x 100 meters) with a single evaluation point corresponding to the plot centroid was used for the land-use visual assessment. PSUs ensured the temporal tracking of land use . Land-use assessments were made for 2000, 2005, 2015, 2018 and 2021. The land-use class was interpreted with context and recorded for the individual pixel or point for t1 and t2. Using the land-use type at t1 and t2, the change class was determined for the pixel or point. Using single point Land-use change class information, areas of change were calculated for the population. Interpreters also collected the transition year in the PSUs with a land-use change registered between assessments.	Low	Yes	No
Emission Factor						
DBH measurement	✓	✓	Three sources of data were used to estimate total biomass in each of the land uses and the emission factors in the land-use change categories: a. The National Forest Inventory (NFI) ⁷⁷ , b Assessment of Biomass and Carbon Content in Non-Forest Cover in the Dominican Republic" (ISNB) ⁷⁸ , and c. Collection of information required for the technical correction of the Forest Reference Level of the Dominican Republic, 2006-2015 (Technical Correction Inventory) ⁷⁹ . The three inventories were compiled using the same methodology, sampling unit, and nested plots in order to determine carbon density for each component recognized as a sink. Each carbon pool is estimated using the database at the tree level, taking the area of the sampling units into account. NFI: The MMARN's Forest Monitoring Unit (UMF) developed a Field Manual ⁸⁰ and QA/QC ⁸¹ procedures to reduce non-sampling errors. Since the beginning of the planning phase, courses on basic forest inventory techniques were given to 68 forestry technicians, half of them MMARN officials and the other half personnel who work outside the Ministry. Then, three-day training workshops were held on INF-RD Field Manual, with the participation of 97 technicians selected. Subsequently, the crews responsible for the field survey were designated and received rigorous training in the Field Manual and the Quality Control Manual. ISNB: The MMARN's Forest Monitoring Unit (UMF) developed a Field Manual ⁸² to reduce non-sampling errors. The crew members for the fieldwork received training for implementing inventory methodology and QA/QC procedures. The inventory methodology was explained, and field practices were carried out, including	Low	Yes	No
H measurement	✓	✓		High	Yes	No
Plot delineation	✓	✓		Low	Yes	No

⁷⁷ Ministry of the Environment. 2015. Inventario nacional forestal de la República Dominicana: Measure and assess forests in order to understand their diversity, composition, volume and biomass. Field Manual. Forest Monitoring Unit. REDD7CCAD-GIZ. Regional Project 48 pages

⁷⁸ Ministry of the Environment. 2017. Assessment of the biomass and carbon content in non-forest systems in the Dominican Republic. Field Manual. Forestry Monitoring Unit REDD+ Preparation Project. 54 pages

⁷⁹ Núñez, J.A.; Milla, F.; Navarrete, E. and Duarte, F. 2021. Collection of information required for the technical correction of the Forest Reference Level of the Dominican Republic, 2006-2015. LUKINVESTMENT SRL. Final Report.

<https://app.box.com/s/xfy8dkfil8c20gikcup3yf9846fifyt6>

⁸⁰ MMARN-GIZ. 2014. Manual de Campo del Inventario Nacional Forestal de la República Dominicana. Unidad de Monitoreo Forestal. Programa REDD CCAD GIZ. Santo Domingo, R.D. 61p. <https://app.box.com/s/e0if1lb49wpbd2981f9iwwvo2gvbf0av>

⁸¹ MMARN-GIZ. 2018. Protocolo para el control de calidad del Inventario Nacional Forestal de Republica Dominicana 2018. Unidad de Monitoreo Forestal y Unidad de Gestión del Proyecto de Preparación REDD+ de la República Dominicana. 9p.

<https://app.box.com/s/b9uoly8bnp5n4b8xivhtv2ob3z2gslub>

⁸² MMARN, 2017. Manual de Campo: Evaluación del contenido de biomasa y carbono en sistemas de No Bosque en la Republica Dominicana. Unidad de Monitoreo Forestal. Proyecto de Preparación de REDD+. 54p.

<https://app.box.com/s/056lacpm9rwyw2uh7a0aqz4a5yye9ol4>

Source of uncertainty	Systematic	Random	Analysis of contribution to overall uncertainty	Contribution to overall uncertainty (High / Low)	Addressed through QA/QC?	Residual uncertainty estimate
			measurements and sampling exercises. During this training, the crew leaders were confirmed according to their abilities and capacities. Technical Correction Inventory: The quality control procedures during the implementation of the survey of the 32 additional plots have been made following the NFI's Field Manual and QA/QC procedures prepared by the Ministry of Environment and Natural Resources. The Forest Monitoring Unit of the Ministry has formed a quality control brigade that applied the QA/QC procedures in these additional plots; Likewise, the MMARN QA/QC team and fieldwork crews were trained. Both teams worked together for two days, putting the inventory QA/QC protocol into practice.			
Wood density estimation	✓	✓	Wood density was obtained from the literature, mainly from Chave et al. (2006) ⁸³ . Gender or family values were used for not-found species (genus/species). For species unknown or not found at any taxonomic level, all found species average density was used.	High	No	No
Biomass allometric model	✓	✓	There are no specific allometric equations for broadleaf forests in the Dominican Republic. Above-ground biomass (AGB) calculations are carried out using the allometric equations of Chave et al. (2014) ⁸⁴ in the three inventories. For pine trees, a local allometric equation is used. Allometric equations developed in Nicaragua and Costa Rica are used for coffee, cocoa, coconut, mango, avocado, and guava. None of the non-local allometric equations are validated. The uncertainty of allometric equations was not propagated in the MC analysis. It is pending the propagation of this error in the MC simulation, increasing the sampling uncertainty of AGB and BGB by 10% at a 90% confidence level using the quadrature approach.	High	No	No
Sampling		✓	Sampling plots were randomly located. A total of 573 plots were collected, with estimations of the above-ground biomass (AGB), dead material (DM), and litter (L). This sample size allowed robust estimates of carbon densities for the different forest types (permanent and secondary) and non-forest land uses.	Low	Yes	Yes
Other parameters (e.g. Carbon Fraction, root- to-shoot ratios)			The Cairns et al. (1997) ⁸⁵ equation is used to quantify below-ground biomass roots. In all inventories, the factor that is used to convert biomass to carbon content is the IPCC's default value (0.47).	High	Yes	No
Representativeness	✓		Based on Canopy Cover maps, a forest cover change analysis was prepared considering only pixels with > 90% probability of having a forest cover higher than 30%, 60%, and 85%. Subsequently, forest degradation classes and secondary forest cohorts were mapped into four categories: i. Intact Forest (>85% crown cover), ii. Degraded forest (60-85% crown cover), iii. Highly degraded forest (30-60% crown cover) and iv. Secondary Forest. All forest inventory plots in forest and tree-shaded crops were classified into these four categories based on terraPulse data. By forest type and degradation class, carbon content was directly derived from the biomass sampling plots database (average and 90%CI) to ensure the representativeness of carbon density estimates. Also, the mean annual carbon change in secondary forest and tree-shaded crops (tC/ha/yr.) was estimated by dividing the carbon change between non-forest and secondary forest land	Low	Yes	No

⁸³ Chave, J. 2006. Medición de densidad de madera en árboles tropicales. Proyectos Pan Amazonía - RAINFOR. 7 pp.

⁸⁴ Chave, J., Réjou-Méchain, M., Búrquez, A., Chidumayo, E., Colgan, M. S., Delitti, W. B. C., ... Vieilledent, G. (2014). Improved allometric models to estimate the aboveground biomass of tropical trees. *Global Change Biology*, 20(10), 3177–3190. <https://doi.org/10.1111/gcb.12629>

⁸⁵ Cairns, M. A., Brown, S., Helmer, E. H., Baumgardner, G. A., Cairns, M. A., Brown, S., ... Baumgardner, G. A. (1997). Root Biomass Allocation in the World's Upland Forests. *Oecologia*, 111(1), 1–11. <http://doi.org/10.1007/s004420050201>

Source of uncertainty	Systematic	Random	Analysis of contribution to overall uncertainty	Contribution to overall uncertainty (High / Low)	Addressed through QA/QC?	Residual uncertainty estimate
			use by the time elapsed to reach the maximum biomass of the secondary forest type determined from the forest cover change maps.			
Integration						
Model	✓		Control Mechanisms of material errors have been included in emission and removal calculations tools; i.e., sums of sampling points by forest type coincide with sample size ensuring no double counting in the sample-based activity data estimate.	Low	Yes	No
Integration	✓		Activity Data and Emission Factors are fully comparable. Carbon densities have been estimated according to the forest types (permanent and secondary), and non-forest land uses interpreted in the visual assessment of hi-res imagery and Forest Cover maps.	Low	Yes	No

5.2 Uncertainty of the estimate of Emission Reductions

Parameters and assumptions used in the Monte Carlo method

Dominican Republic ER Program applied Monte Carlo methods (IPCC Approach 2) for quantifying the Uncertainty of the Emission Reductions. Because the MC propagation analysis includes more than 700 parameter values, it has been provided access to uncertainty and emission factor calculation tools to see all parameter values used in the analysis. The sources of uncertainty propagated in the Monte Carlo (MC) analysis are provided in the following Table.

Parameter included in the model	Parameter values	Error sources quantified in the model (e.g. measurement error, model error, etc.)	Probability distribution function	Assumptions
Permanent Forest's Degradation and carbon Enhancement Activity Data	Twenty-one values for the Reference Period and 16 activity data for the Monitoring Period were included in MC analysis. See all values in the Uncertainty calculation tool ⁸⁶ , "Deforestacion y Degradacion" Sheet – (Reference Period cells M11..O58, Monitoring Period cells Y11..AC58)	The error of Tree Canopy Cover change classes (estimated with the bootstrapping method) ⁸⁷ and Sampling Error of activity data estimate was included in Monte Carlo error propagation.	Normal	Truncated Normal distribution (values > 0) was assumed for sample-based activity data estimate and the bias of Tree Canopy Cover maps.
Deforestation Activity Data	Thirty values for the Reference Period and 6 activity data for the Monitoring Period were included in MC analysis. See all values in	Standard error of activity data estimate	Normal	Truncated Normal distribution (values > 0) was assumed for sample-based

⁸⁶ Uncertainty calculation tool can be accessed at the following link:
<https://app.box.com/s/6p2srq5eq6zpbugtboxc3ckcz4d857e2>

⁸⁷ Error of Tree Canopy Cover change classes estimation tool can be accessed at the following link:
<https://app.box.com/s/jdrs1h7quvi4ay1rauug1hg2wyvo2wvi>

Parameter included in the model	Parameter values	Error sources quantified in the model (e.g. measurement error, model error, etc.)	Probability distribution function	Assumptions
	the Uncertainty calculation tool “Deforestacion y Degradacion” Sheet – (Reference Period cells M59..O122, Monitoring Period cells Y59..AC122)			activity data estimate
Activity Data for estimating SOC emissions associated with deforestation	The MC analysis included 167 Deforestation SOC Activity Data values and 4 values of Permanent Forest areas estimate. See all values in the Uncertainty calculation tool “EmisionesHeredadasSOC” Sheet – (Wet BL forest cells A23..E64; Dry BL forest cells A169..E210; Pine forest cells A315..E356; Tree-shaded crops cells A461..E502)	Standard error of activity data estimate	Normal	Truncated Normal distribution (values > 0) was assumed for sample-based activity data estimate
Activity Data for estimating inherited removals	The MC analysis included 442 Activity Data values for estimating inherited removals. See all values in the Uncertainty calculation tool “RemocionesHeredadas” Sheet – (Wet BL forest cells A25..Q62; Dry BL forest cells A78..Q115; Pine forest cells A131..Q167; Tree-shaded crops cells A184..Q220; Mangroves A237..Q274)	Standard error of activity data estimate	Normal	Truncated Normal distribution (values > 0) was assumed for sample-based activity data estimate
Deforestation and Degradation Emission Factors	The MC analysis included 21 Carbon density values for forest types (secondary and permanent) and non-forest land uses categories considered in emission estimate. See all values in the Uncertainty calculation tool “FactoresEmision” Sheet – (cells E6..E26)	90% Confidence Interval of Carbon density estimate.	Normal	Truncated Normal distribution (values > 0) was assumed for all carbon density estimates.
Soil Organic Carbon Linear decreasing rate	The MC analysis included 4 SOC Linear decreasing rate values. See all values in the SOC Emission Factor calculation tool ⁸⁸ “SOCEF” Sheet cells J7..J10.	Estimate error calculated combining uncertainty of SOC content before and after land-use transition with IPCC’s Approach 1 equation 3.2.	Normal	Truncated Normal distribution (values > 0) was assumed for SOC linear decreasing rate estimates.

⁸⁸The SOC Emission Factor calculation tool can be accessed at the following link:
<https://app.box.com/s/5zcy6gmb7nv9lk8h9og823pcw1g783nd>

Parameter included in the model	Parameter values	Error sources quantified in the model (e.g. measurement error, model error, etc.)	Probability distribution function	Assumptions
Removal factors	The MC analysis included 8 Removal factors. See all values in the Carbon Densities calculation tool ⁸⁹ “CarbonDensities” Sheet cells G45..G62.	Estimate error calculated combining uncertainties of non-forest land use and secondary forest carbon density with IPCC’s Approach 1 equation 3.2.	Normal	Truncated Normal distribution (values > 0) was assumed for Removal factors estimates.

Quantification of the uncertainty of the estimate of Emission Reductions

		Reporting Period		Crediting Period	
		Total Emission Reductions*	Forest degradation**	Total Emission Reductions*	Forest degradation**
A	Median	1,239,931	NA	1,036,107	NA
B	Upper bound 90% CI (Percentile 0.95)	2,624,903	NA	2,193,412	NA
C	Lower bound 90% CI (Percentile 0.05)	-143,093	NA	-119,571	NA
D	Half Width Confidence Interval at 90% (B – C / 2)	1,383,998	NA	1,156,492	NA
E	Relative margin (D / A)	112%	-	112%	-
F	Uncertainty discount	15%	-	15%	-

*Forest degradation is included in the ER estimate. ** Forest degradation has not been estimated using proxy data.

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

The uncertainty of the estimation of each REDD activity included in the forest carbon accounting and monitoring period of the RE Program was calculated (Tables 5-1 and 5-2). The sensitivity analysis has been made at the REDD activity level due to the large number of parameters involved in the estimation of emission reductions and technical limitations for processing them with an MC analysis in Excel. The following tables show activities' contribution to the Emissions Reduction's uncertainty from net emissions. Likewise, the contribution of each activity is calculated separately for the ER from Emissions and ER from Removals (Table 5-3).

All REDD Activities estimates of emissions and removals present high uncertainties. This situation could be associated with the number of forest types included in the calculation. AD of uncommon transitions gives a very high estimation error. Permanent forest (TF-TF) carbon flow estimate showed the higher values for reference and monitoring period (TF-TF from 48% to 61%). Emission from deforestation and reforestation carbon removals present the lower values (15%-38%).

Emission from deforestation and reforestation carbon removals present the highest contributions to the global uncertainty. Sensitivity analysis results for ER from net emission are not consistent with uncertainties observed in emission and removals estimates. For this reason, a separate analysis of sensitivity was performed for RE from

⁸⁹ The Carbon densities calculation tool can be accessed at the following link:
<https://app.box.com/s/x4dhc9gynotu4rwmn82mulysneivrhy>

emission and RE from removals. The most significant contributor to the uncertainty of the ER of emissions is Forest Degradation (32% - ER TF-TF_E), and ER from reforestation is for RE from removals (76% RE OT-TF).

Table 5-1: Uncertainty of the estimation of each REDD activity included in the ER-Program forest carbon accounting for the Reference Period

t C*year ⁻¹	Emissions from deforestation (TF-OT_PR)	Emissions from degradation on permanent forest land (TF-TF_E_PR)	Removals for canopy recovery on permanent forest land (TF-TF_R_PR)	SOC emission from deforestation (TF-OT SOC_PR)	Reforestation removals (OT-TF_PR)	FREL / FRL
Median	388,179	255,154	-217,099	356,523	-490,445	296,845
Upper bound 90% CI (Percentile 0.95)	499,541	443,380	-100,742	503,290	-413,635	505,669
Lower bound 90% CI (Percentile 0.05)	287,857	111,349	-373,415	218,094	-570,447	92,395
Half Width Confidence Interval at 90%	105,842	166,015	136,337	142,598	78,406	206,637
Relative margin	27%	65%	63%	40%	16%	70%

Table 5-2: Uncertainty of the estimation of each REDD activity included in the ER-Program forest carbon accounting for the Monitoring Period

t C*year ⁻¹	Emissions from deforestation (TF-OT_2021)	Emissions from degradation on permanent forest land (TF-TF_E_2021)	Removals for canopy recovery on permanent forest land (TF-TF_R_2021)	SOC emission from deforestation (TF-OT SOC_2021)	Reforestation removals (OT-TF_2021)	Net Emissions (2021)
Median	490,650	482,745	-482,780	87,572	-631,764	-42,912
Upper bound 90% CI (Percentile 0.95)	682,416	952,198	-204,426	110,215	-548,781	325,142
Lower bound 90% CI (Percentile 0.05)	330,709	170,068	-879,355	66,567	-718,340	-391,134
Half Width Confidence Interval at 90%	175,853	391,065	337,464	21,824	84,780	358,138
Relative margin	36%	81%	70%	25%	13%	835%

Table 5-3: REDD Activities contribution to the Emission Reduction's global uncertainty of Monitoring Period

	REDD Activity	Parameters excluded from randomization	Median	Upper bound 90% CI (Percentile 0.95)	Lower bound 90% CI (Percentile 0.05)	Half Width Confidence Interval at 90%	Relative margin	Contribution
Net Emissions	RE 2021	No parameter was excluded	2,238,180	6,309,605	-1,526,932	3,918,268	175%	
	RE TF-OT	AD and EF	343,380	689,426	-10,425	349,925	102%	42%
	RE TF-TF_E	AD, EF, and Canopy cover	346,200	722,220	46,914	337,653	98%	44%
	RE TF-TF_R	AD, EF, and Canopy cover	338,747	643,517	-50,048	346,782	102%	42%
	RE TF-OT SOC	AD, SOC linear decreasing rate	338,370	686,118	-23,147	354,632	105%	40%

	RE OT-TF	AD and Annual change in carbon stock in land converted to forest	339,254	710,818	-31,776	371,297	109%	37%
Emissions	RE Emissions	No parameter was excluded	-68,688	230,210	-442,781	336,495	490%	0%
	RE TF-OT	AD and EF	-62,276	196,152	-411,008	303,580	487%	0%
	RE TF-TF_E	AD, EF, and Canopy cover	-62,350	143,498	-274,249	208,873	335%	32%
	RE TF-OT SOC	AD, SOC linear decreasing rate	-65,494	187,259	-418,450	302,854	462%	6%
Removals	RE Removals	No parameter was excluded	403,113	714,123	199,454	257,334	64%	
	RE TF-TF_R	AD, EF, and Canopy cover	406,809	469,712	344,195	62,758	15%	76%
	RE OT-TF	AD and Annual change in carbon stock in land converted to forest	409,899	559,780	269,524	145,128	35%	45%

6 TRANSFER OF TITLE TO ERS

6.1 Ability to transfer title

This section explains the legal considerations related to the ability of the Program Entity to transfer title to Emission Reduction (ERs). Transfer of title of ERs will be demonstrated through the following institutional arrangements and legal instruments:

- i. **Letter on the Capacity of the RD to Transfer Titles of ERs** and to sign the ERPA. This document establishes the legal considerations related to the ownership of the ERs and the institutional capacity and competence to transfer them to the FCPF. This letter was signed on May 29th, 2020 (see <https://app.box.com/s/m4gy02m1ym9xcin7vo31hv3ifjzn2py>). The Bank accepted this letter, together with other evidence provided to demonstrate fulfilment of the Conditions of Effectiveness of Sale and Purchase (COEs).
- ii. **Joint Declaration that reaffirms the competence of the National Institutions for the transfer of ERs**, dated November 5th, 2019, based on the national legal and regulatory framework that grants the institutional capacity to the Program Entity to sign the ERPA (Treasury). It also confirms the authority of the Ministry of the Environment and Natural Resources (MMARN) as the entity in charge of transferring the ERs Titles to the FCPF and formalizing the assignment and transfer contracts of these titles with the beneficiaries through the Executing Entities and Programs participating in the REDD+ Program (see <https://app.box.com/s/he1ire3kxfgju1lv0jy37gdm38pqmuid>).
- iii. **Assignment Acts / ER Ownership Transfer Agreements Templates to transfer ERs titles** from the beneficiaries and groups of beneficiaries to the corresponding Executing Entity (see <https://app.box.com/s/kaajb96gh7igf6z9jois5xyvxl313b3>) and from the Executing Entity of the ER Program to MMARN. MMARN, in turn, will make the transfer to the FCPF (See <https://app.box.com/s/v8xj5dlyg3a0lhmais93h9a5588yiba4>). To date, and according to this report, RE transfer agreements have been signed with the San Ramón Forestry Association and the Vice Ministry of Protected Areas and Biodiversity.

A "Road Map" has been prepared to determine the deadlines for the signing and formalization of the ER Ownership Transfer Agreements and the enrollment and registration of beneficiaries for the 2021 Reporting Period (see <https://app.box.com/s/qgywjzjlb6lwm773cqis26d79vopbn9>).

During several technical consultation sessions, the potential number of hectares to be intervened under the Emissions Reduction Program (ER Program), based on each type of activity, was developed with each of the Executing Entities, (see https://www.forestcarbonpartnership.org/system/files/documents/dr_government_completion_report_08-09-22.pdf, page 20). Therefore, to achieve the Contract ER Volume of the ERPA, namely a reduction of 5 million tCO₂, a target of 338,934 hectares was established, which were divided proportionally for each Reporting Period. Table 6-1 below determines the potential number of hectares for which ER Ownership Transfer Agreements transferring ER title could be signed under each Reporting Period, to allow the Program Entity to sell the totality of the ERs generated under such Reporting Period.

Table 6-1: Distribution of Ha to be intervened according to each type of activity and Reporting Period for the Dominican Republic's Emissions Reduction Program.

Activity and Executing Entity	Reporting Period			Total
	1 period (Ha)	2 period (Ha)	3 period (Ha)	
Promote natural regeneration and reforestation (Vic. Forest Resources)	13,516.80	32,307.36	16,175.84	62,000.00
Promote and establish silvopastoral systems (DIGEGA/CONALECHE)	6,068.17	14,503.92	7,261.91	27,834.00
Promote and establish coffee agroforestry systems (INDOCAFE y UTEPDA)	2,616.15	6,253.04	3,130.81	12,000.00
Promote and establish cocoa agroforestry systems (Dpto. de Cacao)	3,270.19	7,816.30	3,913.51	15,000.00
Protection of forests in protected areas (Vic. de APs y Biodiversidad)	43,602.57	104,217.30	52,180.13	200,000.00
Sustainable forest management (San Ramon y ASODEFOREST)	3,095.78	7,399.43	3,704.79	14,200.00
Forest protection on livestock farms (DIGEGA/CONALECHE)	1,722.30	4,116.58	2,061.12	7,900.00
Area per period	73,891.97	176,613.93	88,428.10	338,934.00
Cumulative Goal	73,891.97	250,505.90	338,934.00	100%

However, the ER Program has experienced significant challenges identifying and documenting ER ownership . The main challenge is related to the lack of security and formality of land tenure rights and the fact that there are many unregistered properties in the Dominican Republic. Although the Executing Entities of the ER program have specific farmer groups and maintain regular interaction with them, the lack of protocols for the systematization and monitoring of data regarding georeferencing and the status of land tenure, means that the identification of potential beneficiaries and compliance with the criteria and processes for their registration and signature of ER Ownership Transfer Agreements will not be complete for the transfer of the 100% of the ERs on time, with the registry of every activity and all the EEs for the 2021 Reporting Period.

To be able to carry out 100% of ER title transfer corresponding to the current Reporting Period (2021) and considering the issue of land ownership, the Dominican Republic identified that the Executing Entities that have sufficient information and required documentation on the number of hectares and their land ownership status are the Asociación de Silvicultores San Ramón and the Vice Ministry of Protected Areas and Biodiversity. In the first case, the Association has the property titles over their lands, which are community lands owned by the Association and belong to its members, and for this first ERM there are no other individuals or associations that are reporting through this Executing Entity.

For the Vice Ministry of Protected Areas and Biodiversity, the following criteria were used to select the protected areas (PAs) for the transfer of ER title, corresponding to this Reporting Period:

- PAs which have no land title from third parties covering more than 50% of their territory, nor possessors living inside its perimeter. PAs that have legal titles from third parties in more than 50% of their territory, or for which the corresponding process for the legal title clearance of these areas has not yet been completed, will be excluded.
- In the case of PAs with less than 50% with third-party records, only those that do not have human settlements within the state area will be considered.
- Only the area without third-party records within the selected PAs will be considered for the ERs transfer.

- d. The polygons of the areas identified in Table 6-2 below describe the total area of the PAs selected for the first Reporting Period, and the area available for the transfer of ER title from each PA. The available area means the area already cleared that meets the criteria stated above for the ERs transfer.

In addition to these criteria, the Program Entity identified Pas prioritizing those that have a verified status of land tenure. This process has been carried out through a review of the Cartography of the National System of Protected Areas, as well as information provided by the Real Estate Jurisdiction Department of the Legal Directorate of the MENR. This allowed us to cross-check information from the Virtual Office of Cadastral Measurements, cadastral parcel consultation, pre-control of files and the Real Estate Registry of the Dominican Republic. These Protected Areas have been declared and ratified through the Sectoral Law of Protected Areas 202-04.

Table 6-2: Owner type and Ha to transfer the ERs titles for the first Reporting Period

Forest Cover Owner Type	Total ha	Transferred ha (1st period)
Los Cacheos Natural Monument	5,577.00	4,256.98
Arroyo Cano Forestal Reserve	2,390.00	1,888.04
Las Caobas Natual Monument	10,545.00	10,324.35
Sierra de Neiba	18,299.00	18,214.91
Armando Bermúdez National Park	80,254.00	42,392.97
Asociación de Silvicultores San Ramón	3,860.00	1,595.43
TOTAL	120,925	78,672.68

The difference between the total ERs that can be transferred (78,672.68 Ha) and the calculated target (73,891.97 ha) for the 1st Reporting Period may be used for the cumulative goal of the following Reporting Periods.

Considering the above, the following agreements have been signed to date:

- ER Ownership Transfer Agreement from MMARN to the FCPF, dated 12 December 2024, which transfers to the FCPF title over ERs generated in the selected PAs indicated above, in the period between March 1st 2021 to December 31st 2024.
- ER Ownership Transfer Agreement between the Asociacion de Silvicultores San Ramon and MMARN, dated 12 December 2024, which authorizes MMARN to transfer to the FCPF title to ERs generated by the Association in the period between March 1st 2021 to December 31st 2024.

The ER Program is an opportunity to strengthen the different institutions through the REDD+ Program and Projects Data Management System (<https://ambiente.gob.do/sistema-de-registro-de-iniciativas-redd/>). This tool, in addition to promoting training for field technicians and those responsible for planning outreach activities on data collection, will provide useful information for land management and spatial distribution of the beneficiaries of this program and the initiatives of each Executing Entity.

6.2 Implementation and operation of Program and Projects Data Management System

In accordance with criteria 37 and 38 of the FCPF Methodological Framework, the ERP requires a series of arrangements to avoid double accounting, double selling, and multiple claims to an ER Title. Any ERs from REDD+ activities under the ER Program sold and transferred to the Carbon Fund will not be used again by any entity for sale, public relations, compliance, or any other purpose. For this purpose, the Dominican Republic using the Kobotoolbox platform, has decided to implement and maintain its own comprehensive national REDD+ Program and Projects Data Management System, and has implemented a Data Management System -DMS- (a Registry System of REDD+ initiatives at national level).

The Registry System of REDD+ projects and programs (RSPP)⁹⁰ is now operational and can be accessed through the Ministry of Environment website at the following link <https://ambiente.gob.do/sistema-de-registro-de-iniciativas-redd/>. A User Manual⁹¹ has been prepared, and training has been provided to final users of the system⁹².

Each Executing Entity (EE) must create an account which will be then associated with the main REDD+ Initiative Registry account in which all beneficiaries participating in REDD+ activities that may generate emissions reductions through which the CF can provide results-based payments, as well as the areas covered by each and the REDD+ activities carried out in them, and any other information the REDD+ Initiative Registry requires. The REDD+ Initiative Registry will be managed by the REDD+ Coordination Office (OCR Spanish acronym) and it sufficiently robust to avoid double count or over reporting the number of hectares intervened. The detailed procedures to use the Initiative Registry will be incorporated to a user guide and the Operations Manual of Benefit Sharing Plan (MOP).

In addition to the REDD+ Program call (<https://ambiente.gob.do/>) the different Executing Entities will develop the process of disseminating information to potential beneficiaries, in such a manner that stakeholders interested in participating in the REDD+ Program may carry out the process of complying with the legal and administrative requirements to be incorporated. The beneficiaries must be able to demonstrate ownership or possession rights of the lands in which they plan to implement REDD+ activities with the support of EE. Also, they must carry out the REDD+ activities coordinated by the EE programs that will integrate the REDD+ Program.

Lands on which the beneficiaries will develop REDD+ activities must count on mitigation potential in accordance with the type of activity that is planned. In situations in which beneficiaries participate in more than one REDD+ type activity in the same property during the reporting period, such REDD+ type activities must be carried out in different areas of the property. The beneficiary shall voluntarily select the REDD+ type activities and the specific area (with geographic coordinates) of property he/she wishes to register in the REDD+ Program and shall request registration through the corresponding EE. The beneficiary could register up to two REDD+ type activities in different areas within the property through the same or different EEs. The registry has been designed to automatically avoid duplication of areas within a property.

Once the applicant has completed the requirements, and has been deemed eligible, he signs an assignment agreement with the corresponding EE, where he makes the legal transfer of ownership of emissions reduced in their property and receive the corresponding benefits according to the Benefit Sharing Plan (BSP). The EEs will enroll the beneficiary in the Registry of REDD+ Initiative, in accordance with the provisions in the guidelines for participation in the REDD+ Program in Section 3.3.

⁹⁰ A description of the Registry System of REDD+ programs and projects can be found at the following link: <https://app.box.com/s/cicqswk4h2t0x71l2dvbbwr9mmyfdxev> and <https://ambiente.gob.do/sistema-de-registro-de-iniciativas-redd/>

⁹¹ The User Manual of the Registry System of REDD+ projects and programs can be accessed at the following link: <https://app.box.com/s/1xdn00zv7vtqcnsjd77enp9hvr9iwn2>.

⁹² The documentation report on the training workshop can be accessed at the following link: <https://app.box.com/s/ya9f6d1377mpcxp4ziedhtn6vudgqkx3>

Tabla

Informes

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Mapa

ocultar campos

1 - 3 3 resultados	start	Validación	end	Q1	Tipo_Documento	Copia_titulo	1.6 Hta	123 reg_numero_con	Copia_acto	abc Reg_Nombre_Tit	abc Reg_Alias_Titula	Reg_sexo_titular	123 Edad_del_Titular	123 Reg_Telefono_tit
☐	Buscar	Mostrar todo	Buscar	S.RAMON	Mostrar todo		Buscar	Buscar		Buscar	Buscar	Mostrar todo	Buscar	Buscar
☐	25 de feb. de ...	-	15 de mar. de...	S.RAMON	Titulo_propiedad		1303	430018414		Asociación de...		no_aplica		8292929017
☐	25 de feb. de ...	-	15 de mar. de...	S.RAMON	Titulo_propiedad		1085.8	430018414		Asociación de...		no_aplica		8292929017
☐	25 de feb. de ...	-	15 de mar. de...	S.RAMON	Titulo_propiedad		554	430018414		Asociación de...		no_aplica		8292929017

Figure 6-1.: Screenshot of the Registry System. San Ramón record.

ocultar campos

1 - 5 5 resultados	start	Validación	end	Q1	Tipo_Documento	Copia_titulo	1.6 Hta	123 reg_numero_con	Copia_acto	abc Reg_Nombre_Tit	abc Reg_Alias_Titula	Reg_sexo_titular	123 Edad_del_Titular	123 Reg_Telefono_tit
☐	Buscar	Mostrar todo	Buscar	VAP	Mostrar todo		Buscar	Buscar		Buscar	Buscar	Mostrar todo	Buscar	Buscar
☐	20 de feb. de ...	-	7 de mar. de ...	VAP	documento_susten...		10545	422000421		Monumento N...		no_aplica		8065974300
☐	19 de feb. de ...	-	7 de mar. de ...	VAP	Titulo_propiedad		18299	422000421		Viceministerio...	Parque Nacio...	no_aplica		8065974300
☐	20 de feb. de ...	-	7 de mar. de ...	VAP	documento_susten...		2390	422000421		Reserva Fore...		no_aplica		8065974300
☐	19 de feb. de ...	-	7 de mar. de ...	VAP	documento_susten...		5577	422000421		Monumento N...		no_aplica		8065974300
☐	24 de feb. de ...	-	24 de mar. de...	VAP	documento_susten...		80254	422000421		Parque Nacio...		no_aplica		8065974300

Figure 6-2.: Screenshot of the Registry System. Vice Ministry of Protected Areas and Biodiversity record.

6.3 Implementation and operation of ER transaction registry

For the ERs transaction registry in response to indicator 38.1, the Dominican Republic has taken the decision to use the Carbon Asset Tracking System (CATS) developed by the World Bank. This centralized system will track all the transactions under the FCPF ER Program. If the Dominican Republic decides to implement its own national emission reduction transaction system after finishing the ERPA, it must have clear links to the basic information of projects and programs included in the National DMS of REDD+ Programs and Projects; ensuring that ERs are not emitted, sold or claimed by more than one entity. The registration process of REDD + initiatives in the National DMS of REDD+ Programs and Projects that is currently under design, will avoid double counting of initiatives that could be developed in the future, the information will be taken into account when operating the CATS of the World Bank (in the event that there are matching REDD + initiatives in space / time with the FCPF CF ERP).

6.4 ERs transferred to other entities or other schemes

In the country there is a forest carbon mitigation initiative, which has an effect on the El Zorzal Private Reserve and local communities located in the northern mountain range. This initiative functions through the Plan Vivo Standard and was since 2014 in the Plan Vivo pipeline, although its registration is no longer available (<http://www.planvivo.org/project-network/project-pipeline/>). The initiative was established with The Dominican Environmental Consortium (CAD), who has signed a contract to sell carbon bonds with three chocolate companies: Dandelin Chocolate (California), ChocoSol (Toronto) and Blue Vandana (Vermont). These chocolate companies pay an extra 200 dollars per tonne of Zorzal Cocoa produced organically in a sanctuary intended for the conservation of biodiversity, especially the conservation of the habitat of the migratory bird species *Catharus bicknelli*. The payment from the chocolate companies supplies the El Zorzal Fund, which ensures payment to small producers for reforestation of degraded areas, with native or endemic species. The payment to producers is made on the basis of a fixed amount per reforested hectare and compliance with various previously established requirements. Over a period of 20 years, 200 hectares will be reforested.

It is essential to note that this initiative is now called Choco-Carbono and it is not currently registered with any standard for the issuance of carbon titles. This forest carbon mitigation initiative is within the accounting area, as the ERP accounting area is the national territory. However, in the event that a sale occurs of credits originating from the aforementioned initiative with a Carbon Standard, they will be excluded from the accounting of ERs to be submitted to the Forest Carbon Partnership Facility. For this, monitoring will be performed of the formal registration of the initiative in question and the measurement and verification reports. The initiative with Plan Vivo Standard is on a small scale in terms of emission reductions (a total of 200 hectares reforested between 2014 and 2020, to be registered as a reforestation carbon project).

Other mitigation initiatives generated separately from the FCPF will be duly registered in accordance with the explanation in ERPD Chapter 18.2, and any ERs generated by these initiatives will also be excluded from the ERs to be transferred to the Cooperative Fund for Forest Carbon, thereby ensuring that double accounting does not occur with the ER program.

To date, no ERs have been transferred to other entities or other schemes.

7 REVERSALS

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

The FCPF emissions reduction program guidelines for establishing a buffer identify***** several risk factors and foresee an assessment mechanism to determine the Investment Risk ratios for each one. These risk factors are enumerated and assessed in Section 7.3. No reversals occur during this reporting period.

7.2 Quantification of Reversals during the Reporting Period

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

A.	ER Program Reference level for this Reporting Period (tCO ₂ -e)	from section 4.1		
B.	ER Program Reference level for all previous Reporting Periods in the ERPA (tCO ₂ -e).	from section 4.1 of previous ER Monitoring Reports		+
C.	Cumulative Reference Level Emissions for all Reporting Periods [A + B]			
D.	Estimation of emissions by sources and removals by sinks for this Reporting Period (tCO ₂ -e)	from section 4.2		
E.	Estimation of emissions by sources and removals by sinks for all previous Reporting Periods in the ERPA (tCO ₂ -e)	From section 4.2 of previous ER Monitoring Reports		
F.	Cumulative emissions by sources and removals by sinks including the current reporting period (as an aggregate accumulated since			-

***** FCPF ER Program Buffer Guidelines (2015), 22 p. Available at:
<https://www.forestcarbonpartnership.org/sites/fcp/files/2015/December/FCPF%20ER%20Program%20Buffer%20Guidelines.pdf>

	the Crediting Period Start Date) [D + E]		
G.	Cumulative quantity of Total ERs estimated including the current reporting period (as an aggregate of ERs accumulated since the Crediting Period Start Date) [C – F]		
H.	Cumulative quantity of Total ERs estimated for prior reporting periods (as an aggregate of ERs accumulated since the Crediting Period Start Date)	from previous ER Monitoring Reports	–
I.	[G – H], negative number indicates Reversals		
If I. above is negative and reversals have occurred complete the following:			
J.	Cumulative quantity FCPF ERs (as an aggregate of FCPF ERs accumulated since the Crediting Period Start Date)	from previous ER monitoring reports, section 8	
K.	Cumulative ER Program's Pooled Reversal Buffer contributions (as an aggregate of Pooled Reversal Buffer ERs accumulated since the Crediting Period Start Date)	from previous ER monitoring reports, section 8	
L.	Cumulative ER Program's Uncertainty Buffer contributions (as an aggregate of Uncertainty Buffer ERs accumulated since the Crediting Period Start Date)	from previous ER monitoring reports, section 8	
M.	Cumulative ER Program's Pooled Reversal Buffer replenishments (as an aggregate of Reversal	from previous ER monitoring reports, section 7.3	

	Buffer ERs replenished since the Crediting Period Start Date)	
N.	Cumulative amount of FCPF ERs , Uncertainty and Pooled Reversal Buffer contributions and replenishments (as an aggregate since the Crediting Period Start Date) [J + K + L + M]	
O.	Quantity of Buffer ERs to be canceled from the Pooled Reversal Buffer account [If I < N, report the value of I; if I > N, report the value of N]	

7.3 Quantification of pooled reversal buffer replenishments

This section is not applicable because this is the first monitoring report for the first reporting period.

7.4 Reversal risk assessment

Reversal risk set-aside values included in this section are the same submitted in the final Emission Reduction Program Document ***** and updated for the 2021 period.

Risk Factor	Risk indicators	Default Reversal Risk Set-Aside Percentage	Discount	Resulting reversal risk set-aside percentage
Default risk	N/A	10%	N/A	10%
Lack of broad and sustained stakeholder support	The ERP was formulated on the basis of a fact-gathering process, involving participation and consultation, and including all players – whether within or without the forest sector – who are somehow linked to the deterioration and the deforestation occurring in the Dominican Republic. An array of platforms, sectors and social groups were systematically called upon. The consultation process took place on a national level, involving all the key actors, with a special emphasis on local, rural and farming communities. The preparatory notes for setting up a REDD+ strategy were formulated during the first preparatory phase (2010-2013). The workshops that were held during this period were widely attended (182 community representatives, government bodies, manufacturers associations, businessmen, technical experts, and other professionals). The different aspects of the REDD strategy were discussed and collectively defined during this phase: Monitoring, Reporting and Verification (MRV), Causes of deforestation, Legal Framework, Carbon Property and definition of pilot zones. The REDD+ strategy comprises a Gender Component. It is defined in a way as to promote participation. During the second phase of preparation (2014 to now): As part of the REDD + process, the following events took place between 2014 and 2016: ☐ August 2014 R-PP Approval accepted into the readiness fund. March 2015. First SESA National Workshop. ☐ October 2015. Grant Agreement signed and ER-PIN Approved. ☐ June 2016, the Letter of Intent (LOI) was signed. ☐ During 2016, the Technical Management Unit of the project (UTG) was established, the terms of reference were drawn up and the hiring of the required personnel was initiated. The REDD+ Strategic Options and the Emission Reduction Actions were discussed during the creation of the MGAS, wherein environmental and social impacts are identified. Workshops involving key players (309 people) were held as part of the Participation and Consultation plan. Although the restrictions imposed by COVID19 negatively affected the consultation and socialization processes with the different actors of the Reduction of Emissions from Deforestation and Forest Degradation Program (PREDD), the consultation process on the Benefit Sharing Plan (BSP) and its additional criteria was carried out. Key actors from all	10%	10%	0%

***** ER-PD Dominican Republic, date of submission or revision: August 14, 2019, can be accessed at the following link: https://www.forestcarbonpartnership.org/system/files/documents/Version%20ERPD%2014-08-2019%20Uncertainty%20correction-Trend%20in%20Ref%20level_rev.pdf

Risk Factor	Risk indicators	Default Reversal Risk Set-Aside Percentage	Discount	Resulting reversal risk set-aside percentage
	sectors and producers linked to the Program participated, with a total of 471 people consulted, of which 372 (78.9%) were men and 99 (21.1%) women, in 2020. With the limitations still in place, during 2021 it was possible to hold two meetings with the Technical Advisory Committee (TAC) where 40 representatives from different state, academy and civil society institutions were updated on the status of the preparation phase of the program, the commitments to comply with the ERPA, the signing of the inter-institutional agreements and the transfer of RE agreements, and the formation of the National Benefit Sharing Committee (NBSC). At the end of 2021, the TAC approved the roadmap for the NBSC creation, which is the main governance body and where the beneficiaries and executing entities are represented.			
Lack of institutional capacities and/or ineffective vertical/cross sectorial coordination	In accordance with Decree No. 269-15 ***** , article 3a, the integration and coordination of sectorial, regional, local and national policies, starting with the recognition that public policies and all related plans, programs and project need to be designed and managed bearing in mind the need to adapt to climate change. Furthermore, adapting to and mitigating climate change is established as a transversal policy, to be implemented across the entire National Development Strategy 2030, and coordinated with all other transversal policies, particularly environmental sustainability, risk management, territorial cohesion, and gender equality (Art 4a). Resolution No. 034-2019 was issued in 2019, which institutionalizes the mechanism of the United Nations Framework Convention on Climate Change for the reduction of emissions caused by deforestation and forest degradation (REDD+) and establishes the Coordination Office for REDD+ in the Ministry of Environment and Natural Resources. In 2020, Decree 540-20 National System for Measurement, Reporting and Verification of Greenhouse Gases of the Dominican Republic (MRV) was issued, which strengthens coordination between the different sectors. In its article 4 establishes that: The National MRV System has as its fundamental objective the inter-institutional coordination of the different reports that are prepared to make transparent the emissions of greenhouse gases generated at the national level, as well as the establishment of mitigation measures of greenhouse gas emissions and the support and financing received for climate action.	10%	5%	5%
Lack of long term effectiveness in addressing underlying drivers	Recent improvements in Dominican legislation have given environmental issues exposure on a national level and have inspired environmental conservation projects. In addition to the Emissions Reduction Program Actions, the agricultural sector has economic instruments at its disposal that contribute to breaking the connection between economic ventures and deforestation, for example: i. Resolution No. 10-08 issued by the Ministry of the Environment created the Payment for Environmental Services (PSA) program, which purports to set up the National Compensation System for the conservation of woodland or agroforestry systems that protect the soil in water-catchment areas. ii. The "Climate Change National Policy" (PNCC) document, drafted by the Ministry for the Economy, Planning and Development, in collaboration with the Ministry for the Environment, foresees the establishment of a National Carbon and Climate Change Fund (FONCAC). This fund is aimed at financing climate change adaptation activities, including in the farming sector. Such activities include: a) paying small farmers for environmental	5%	5%	0%

***** Dec. No. 269-15 establishing a National Climate Change Policy Repeals Decree No. 278-13. G. O. No. 10813 of 2 October 2015.

Risk Factor	Risk indicators	Default Reversal Risk Set-Aside Percentage	Discount	Resulting reversal risk set-aside percentage
	and ecosystemic services designed to tackle deforestation and protect biodiversity; b) granting rural credits in exchange for compliance with environmental conditions set out in management plans; and c) offering favourable interest rates and guarantees for environmental projects iii. During 2020, Decree 540-20 established the National System for the Measurement, Reporting and Verification (MRV) of Greenhouse Gases of the Dominican Republic, in order to account for greenhouse gas emissions and execute mitigation actions to guarantee financing aimed at promoting climate action. iv) In 2021, Decree No. 627-21 was issued, approving the Regulations of the Forestry Sector Law No. 57-18, which complements the application of this law. v) The National REDD+ 2022-2036 Strategy was prepared, whose objectives are: i) Promote sustainable forest management, ii) Increase the resilience of forest ecosystems against the effects of climate change, iii) Contribute to the improvement of quality of life of the population, through goods and services from forests and agroforestry systems, iv) Reduce greenhouse gas emissions caused by deforestation and forest degradation, and v) Maintain and/or increase carbon stocks in forests and agroforestry systems.			
Exposure and vulnerability to natural disturbances	Due to its geographical location, the country is permanently exposed to hurricanes and heavy rain that seriously damage the vegetation and associated resources. Between 1930 and 2007, the Dominican Republic was very badly affected by 8 high-intensity hurricanes. The 2021 hurricane season was the sixth consecutive season since 2016 where the climatological average for tropical cyclone formation has been exceeded. For the Dominican Republic we were affected by: Hurricanes Elsa and Grace, and Tropical Storm Fred. According to the reports of the Central Bank, by sectors, the most vulnerable to hurricanes, storms and droughts are agriculture, tourism and mining, whose income is equivalent to 14.6% of GDP. "After a climatic event, agricultural production is reduced, the hotel infrastructure is affected and the entry of tourists to the country decreases." The COVID-19 pandemic negatively affected the country. However, during 2021 a growth of 12.3% of GDP was achieved, due to the timely response of the government, as well as an effective vaccination campaign.	5%	0%	5%
		Total reversal risk set-aside percentage		20%
		Total reversal risk set-aside percentage from ER-PD or previous monitoring report (whichever is more recent)		20%

8 EMISSION REDUCTIONS AVAILABLE FOR TRANSFER TO THE CARBON FUND

A.	Emission Reductions during the Reporting period (tCO ₂ -e)	<i>from section 4.3</i>	1,229,627
B.	If applicable, number of Emission Reductions from reducing forest degradation that have been estimated using proxy-based estimation approaches (use zero if not applicable)		
C.	Number of Emission Reductions estimated using measurement approaches (A-B)		1,229,627
D.	Percentage of ERs (A) for which the ability to transfer Title to ERs is clear or uncontested	<i>from section 6.1</i>	100%
E.	ERs sold, assigned or otherwise used by any other entity for sale, public relations, compliance or any other purpose including ERs accounted separately under other GHG accounting schemes or ERs that have been set-aside to meet Reversal management requirements under other GHG accounting schemes	<i>from section 6.4</i>	0
	If applicable, any buffer replenishments	<i>section 7.3 P</i>	n/a
F.	Total ERs [(B+C)*D-E] minus, if applicable, any replenishments as per section 7.3, Q		1,229,627
G.	Conservativeness Factor to reflect the level of uncertainty from non-proxy based approaches associated with the estimation of ERs during the Crediting Period	<i>from section 5.2</i>	15%
H.	Quantity of ERs to be allocated to the Uncertainty Reversal Buffer (0.15*B/A*F)+(G*C/A*F)		184,444
I.	Total reversal risk set-aside percentage applied to the ER program	<i>from section 7.4</i>	20%

J.	Quantity of ERs to be allocated to the Pooled Reversal Buffer (F-H)*I		209,036
K.	Number of FCPF ERs (F- H – J)		836,147
L.	Percentage of Emission reductions from enhanced removals from afforestation/reforestation as a percentage of the total FCPF ERs [Optional if the country wishes to generate enhanced removals]	<i>From section 4.3</i>	0
M	Number of FCPF ERs from enhanced removals from afforestation/reforestation (L * K) [Optional if the country wishes to generate enhanced removals]		0

ANNEX 1: INFORMATION ON THE IMPLEMENTATION OF THE SAFEGUARDS PLANS

The purpose of this annex is to provide evidence on whether the Emissions Reduction (ER) Program has been implemented in a consistent manner with national legislation, institutional guidelines, and procedures identified in the [Environmental and Social Management Framework \(ESMF\)](#) and, therefore, with the World Bank's Operational Safeguard Policies. This document is available on the website of the Ministry of Environment and Natural Resources. The current annex corresponds to the first monitoring period, covering March 1 to December 31, 2021. However, information up to December 2024 is also included in order to provide updated information.

Given the limited availability of systematized and standardized information, added to the delay in the launch of the SIS and applicability of the compliance matrix, the evaluation employed a multi-method approach to reconstruct and verify evidence. Data was collected through extensive desk reviews of institutional documents, annual reports, and memory aids from World Bank missions, complemented by semi-structured interviews and in-person visits to all Executing Entities (EEs). This comprehensive approach ensured triangulation of information across multiple sources, enhancing the robustness and reliability of the findings.

In addition, a systematic review of the national legal framework in the Dominican Republic was undertaken to assess its role in supporting the implementation and compliance of REDD+ social and environmental safeguards. The assessment included a detailed examination of publicly available and government-managed Grievance Redress Mechanism (GRM) systems, such as Line 311 and the Green Line (see sections below for a detailed explanation of these systems), as well as a dedicated walk-through with UTEPDA to directly observe the functionality of their platform. This methodology allowed for the compilation, verification, and analysis of safeguard-related actions, practices, and institutional arrangements across all REDD+ activities.

Overall, despite challenges posed by fragmented documentation and non-standardized reporting systems, the multi-source and methodologically rigorous assessment provides a comprehensive understanding of safeguard implementation during the reporting period. Based on the available data, the review does not identify material non-compliances with safeguards. Moreover, it enables the identification of gaps, lessons learned, and opportunities for strengthening compliance, monitoring, and institutional capacity in future REDD+ cycles.

The ESMF of the Dominican Republic is the operational instrument through which the principles, guidelines, and practical protocols are established to address, prevent, minimize, and manage the adverse environmental and social risks and impacts associated with the implementation of activities, projects, policies, or regulations related to the execution of the National REDD+ Strategy.

In this context, and based on a participatory analysis of the causes of degradation and deforestation, initially five REDD+ Options and 23 Strategic Actions were identified and agreed upon. These options and actions were submitted to the Strategic Environmental and Social Assessment (SESA) process, which identified and prioritized potential impacts, both adverse and positive, as well as corresponding mitigation measures.

Likewise, during the finalization stage of the National REDD+ Strategy, this set of strategic options and actions was enriched through a consultation process conducted between July and August 2020. As a result, a new strategic action aimed at promoting sustainable livelihoods at the local level was incorporated, with the objective of strengthening the role of communities as guardians of natural resources in their territories and turning them into key allies for the effective implementation of the EN-REDD+ strategy.

The ESFM also systematizes the procedures for the implementation and monitoring of all REDD+ type actions, ensuring their alignment with relevant regulatory frameworks, including the World Bank Operational Policies (WB/OP) and the safeguards of the United Nations Framework Convention on Climate Change (UNFCCC).

Mechanisms and tools have been established to monitor and report on the implementation of REDD+ safeguards, as well as to manage results-based payments for performance during the implementation phase, in order to ensure compliance with the commitments made.

The following measures are included to address the risks:

- a) An Integrated Pest Management Plan (IPM); This can be found in Annex 3 of the ESMF: [Integrated Pest and Disease Management Plan \(addressing OP 4.09\)](#)
- b) The Involuntary Resettlement Policy Framework (MRI). This can be found in: [Anex 2 of the ESMF: Involuntary Resettlement Framework/Process Framework, in accordance with the country context and the requirements of WB OP 4.12.](#)
- c) A [Grievance Redress Mechanism \(GRM\)](#) and;
- d) Five Environmental and Social Management Plans (ESMP) for Priority Geographic Areas of Intervention:
 - [Environmental and Social Management Plan – Priority Area 1](#)
 - [Environmental and Social Management Plan - Priority Area 2](#)
 - [Environmental and Social Management Plan - Priority Area 3](#)
 - [Environmental and Social Management Plan - Priority Area 4](#)
 - [Environmental and Social Management Plan - Priority Area 5](#)

A verification tool, on which the Safeguards Information System (SIS) is based, was developed in the form of a [Compliance Matrix for Environmental and Social Management Plans specific to each REDD+ activity](#), consisting of a table in the form of a database. The Matrix details the impacts and mitigation measures of the identified REDD+ types of activities, and a compliance sheet with the indicators to be measured for each type of activity (Table 1) ***** . All activities were carried out during this reporting period, from March 1 to December 31, 2021.

Table 1 Summary of the number of impacts identified and indicators by REDD+ types of activities

Type of activity	Possible impacts identified	Indicators to be measured
1. Sustainable Forest Management (SFM): Activities involving stakeholders aimed at maintaining and/or promoting forest stands in order to reduce emissions from deforestation and degradation, serving as a tool to stabilize the agricultural and livestock frontier while offering productive alternatives to local communities. They include silvicultural operations aimed at increasing the productivity of forest biomass, such as forest harvesting, non-timber harvesting, fire control, integrated pest management, among others.	10	23
2. Reforestation within REDD+ framework: Establishment of forest plantations on land without tree cover, using naturalized, endemic, and/or native species, either by promoting natural regeneration, direct seed sowing, or planting trees reproduced in nurseries.	8	22
3. Agroforestry systems: (SAF Coffee, Cacao) Activities that encourage agroforestry, promoting the use of non-invasive agricultural and forest species to generate increased economic and social benefits for producers, while maintaining forest cover and other ecosystem services, including carbon (CO2) capture. Includes activities such as shade-grown coffee and cacao production, among others.	8	15
4. Silvopastoral systems: Activities aimed at converting livestock farms in full sun to the farming of animals associated with trees and shrubs that provide some type	9	17

During the preparation phase, software was developed that was eventually not useful due to technical difficulties in integrating it into the MMARN technology platform.

of fodder, preferably native and/or endemic, which serve for shade, food, and other uses, while also capturing carbon (CO ₂). The positive effect is aimed at providing productive alternatives to beneficiaries to maintain the forest frontier and prevent the expansion of the agricultural frontier.		
5. Assisted natural regeneration of degraded areas: Preparation and care of land with little or no tree cover, in order to promote the growth or development of natural vegetation with the aim of reestablishing forest systems, whether for conservation or productive purposes.	8	14
6. Conservation of forests in priority protected areas, alongside social stakeholders: Land use activities in protected areas with the participation of key actors and stakeholders living within or in buffer zones, aimed at maintaining forest cover, biodiversity, and ecosystems within these areas. Seeks to harmonize forest conservation and livelihoods, in accordance with the law and regulations on protected areas and in compliance with legal principles relating to user rights, in order to reduce emissions from deforestation and degradation within Protected Areas.	8	22

9 FCPF REQUIREMENTS REGARDING THE MANAGEMENT OF ENVIRONMENTAL AND SOCIAL ASPECTS OF EMISSIONS REDUCTION PROGRAMS

The Constitution of the Dominican Republic guarantees the rights of citizens, establishing in Article 67 that the protection of the environment is a duty of the State. This article states that: *“It is the duty of the State to prevent pollution and to protect and maintain the environment for the benefit of present and future generations.”*

In line with this constitutional mandate, the country has defined specific plans and targets to address climate change, including the [Nacional Development Strategy 2010-2030 \(NDS\)](#), Article 10, which states that sustainable environmental management, adaptation to climate change, and effective and equitable management of risks and natural resources are among its strategic priorities.

Based on this national regulatory framework, the Program for Emissions Reduction from Deforestation and Forest Degradation (PREDD+) was designed to ensure consistency with existing laws and policies, thereby guaranteeing that its implementation does not infringe on citizens' rights.

This design also responds to the country's commitment to international standards, particularly the principles of safeguards established by the United Nations Framework Convention on Climate Change (UNFCCC) and the World Bank's Operational Policies.

In this context, the country conducted a [Strategic Social and Environmental Assessment \(SESA\)](#), which identified and presented environmental and social safeguards that respond to the national reality without compromising its integrity, as well as the designs of the following digital instruments: a [REDD+ Initiative Registration System \(SRI\)](#), with its user manual (final version pending, to be published on the MMARN website on Friday, June 20); and a [Safeguards Information System \(SIS\)](#), with its user manual (final published on the MMARN website on Friday, June 20).

Both systems were launched on the Kobotoolbox platform in August 2024 and developed jointly with the World Bank's Geo-Enabling Initiative for Monitoring and Supervision (GEMS) team. The new systems were linked together in November 2024, and both the **SIS** and **SRI** are being implemented jointly. However, they were not yet operational during the corresponding period, from March 1 to December 31, 2021. By December 2024, 12 training sessions had been held on their use (271 participants, 171 men and 100 women), and the manuals are in the final stages of review and are expected to be ready by June 2025.

This union consists of a computer platform that allows for the presentation of concentrated information and continuous monitoring of compliance with Environmental and Social Safeguards, which will be used to prepare reports on commitments, goals, strategies, and activities previously established within the country's legal framework. To date, the data available on the platform comes from the testing with the Executing Entities.

In 2023, a Safeguards Implementation Report (SIR) format was developed to identify barriers in the EE for monitoring compliance with safeguards, as well as to provide a form to evaluate them.

In addition, in 2024, a dashboard was designed using Power BI, a Microsoft data analysis tool that allows information to be visualized, shared, and transformed into interactive reports and dynamic dashboards. This dashboard, which is expected to be ready in September 2025 for both the SRI and the SIS, will present consolidated information that is easily accessible to the public so that interested parties can review and consult the results of the application of the safeguards. Its operation is reported in the section on [Supervision and reporting requirements](#) of this annex.

Finally, [Grievance and Redress Mechanism \(GRM\)](#), was also developed, approved in 2019 and implemented through the Grievance and Redress System (GRMS), a digital tool designed as an accessible channel for anyone affected by the implementation or results of REDD+ Activities to submit, in writing, any disagreement or possible violation of their rights and integrity, whether as an individual, producer, or citizen.

The GRM applies to the entire national territory and to all actions or activities undertaken with the implementation of REDD+ in the Dominican Republic, with the aim of ensuring the proper management of grievances, complaints, and conflicts arising from that process. This was initially proposed by the Social Participation Directorate of the Ministry of Environment and Natural Resources, which was responsible for managing the **Green Line** and receiving complaints that are currently forwarded to the institution. Due to changes in the structure of the MMARN, the Green Line is now located in the Directorate of Citizen Services and the Environment, with a Department for the Management of Complaints, Reports, Suggestions, and Claims, which in turn houses the Green Line Division. These changes were formalized by [Resolution 0039-2024, dated November 14, 2024](#). An organizational chart of this structure is provided in [section 2.4](#) of this annex.

This arrangement maintains its vital structural characteristics, whereby the MMARN's thematic vice-ministries are responsible for monitoring, evaluating, and controlling complaints and conflicts that arise. As stipulated in the ESMF, the information and products generated by the interactions of this MMARN structure are provided as input to improve REDD+ implementation to the RCO.

The GRM was initially conceived as a single, centralized platform. In practice, during the reporting period, it was a system that encompassed three platforms: the Green Line, with its REDD+ section (2024); Line 311; and the UTEPDA Complaint Handling Mechanism. Due to delays in the availability of the planned software, it was necessary to migrate from the digital platform created during the preparation phase due to incompatibility of the software language with the MMARN development environment. Access for REDD+ has been created, connected to the general [Green line](#) system, with its user manual.

This system is explained in detail in [section 2.4](#) and became operational in January 2024 (it was not operational during the first monitoring period). The Green Line of the Ministry of Environment and Natural Resources has been available to receive grievances, complaints and general inquiries, that is, without differentiation from REDD+, since 2017.

It should be noted that the Green Line continues to have the capacity to collect information directly through the various provincial offices throughout the country, as well as by telephone and via the renewed web platform.

To strengthen this arrangement, corrective actions have been included in the action plan to be implemented during the second half of 2025, including the development of a GRM manual, the design of a protocol for compiling the information collected by the platforms that make up the GRM, and a short user guide for each one.

The Emissions Reduction Payment Agreement (ERPA) contains a set of regulatory measures for program activities implemented in accordance with the ESMF and national legislation. [Section 2.1](#) of this annex focuses on the environmental and social risks and the main mitigation measures identified in the Environmental and Social Compliance Matrix for Projects (Programs, Systems, and Plans) that implement REDD+ Activities.

The REDD+ mechanism safeguards instruments in the Dominican Republic have been evaluated and consulted with stakeholders, and feedback has been integrated into the instruments. The approved versions of the SESA, ESMF, ESMP, SIS, and GRM were published on the [MMARN](#) website and on the external WB website on November 22, 2019. However, due to a maintenance and improvement update to the ministry's website in 2023, the initial [list of publications](#) was moved to a new section of REDD+, which can be accessed [here](#).

In accordance with the impacts identified in the SESA and the World Bank guidelines, the World Bank's applicable Social and Environmental Operational Policies activated in the Dominican Republic for REDD+ include:

- OP 4.01. Environmental Assessment
- OP 4.04. Natural Habitats
- OP 4.36. Forests
- OP 4.09. Pest Management
- OP 4.11. Physical and Cultural Resources
- OP 4.12. Involuntary Resettlement

Due to the particular context and history of the Dominican Republic, there are no indigenous ethnic groups in the country (confirmed by analysis of the legal framework) and, based on the [preliminary assessment of these aspects for the REDD+ project](#), the World Bank has determined that its Operational Policy 4.10 on Indigenous Peoples is not applicable.

Even though they are not provided for in the Common Approach, the following Operational Policies were considered for the development of the ESMF:

- OP 4.20 Gender and Development: to ensure gender and rights perspectives in activities and strategies, the Emissions Reduction Program incorporated a [Gender Action Plan](#), which includes actions to facilitate and promote women's participation and ensure that they are selected as beneficiaries in REDD+ activities.
- OP 4.09 Pest Management: The following activities were incorporated during project preparation and implementation: a) promotion of Integrated Pest Management (IPM) and Good Practices, b) generation and distribution of outreach materials and a guide on the use and management of [pesticides](#) within the REDD+ framework.

10 SUPERVISION AND REPORTING REQUIREMENTS

Entities responsible for implementing safeguard plans have adequate resources to carry out their assigned roles and responsibilities, as defined in the safeguard plans.

10.1.1 1.1 Summarize the key institutional arrangements, such as decision-making procedures, institutional responsibilities, budgets, and monitoring arrangements required under the Safeguard Plans.

Due to the simultaneous development of the REDD+ preparation phase in the Dominican Republic and the signing of the ERPA, for the reporting period corresponding to March 1 to December 31, 2021, the REDD+ coordination and implementation unit was the Technical Management Unit (TMU), which was formed during the readiness phase and continued to operate for the first reporting period of the ERPA until June 2022, when its term ended. The TMU operated under the Climate Change Directorate of the Ministry of Environment and Natural Resources and consisted of an administrative-financial division and a technical support division, including safeguards.

The administrative and financial division had a general project coordinator, a financial specialist, a procurement specialist, an administrative secretary, an administrative assistant, and two drivers, who also provided logistical support.

In the technical support division, the TMU had: a technical coordinator specializing in land use, agriculture, and forests; a forestry and land use technician; a social specialist; a social technician; a capacity building officer; a communications specialist; a legal-interinstitutional coordinator; and a technical document analyst.

By this time, the government of the Dominican Republic had already established robust governance based on the participation of different stakeholders and sectors at various levels interested in implementing the REDD+ Mechanism. Under this arrangement, the Ministry of Environment and Natural Resources (MMARN) is the coordinating entity and oversees the overall implementation of the REDD+ Program through the TMU in 2021 and, after the closure of the preparation phase and the subsequent departure of the TMU in October 2022, through the REDD+ Coordination Office (RCO), which is also the Implementation Unit.

The RCO maintains a constant exchange of information with the focal points and technical experts designated by the EE, which serves to coordinate joint actions for the implementation of the Program.

Under this institutional arrangement, all actions are implemented through Implementing Entities (IE) that carry out REDD+ activities. These were assessed by the MMARN, considering the objectives of the programs and projects, the activities they perform, and their link to the country's REDD+ goals, establishing that they contribute in the short and medium term to the achievement of REDD+ strategic options and actions.

The participation of the EEs was validated by a multidisciplinary team from the Ministry of the Environment and subsequently by the expanded Technical Advisory Committee.

To formalize coordination between the RCO and the EEs, during the period covered by this annex, the Letters of Intent served as the means through which each Implementing Entity (EE) of the Emissions Reduction Program for Deforestation and Forest Degradation in the Dominican Republic assumed the commitments and criteria that allowed for the execution of the strategic options and their respective facilitating actions for the implementation of the EN-REDD+.

To strengthen this partnership, during 2023 and 2024, inter-institutional agreements were signed between each EE and the Ministry of Environment and Natural Resources, ratifying the commitments outlined in the Letters of Intent.

All projects participating in the Program and the REDD+ Strategy must comply with the procedures established in the ESMF and the ESMP, regardless of the source of funding and the implementing agency, whether national or international.

This fundamental structure has not changed since its design in the Environmental and Social Management Framework (ESMF) and is summarized in Table 2 below: Replication of Table 42, page 168, on Institutions and roles for the implementation of the ESMF.

Table 2 Replication of Table 42, page 168 of the ESMF on Institutions and roles for implementation

Entity	Role
REDD+ Steering Committee (SC)	• Senior political leadership • Ensure consistency with the strategic objectives and actions of EN-REDD+. • Ensure national political and institutional processes for the implementation and fulfillment of the ER Program objectives. • Ensure that political processes are exercised in strict compliance with the guidelines and regulations of institutional arrangements.

Technical Advisory Committee (TAC)	• Validate inter-institutional agreements, including those relevant to ESMF and safeguards. • Carry out consultations to ensure transparency and accountability in the implementation of the ER Program. • Validates, if required, instruments developed by the RCO associated with compliance with the OP/WB and other safeguards. • Provide technical support in the preparation of environmental and social material to the Executing Entities that will implement the projects at the local level. • Validates the results of the systematization carried out by the RCO of the periodic evaluations of the specific activities implemented by the Executing Entities, emphasizing the recommendations for all necessary cases that allow compliance with the OP/WB and safeguards. • Validates the systematization of monitoring reports and safeguards, including complaints and claims, which the RCO will carry out for subsequent entry into the Safeguards Information System (SIS) and Safeguards Report, respectively. • Follows up on compliance with inter-institutional agreements established with executing entities for the implementation of the ESMF. • The above functions will be closely related to the work that the RCO will undertake with project and program implementing entities. In this regard, the RCO shall establish permanent coordination and liaison with the TAC in order to verify the correct implementation of the WB/OP.
REDD+ Coordination Office	• Conduct technical, economic, environmental, and social feasibility analyses of the selected projects to implement the types of activities. • Prepare the inter-institutional agreement with the EE, including sections related to compliance with the WB/OP and safeguards. These documents must be submitted to and validated by the TAC. • Prepare an assessment of the institutional capacity of the executing entities to address and comply with the environmental and social safeguards of the REDD+ Strategy. • Provide technical support regarding environmental, social and safeguards matters to the executing entities that will implement the projects at the local level. • Follow up and systematize monitoring and safeguard reports for subsequent entry into the Safeguard Information System (SIS) and Safeguard Report, respectively. This will include periodic assessments of compliance with the WB/OP and other safeguards for specific activities, providing feedback and recommendations for all necessary cases. This will include identifying any regulatory gaps that arise based on

	information generated in the field during implementation and propose amendments or corrections. • Develop inter-institutional agreements with REDD+ project executing entities. • Develop support material for the application of safeguards, such as guidelines and minimum content for each environmental and social management instrument. If necessary, an external call for tenders may be issued for this purpose. • Conduct periodic evaluations of compliance with the WB/OP and other safeguards for projects implemented with the executing entities, providing feedback and recommendations for all necessary cases. This will include identifying, based on information generated in the field during implementation, any regulatory gaps that may arise and propose amendments or corrections. • The above functions will be closely related to the work to be carried out by the executing entities. In this regard, the RCO shall establish permanent coordination with management and technical execution representatives of specific REDD+ actions in order to verify the correct implementation, activity schedules, and budgets to be executed.
Executing Entities	• Responsible for implementing specific REDD+ actions and, therefore, for implementing and complying with ESMF guidelines. • Apply reporting tools for specific activities in accordance with the procedures presented by the RCO for monitoring and systematizing information. • Participate in periodic evaluations coordinated and carried out by the RCO on compliance with the PO/WB and other safeguards of the implemented projects. • Submit monitoring reports in accordance with the guidelines established by the RCO. • Apply the ESMF for the specific activities detailed in the inter-institutional agreement with the RCO. • The above functions will be closely related to the work to be carried out by the RCO, in accordance with the inter-institutional agreements signed.. • Submit monitoring reports in accordance with the guidelines established by the RCO. • Apply the ESMF for specific activities detailed in the inter-institutional agreement with the RCO. • The above functions will be closely related to the work to be carried out by the RCO, in accordance with the inter-institutional agreements signed.

For more details on governance, the core composition of each governance body and its current status are described below:

- The **REDD+ Steering Committee (ST)**, composed of MMARN, the Ministry of Agriculture (MAG) and the Ministry of Economy, Planning and Development (MEPyD)****. The REDD+ Steering Committee provides political and strategic support for the promotion and adoption of the ENREDD+ and the ER Program. Its [regulations](#) are available on the MMARN website.
- The **Technical Advisory Committee (TAC)**, an inter-institutional body composed of different institutions from the public and private sectors and civil society producers. The TAC advises the MMARN Steering Committee and the RCO on technical aspects of REDD+ and monitors the Redd+ process. To this end, three technical subcommittees have been created: a Working Group on Safeguards, a Legal Working Group, and a Working Group on Land Use and Forests, as periodic *ad hoc* working groups. Their [regulations](#) are available on the MMARN website.
- The **REDD+ Coordination Office (RCO)******, affiliated with the Vice Ministry of Climate Change and Sustainability of the MMARN, is responsible for coordinating and implementing the ENREDD+ and REDD+. Its multidisciplinary team provides technical and financial advice, coordinates data collection and analysis, and develops tools and procedures that support Executing Entities (EE) in managing environmental and social risks, in compliance with REDD+ safeguards.

One of the main challenges faced by the program in the country was the overlap of its start in 2021, which coincided with the signing of the Emissions Reduction Payment Agreement (ERPA) while the REDD+ preparation project and the Technical Management Unit were still in the closing phase. This overlap, exacerbated by delays caused by the COVID-19 pandemic, extended the preparation phase to 2022 and limited timely monitoring of the PREDD+ as established in the ESMF.

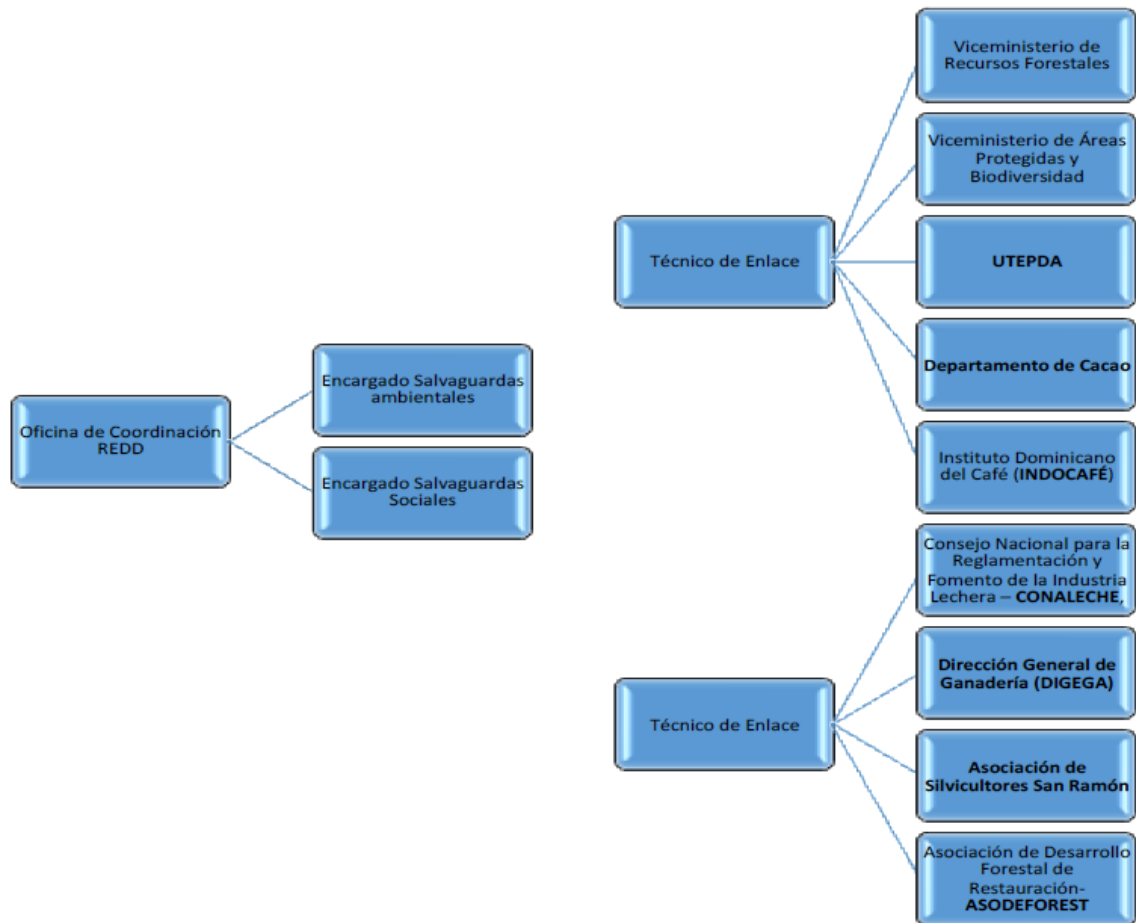
As a result, and adding to the transition from the TMU team to the formation of the RCO, there was initially no technical staff available to monitor PREDD+ operations, including those responsible for ensuring compliance with safeguards. It was not until October 2022 that technical staff were hired, including a Safeguards Officer specializing in social issues, and in March 2023, a Legal Specialist joined the team. Subsequently, in 2024, an environmental technician was hired, thus forming the team responsible for monitoring compliance with environmental and social safeguards. For the reporting period covered by this annex, this function was covered by the TMU, mentioned above, until June 2022, leaving a monitoring period from June to October 2022 during which an ad hoc group comprising the Director of Climate Change and the Head of the Climate Change Mitigation Department of the MMARN were in charge. Therefore, during that period, there was a gap in institutional resources to cover aspects related to safeguards.

According to the ESMF and the BSP, the RCO must have sufficient staff to carry out the liaison and monitoring activities shown in **Figure 1**: Reproduction of Diagram 2 of the Environmental and Social Management Framework on Coordination between the RCO and the EEs. However, the hiring of liaison technicians to support those responsible for safeguards is still pending.

***** On September 16, 2024, President Luis Abinader announced his proposal that the Ministry of Economy, Planning, and Development (MEPyD) merge with the Ministry of Finance, resulting in the Ministry of Finance and Economy, which would require an update to the CD REDD+.

***** The country established the REDD+ Coordination Office operating within the Ministry of Environment and Natural Resources (through Ministerial Resolution No. 034-2019).

Figure 1 Replication of Scheme 2 of the Environmental and Social Management Framework on Coordination between the RCO and the EE



- **The National Benefit Sharing Committee (NBSC)** is responsible for establishing the criteria under which benefit sharing will be allocated, as well as the application of the contingency fund, the implementation, supervision and audit of the Benefit Sharing Plan (BSP) at the national level and reports directly to the REDD+ Program Steering Committee (governance structure available in Chapter 6.1 of the ERPD). The NBSC is composed of representatives from the Ministry of the Environment, the MEPyD and the Ministry of Agriculture, as well as representatives from all EE and beneficiaries.
- **The National Benefit Sharing Committee (NBSC)** is responsible for establishing the criteria under which benefit sharing will be allocated, as well as the application of the contingency fund, the implementation, supervision and audit of the Benefit Sharing Plan (BSP) at the national level and reports directly to the REDD+ Program Steering Committee (governance structure available in Chapter 6.1 of the ERPD). The NBSC is composed of representatives from the Ministry of the Environment, the MEPyD and the Ministry of Agriculture, as well as representatives from all EE and beneficiaries.
- **The Beneficiary Committee:** This is a decision-making and verification body for the distribution of the results-based payments obtained from the emissions reduction efforts made by producers and other stakeholders involved in forest conservation and management. These committees are constituted by representatives of the Executing Entity corresponding to one of the REDD+ Type Activities and by representatives of the beneficiaries who carry out the Activity in question, both at the local (territorial) level. Their main purpose is to decide whether payments will be monetary or non-monetary and to verify

that payments are made in accordance with the distribution criteria defined in the BSP and as approved by the NBSC.

- The **Executing Entities (EE)** are the institutions responsible for directing and implementing the activities that were defined and assumed as REDD+ Type Activities. They supervise and coordinate the execution of direct activities under their jurisdiction and technical expertise.

Eleven Implementing Entities (EE) were initially identified, which are summarized in Table 43 (page 170 of the final ESMF). However, during the process of developing the National REDD+ Strategy (ENREDD+) and in accordance with the provisions of the Benefit Sharing Plan (BSP) 2022, the decision was made to limit the selection of EE.

Specifically, the entities responsible for payments for environmental services in the Yaque del Norte Basin, managed by EGEHID, CORAASAN and the Ministry of Environment (MMARN), as well as the Resilient Agriculture and Integrated Water Resources Management Project, administered by the inter-ministerial structure comprising the Ministry of Agriculture (MAG), MMARN and the Ministry of Economy, Planning and Development (MEPyD), were excluded. These programs were considered allies of those already existing under the Vice Ministry of Forest Resources and, for the sake of simplification and practicality, it was understood that these institutions were not required as Executing Entities. However, they may apply as beneficiaries under other EEs.

The currently active executing entities are those established in the 2022 Benefit Sharing Plan (BSP) and are detailed in the following table:

Table 3 Interpretation of Table 4 of the 2022 BSP. Current EE programs under implementation.

No.	Executing Entity	Plan, System, Program/ Project	Type
1	MMARN- Vice Ministry of Forest Resources	Quisqueya Verde Nacional Plan \$	Governmental
2	MMARN – Vice Ministry of Protected Areas and Biodiversity	Nacional System of Protected Areas (SINAP)	Governmental
3	UTEPDA – (Ministry of Agriculture, MMARN, and Ministry of the Presidency)	Presidential Agroforestry Development Project (PAP)	Governmental (interministerialstructure)
4	Ministry of Agriculture – Cacao Department	Agroforestry system with shade-grown cacao (CACAO)	Governmental
5	Dominican Coffee Institute (INDOCAFÉ)	Agroforestry system with shade-grown cacao (CAFÉ)	Governmental
6	National Council for the Regulation and Promotion of the Dairy Industry (CONALECHE)	Silvopastoral system and forest conservation on livestock farms	Governmental
7	General Directorate of Livestock	MEGALECHE Program (Silvopastoral system and	Governmental

\$ This plan has already been completed and transitioned to the National Reforestation Strategy in June 2023.

		forest conservation on livestock farms)	
8	San Ramón Forestry Association	La Celestina project	Private
9	Association for Forest Restoration and Development (ASODEFOREST)	Sustainable forest management plan	Private

The technical staff designated by each of the EEs is responsible for making decisions related to activities and implementing tools for monitoring and complying with environmental and social safeguards, as well as the actions and tasks of the Benefit Sharing Plan. To this end, each EE has designated a focal point for Environmental and Social Safeguards.

Table 4 Focal points by executing entity until 2024

No	Executing Entity	Representative	Role as focal point
1.	MMARN – Vice Ministry of Protected Areas and Biodiversity	Thelma Alcántara	Safeguards and Registration (focal point)
		Carolina Alba y Thelma Alcántara	National Committee for Benefit Sharing (NCBS)
2.	MMARN- Vice Ministry of Forest Resources	Salvador Escarramán	Safeguards and Registration (focal point)
		Ramón Díaz	National Committee for Benefit Sharing (NCBS)
3.	Dominican Coffee Institute (INDOCAFÉ)	Omar Peña	Focal point and NCBS
			Safeguards and Registration
		José de la Cruz	Legal
4.	UTEPDA – (Ministry of Agriculture, MMARN, and Ministry of the Presidency)	Maydri Medina	Safeguards and Registration (NCBS)
		María Pérez	
		Abel Carvajal	Focal point
		Ricardo Perez	Legal
5.	Ministry of Agriculture – Cacao Department	Enelvi Brito Sosa	Focal point and NCBS
		Rodrigo de la Cruz Guzmán	Safeguards and Registration Cacao Department
		Dominga Zorrilla	National Committee for Benefit Sharing NCBS Agriculture
6.	National Council for the Regulation and Promotion of the Dairy Industry (CONALECHE)	Ironelis Arias	Safeguards and Registration
		Bernardo Santana	National Committee for Benefit Sharing NCBS
		Cynthia Tejada	Legal

7.	General Directorate of Livestock	Alcibíades Feliz	National Committee for Benefit Sharing NCBS
		Martín Canals	Focal point
		Sofía Cuevas Gren	Registration and Safeguards
		Juan Daniel García	Legal
8.	San Ramón Forestry Association	Juan Azcona	Safeguards and Registration NCBS
		Edinson Martínez	Focal point
		Karina Núñez	Financial
9.	Association for Forest Restoration and Development (ASODEFOREST)	Humberto Brito	Safeguards and Registration
		Ana Carrasco	Focal point
			National Committee for Benefit Sharing (NCBS)
		Carmen Eduardo	Financial
		Julio Cesar Vargas	Legal

The Environmental and Social Management Framework (ESMF) and the 2022 version of the Benefit Sharing Plan (BSP) established that the Executing Entities (EE) should have technicians specialized in safeguards, who would work in coordination with the outreach technicians of those entities. In addition, these specialized technicians could assume the role of focal point within each EE.

However, for the period covered by this annex (2021), it was observed that, with the exception of UTEPDA, the nine Implementing Entities had designated focal points but did not have specialized safeguards technicians, as required by the MGAS and the BSP. During the following periods, more people were added by the EEs to perform the different roles.

Through their technical team and designated focal points, the Executing Entities (EE) have access to the REDD+ Initiative Registry and are responsible for registering beneficiaries who, on a voluntary basis and in compliance with the requirements of the REDD+ program, decide to register the initiative they are implementing in the Dominican Republic. These initiatives must also comply with the environmental and social criteria established in the Environmental and Social Management Framework (ESMF) of the REDD+ Strategy and Program.

The relationship between the coordinating institution, MMARN, and the EE was initially formalized through Letters of Intent, in which EE committed to complying with the requirements and criteria for the execution of strategic options and enabling actions relevant to the implementation of EN-REDD+. The Letters of Intent were signed in December 2019 and early 2020 and can all be accessed through this [link](#).

Each Implementing Entity then signed an Inter-institutional Agreement with the Ministry of Environment and Natural Resources that includes the rights and obligations regarding compliance with and implementation of the REDD+ Safeguards and the World Bank's Operational Policies, as well as the REDD+ activities for each of the Implementing Entities. In the case of the EE under the MMARN, a letter of commitment was signed with the vice ministries of Forest Resources and Protected Areas and Biodiversity.

Table 4 Summary of Inter-institutional Agreements signed in May 2025

No.	Executing Entity	Signature date	Expiration date(*)
1	General Directorate of Livestock	March 21, 2023	December 31, 2025
2	Association for Forest Restoration and Development, INC (ASODEFOREST)	March 28, 2023	December 31, 2025
3	San Ramón Forestry Association	April 12, 2023	December 31, 2025
4	INDOCAFÉ	July 13, 2023	December 31, 2025
5	Environment -Vice Ministry of Forest Resources	November 02, 2023	December 31, 2024(**)
6	CONALECHE	November 15, 2023	December 31, 2025
7	Environment -Vice Ministry of Protected Areas	November 22, 2023	December 31, 2025
8	Ministry of Agriculture	January 01, 2024	December 31, 2025
9	UTEPDA	February 05, 2024	December 31, 2025
(*) The following Executing Entities signed a new addendum to extend their validity until December 31st of 2025: INDOCAFÉ, CONALECHE, Viceministry of Protected Areas, Ministry of Agriculture and UTEPDA. All interinstitutional agreements will be updated with a new addendum according to the ERPA extension (24 months, which is currently under discussion). (**) Addenda still pending. According to the Vice Ministry of Forest Resources, the request for no objection submitted by the OCR was not promptly included in the corresponding agenda for signature due to an inadvertent error, causing a delay in the processing process. However, it is already being addressed, and the signed addendum is expected by the last week of October or the first week of November.			

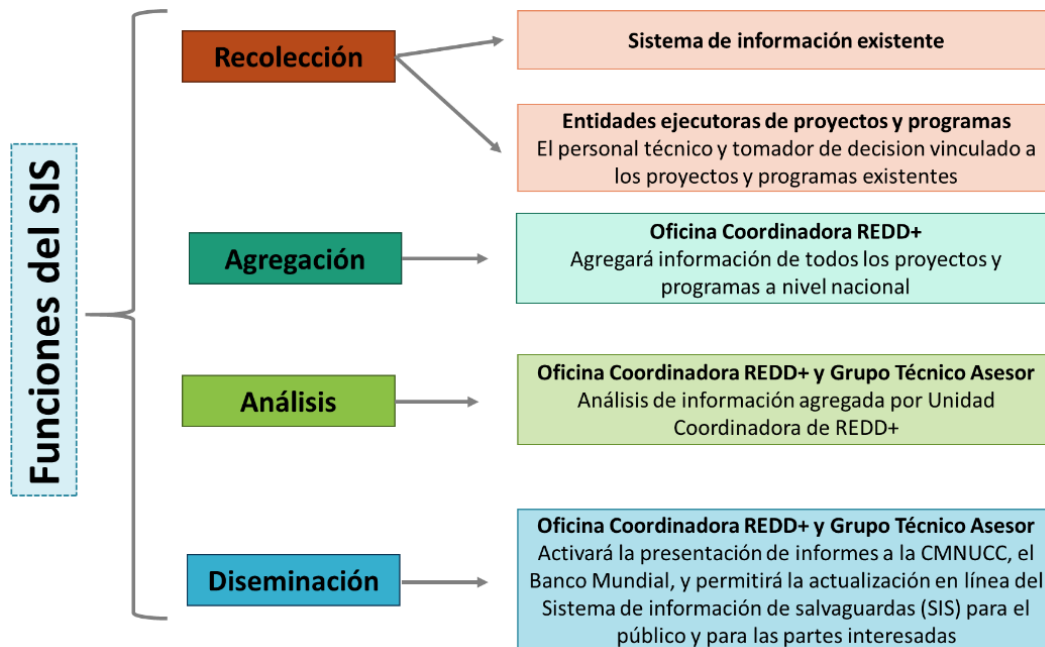
Addenda to these agreements were signed with the following EE: INDOCAFE (December 9, 2024), Ministry of Agriculture (December 10, 2024), and CONALECHE (December 10, 2024), effective until December 31, 2025. The Vice Ministry of Protected Areas and Biodiversity signed the 22th of May 2025, and UTEPDA the 13th of June of the same year. As for the Vice-Ministries of Forest Resources, the signing of the corresponding addenda is currently underway and will be ready in November 2025.

Among other things, the following commitments related to safeguards are included:

- I. Apply the procedures and requirements established in the Environmental and Social Management Plans (ESMP) and the activities and budgets contained in the Environmental and Social Management Framework (ESMF) of the REDD+ Program, as well as social, environmental, and governance principles, in order to comply with the UNFCCC Environmental and Social Safeguards and the World Bank's Operational Policies.
- II. Apply the instruments of the REDD+ Initiative Registration System, Monitoring, Reporting and Verification (MRV) and the Safeguards Information System (SIS), in accordance with the procedures established in the Operating Manual of the REDD+ Program and/or in the respective user manuals.
- III. Participate in periodic evaluations to be coordinated and conducted by the Ministry of Environment and Natural Resources, through its REDD+ Coordination Office (RCO), in order to verify compliance with the UNFCCC Environmental and Social Safeguards and the World Bank's Operational Policies.

Similarly, the functions of the SIS are closely related to institutional arrangements, as they will be carried out by the RCO and the EE. The proposed SIS scheme is presented below with the institutional arrangements and functions of each.

Figure 2 Institutional arrangements of the SIS. Taken from the 2022 version of the BSP, page 66



The SIS was designed to be hosted on the MMARN website, from where it manages data and information. During the implementation of the REDD+ Program, the operation of the SIS must be continuously monitored and improved by strengthening inter-institutional links with the EE bodies. However, the software developed during the readiness phase could not be connected to the MMARN due to programming language incompatibility, as described at the beginning of this annex.

The current arrangement respects the hosting on the MMARN website and operates on the open source platform called KoboToolbox, used to collect information in areas that are difficult to access, as it does not require an internet connection throughout all steps.

The GRM was initially proposed with its center in the Social Participation Directorate of the Ministry of Environment and Natural Resources, which had jurisdiction over the management of the **Green Line** and receives grievance that are currently forwarded to the institution. Due to changes in the structure of the MMARN, the Green Line is now part of the Directorate for Citizen Services and the Environment, which has a Department for Grievances, Reports, Suggestions, and Complaints that also houses the Green Line Division. These changes were formalized by [Resolution 0039-2024 of November 14, 2024](#). An organizational chart of this structure is provided in section 2.4 of this annex.

10.1.2 1.2 Confirm whether the institutional arrangements summarized above have been established.

Regardless of the restrictions initially caused by the COVID-19 pandemic and subsequently by changes in the Dominican Republic's public administration, PREDD+ governance has, for the most part, been implemented and established as planned. Specifically, during the monitoring period in question, from March 1 to December 31, 2021.

As stated in the previous section, due to the overlap between the REDD+ preparation phase in the Dominican Republic and the signing of the ERPA, for the period corresponding to the first report from March 1 to December 31, 2021, the REDD+ coordination and implementation unit was the Technical Management Unit (TMU). Formed during the readiness phase, it continued to function for the first ERPA reporting period until June 2022, when its work concluded. This TMU operated under the Climate Change Directorate of the Ministry of Environment and Natural Resources and consisted of an administrative-financial division and a technical support division.

From the departure of the TMU in June 2022 until October of the same year, the functions of this body were taken over by an *ad hoc* group led by the Director of Climate Change and the Head of the Climate Change Mitigation Department of the MMARN. Current progress includes the following:

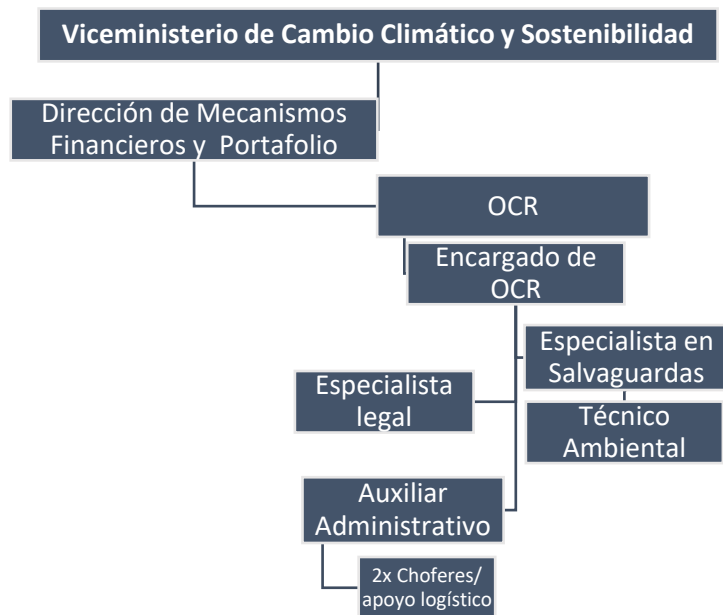
REDD+ Coordination Office (RCO): Became operational in October 2022 with the Head of the RCO, the Social Safeguards Specialist, the Financial Administrative Specialist, administrative support, and a driver. Subsequently, a legal specialist (March 2023), a second driver (October 2023), and a safeguards technician (March 2024) were added.

Despite these advances and new recruitments, the current structure of the RCO, described in **Figure 1**, differs from the organizational chart proposed in the ESMF, which described the assumed positions for the RCO in its “Table 54. Estimated operational and transaction costs of the PREDD+ and the BSP, page 207” and continued in the updated version of the BSP dated January 2022 in its “Table No. 2, page 23.” The organizational chart proposed in the ESMF and ratified in the 2022 version of the BSP stated that the RCO would have:

“1 RCO manager, 1 RCO coordinator, 1 Environmental Safeguards Specialist, 1 Social Safeguards Specialist, 1 Legal Specialist, 1 Financial Administrative Specialist, 2 Technical Coordinators with EE, 1 Administrative Support, 2 drivers/logistical support.”

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Figure 3 RCO organizational chart till December 2024. Prepared by the author.

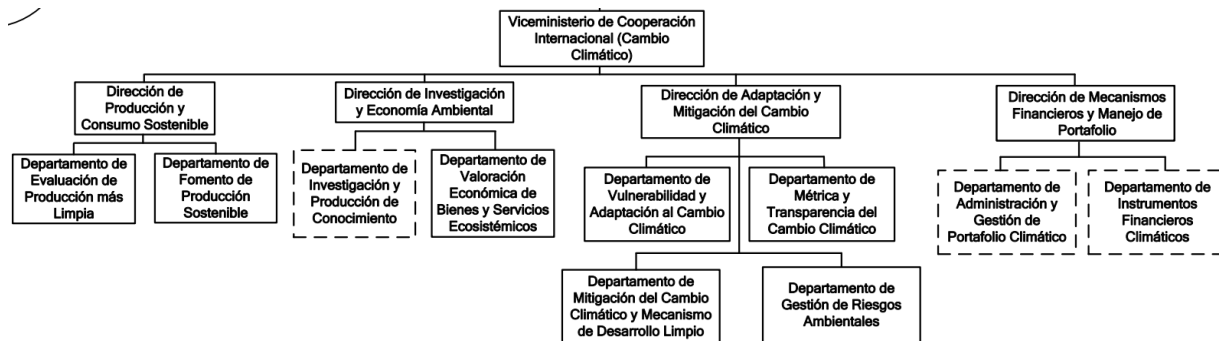


While efforts were made through training and field visits to support and follow up on the reports submitted by the executing entities (EE), the difference between the number of technical staff originally planned for the RCO according to **Figure 1** Replication of Scheme 2 of the Environmental and Social Management Framework on Coordination of

the RCO with the EE, and the number that was ultimately implemented, as well as the contracting periods, has made it difficult to robustly monitor compliance with environmental and social safeguards.

The RCO, initially conceived under the Climate Change Directorate, Mitigation Department, was transferred to the Financial Mechanisms and Portfolios Directorate in 2022. This directorate, in the [MMARN Organization and Functions Manual](#) assumes responsibility for “Coordinating and optimizing the implementation of the program for Emissions Reduction from Deforestation and Forest Degradation and the promotion of conservation, sustainable forest management, and increased forest carbon stocks (REDD+).” This change did not impact the implementation of the program.

Figure 4 Organizational chart of the Vice Ministry of Climate Change of the MMARN in April 2025



Steering Committee: Although this structure continues to function, no meeting has been held despite coordination efforts by the RCO. This is due to the ongoing empowerment and awareness-raising process resulting from changes in the national authorities. A meeting is expected to be necessary to reorganize the SC due to the potential merger of the Ministry of Finance and the Ministry of Economy, Planning, and Development (MEPyD).

Despite constant consultations and follow-up have conducted to confirm the availability of dates on behalf of the ministers, three calls were made from the Office of the Minister of MMARN (September 28, 2023, April 11, 2024, and July 29, 2024), but the meeting could not be held due to lack of quorum. At the date of submission of this annex, efforts to coordinate this meeting are continue.

Technical Advisory Committee: For the period covered by this report, the TAC met only once, on May 31, 2023, to review the BSP and discuss its responsibilities as a TAC. At the meeting, the TAC decided that its member composition should be reformulated and updated due to the large number of individuals and institutions that formed the original TAC, many of whom are no longer part of the staff of their respective institutions, resulting in an entity with operational limitations, including the difficulty of achieving the necessary quorum.

Inter-institutional agreements with Executing Entities: For the period covered by this report (2021), only letters of intent were available. As detailed in **Table 4** Summary of Inter-institutional Agreements, the first Inter-institutional Agreements were signed in March 2023, completing the process with the signing in 2024 by the Ministry of Agriculture (MAG), on behalf of the Cacao Department, and the Technical Unit for the Implementation of Agroforestry Development Projects (UTEPDA).

These Inter-institutional Agreements were signed with the intention of strengthening, on behalf of the Executing Entities, the internalization and consent to comply with the Environmental and Social Safeguards, as well as the commitments added to the implementation of the REDD+ types of activities under this program.

10.1.3 1.3 Confirm that the executing entities and stakeholders understand their respective roles; have the technical capacity to carry out their responsibilities; and have adequate human and financial resources.

During the period covering the first report of the Emissions Reduction Payment Agreement (ERPA), from March 1 to December 31, 2021, the unit responsible for coordinating and implementing REDD+ in the Dominican Republic was the Technical Management Unit (TMU). This unit had been formed during the readiness phase and continued to operate until June 2022, when its mandate ended. The TMU operated under the Climate Change Directorate of the Ministry of Environment and Natural Resources (MMARN) and had an organizational structure designed to effectively fulfill its technical, administrative, and operational responsibilities.

The TMU was divided into two main areas: an administrative-financial division and a technical support division.

The administrative-financial division included the following roles:

General project coordinator

Financial specialist

Procurement specialist

Administrative secretary

Administrative assistant

Two drivers with additional logistical support functions

The technical support division was composed of a multidisciplinary team covering key aspects of REDD+ activities, including:

Technical coordinator (land use, agriculture, and forestry specialist)

Forestry and land use technician

Social specialist

Social technician

Capacity building officer

Communications specialist

Legal and inter-institutional coordinator

Technical document analyst

This structure enabled the TMU to fulfill its functions during the preparation phase, but a gap remained due to the overload generated by running the first implementation period in parallel after the signing of the ERPA. This overlap, compounded by delays in the systems expected as a result of the preparation phase (SIS, GRM, and SRI), limited the TMU's ability to follow up on the implementation of REDD+ activities and monitor compliance with safeguards.

In turn, the Safeguards Compliance Matrix was not yet available, as it was only ready after the first monitoring period.

In terms of the capacity of the executing entities (EE), one of the selection criteria was to prioritize institutions that already had established processes, as well as human, technical, and financial resources to implement the REDD+ measures identified by the Dominican Republic. Based on this, an [Institutional Capacity Assessment](#), was carried out

in 2019, which evaluated the technical and operational capacities of the EEs to comply with safeguards and their alignment with the Environmental and Social Management Framework (ESMF) and the Environmental and Social Management Plans (ESMP). This assessment concluded that both the EE and the beneficiaries had a low level of understanding of the technical aspects and safeguards of REDD+.

Based on these findings, an intensive [training program](#) (Table 5) was implemented in 2021 for the Technical Advisory Committee (TAC), representatives of the National Benefit Sharing Committee (NBSC), technical staff from the EEs and the REDD+ Coordination Office (RCO), as well as local communities and other key stakeholders. These trainings focused on the use of instruments that support the implementation of the REDD+ Program in the country.

The ESMF and the Benefit Sharing Plan (BSP) version 2022 stipulated that the EEs would have “10 technical experts in safeguards for the EEs (responsible for implementing safeguards at the project or program level). The costs of the RCO coordination technicians with the EEs were charged to the RCO (...). These technicians will be supported by the extension technicians of the EEs.”

However, the diversity of institutional and social stakeholders involved, together with administrative pressures and staff changes during the implementation period, led to frequent adjustments that made continuous and timely monitoring difficult. For example, several introductions to the REDD+ Program as well as basic awareness training were required for trained personnel who already existed within the institutions and for new managers. This resulted in monitoring processes taking longer than initially planned and EE facing challenges in reaching expected capacity levels.

During 2021 and 2023, the EE designated the technicians responsible for monitoring the compliance criteria established in the ESMF and the ESMP.

As of December 2024, all the EE have formally appointed their representatives to the NBSC. At the same time, the federations, associations, and cooperatives linked to each Program Activity Type have elected their sectoral representatives through their own consultation processes.

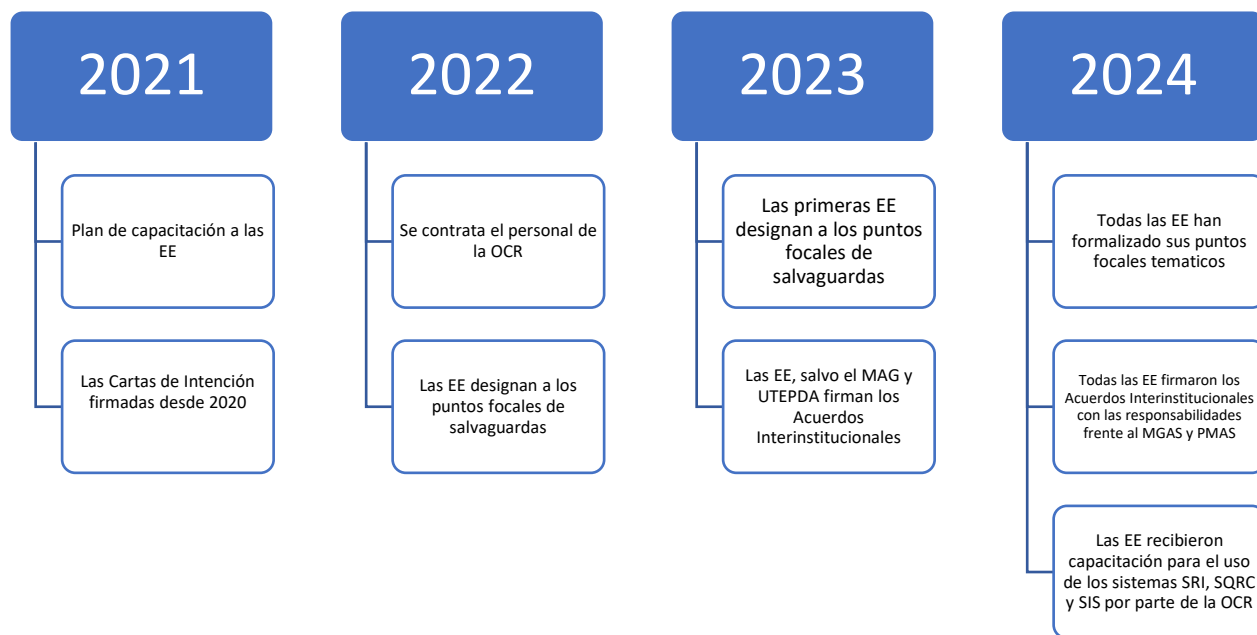
In terms of institutional formalization, the first Inter-institutional Agreements with the EE were signed in 2023, and completed in 2024 with the incorporation of the Ministry of Agriculture (through the Department of Cacao) and the Technical Unit for the Implementation of Agroforestry Development Projects (UTEPDA).

It should be noted that the next step in the institutional arrangements for the REDD+ program was the identification and registration of beneficiaries, which was not possible during the reporting period (March to December 2021). This, in turn, had repercussions on the follow-up, monitoring, and verification of compliance with environmental and social safeguards with beneficiaries in the field. However, the EEs did report the general application of good practices in their institutional reports. To date, the Registration System is already operational.

On the other hand, although RCO technicians play a key role in coordination and supervision, it is not feasible for them to undertake comprehensive monitoring in the field on their own. Therefore, direct monitoring of safeguards falls to the environmental and social focal points designated by each EE, while RCO specialists provide support in training, information requests and analysis, and report monitoring. However, given the limitations of the EE's staff and resources, the RCO has strengthened monitoring through field visits, information gathering, and recording in the safeguards information and monitoring systems.

The following timeline documents the progress in the installed capacities of the Executing Entities and their ongoing commitment to the REDD+ program.

Figure 5 Timeline showing progress and commitment of the Executing Entities



In general terms, the requirements established in the inter-institutional agreements have been met by each Executing Entity (EE) in according to its technical and operational capacities and based on its institutional realities.

This compliance demonstrates a progressive appropriation of the commitments made, positioning these agreements not only as formal frameworks for action, but also as dynamic tools for reference and periodic review, thereby consolidating the country's commitment to the effective implementation of the REDD+ Program. The appropriation and use of information systems, in particular the SIS, is still pending, as is the organization and implementation of field data collection to feed these systems.

10.1.4 1.4 When the RE Program or Safeguard Plans have required specific capacity-building measures (e.g., training and professional development), describe the extent to which these have been carried out.

To address the responsibilities and guidance of the ESMF, the MMARN, through the RCO, conducts recurring training based on the [Capacity Building Plan](#), developed during the REDD+ preparation phase, which includes, but is not limited to:

- i) Training for EEs on safeguard requirements and the implementation and monitoring of ESMF;
- ii) Training for EEs on the implementation requirements of the REDD+ Initiative Registration System and SIS;
- iii) Training for EEs about the GRM;
- iv) Training for EEs on general frameworks and knowledge plans for pest management.

A two-day workshop (April 15 and 16, 2024) was held with the participation of the RCO, the EEs, and WB specialists. The main objective was to discuss safeguards based on the compliance matrix, using a methodology in which participating technicians from all EEs received training with practical applications of the compliance matrix and the SIS.

A [Safeguards Training Guide](#), was also developed, focusing on providing scientific, technical, and legal knowledge on the processes, commitments, and opportunities for implementing the REDD+ Program in the Dominican Republic, particularly aimed at implementing entities and partners interested in the program to continue with the processes related to the social component and subcomponents of the ERPA and EN-REDD+.

For the 2021 period, following the delay caused by the COVID-19 pandemic, the Technical Management Unit (TMU) resumed contact with the executing agencies and Federations and Associations at both the central and local levels. One of the aims of these meetings was to coordinate and collectively plan the implementation of the Training Plan and how to reach the beneficiaries, as well as the availability of technological resources to hold online meetings.

In 2022, [Institutional Capacity Building was carried out for the Association for Sustainable Forest Restoration Development \(ASODEFOREST\) and the San Ramón Forestry Association](#). ASODEFOREST received two training sessions, the first held on April 30 and May 1 of 2022, and the second on May 14 and 15 of the same year. According to the participant lists, 30 people participated in the first session, including members, managers, and administrative staff. For the second training session of this phase, the participant lists confirm the attendance of 27 people over the two days of the workshop.

A [Business Plan](#) was also developed for ASODEFOREST and another for the [San Ramón Forestry Association](#), both in May 2022.

During 2021 and 2022, a Training Plan was implemented for stakeholders involved in the Emissions Reduction Program for Deforestation and Forest Degradation, which included a total of 87 training activities, including courses, workshops, and meetings, with the participation of 1,488 people, 256 women and 1,232 men, all representatives of the Executing Entities of the REDD+ Program and the federations and associations of producers linked to them (Table 5).

Stakeholders, including communities and producers, were consistently consulted throughout the REDD+ governance structure, primarily via the Executing Entities (EEs) and the Technical Advisory Committee (CTA). This ensured that local perspectives were systematically considered in planning and decision-making processes. As a result, the criteria and representatives for the formation of the National Benefit-Sharing Committee were established. It has been active since May 2022 and is the primary body for consultations and decisions regarding the implementation of the REDD+ Program, which is represented by producers, Executing Entities, and other relevant stakeholders.

During these training sessions, a broad campaign was developed to raise awareness among ER program stakeholders and potential beneficiaries. The campaign consisted of five modules covering the following topics: i) Climate Change, ii) The Dominican Republic REDD+ Program, iii) Social and Environmental Safeguards, iv) Safeguards Information System (SIS) and Environmental and Social Management Plans (ESMP), v) Grievance and Conflict Resolution System (GCRS) and Benefit Sharing Plan (BSP).

In addition, five (5) [regional meetings](#) were held to strengthen capacities in relation to the SIS and the GCRS, aimed at EE technicians (Table 5). A total of 147 people participated, including 126 men and 21 women. Five (5) regional meetings were also held to raise awareness among stakeholders, with the participation of 134 representatives (117 men and 17 women) from federations, producer associations, and communities.

The following are other capacity-building activities carried out by the EE:

1. Specialized course on cacao production in the context of REDD+
2. Course on forest management, forest plantations, and natural landscape restoration
3. Training for the national team affiliated with the Directorate of Environmental Information and Natural Resources (DIARENA) on the use of software and implementation of the Terrapulse methodology.
4. Training in the preparation of reports on the monitoring of reduced emissions

5. Capacity building for executing entities: ASODEFOREST and the San Ramón Forestry Association, within the framework of REDD+.

The following printed, digital, and audiovisual materials were developed to complement these efforts and ensure the continued capacity building of both the EE and the Federations and Associations involved:

- Module 1: Topics covered: a) Climate change, b) Greenhouse effect, c) Carbon cycle, d) Water cycle.
- Module 2: Topics covered: a) Definition of forest, b) Concept of REDD+, c) Main causes of deforestation and degradation in the country, d) Phases of REDD+, e) Strategic options for REDD+, f) REDD+ type activities, g) Executing entities involved in REDD+.
- Module 3: Topics covered: a) Concept of environmental and social safeguards, b) Elements of safeguards, c) Co-benefits, d) Identification of environmental and social impacts, e) Identification of risks by production activity, f) Examples of application of safeguards and best practices.

In order to support the activities of the Training Plan, the [following educational material has been developed](#):

- Audiovisual productions: A production company was hired to create educational videos, success stories, and radio spots to raise awareness, educate, and enable self-learning among beneficiaries about REDD+ and its safeguards.
- Scriptwriting for the production of educational videos on the REDD+ Program: Seventeen scripts were written for educational videos on the following topics: a) climate change, b) the effects of climate change, c) forests, d) REDD+, e) safeguards, f) SIS, g) GRM, h) BSP, i) gender and women's participation in REDD+, j) causes of forest degradation and deforestation, k) stakeholder participation in REDD+, l) co-benefits, m) REDD+ type activities.
- Drafting of REDD+ Educa booklets: Nine volumes of a series of educational booklets were drafted and designed as part of the technical learning and training packages for the REDD+ Program.
 1. REDD+: Provides a general and succinct description of the program, its origins, scope, objectives, and stakeholders involved.
 2. Climate Change: A group of leaders exchange information on what climate change is, the risks it poses, and how it can be addressed.
 3. Forests and Climate Change: This document explains in simple terms the relationship and role of forests in reducing emissions and capturing carbon dioxide, and their contribution to mitigating the effects of climate change.
 4. Participation and Governance; Explains the importance of the participation of all stakeholders, defines governance, mentions the program's participation mechanisms, and refers to criteria and principles of opportunity, equity, participation, and consensus.
 5. Safeguards: This booklet defines Environmental and Social Safeguards, explains their importance, and indicates that their purpose is to reduce the impacts that REDD+ activities may have and promote good environmental practices. It describes the national interpretation of the Safeguards of the United Nations Framework Convention on Climate Change (UNFCCC) and the World Bank's Operational Policies.
 6. Benefit Sharing Plan: A group of producers meet to explain what the BSP is, establish the type of benefits, and describe what will be distributed, how, and when. It describes the beneficiaries and the role of the executing entities and other related organizations.
 7. Grievance and Conflict Resolution System: This directly defines what the GCRS is, how it works, its impact on the program's transparency, and its potential to guarantee rights.
 8. Gender, Equity, and Climate Change. This document defines gender, equity, and their implications in and for climate change. It explains the roles of men and women, how they have been constructed, and how they have influenced the participation of each gender in the construction and definition of societies and their collective roles.

9. Involuntary Resettlement: an exercise in strengthening rights and institutions. This document describes the meaning of involuntary resettlement in the context of REDD+, the mitigation measures that should be adopted in the event of adverse effects, the legal framework within which it can operate, and the institutional and community roles, its origins, its purposes, and the opportunities for the fulfillment of rights of individuals, families, and communities in the event that any REDD+ activity causes impacts related to involuntary resettlement.

In addition, with the aim of building the capacity of the EEs in applying safeguards nine technical guides on good environmental and social practices have been developed. These guides were incorporated into the PESMP for each type of activity and annexed to the interinstitutional agreements signed between the Ministry of Environment and Natural Resources and the executing entities.

Finally, a Safeguards Application Report Format (SAR) was developed and approved in October 2023 to facilitate the collection of information for monitoring and verifying compliance with the Environmental and Social Safeguards.

Table 5 Summary of participation, consultation, and training activities till May 20, 2022

Summary of participation and consultation activities (January to May 20, 2022)						
Regional meetings with technical staff from executing entities (EEs)						
Capacity building						
No.	Date	Place	Number of participants	Women	Men	Type of Activity
1	April 20, 2022	Azua	32	4	28	SIS and GRM training for EE technicians
2	April 21, 2022	Peravia (Bani)	31	2	29	SIS and GRM training for EE technicians
3	April 28, 2022	Santiago Rodriguez (Sabaneta)	22	6	16	SIS and GRM training for EE technicians
4	April 29, 2022	La Vega	28	1	27	SIS and GRM training for EE technicians
5	May 05, 2022	Santo Domingo	34	8	26	SIS and GRM training for EE technicians
Subtotal			147	21	126	
Percentage by gender			100%	14%	86%	
Regional meetings with Producer Leaders from Organizations						
Capacity building						
1	May 11, 2022	San Juan	32	3	29	SIS and GRM training for producers
2	May 12, 2022	San Cristóbal	33	5	28	SIS and GRM training for producers
3	May 19, 2022	Santiago Rodriguez (Sabaneta)	26	1	25	SIS and GRM training for producers
4	May 25, 2022	Hermanas Mirabal	19	1	18	SIS and GRM training for producers
5	May 26, 2022	Hato Mayor	25	9	16	SIS and GRM training for producers
Subtotal			135	19	116	
Percentage by gender			100%	15%	85%	
Meetings with Federations, associations and communities						
Raising awareness among local public, social, and private stakeholders						

1	January 03, 2022	Distrito Nacional	2		2	CONACADO Management Meeting (NBSC Election)
2	January 04, 2022	San Cristóbal (Los Cacao)	3		3	INDOCAFE Technicians Meeting (REDD+ Update)
3	January 06, 2022	Hato Mayor (Ciudad)	6	1	5	CONACADO Leaders from Hato Mayor
4	January 16, 2022	San Cristóbal (Ciudad)	16	3	13	NACAS Management Update
5	March 10, 2022	Independencia (La Descubierta)	12	1	11	REDD+, Climate Change, Forests, and Coffee Training
6	February 01, 2022	Distrito Nacional	5	2	3	ASOCARNES Management (NBSC Election)
7	February 02, 2022	Jarabacoa (Virtual)	2	1	1	Coffee Cluster and Cordillera Plan Meeting (NBSC Election)
8	February 03, 2022	San Juan de la Maguana	3	1	2	FECADESJ Executive Board Meeting (NBSC Election)
9	February 24, febrero	Virtual	4		4	Discussion on NBSC PA (Loma Quita Espuela, Guaconejo, Nalga de Maco)
10	March 04, 2022	Virtual	4		4	Election of Cacao Representative to the NBSC
11	March 05, 2022	Virtual	6		6	Election of Reforestation Representative to the NBSC
12	February 05, 2022	Monte Plata (Los Botados)	11	1	10	REDD+ APROGLOBO and NBSC Update
13	March 08, 2022	San José de Ocoa (Ocoa)	5		5	ADESJO Executive Board Meeting (NBSC Election) PA
14	March 09, 2022	Virtual	11	2	9	Election of Coffee Representative to the NBSC
		Subtotal	90	12	78	
Raising awareness and training producers (modules 1 to 3)						
1	June 02, 2021	San José de Ocoa (Rancho Francisco)	18	5	13	Coffee Growers Association and INDOCAFE (REDD+ and Climate Change)
2	June 14, 2021	Peravia (Bani)	4	1	3	Meeting with INDOCAFE technician to plan meetings with producers
3	June 15, 2021	Santiago Rodríguez (Sabaneta-El Aguacatico)	16	1	15	Agroecological Cooperative of the Upper Mao River Basin (REDD+ and Climate Change)

4	June 16, 2021	Santiago Rodríguez (Sabaneta)	5	2	3	Visita de contacto a la Federación de Engagement with the Federation of Livestock Farmers of the Northwest (FECEGANO) and DIGEGA
5	June 16, 2021	Santiago Rodríguez (Villa Los Almacigos)	9	1	8	Association of Livestock Farmers of Villa Los Almacigo, Caimital junction (REDD+ and Climate Change)
6	June 18, 2021	Santiago Rodríguez (Villa Los Almacigo-La Pionia)	24	2	22	Association of Coffee Growers of La Pionia (REDD+, climate change and forests)
7	July 08 , 2021	Monte Plata (Sabana Grande de Boyá)	11		11	La Unión Livestock Farmers Association and two others (REDD+ and forests)
8	July 08, 2021	Monte Plata (Sabana Grande de Boyá-Gonzalo)	16	1	15	Gonzalo Cacao Growers Association (REDD+ and Climate Change)
9	July 09, 2021	Sánchez Ramírez (Cevico-Arenoso)	14	2	12	Arenoso Cacao Producers Association (Forests and REDD+)
10	July 09, 2021	Sánchez Ramírez (Cotui)	17	2	15	Local CONACADO (REDD+ and Climate Change)
11	July 13, 2021	Santiago Rodríguez (Villa Los Almacigo)	11	1	10	Caimital Crossroads Livestock Farmers and Small Milk Producers Association (REDD+ and Forests)
12	July 14, 2021	Santiago Rodríguez (Sabaneta-El Naranjito)	19	3	16	El Naranjito Coffee Growers Association
13	July 15, 2021	Dajabón (Loma de Cabrera)	4	1	3	Loma de Cabrera Livestock Farmers Association (engagement and planning)
14	July 15, 2021	Elías Piña -Dajabón(Río Limpio)	14	2	12	Cooperative of Organic Producers of the Río Limpio Valley (REDD+ and Climate Change)
15	July 21, 2021	Sánchez Ramírez (Cevico-Arenoso)	13		13	Arenoso Cacao Growers and Reforestation Association (REDD+ and Climate Change)
16	July 23, 2021	Sánchez Ramírez (Cotui)	16	2	14	LOCAL GROUP CONACADO, Forests and Safeguards
17	July 30, 2021	Sánchez Ramírez (Cevico-Arenoso)	11		11	Arenoso Cacao Growers Association and Reforestation (Safeguards, BSP)
18	August 10, 2021	Santiago Rodríguez (Villa Los Almacigos-Pionia)	18	3	15	Pionia Coffee Growers Association (Safeguards BSP)

19	August 11, 2021	Dajabón Loma de Cabrera (Carrizal)	17	6	11	Carrizal Coffee Growers Association (REDD+ and climate change)
20	August 11, 2021	Elías Piña -Dajabón (Río Limpio)	21	4	17	Cooperative of Organic Producers of the Río Limpio Valley (REDD+ and Climate Change)
21	September 15, 2021	Elías Piña -Dajabón (Río Limpio)	13	1	12	Cooperative of Organic Producers of the Río Limpio Valley (Safeguards, BSP)
22	September 15, 2021	Dajabón (Restauración Carrizal)	17	6	11	Association of Coffee Growers of Carrizal (Safeguards and BSP)
23	September 16, 2021	Santiago Rodríguez (Villa Los Almacigo -Aguacatico)	34	6	28	Aguacatico Coffee Growers Association (Safeguards, BSP, and NBSC)
24	September 16, 2021	Santiago Rodríguez (Villa Los Almacigo)	10	1	9	Association of Livestock Farmers and Small Milk Producers of Cruce de Caimital (Safeguards)
25	October 06, 2021	Dajabón (Restauración)	6	1	5	Association for Sustainable Forest Restoration Development (ASODEFOREST) (Meeting with executive board)
26	October 06, 2021	Dajabón (Restauración-Valle Nuevo)	15	3	12	Association of Coffee Growers of Valle Nuevo (REDD+ Safeguards, BSP and NBSC)
27	October 07, 2021	Santiago Rodríguez (La Cidra)	33	4	29	Association of Coffee Growers of La Toma de Cidra (safeguards, BSP, and NBSC)
28	October 08, 2021	Santiago Rodríguez (Sabaneta)	28	1	27	Federation of Cattle Ranchers of the Northwest (FEDEGANO) Presentation of REDD+ to management
29	October 06, 2021	Dajabón (Restauración-Valle Nuevo)	15	3	12	Association of Coffee Growers of Valle Nuevo (REDD+ safeguards, BSP, and NBSC)
30	October 17, 2021	San Cristóbal (Los Cacao)	17	2	15	Meeting with the management of Asociación La Esperanza de Los Cacaos
31	October 17, 2021	San Cristóbal (Cambita)	4		4	Meeting with INDOCAFE technicians from San Cristóbal, general information on REDD+
32	November 02, 2021	Hato Mayor	6	1	5	Meeting with CONACADO executive board (NBSC election)
33	November 12, 2021	Hermanas Mirabal (Tenares)	5	1	4	Meeting with the executive board of the Cibao Cacao Producers Association (APROCACI) NBSC

34	March 11, 2022	Elias Piña (Hondo Valle)	17	6	11	Training on REDD+, climate change, forests, and coffee
35	March 12, 2022	San José de Ocoa (Sabana Larga)	21	3	18	Training on REDD+, climate change, forests, and coffee
36	March 16, 2022	La Vega (Constanza-Los Sánchez)	16	2	14	Training on REDD+, climate change, forests, and coffee
37	March 16, 2022	Restauración (Valle Nuevo)	24	4	20	Training on REDD+, climate change, forests, and coffee
38	March 17, 2022	Santiago Rodríguez (Mata de Jobo)	20		20	Capacitación REDD+, Cambio Climático, Bosques y Ganaderos
39	March 21, 2022	Santiago Rodríguez (Cruce La Lana)	13	2	11	REDD+ Training, Climate Change, Forests and Livestock Farmers
40	March 22, 2022	Dajabón (Loma de Cabrera-Fondo Negro)	30	5	25	REDD+ Training, Climate Change, Forests and SAF
41	March 22, 2022	Dajabón (Loma de Cabrera-Hipolito Billini)	21	6	15	REDD+ Training, Climate Change, Forests and SAF
42	March 23, 2022	Dajabón (Restauración -La Rosa)	23	5	18	REDD+ Training, Climate Change, Forests and SAF
43	March 23, 2022	El Seibo (Miches)	22	2	20	REDD+ Training, Climate Change, Forests and Cacao
44	March 25, 2022	Duarte (San Francisco)	7	1	6	REDD+, GRM, and SIS Training for Producers SAF, Reforestation
45	April 28, 2022	Restauración (Manuel Bueno)	19	5	14	REDD+, GRM, and SIS training for producers
46	April 30, 2022	Restauración	14	2	12	Technical and administrative training and business plan ASODEFOREST
47	April 30, 2022	Monte Plata (Los Botados)	17	5	12	REDD+, GRM, and SIS training for SAF Cacao producers
48	May 04, 2022	San Juan (Barranca)	29	1	28	REDD+, GRM, and SIS training for livestock producers
49	May 05, 2022	Santiago Rodriguez (Cenovi)	57	19	38	REDD+, GRM, and SIS training for SAF coffee producers

50	May 06, 2022	San Jose de Ocoa (Ocoa)	37	9	28	REDD+, GRM, and SIS training for SAF producers, reforestation, and protected areas
51	May 12, 2022	Sánchez Ramírez (Comedero Arriba)	20	1	19	REDD+, GRM, and SIS training for SAF Cacao producers
52	May 13, 2022	San Juan de Maguana (Punta Caña)	28	1	27	REDD+, GRM, and SIS training for livestock producers
53	May 13, 2022	Arroyo del Toro	21	3	18	REDD+, GRM, and SIS training for SAF Cacao producers
54	May 19, 2022	Monseñor Nouel (Blaco)	27	7	20	REDD+, GRM, and SIS training for SAF Cacao producers
55	May 19, 2022	Peravia (Bani)	8	8	0	REDD+, GRM, and SIS training for women SAF coffee producers
56	May 20, 2022	Peravia (La Iguana)	16	0	16	REDD+, GRM, and SIS training for SAF coffee producers
57	May 21, 2022	San Cristóbal (San Cristóbal)	24	2	22	REDD+, GRM, and SIS training for livestock producers
		Subtotal	1012	168	844	
		Percentage by Sex/gender of producers	100%	17%	83%	
		Meetings with Executing Entities (EEs) Consultations, coordination, and follow-up with key stakeholders				
1	June 14, 2021	Peravía (Bani)	4	1	3	Meeting with INDOCAFE technician to plan meetings with producers
		Others meetings and gatherings				
1	March 29, 2022	ENREDD Socialization Workshop	26	11	15	Socialize with key stakeholders on the content of the final draft of the National Strategy for Emissions Reduction from Deforestation and Forest Degradation in the Dominican Republic
2	April 05, 2022	1st Meeting of the Benefit Sharing Committee (NBSC)	17	4	13	Explanation of the Benefit Sharing Plan and swearing-in of the NBSC

3	April 21, 2022	Meeting of Executing Entities with the Minister	22	4	18	ERPA commitments and inter-institutional agreements and carbon ownership transfer agreements
4	May 05, 2022	Meeting of the Technical Advisory Committee (TAC)	29	14	15	Progress on the REDD+ Program, Draft Regulations for the Operation of the TAC, REDD+ initiative registration systems, GRM, and SIS.
5	May 17, 2022	2nd Meeting of the Benefit Sharing Committee (NBSC)	10	3	7	Draft Regulations for the Operation of the National Benefit Sharing Committee (NBSC)
Subtotal			104	36	68	
Grand Total			1488	256	1232	
Percentage by sex-gender			100%	17%	83%	
			1488	187	820	

REDD+ activities are implemented in accordance with the management and mitigation measures specified in the Safeguard Plans.

10.1.5 2.1 Confirm that the environmental and social documents prepared during the implementation of the Program are based on the Safeguard Plans, provide information on their scope, the main mitigation measures specified in the plans, whether the plans are prepared in a timely manner, and whether disclosure and consultation on the plans are carried out in accordance with the agreed measures.

As previously described in Section I of this annex, five Environmental and Social Management Plans (ESMP) were prepared for the 2021 period, in accordance with the provisions of the Environmental and Social Management Framework (ESMF) and the Inter-institutional Agreements.

The ESMP are mandatory documents, annexed to the Inter-institutional Agreements, which identify specific mitigation measures for each type of activity, as well as the frameworks for implementation, monitoring, and supervision of environmental and social impacts during their execution. These plans were validated through participatory workshops with public, private, and social actors in each territory and approved by each of the Program's Executing Entities (EE).

A Compliance Matrix (in Microsoft Excel) was designed based on these plans and approved in April 2022 to monitor the implementation of the measures established in the ESMP. This tool allows for monitoring progress in mitigating environmental and social impacts and risks and facilitates verification of compliance by implementing parties. It also details the corresponding measures, acceptance and rejection criteria, and the level of compliance required for each identified risk. It serves as a technical instrument for proactive and corrective management.

This matrix allows gaps in the implementation of good practices or mitigation measures to be identified and establishes a performance rating system through which non-compliance can be identified and intervention strategies designed to ensure full compliance with safeguards. This matrix was not used for the reporting period, as it was expected that technological systems for recording and reporting safeguards would be in place to help simplify the use of the matrix in the field. It had also been planned that both the RCO and the EEs would have dedicated staff, which was not possible during this monitoring period. However, each EE continued to carry out its monitoring and record-keeping specific to the nature of its programs, as explained in section 3 of this annex.

With the aim of recording and systematizing compliance with the environmental and social safeguards of REDD+, the Safeguards Information System (SIS) was designed, using the Compliance Matrix as the main input for completing the SIS form. Due to technical difficulties that prevented the original system from functioning properly, an alternative solution was implemented using the KoboToolbox platform, with technical support from the World Bank's GEMS team. This new version has been tested and verified in 2024 and meets the requirements and functionalities originally defined, allowing its use in reporting and monitoring activities.

This problem, along with other barriers such as staff shortages, led to gaps in the monitoring and reporting of the first safeguard compliance reports summarized in [sección 2.3](#) of this annex. It was not until October 2023 that the RCO, with support from the World Bank, simplified and made available to the Executing Entities a new "Safeguards Implementation Report Format." This format is aligned with the provisions of the ESMF and the ESMP Compliance Matrix, updated in its April 2022 version.

To complement the safeguard instruments, nine Technical Guides were also developed to promote good practices in the implementation of REDD+ activities. These guides systematize technical procedures aligned with the ESMF and were distributed to and consulted with the Executing Entities. They are publicly available on the official website of the Ministry of Environment and Natural Resources.

These guides cover the following topics:

1. Forest plant production (nurseries)

2. Reforestation
3. Sustainable forest management and plantations
4. Forest conservation in protected areas
5. Natural regeneration of degraded areas
6. Silvopastoral system: trees on livestock farms
1. Shade-grown cacao production
7. Shade-grown coffee production
8. Proper use and management of pesticides

As part of national efforts to ensure the responsible and sustainable implementation of REDD+ in the Dominican Republic, nine Technical Guides were developed and published to provide guidance to Executing Entities (EE) on the application of good environmental, social, and productive practices. These Guides address the main activities of the AFOLU sector and are essential tools for ensuring compliance with safeguards, gender mainstreaming, and the improvement of production systems in the territory.

These guides were developed through a broad participatory process that included technical workshops, consultation forums, and validation sessions with the Executing Entities and other relevant actors. This process allowed for the integration of local technical knowledge, practical experiences, and territorial priorities, thereby strengthening the relevance, applicability, and acceptance of each of the guides.

Once finalized, the Guides were edited and distributed, in both physical and virtual formats, to all Executing Entities, with the aim of facilitating their direct use in the design and implementation of field activities related to REDD+ and other sectoral policies.

In addition, each Guide makes explicit reference to the safeguard compliance indicators established in the Compliance Matrix, contributing to the systematic monitoring and evaluation of compliance with social and environmental commitments. The Guides are also linked to the Safeguards Information System (SIS), which ensures the traceability of information generated in the field. Finally, the Guides incorporate elements of the Gender Action Plan, promoting equity, the active participation of women, and the mainstreaming of a gender perspective at all stages of implementation.

The gender approach has been mainstreamed through the development of a Gender Action Plan (GAP) with concrete actions to reduce structural gaps in women's access, participation, and recognition of their role in REDD+ activities.

The GAP focuses on three strategic areas:

1. Raise awareness and value the contribution of women in agricultural and forestry production chains.
2. Increase their participation in producer organizations and decision-making spaces.
3. Reduce gaps in access to land and employment in the sector.

Verifiable indicators were defined for each axis and incorporated into the SIS, including training for beneficiaries, promotion of women's participation in organizations, and actions to improve access to land. Compliance with these indicators is supported by the implementation of specific mitigation measures and good practices included in the operational plans. These indicators were also included in each of the nine Technical Guides.

The **Table 6** below, taken from the Compliance Sheet of the Compliance Matrix uploaded to the MMARN website, version February 4, 2022, shows a summary of the social and environmental impacts by REDD+ activity type and the applicable mitigation measures.

The application of the compliance matrix was later simplified for the Executing Entities (EEs) through a structured questionnaire, facilitating easier data collection and reporting. In addition, Table 6 now forms the basis of the Safeguards Information System (SIS). With the implementation of the SIS software, EEs are expected to have a more user-friendly and operational tool, enabling systematic tracking and facilitating compliance with social and environmental safeguards across REDD+ activities.

Table 6 Summary of the environmental and social impacts of REDD+ activities and their mitigation measures. Taken from the Compliance Matrix Compliance Sheet.

REDD+ activity	Environmental and social impacts of REDD+ activities	Mitigation measure and/or good practices
1. Sustainable Forest Management (SFM): Activities carried out with the participation of stakeholders, aimed at maintaining and/or promoting forest stands in order to reduce emissions from deforestation and degradation, serving as a tool to stabilize the agricultural and livestock frontier, while offering productive alternatives to local communities. They include silvicultural operations aimed at increasing the productivity of forest biomass, such as forest harvesting, non-timber harvesting, fire control, integrated pest management, among others.	Planning and management of areas is inefficient due to a lack of management plans.	The activity is carried out under a forest management plan or technical authorization issued by the Ministry of the Environment.
	Activity planning includes developing consultations and agreements with current users to conduct alternative productive activities.	Development of consultations and agreements with current users to conduct alternative productive activities.
	Use of species inappropriate for the area and/or use of a single forest species.	The forest management plan or corresponding technical authorization provides for maintaining a minimum diversity of forest species, thus avoiding monoculture.
	Firewood extraction intensifies in conserved forest areas.	The management site is protected, especially those of 10 or more hectares Monitoring plan in conservation areas Registration and reporting of timber extraction in the area Biodiversity protection actions are carried out.
	Fauna and flora diversity is reduced in the harvesting area due to exclusively commercial timber interests.	Thick woody material is left to create micro-habitats on the ground Habitat connectivity is maintained within and across the landscape Sites of critical importance for flora and fauna species are protected, with an emphasis on vulnerable and endangered species.

REDD+ activity	Environmental and social impacts of REDD+ activities	Mitigation measure and/or good practices
	Promotion of plantations over natural forests.	Conserve natural forest cover.
	Soil erosion, loss of physical and chemical properties, and loss of vegetation.	Forest harvest residues are laid out on the ground. Areas under management are kept free of contaminating residues. Regulations and measures on the use and management of fuels and pesticides are considered. In the upper watersheds, actions such as the following are conducted: -retention of standing dead trees and trees that exceed the upper canopy, -construction of firebreaks, -controlled use of chemicals (fuels, agrochemicals).
	Forest fires.	Enhancing training in disaster supervision, monitoring, and prevention with community participation. Establishment of community brigades for fire control. Construction of firebreaks. Brigades are provided with personal safety equipment.
	Presence of pests and diseases.	Pests and diseases are detected through continuous monitoring in the field or at reforestation sites. Biological prevention and control are used instead of chemical pesticides and fertilizers. Sanitary thinning is carried out within plantations that are severely affected and whose condition cannot be reversed. Severely affected individuals whose condition cannot be reversed are removed.

REDD+ activity	Environmental and social impacts of REDD+ activities	Mitigation measure and/or good practices
		Dead plants are replaced in each rainy season. The reforested site is protected, especially those of 10 or more hectares.
	Health risks and soil and water contamination due to poor handling of agrochemicals.	Protocols are established for the use of chemical inputs, and training is provided on their use. A record is kept of the use of agrochemicals.
2. Reforestation within REDD+ framework: Establishment of forest plantations on land without tree cover, using naturalized, endemic, and/or native species, either by promoting natural regeneration, direct seed sowing, or planting trees reproduced in nurseries.	Planning and management of areas is inefficient due to a lack of reforestation plans.	A reforestation plan is implemented, considering that forestry activities and the species to be planted are compatible with the habitat requirements of vulnerable and endangered species. The biodiversity present on the property is considered. Where appropriate, measures are established to protect the upper river basin. Planning includes consultations and agreements with current users to develop alternative productive activities.
	Use of species that are inappropriate for the area and/or use of a single forest species.	The reforestation plan or corresponding technical authorization provides for maintaining a minimum level of forest species diversity. Species are selected according to technical criteria established by the Directorate of Biodiversity and Wildlife (native or naturalized species) in order to more quickly cover areas devoid of vegetation. The forest germplasm is of good quality and known origin (mother trees).

REDD+ activity	Environmental and social impacts of REDD+ activities	Mitigation measure and/or good practices
		Plants obtained from the nursery meet quality parameters (stem diameter, plant height, root, mycorrhizae, lignification, vigor, and health). The seedlings are transferred to the reforestation site in an adequate manner.
	Low survival rate of forest species due to poor management.	Thinning is carried out for management and sanitary purposes within the plantations (removal of affected or diseased individuals). Dead plants are replaced in each rainy season. The reforested site is protected, especially those of 10 or more hectares.
	Firewood extraction intensifies in reforested forest areas.	The management site is protected, especially those of 10 or more hectares. Monitoring plan in conservation and reforested areas. Record and report timber extraction in the area. Biodiversity protection measures are implemented (thick woody material is left to create microhabitats on the ground. Habitat connectivity within and across the landscape is preserved. Sites of critical importance for flora and fauna species are protected, with an emphasis on vulnerable and endangered species).

REDD+ activity	Environmental and social impacts of REDD+ activities	Mitigation measure and/or good practices
	Soil erosion, loss of physical and chemical properties, and loss of vegetation.	Soil organic matter is preserved or enriched. Techniques are used to stabilize riverbanks, streams, and ravines or to stabilize slopes. Forest harvest residues are distributed on the soil. Areas under management are kept free of contaminating residues. Regulations and measures on the use and management of fertilizers and pesticides are considered. In upper watersheds, actions such as the following are carried out: -retention of standing dead trees and trees that exceed the upper canopy, -construction of firebreaks, -soil conservation and restoration works, controlled use of chemicals. (SELECT AS APPLICABLE))
	Presence of pests and diseases.	The reforested site is protected, especially those covering 10 or more hectares.
	Health risks and contamination of soil and aquifers due to poor handling of agrochemicals.	Protocols are established for the use of chemical inputs and training is provided on their use.
	Forest fires.	Enhancing training in supervision, monitoring, and disaster prevention with community participation. Establishment of community brigades for fire control. Construction of firebreaks. Brigades are provided with personal safety equipment.

REDD+ activity	Environmental and social impacts of REDD+ activities	Mitigation measure and/or good practices
3. Agroforestry systems: (SAF Coffee, Cacao): Activities that encourage agroforestry, promoting the use of non-invasive agricultural and forest species to generate increased economic and social benefits for producers, maintaining forest cover and other ecosystem services, including carbon (CO2) capture. Includes activities such as shade-grown coffee and cacao production, among others.	Coffee and cacao production is inefficient due to a lack of agroforestry management plans to guide crop implementation.	Agroforestry activities are planned considering that forestry and agricultural work and the species to be used are compatible with the habitat requirements of vulnerable and endangered species. (Species are chosen in accordance with the technical criteria of the Ministry of Agriculture and the Directorate of Biodiversity and Wildlife). Where appropriate, measures are established to protect the upper river basin.
	Degradation of biodiversity in the region due to the use of seeds not approved by the Ministry of Agriculture and the Ministry of Environment and Natural Resources (MARN), leading to a loss of native species.	Native species are used. Germplasm is collected from healthy, vigorous individuals that meet the desired characteristics according to the objective. Species are chosen according to technical criteria from the Directorate of Biodiversity and Wildlife for the planting of shade trees. Plants obtained from the nursery meet quality parameters (stem diameter, plant height, root, mycorrhizae, lignification, vigor, and health). The seedlings are transferred to the reforestation site in an adequate manner.
	Impacts on local biodiversity in areas with water scarcity.	Non-invasive agricultural and forest species are used, which comply with the technical criteria of the Directorate of Biodiversity and Wildlife.

REDD+ activity	Environmental and social impacts of REDD+ activities	Mitigation measure and/or good practices
	Soil erosion, loss of physical and chemical properties, and loss of vegetation.	Soil organic matter is preserved or enriched. Techniques are used to stabilize riverbanks, streams, and ravines or to stabilize slopes. Forest harvest residues are laid out on the soil. Areas under management are kept free of contaminating residues. Regulations and measures on the use and management of fertilizers and pesticides are considered. In upper watersheds, actions such as the following are carried out: -retention of standing dead trees and trees that exceed the upper canopy, - construction of firebreaks, -soil conservation and restoration works, controlled use of chemicals. Soil organic matter is maintained or enriched through crop rotation. (SELECT AS APPROPRIATE)
	Forest fires.	Enhancing training in disaster supervision, monitoring, and prevention with community participation. Establishment of community brigades for fire control. Construction of firebreaks. Brigades are provided with personal safety equipment.

REDD+ activity	Environmental and social impacts of REDD+ activities	Mitigation measure and/or good practices
	Presence of pests and diseases.	Pest and disease detection is conducted through continuous monitoring in the field or at reforestation sites. Prevention and biological control are used instead of chemical pesticides and fertilizers. Sanitary thinning is carried out in severely affected plantations whose condition cannot be reversed.
	Health risks due to poor handling of agrochemicals.	Protocols are established for the use of chemical inputs, and training is provided on their use.
	Contamination of soil and aquifers. Health impacts due to improper use of pesticides.	Protocols are established for the use of chemical inputs, and training is provided on their use.
4. Silvopastoral systems: Activities aimed at converting livestock farms under full sun to the rearing of animals associated with trees and shrubs that provide some type of forage, preferably native and/or endemic, which can provide shade, food, and other uses, while also capturing carbon (CO₂). The positive effect is aimed at providing productive alternatives to beneficiaries to conserve the forest frontier and prevent the expansion of the agricultural frontier.	Silvopastoral systems with inefficient results due to lack of technical considerations for implementation.	The activities of the silvopastoral system are planned considering that forestry and livestock activities and the species to be used are compatible with the habitat requirements of vulnerable and endangered species. (Species are chosen in accordance with the technical criteria of the Directorate of Biodiversity and Wildlife and the Directorate of Livestock). Where appropriate, measures are established to protect the upper river basin.
	Low efficiency in the silvopastoral system due to poor management.	Preventive measures are established to protect plantations and crops from livestock. Plantations are established with species that provide shade and/or food for livestock, in accordance with the technical criteria of the Directorate of Biodiversity and Wildlife and the Directorate of Livestock.

REDD+ activity	Environmental and social impacts of REDD+ activities	Mitigation measure and/or good practices
	Low productivity in the silvopastoral system.	Local resources are used to enable producers to improve animal productivity.
	As the activity is profitable, it can put pressure on land use change in surrounding forest areas.	The development of silvopastoral systems is limited to livestock farms with no trees or little forest cover, thus avoiding the use of forested areas.
	Impacts on local biodiversity. Impact on shallow aquifers.	Non-invasive forest and forage species are used that comply with the technical criteria of the Directorate of Biodiversity and Wildlife and the Directorate of Livestock.
	Soil erosion, loss of physical and chemical properties, and loss of vegetation.	Soil organic matter is preserved or enriched. Riverbank stabilization techniques are used on rivers, streams, and ravines, as well as slope stabilization techniques. Vegetation residues are laid out on the soil. Areas under management are kept free of polluting residues. Regulations and measures on the use and management of fertilizers and pesticides are considered. In the upper watersheds, actions such as the following are carried out: -retention of standing dead trees and trees that exceed the upper canopy, -construction of firebreaks, -soil conservation and restoration works, controlled use of chemicals. (SELECT AS APPROPRIATE) N)

REDD+ activity	Environmental and social impacts of REDD+ activities	Mitigation measure and/or good practices
	Disease spread and poor herd health.	Measures are established to prevent the spread of disease and maintain herd health, in accordance with animal health regulations.
	Presence of pests and diseases.	Pest and disease detection is conducted through continuous monitoring in the field or at reforestation sites. Prevention and biological control are implemented instead of applying pesticides and chemical fertilizers. Sanitary thinning is carried out within plantations that are severely affected and whose condition cannot be reversed. Protocols are established for the use of chemical inputs and training is provided on their use.
	Forest fires.	Enhancing training in disaster supervision, monitoring, and prevention with community participation. Establishment of community brigades for fire control. Construction of firebreaks. Brigades are provided with personal safety equipment.
5. Assisted natural regeneration of degraded areas: Preparation and care of land with little or no tree cover, in order to promote the growth or development of natural vegetation with the aim	Restored areas without adequate monitoring/maintenance may suffer high mortality rates. Failure to eliminate the source of the problem limits the potential positive impact of this measure.	There is a plan to follow up and monitor areas undergoing natural regeneration. Areas undergoing regeneration are kept free from polluting waste. The restoration site is protected.

REDD+ activity	Environmental and social impacts of REDD+ activities	Mitigation measure and/or good practices
of reestablishing forest systems, whether for conservation or productive purposes.	Firewood extraction intensifies in conserved forest areas, as its use is not authorized in areas undergoing regeneration.	The management site is protected, especially those covering 10 or more hectares. Monitoring plan in conservation areas. Recording and reporting of timber extraction in the area. Biodiversity protection measures are implemented.
	Fauna and flora diversity is reduced in the logging area due to exclusively commercial timber interests. Reconfigure the impact.	Coarse woody material is left to create microhabitats on the ground. Habitat connectivity within and across the landscape is preserved. Sites of critical importance for flora and fauna species are protected, with emphasis on vulnerable and endangered species.
	Soil erosion, loss of physical and chemical properties, and loss of vegetation.	Soil organic matter is preserved or enriched. Techniques are used to stabilize riverbanks, streams, and ravines or to stabilize slopes. Forest harvest residues are distributed on the soil. Areas under management are kept free of contaminating residues. Regulations and measures on the use and management of fertilizers and pesticides are taken into account. In upper watersheds, actions such as the following are carried out: -retention of standing dead trees and trees that exceed the upper canopy, -construction of firebreaks, -carrying out soil conservation and restoration works, controlled use of chemicals. (SELECT AS APPROPRIATE)

REDD+ activity	Environmental and social impacts of REDD+ activities	Mitigation measure and/or good practices
	Forest fires.	Enhance training in disaster relief supervision, monitoring, and prevention with community participation. Establishment of community brigades for fire control. Construction of firebreaks. Brigades are provided with personal safety equipment.
	Presence of pests and diseases (Pine forests).	Pest and disease detection is conducted through continuous monitoring in the field or at reforestation sites. Biological prevention and control is carried out instead of applying pesticides and chemical fertilizers. Sanitary thinning is carried out within plantations that are severely affected and whose condition cannot be reversed..
	Health risks and contamination of soil and aquifers. Health problems caused by improper use of pesticides.	Protocols are established for the use of chemical inputs, and training is provided on how to use them.
	Low survival rate of forest species due to poor management.	Thinning is carried out for management and sanitary purposes within the plantations. Severely affected individuals whose condition cannot be reversed are removed. Dead plants are replaced in each rainy season. The reforested site is protected, especially those covering 10 or more hectares.

REDD+ activity	Environmental and social impacts of REDD+ activities	Mitigation measure and/or good practices
	Soil erosion, loss of physical and chemical properties, and loss of vegetation.	Soil organic matter is preserved or enriched. Techniques are used to stabilize riverbanks, streams, and ravines or to stabilize slopes. Forest harvest residues are distributed on the soil. Areas under management are kept free of contaminating residues. Regulations and measures on the use and management of fertilizers and pesticides are considered. In upper watersheds, actions such as the following are carried out: -retention of standing dead trees and trees that exceed the upper canopy, -construction of firebreaks, - conduct soil conservation and restoration actions, controlled use of chemicals. (SELECT AS APPROPRIATE)
	Forest fires.	Enhance training in disaster supervision, monitoring, and prevention with community participation. Establishment of community brigades for fire control. Construction of firebreaks. Brigades are provided with personal safety equipment.
	Presence of pests and diseases.	Pest and disease detection is conducted through continuous monitoring in the field or at reforestation sites.

REDD+ activity	Environmental and social impacts of REDD+ activities	Mitigation measure and/or good practices
		Biological prevention and control is carried out instead of applying pesticides and chemical fertilizers. Sanitary thinning is carried out within plantations that are severely affected and whose condition cannot be reversed.
	Low survival rate of forest species due to poor management.	Thinning is carried out for management and sanitary purposes within the plantations. Severely affected individuals whose condition cannot be reversed are removed. Dead plants are replaced in each rainy season. The reforested site is protected, especially those covering 10 or more hectares..
6. Forest conservation in priority protected areas, together with stakeholders: Land use activities in protected areas with the participation of key actors and stakeholders living within or in buffer zones, aimed at maintaining forest cover, biodiversity, and ecosystems within these areas. Aims to harmonize forest conservation and livelihoods, in accordance with the law and regulations on protected areas and in compliance with legal principles relating to user rights, in order to reduce emissions from deforestation and degradation within Protected Areas. (FOREST CONSERVATION ACTIVITY)	The implementation of strategies with little transparency and/or participation of local stakeholders in land use can lead to limited and/or unequal access to benefits by local communities, which can be a source of conflict. Possible involuntary displacement, as well as limited access to natural resources in protected areas. (APPLIES TO LAND UNDER STATE OWNERSHIP AND JURISDICTION)	Local stakeholders are involved and/or sustainable production alternatives are established. Strengthening training in supervision and monitoring of safeguards and conservation of the protected area. Training and awareness-raising activities on natural resource conservation and sustainable management practices are established. Strategies are established to support and promote projects and practices for sustainable crop use. Promotion and support for women's entrepreneurship. Strategies are established to strengthen the benefits associated with conservation.

REDD+ activity	Environmental and social impacts of REDD+ activities	Mitigation measure and/or good practices
		Integration of community members into the park ranger staff. Creation of Payment for Environmental Services in Protected Areas.
	Forest fires. (APPLIES TO LAND UNDER STATE OWNERSHIP AND JURISDICTION)	Strengthening training in disaster supervision, monitoring, and prevention with community participation. Establishment of community brigades for fire control. Construction of firebreaks. Brigades are provided with personal safety equipment.
	Performing prohibited activities within the protected area and buffer zone. (STATE MANAGEMENT)	Safety, monitoring, and control protocols are established for activities, thus preventing unauthorized and inappropriate use.
	Use of species inadequate for the area and/or use of a single forest species. (IN CASES OF STATE-ASSISTED REGENERATION).	The composition of appropriate tree species is preserved in accordance with the stage of succession of the stand.
	Intensified firewood extraction and unauthorized logging in conserved forest areas.	The management site is protected, especially those of 10 or more hectares. Monitoring plan in conservation areas. Recording and reporting of incidents. Protection measures for biodiversity are performed.

REDD+ activity	Environmental and social impacts of REDD+ activities	Mitigation measure and/or good practices
	Soil erosion, loss of physical and chemical properties, and loss of vegetation.	Soil organic matter is preserved or enriched. Techniques are used to stabilize riverbanks, streams, and ravines or to stabilize slopes. Forest harvest residues are distributed on the soil. Areas under management are kept free of contaminating residues. Regulations and measures on the use and management of fertilizers and pesticides are considered. In upper watersheds, actions such as the following are carried out: -retention of standing dead trees and trees that exceed the upper canopy, -construction of firebreaks, -carrying out soil conservation and restoration works, controlled use of chemicals. (SELECT AS APPROPRIATE).
	Presence of pests and diseases. PINE FORESTS.	Pest and disease detection is conducted through continuous monitoring in the field or at reforestation sites. Prevention and biological control are used instead of chemical pesticides and fertilizers. Sanitary thinning is carried out within severely affected plantations whose condition cannot be reversed.

REDD+ activity	Environmental and social impacts of REDD+ activities	Mitigation measure and/or good practices
		Protocols are established for the use of chemical inputs, and training is provided on how to use them.
	Low survival rate of forest species due to poor management. (IN THE CASE OF ASSISTED REGENERATION)	Thinning is carried out for management and sanitary purposes within plantations. Severely affected individuals whose condition cannot be reversed are removed. Dead plants are replaced in each rainy season. The reforested site is protected, especially those covering 10 or more hectares.
Gender Action Plan (this is not a REDD+ activity, but rather a cross-cutting action)	Activities are being conducted to improve the visibility and appreciation of women's contribution to production chains.	
	Activities are being conducted to increase the number of organizations that include women in their membership and governing bodies in subprojects prioritized by REDD+.	
	Community members have received training to develop activities to reduce gaps in women's access, use, and enjoyment of resources in conservation and alternative production plans.	

Figure 6 Extract from the SIS that shows questions to address the Compliance Matrix

Conservar bosques en áreas protegidas prioritarias junto con los actores sociales

» CAP - Capacitación y sensibilización ambiental

CAP_01 En las áreas protegidas donde hay pérdida de bosque o riesgo de pérdida de bosque, se requiere de un Plan de involucramiento actores locales y/o establecimiento de alternativas sustentables. Fortalecimiento de la capacitación en supervisión y monitoreo de salvaguardas que incluya la participación de usuarios y población que vive en las zonas de amortiguamiento del área protegida.

-

¿Aplica el criterio CAP_01?

-

- ☐ Sí
- ☐ No

¿Se cumple el criterio CAP_01?

-

- ☐ Sí
- ☐ No

¿Qué medidas tomará para mejorar el cumplimiento de este criterio?

-

Adjuntar archivo de soporte

-

Haga clic aquí para subir el archivo. (<10MB)

Comentarios adicionales

-

10.1.6 2.2 Confirm whether the entities responsible for implementing the Safeguard Plans maintain consistent and complete records of the activities of the REDD+ Mechanism, such as records of administrative approvals, licenses, permits, public consultation documentation, documentation of agreements reached with communities, records of the selection process, due diligence assessments, and records of complaint handling under the Grievance and Conflict Resolution System (GCRS).

Within the Executing Entities (EE), there are technical units responsible for verifying compliance with good environmental and social practices in the activities they perform. However, these units vary in terms of their compliance criteria and the systematization of records, which depends on both the type of project and their specific institutional mandates. To standardize criteria and recording mechanisms, corrective actions are proposed regarding the use of the Safeguards Information System by the EE and training on the indicators and mitigation measures associated with each REDD+ activity.

As described in section 2.1, another important tool for EE is the good practice guidelines developed by the REDD+ Program, which were developed based on the environmental and social compliance matrix to directly respond to the indicators defined and the needs expressed by the EE themselves.

These technical units operate on the basis of pre-existing registration systems inherent to their functions, which were not specifically designed for REDD+ activities. However, in practice they show a significant level of consistency, to varying degrees, with the Cancun Safeguards and the World Bank's Operational Policies (Table 7).

An example of it is the **Vice Ministry of Forest Resources (VFR)**, which has the technical support of forest rangers who are professionals accredited by the Ministry of Environment and Natural Resources under Forest Law 57-18 and its regulations. These technicians are responsible for developing, supervising, and ensuring the implementation of forestry projects approved by the competent authority. The information generated by the forestry managers is systematized and used to continuously monitor the good environmental practices established in the forest management plans, which correspond to categories of permits granted by the MMARN.

Another example is the case of the **Vice Ministry of Protected Areas and Biodiversity**. Although work is underway to implement this in all areas of the National System of Protected Areas (SINAP), annual assessments are carried out using the Management Effectiveness Tracking Tool [METT](#), which collects data on governance, ecosystem services, participation, education and awareness, climate change, and carbon sequestration, among others. In addition, it monitors conservation targets, training and awareness-raising processes, and protection and surveillance reports, among other things.

Meanwhile, the **Technical Unit for the Implementation of Agroforestry Projects (UTEPDA)**, an entity affiliated with the VFR, keeps detailed records on agroforestry activities. These include data on species planted, area covered, use of agrochemicals, participation of women in activities, and aspects related to the delivery of property titles to beneficiary producers, in coordination with the national titling program of the central government.

As for private or social EE, such as the San Ramón Association and the Association for Sustainable Forest Restoration (ASODEFOREST), both also receive technical support from forest managers, in compliance with the aforementioned legal framework. The San Ramón Association, in particular, has a unique organizational structure based on collective land ownership among its members (men and women) and has forestry technicians who monitor compliance with safeguards in its interventions.

However, structural limitations were identified that hinder the use and collection of associated records as planned, especially under the SIS. Among the main challenges are:

- The operational overload of technical staff in the EE, which limits their ability to specifically monitor safeguards under standardized formats.
- The absence of technical liaison staff with the EE (the two technicians specified for this function according to the organizational chart proposed for the ESFM) from the REDD+ Coordinating Office (RCO).

- The lack of digital tools (software) to upload records to the Safeguards Information System (SIS), Beneficiary Registry, and GRM. These did not become operational until 2024.
- The complexity of the Environmental and Social Management Plan (ESMP) Compliance Matrix, which made it difficult to use as a monitoring tool in the field. Despite ongoing training, there are gaps in understanding between the EEs, and constant staff changes in government agencies exacerbate this situation. As the SIS was designed based on the matrix, which simplified its use. However, since the software could not be deployed on time, it was proposed to use the matrix itself (in Excel format) while a solution for the SIS was being sought, which turned out to be very complex and not functional in the field. As a result, safeguard data could not be collected as originally planned. This was resolved by developing the new SIS and making it operational in 2024.

There is, however, a clear institutional commitment on the part of the EE, which have kept general records on key aspects such as plant deliveries, plot location, agreements with communities, agrochemical management, women's participation, compliance with management plans, and application of good environmental practices. This information constitutes a valuable basis that can be used to strengthen registration mechanisms and align them more closely with the Safeguards Information System (SIS) and the specific requirements of the REDD+ Mechanism.

Based on these EE records and their communication to the RCO, compliance was assessed by item in the On-Site Compliance Criteria Assessment Matrix in section 2.3 of this annex and in the table below summarizing the existing records in each EE to date.

In this regard, during the accounting period for reduced emissions, the EEs applied various instruments and tools that were used to report in this annex on the monitoring and reporting of REDD+ Activities.

The following table summarizes the records that have been used by the EE:

Table 7 Summary of existing records kept by Executing Entities

Executing Entity *****	Type of record	Comments	Existence at the time of the 2021 report
UTEPDA: - Sustainable Agroforestry Systems	Permits, authorizations, and agreements	Due to the type of activity performed, no environmental permits are required. An official from the ministry issues this certificate six months after the plantation is established, ensuring that the appropriate species, type of plantation, and spacing are used. At UTEPDA, all beneficiaries are screened beforehand and added to its registration system (SDIGEM), so that they can receive technical support or supplies and ensure traceability.	Yes

***** Information on the activities conducted by each executing entity is extracted from Annex 5 of the Benefit Sharing Plan, final version 2022..

	Environmental training and awareness	UTEPDA conducted Training modules on management of gaps between IDB safeguards and national systems in 2021. Although this activity was not designed for REDD+ safeguards, the awareness and training results are very useful. According to the Environmental and Social Compliance Report, a workshop on the importance of protected areas was held for community members in Guázara on May 27, 2022, with 29 people attending. For 2023 and 2024, their annual report shows that they keep a record of all training activities.	Yes
	Training and raising awareness on integrated pest management	In 2023, UTEPDA implemented its PAgrochemical Management Plan and its Training Program on Agrochemical Handling and Management	Yes
	Gener approach	UTEPDA segregates participants in its activities by gender in order to keep accurate records and promote inclusiveness. Consultations and awareness-raising activities are carried out focusing on women's right to land tenure, empowering them as participants in the process and as beneficiaries in their own right, strengthening their knowledge on the subject and inviting them to be present and participate in these activities.	Yes
	Incident report log- GRM	UTEPDA has a Grievance and Redress Mechanim (GRM) and a Community Relations and Participation Plan (CRPP), one of the three mechanisms specified in the GRM REDD+ It also promotes the use of Portal 311 for complaints, claims, suggestions, and reports. This is also a government system; however, statistics are not yet available on its transparency portal. Citizens can visit UTEPDA offices or contact them by phone to receive feedback from the 311 line and the GRM.	Yes
	Other relevant records	UTEPDA has Environmental and Social Compliance Reports that are publicly available on its website	Yes

INDOCAFE: - Sustainable Agroforestry Systems - Assisted natural regeneration of degraded areas	Permits, authorizations and agreements	Due to the nature of its activities, it does not require specific environmental permits.	N/A
	Environmental training and awareness	INDOCAFE develops a training and extension program that enables producers and other stakeholders in the chain to adopt correct coffee production practices that result in higher productivity, better plantation management, and pest control. The program is run by the Technical Department (Extension and Training Department).	Yes
	Integrated Pest Management training and awareness		Yes
	Gender approach	INDOCAFE divides participants in its activities by gender to keep accurate records and promote inclusivity. Likewise, the strengthening of associations and the promotion of equitable participation in the value chain and the recognition of gender equality were formalized in its Strategic Plan 2020-2025 . At the request of the central government, INDOCAFE currently has a Gender Office within the institution with a work plan.	Yes
	Incident report log - GRM	INDOCAFE promotes the use of Portal 311 for grievances, claims, suggestions, and complaints. This is also a government system, and statistics are publicly available on its transparency portal.	Yes
	Other relevant records	INDOCAFE summarizes all of its annual activities in its Annual Report. It also maintains records of producers.	Yes
MAG- Cacao Department: - Sustainable Agroforestry Systems - Assisted natural regeneration of degraded areas	Permits, authorizations, and agreements	Through consultation with the executing entities, they do not require these documents.	N/A
	Environmental training and awareness	The Cacao Department has a program of “field schools” that address the needs of producers, emphasizing good practices and technology.	Yes
	Training and awareness on Integrated Pest Management	They have developed campaigns for integrated pest management, such as moniliasis, promoting good practices.	Yes
	Gender approach	The MAG has a Women's Office, which is responsible for advancing the gender equality agenda. In 2022, the MAG's technology department generated statistics for the Extension	No

		Department, including farm visits, planting data, farm product prices, and producers (by gender). Since 2024, there has been a gender training program in the municipality of Yamasá.	
	Incident report log - GRM	The MAG promotes the use of Portal 311 for grievances, claims, suggestions, and complaints. This is also a government system, and statistics are publicly available on its transparency portal. In addition, technicians at its eight regional offices collect any concerns, needs, and complaints from producers. The Cacao Commission is a body in which the government sector, producers, and commercial companies participate. It is a governing body for the sector, recording decisions, problems, and activities to be conducted by the sector. They keep records of commercial companies, as well as the seals and certifications that are implemented in the country for cacao. Each one has environmental and social standards that are audited annually.	Yes
	Other relevant records	The Cacao Commission is a body in which the government sector, producers, and commercial companies participate. It is a governing body for the sector. It records the decisions, problems, and activities to be performed by the sector. They keep records of commercial companies, as well as the seals and certifications that are implemented in the country for cacao. Each one has environmental and social standards that are audited annually. Through consultation with the executing entities, they do not require it..	Yes
CONALECHE: - Silvopastoral Systems (Arborization of livestock farms)	Permits, authorizations, and agreements	Through consultation with the EE, they do not require it.	N/A
	Environmental training and awareness	In 2021, an induction workshop was held on filling out technical data sheets on dairy farms for data collection.	Yes

	Training and awareness on Integrated Pest Management	For 2022 and 2023, the institutional report indicates that there is a record of various training and awareness-raising activities.	Yes
	Gender approach	In 2021, under the GANACLIMA program, CONALECHE held a session on Mainstreaming Gender and designed infographics on Women's Participation in the Livestock Sector in the Yuna River Basin. In 2022, they carried out the Program for the Recovery of Degraded Pastures with a Gender Perspective and the Guide for the Facilitation of Gender-Responsive Field Schools for Livestock Production. In 2024, through self-assessment of the CAF guide, CONALECHE demonstrated that it complies with improvements to the management and performance system by involving target groups, communities, and social sectors in decision-making. EVIDENCE: • RPEI 2019-2024 Board of Directors Resolution • Resolution and Implementation of the 2022-2023 POAs • Workshops for associations on the credit program. • User satisfaction survey. • Statistical reports on dissatisfaction surveys. • Meetings with stakeholders held by the executive management through regular visits to producer associations.	Yes
	Incident report log - GRM	CONALECHE promotes the use of Portal 311 for grievances, claims, suggestions, and complaints. This is also a government system. However, statistical reports are not available on its transparency portal.	Yes
	Other relevant records	N/A	N/A
DIGEGA: - Silvopastoral systems (tree	Permits, authorizations, and agreements	Through consultation with the EE, they do not require it.	N/A

planting on livestock farms)	Environmental training and awareness	DIGEGA presents a summary of the training conducted each year in its annual report. A compilation of the lists of participants is kept by its Directorate of Extension and Livestock Development.	Yes
	Training and awareness on Integrated Pest Management		Yes
	Gender approach	In 2021, a gathering was held for the Women Farmers' Cooperative, sponsored by INESPRE, and other meetings focused on women producers There are separate records for male and female beneficiaries from 2022, 2023, and 2024. The DIGEGA memorandum lists activities such as a course on goat and sheep production for members of the Association of Women Entrepreneurs of Los Guineos, municipality of Yamasa, Monte Plata Province. Good progress was made in relation to gender equity policy, and to achieve significant advances, a Gender Analyst was appointed, whose role is to monitor and develop activities that promote gender equity. Likewise, the Institutional Committee for Gender Mainstreaming was formed, which was approved by the highest authority through a resolution in 2024.	Yes
	Incident report log - GRM	DIGEGA promotes the use of Portal 311 for complaints, claims, suggestions, and grievances. This is also a government system, and statistics are publicly available on its transparency portal.	Yes
	Other relevant records	N/A	N/A
ASODEFOREST: - Sustainable Forest Management (Sustainable Forest Use)	Permits, authorizations, and agreements	ASODEFOREST records the Ministry of Environment authorization number, the Operational Plan, and the reports on beneficiaries prepared by the provincial office.	Yes
	Environmental training and awareness	In 2022, institutional capacity building was strengthened for the Association for Sustainable Forest Restoration Development (ASODEFOREST) and the San Ramón Forestry Association.	Yes
	Training and awareness on Integrated Pest Management		Yes
	Gender approach	ASODEFOREST has mainstreamed gender in its activities and promotes women's participation in	Yes

		leadership roles, their rights to land tenure, access to benefits from the REDD+ program, and representation and presence alongside their counterparts as co-beneficiaries. ASODEFOREST has the highest percentage of women registered as beneficiaries of the REDD+ program as a result of constant, daily, and broad awareness-raising, reaching 33% female participation. Likewise, under the EnABLE program, work was done on social inclusion and gender equality. In collaboration with the San Ramón Association and the Association for Sustainable Forest Development and Restoration (ASODEFOREST), this component focused on empowering women, youth, and people with disabilities to ensure that their voices are heard in forums on climate change and to highlight their role in community development and resource management.	
	Incident report log - GRM	ASODEFOREST fully adheres to GRM—Green Line as a platform for grievances, claims, and inquiries regarding REDD+.	Yes
	Other relevant records	N/A	N/A
San Ramón Forestry Association: - Sustainable Forest Management (Sustainable Forest Use)	Permits, authorizations, and agreements	In accordance with criteria MFS-01, the reference number of the Ministry of Environment authorization must be recorded, MFS-03 reference to the consecutive number of the Operational Plan, and MFS-04 official number of the reports made by the province. In the report on Operational Policies on the Application of Environmental Safeguards for 2021, focal point Juan Azcona details that the San Ramón Forestry Association uses the forest management plans approved by the MMARN and the Annual Operational Plan on forest use and reforestation activities as management tools. Likewise, as a means of verification, they submit monthly reports on harvesting and reforestation activities.	Yes

	Environmental training and awareness	Information on 2021 can be found in the report on relevant information for REDD+ 2021, produced by Juan Azcona. Information provided: - Sanitation plan for the attack of the pine bark beetle (<i>Ips calligraphus</i>). Approved by the Ministry of the Environment. - Instructions on how to recognize, prevent, and control pests. - Constant monitoring of the forest. - Map of the area undergoing forest sanitation - Photos of areas affected by the <i>Ips calligraphus</i> pest.	Yes
	Training and awareness on Integrated Pest Management		Yes
	Gender approach	World Bank teams conducted a field visit in December 2023. EnABLE's knowledge and capacity development activities in the Dominican Republic are structured around three key components. One of these is social inclusion and gender equity. In collaboration with NGOs such as the San Ramón Association and the Association for Sustainable Forest Development and Restoration (ASODEFOREST), this component focuses on empowering women, young people, and people with disabilities to ensure that their voices are heard in forums on climate change and to highlight their role in community development and resource management.	No information
	Incident report log - GRM	The association fully adheres to the GRM—Green Line as a platform for grievances, claims, and inquiries. REDD+	Yes
	Other relevant records	San Ramón has a history of good practices in soil management, pest control, thinning, and other good practices, according to the rotation on each plot.	Yes
Vice-Ministry of Forest Resources-MMARN: Assisted natural regeneration of degraded areas Reforestation within the	Permits, authorizations, and agreements	They keep records of Forest Management Plans. Register of beneficiaries of the PSA Pilot Program. Minutes of community meetings for the selection of reforestation brigade members when a reforestation front is opened.	Yes

framework of REDD (Reforestation with a harvesting right)	Environmental training and awareness	With regard to fire management, training is provided at two levels: the first level is for communities where fires are most likely to occur, and the second level is ongoing training for the forest fire brigade so that they can act as the first line of response.	Yes
	Training and awareness on Integrated Pest Management	There are six forest monitoring committees that receive training on the legal framework, forest benefits, good forest management practices, forest management, pests, and fire control. Training is provided on seed collection, plant production, establishment and management of forest plantations, and GPS management for technical staff in local offices. There is ongoing training for forest managers who are external to the MMARN.	Yes
	Gender approach	The participation of women is encouraged by the Vice Ministry in various field activities. Currently, more than 50% of reforestation brigades are led by women, something that continues to be encouraged. Similarly, more than 50% of the staff involved in plant production in nurseries are women.	Yes
	Incident report log - GRM	As the MMARN vice-ministry, the "Green Line" is applied fully, which is then referred to the relevant area. If appropriate, a field trip is scheduled to evaluate the situation and a report is generated and forwarded to the Green Line for a response to the user. In addition, forest monitoring committees are the forums where grievances and claims from community members are received. Field visits are conducted, the grievance is verified, and a report is prepared, which is shared via WhatsApp in the group created for the committee, and the appropriate measures are taken.	Yes
	Other relevant records	Records of plant deliveries to different beneficiaries. Records of forest fires.	Yes

		Records of the origin of seeds and fruits used in reforestation. Reforestation Initiative Information and Management System (SIGIR)	
Vice Ministry of Protected Areas and Biodiversity – MMARN: - Conserve forests in priority protected areas together with social stakeholders.	Permits, authorizations, and agreements	Co-management agreements for protected areas. Letters of no objection for the implementation of ecological restoration projects within SINAP and buffer zones.	Yes
	Environmental training and awareness	Training and awareness courses for park rangers. Courses for local ecotourism guides, including conservation topics and promoting this economic activity.	Yes
	Training and awareness on Integrated Pest Management	Awareness-raising activities through the implementation of projects and initiatives by different civil society organizations in the vicinity of protected areas, under co-management or proposals that received no objection.	Yes
	Gender approach	Through the World Bank's EnABLE program, efforts were made in 2023 to promote gender equity. In collaboration with partners such as the Dominican Coffee Institute (INDOCAFE) and the Vice Ministry of Protected Areas and Biodiversity, this component includes the dissemination of a gender action plan to improve women's participation in REDD+ activities and raise awareness of their role in decision-making processes.	Yes
	Incident report log - GRM	As the Vice Ministry of MMARN, the “Green Line” is fully implemented.	Yes
	Other relevant records	Registration and training of ecotourism guides in protected areas. Consultations about updating and formulating management plans. Application of the METT tool *****.	Yes

These records were used by the EE to identify potential beneficiaries (potential universe). This approach was shared with the RCO in 2022. As a country, both the Executing Entities and the MMARN and the various governance bodies

***** Tool for Monitoring the Effectiveness of Protected Area Management

are committed to continuous improvement and compliance with safeguards and therefore confirm their full willingness to make any corrections, changes, or modifications required to improve the execution of this component.

10.1.7 2.3 Summarize the extent to which the environmental and social management measures established in the Safeguard Plans and any subsequent plans prepared during the implementation of the Program are put into practice, the quality of stakeholder participation, and whether monitoring and oversight arrangements are in place in the field.

Throughout the period covered by this annex, and during the implementation of the REDD+ Program until December 31, 2024, the Executing Entities (EE) applied the environmental and social provisions contained in the Safeguard Plans and other complementary instruments, such as environmental management plans, environmental and social management frameworks, and good practice guidelines and complaint and grievance mechanisms, in a general manner.

This implementation is evidenced by compliance with the legal and institutional framework of the Dominican Republic, as represented in its laws, regulations, procedures, institutional functions, letters of commitment to citizens, and other instruments. These are also implemented through institutional strategic plans, operational plans, and institutional reports.

This compliance is limited to the provisions of national regulations and has weaknesses in terms of the additional measures identified in the ESMF, especially in the activity type of Forest Conservation in Protected Areas and cross-cutting measures for gender equality. To strengthen this point, the REDD+ Plan being prepared for benefit-sharing will incorporate measures to enhance the application of safeguards, as well as their tracking and monitoring. It will also include measures to address gender gaps selected from the REDD+ Gender Action Plan.

The measures presented in **Table 5** to ensure gender equality comprise a compendium of information reported by the EE through the Safeguards Implementation Report Form for the reporting period from March to December 2021. This shows that most EE monitored women's participation and were already aware of the importance of ensuring their full and effective participation in REDD+ activities.

With regard to the potential risks associated with forest conservation activities in protected areas involving local stakeholders, challenges are recognized in the implementation of Law 202-04, linked to some of its objectives: "(...) 2) Promote the active participation of all social sectors in the conservation and ecologically sustainable use of protected areas; (...) 6) Recognize and compensate the efforts, practices, and innovations of local communities for the conservation and ecologically sustainable use of protected areas; (...) 8) Promote the participation of civil society in the administration of services in protected areas and guarantee access to the benefits they provide to society, doing so in such a way that this access is ensured for present and future generations; (...) 10) Promote the adoption of incentives and special forms of income generation through the payment of environmental services for the conservation and sustainable use of protected areas; (...)." Challenges remain, however, related to the lack of continuity in public policies aimed at nature conservation and the inadequacy of control, monitoring, and enforcement mechanisms.

As part of the improvement actions proposed in Section 5 of this Annex I, the above situation is addressed through the implementation of a corrective action linked to the systematic use of the Safeguards Information Compliance Matrix, as well as a commitment to strengthen community participation activities in the formulation and updating of management plans and in the conservation and management of forests in buffer zones and protected areas. These actions will contribute to more inclusive, effective, and sustainable management of Protected Areas.

To date, no activation of the Resettlement Policy Framework and Process Framework has been reported in the context of activities related to forest conservation within Protected Areas. However, it remains available as a preventive and response tool in case future implementation phases identify scenarios that could trigger its

application, particularly with regard to potential risks of restricting access to natural resources in Protected Areas. The ESMF establishes that physical displacement is not expected to occur and will be avoided as a matter of priority.

Implementation of environmental and social management measures

As this is a systematic approach, there have been gaps in the quality of reporting and monitoring during the period from 2021 to date. However, no significant non-compliance has been identified, as environmental and social risks have been largely mitigated by the good institutional practices of the Executing Entities (EE) and by the robust Dominican regulatory framework on environmental and social matters.

Under the operational structure of each Executing Entity (EE) and in line with its institutional mandate and operating procedures, specific monitoring measures have been defined to ensure the application of good environmental practices. These measures have been formalized through protocols, technical guidelines, operational programs, and institutional strategies, as detailed in Table 7.

These measures have been implemented mainly by field technicians who make regular visits (monthly, bimonthly, or depending on the development of the crop or type of activity), during which they provide guidance to beneficiaries and record the practices implemented, any new developments, and any relevant incidents. The guidance offered to producers included measures to reduce the risks and impacts of their activities, while promoting productivity and profitability.

Although no specific monitoring of REDD+ program beneficiaries was carried out due to the lack of formal beneficiary registration in the early years, the EE reported the general application of these good practices in their institutional reports.

Stakeholder participation and feedback mechanisms

The program has also promoted the participation of relevant stakeholders through workshops, consultations, and community meetings, particularly in the initial phases. Some EE, such as UTEPDA, implemented their own mechanisms, such as the Grievance Redress Mechanism (MAQ), for other reasons and interests.

As mentioned in 1.4 stakeholders, including communities and producers, were consistently consulted throughout the REDD+ governance structure, primarily via the Executing Entities (EEs) and the Technical Advisory Committee (CTA). This ensured that local perspectives were systematically considered in planning and decision-making processes. As a result, the criteria and representatives for the formation of the National Benefit-Sharing Committee were established. It has been active since May 2022 and is the primary body for consultations and decisions regarding the implementation of the REDD+ Program, which is represented by producers, Executing Entities, and other relevant stakeholders. Once the beneficiaries are registered in the Registration System for the 2021 period, the beneficiary committees will be established for each REDD+ activity type.

While further improvement is needed in the systematic documentation of these participatory processes to better assess their depth, representativeness, and impact, these efforts provide a strong basis for enhanced and more transparent stakeholder engagement.

Monitoring and reporting arrangements

Periodic reports from the EE are being prepared, including the annual safeguards report. To date, the EE have submitted institutional forms and reports, although in varying formats. The data collected has served as a reference for verifying certain compliance criteria (see Table 6, Section 3.3), although in many cases the records remain scattered across different databases and have not yet been integrated into a single, automated system. As detailed in section 5.2, corrective actions are proposed to ensure that the information is standardized and responds more accurately to the requirements for compliance with the safeguards as established in the ESMF.

In this regard, the EE have carried out actions within the framework of national regulations and those of each of these institutions, which comply with aspects of the OP, including coordination actions, both at the local level and in the establishment of governance bodies. Examples include efforts to implement the National Benefit Distribution Committee (NBDC) and the Beneficiary Committees. In all cases, the EE, in coordination with the RCO, held consultation, working, and coordination meetings on training and awareness-raising activities on specific program topics, both for technical staff and potential beneficiaries, as appropriate. They also organized and held informational and educational meetings to present the program, explain how it works, and discuss local opportunities and improvements in the EEs' relationships with the audiences they work with. In addition to these actions, the program distributed hundreds of printed booklets addressing general REDD+ issues to beneficiaries and thousands more in electronic format through social media.

For more information on the scope of monitoring and daily activities of the Executing Entities, below is a brief summary of the system applicable to each of them for environmental and social safeguards.

- **MMARN- Vice Ministry of Protected Areas and Biodiversity**

The operation of protected areas in the Dominican Republic is based primarily on the legal and regulatory framework, essentially the [General Environmental Law 64-00](#) and the [Sectoral Law on Protected Areas 202-04](#), the [Management Plans for Conservation Units](#), are the technical regulatory instruments containing the set of decisions on protected areas, and the Compendium of Regulations for Environmental Authorizations of the Dominican Republic.

The Department of Protected Areas Management is the organizational unit responsible for their management and administration. One of the main actions is prevention (protection) and surveillance, through different types of patrols, guard posts, and drones for control, surveillance, and monitoring in the conservation units. The Department of Planning, which manages certifications inside and outside the protected areas, is also part of its structure.

Protected area management plans are another important aspect to consider since, according to the provisions of the Sectoral Law, they are a technical and management tool for Protected Areas.

These, in turn, provide guidance through their [Methodological Guide for the Preparation and/or Updating of Management Plans for Protected Areas in the Dominican Republic](#):

- Public viewings.
- Ecotourism concessions
- Socialization of management plans with key stakeholders from communities adjacent to protected areas.
- Ecosystem monitoring and restoration. (Biodiversity Directorate).
- Evaluation of the effectiveness of protected area management.

Co-management agreements are another mechanism for participation and governance in protected areas. They are legally based on the General Law on the Environment and Natural Resources (Law 64-00), which establishes in Article 6 that "the State shall guarantee the participation of communities and the inhabitants of the country in the conservation, management, and sustainable use of natural resources..."; as well as the Sectoral Law on Protected Areas, No. 202-04 of July 30, 2004, which includes among its objectives: *"To promote the participation of civil society in the administration of services in protected areas and guarantee access to the benefits they provide to society, doing so in such a way that this access is ensured for present and future generations, and to improve and modernize administration for the effective and efficient management of protected areas."* The objective of co-management is to contribute to the effective management of Protected Areas and society's participation.

Involvement of local communities is evident, among other actions, in the establishment of community surveillance committees around protected areas. This mandate comes from the [Regulations for Co-management of Protected](#)

[Areas in the Dominican Republic](#). An example of the creation of these governance bodies was the [swearing-in of the Forest Surveillance Committee of the Ébano Verde scientific reserve](#). In addition to this scientific reserve, other protected areas under co-management include: the Bajo Yuna Mangrove National Park, Cabo Samaná Natural Monument, Salto del Limón Natural Monument, Cabo Cabrón National Park, Laguna Prieta Wetlands Wildlife Refuge, Loma Novillero Forest Reserve, Loma Los Sietes Picos Park, and others.

Other programs for ongoing involvement and participation include training programs for park rangers and a capacity building program for community members through training courses for nature interpreters in the communities adjacent to the conservation units of the National System of Protected Areas (SINAP).

Each of these actions is monitored through matrices, with periodic reports (every three months), which allow for the identification of compliance with the Annual Operational Plans of the Protected Areas Directorate.

In addition, annual assessments are conducted on the effectiveness of the management of protected areas using the Management Effectiveness Tracking Tool (METT), which is an internationally accepted standard for monitoring the status of governance, ecosystem services, participation, education, and awareness, among other topics. This information is recorded in specific matrices that can be compared over time and help inform decision-making on the management of these areas.

The REDD+ Coordinating Office (RCO) has held several working meetings with the vice ministry to support the establishment of selection criteria for the transfer of reduced emissions from protected areas and the design of activities to be considered for benefit sharing that promote the integration of communities and their organizations into the governance mechanisms of the REDD+ Program, such as the creation of beneficiary committees. Training has also been provided on the management of registration systems (SRI) and safeguard information systems (SIS).

To strengthen compliance with safeguards, the “Technical Guide for Good Environmental and Social Practices for Forest Conservation in Protected Areas within the Framework of REDD+” was developed with the Vice Ministry, as well as the booklet [“Involuntary Resettlement, an Exercise in Strengthening our Rights and Institutions”](#), in coordinación and follow-up with the RCO.

- **INDOCAFE**

INDOCAFE, as an organization with national influence, has significantly strengthened its institutional and operational capacity in areas such as gender, social inclusion, and environmental sustainability. This strengthening responds to both government requirements and the organization's own institutional commitments. Examples of this include the opening of its Gender Office, the development of a work plan with a focus on equality, active participation in the ENABLE program, and recent activities to promote the effective participation of women producers in all phases of the coffee production cycle.

At the same time, INDOCAFE implements agroforestry systems for shade-grown coffee that comply with various national laws, standards, and good practices, including:

- **General Law on Environment and Natural Resources (Law No. 64-00):** By promoting sustainable agricultural practices, such as shade-grown coffee, INDOCAFÉ directly contributes to biodiversity conservation, soil protection, and reduced deforestation.
- **Organic Agriculture Law (Law No. 01-18):** The agroecological management practices implemented by INDOCAFÉ, including organic pest control such as coffee berry borer and coffee leaf rust, are aligned with the principles of this law.

- **Environmental standards of the Ministry of Environment and Natural Resources (MMARN)**, such as guidelines for the establishment of forest and agroforestry plantations, and the provisions of the Environmental Assessment Regulations.
- **National Guide to Good Practices for Coffee Agroforestry Systems (REDD+)**, which INDOCAFE actively participated in developing and which currently guides all its field interventions.
- **NAMA for coffee**, which includes four measures to reduce GHGs in the subsector: 1. reduction in the use of nitrogen fertilizers and N₂O emissions, 2. avoidance of methane through improved treatment and reuse of wastewater in mills, 3. better use and management of biomass as an energy source instead of wood, and 4. carbon capture through the spread of agroforestry systems.

Furthermore, INDOCAFE also keeps up to date on developments and trends in the sector by actively participating in regional and international forums, such as PROMECAFE forums and other technical and scientific exchange platforms.

Monitoring, training, and technical support for producers are provided by INDOCAFE extension technicians, who operate from the Provincial Coffee Extension Offices and prepare georeferenced technical reports on visits, planted areas, climatic or phytosanitary events, and strengthening activities.

INDOCAFE keeps detailed monthly records that include: i) areas planted with coffee, their location, owners, and type of seeds used; ii) field visits conducted by technical staff as part of agricultural extension work; iii) estimated or reported production volumes; and iv) events that positively or negatively impact plantations, such as rainfall, drought, pests, or diseases. This information is also consolidated in an annual institutional report that summarizes the areas covered and the progress of the program.

The INDOCAFE technical team makes regular visits to coffee farms, approximately every two months or as required by the biological conditions of the crop and the objectives of the programs being implemented. These visits are coordinated by the Regional Directorates, which also prepare monthly technical reports on the status of agroforestry systems and compliance with established criteria.

The producer registration system includes information disaggregated by gender and details the roles played by each person in the coffee process (cultivation, harvesting, drying, marketing), which allows for transparent reflection of women's participation in all stages. During 2021, technical assistance was provided to 23,271 producers (18,617 men and 4,654 women), more than 12,000 extension activities were carried out, and integrated pest management and an environmental approach were actively promoted among beneficiaries, including women.

In addition, INDOCAFE has established institutional criteria to validate and certify the agroforestry practices implemented, such as:

1. **Origin of plant material:** both coffee plants and species used for shade must be of known and documented origin. They may come from INDOCAFE, the Ministry of Environment and Natural Resources (MMARN), or other officially recognized sources.
2. **Use of native, endemic, or naturalized non-invasive species:** priority is given to the use of plant material compatible with local ecosystems, avoiding the use of invasive exotic species.
3. **Technical inspections and field documentation:** technical reports are prepared by extension workers describing the number of hectares established or renovated, the quantity of plants delivered, and the status of implementation of the agroforestry system, accompanied by photographic records.
4. **Traceability of planting material:** documentation such as labels, phytosanitary certificates, or proof of delivery of seedlings is required to support the traceability and quality of the material used.

During the period covered by this report, the Ministry of Environment and Natural Resources (MMARN) had identified the possible requirement for certification of plantations with logging rights. However, this certification

applies only under two conditions: when the agroforestry system includes forest use and the land/plots are larger than 200 hectares. In contrast, 99% of the potential beneficiaries identified for the 2021 reduced emissions accounting period grow exclusively coffee—in some cases accompanied by fruit trees—and, based on the other criterion, the same percentage have properties smaller than 15 hectares, so there is no beneficiary meeting both criteria at the same time, and therefore this requirement does not apply to them.

Grievances and claims are mainly channeled through the Coffee Extension Offices. Responses vary depending on the magnitude of the case and, when necessary, are referred to the Ministry of Agriculture or the MMARN. In addition, citizens can use the institutional system 311, a Dominican government service that allows complaints, claims, and suggestions to be channeled to the appropriate institutions. In cases related to environmental issues, complaints can also be directed to the MMARN through its **Green Line** mechanism, which is designed to receive and manage such reports.

This entire process ensures that agroforestry interventions are not only technically sound and environmentally sustainable, but also socially inclusive, complying with national requirements and international standards promoted within the framework of the REDD+ Program.

The REDD+ Coordinating Office (RCO) presented the program and institutional commitments in detail to INDOCAFÉ's Executive Directorate, which contributed to the signing of the inter-institutional agreement between the Ministry of Environment and Natural Resources (MMARN) and INDOCAFÉ. The RCO maintains ongoing coordination with INDOCAFÉ, supporting them in holding meetings with coffee producers in all coffee-growing regions of the country to promote the program, publicize the opportunities it offers, comply with safeguards, explain the benefit sharing plan, and explain how producers can participate in its implementation. It also provides training on safeguards and the use of the SRI and SIS systems (section 4.1). As with the other Executing Entities (EE), the RCO supports and monitors the legal and financial processes related to the program. It also establishes the criteria for selecting beneficiaries, considers the creation of beneficiary committees, monitors compliance with safeguards, prepares reports, and participates in the NBSC.

To strengthen compliance with safeguards, the “Technical Guide on Good Environmental and Social Practices for Shade-Grown Coffee Production under REDD+” and the “Technical Guide to Good Environmental and Social Practices for the Use and Management of Pesticides in the Context of REDD+” were developed in coordination and follow-up with the RCO.

MMARN- Vice Ministry of Forest Resources

During the period evaluated, the Vice Ministry of Forest Resources (VMFR) granted 22 new Forest Management Plans, which were added to more than 300 existing plans from previous years. All plans met the established requirements, including the submission of a letter from the rights holder, personal and land ownership documents, the application protocol provided by the VMFR, and the corresponding payment in national currency.

To ensure effective compliance with the environmental and social management measures set out in the Forest Management Plans, the VMFR implements a permanent technical monitoring system. Technicians assigned to the provincial and municipal offices of the Ministry of Environment and Natural Resources (MMARN) conduct verification visits, recording their findings using standardized forms and Excel databases. This system ensures continuous supervision of forestry activities in the field.

In addition, the Forest Regent, a figure recognized by the Forest Law Regulations, plays a key role in the practical implementation of the plans. He is responsible for the preparation and technical monitoring of the Management Plans, supervising activities such as the establishment of plantations, the origin and phytosanitary status of species, silvicultural practices (thinning, harvesting), and compliance with good environmental practices.

When it comes to reforestation, until 2021, actions were part of the Quisqueya Verde Plan. Starting that year, the National Plan for Reforestation and Restoration of Forest Ecosystems was put together, which strengthens the commitment to biodiversity and the recovery of watersheds that are key for water production. All reforestation plans included clear objectives, environmental and social risk analyses, and mitigation strategies.

The plant material used for planting (plants or seeds) comes from nurseries managed directly by the VMFR, which guarantees its controlled origin, plant health, and production that minimizes the use of agrochemicals. These plants are distributed upon formal request by the producer or beneficiary, who is registered along with the quantity and species delivered, as well as the location and area of planting. This process is managed by technicians in provincial and municipal offices.

The program promotes social inclusion and gender non-discrimination. Women and men receive equal attention in access to plants and participation in forest brigades. The presence of women in these brigades, hired by the MMARN, represents a significant advance in raising awareness of their role in environmental management.

In terms of stakeholder participation, reforestation is carried out in collaboration with local producers, private companies, social organizations, and other Dominican government entities, promoting inclusive governance of forest resources.

Post-planting monitoring is carried out by MMARN's regional offices, which assess the growth of the plantations and take maintenance or replacement measures as necessary, ensuring the survival of the planted species.

On the other hand, the VMFR is the body responsible for forest fire management, providing ongoing training at two levels: the first level is with communities where there is a higher risk of fires, and the second level is ongoing training for the forest fire brigade. It also keeps records and monitors this system. There are six forest monitoring committees that receive training on the legal framework, forest benefits, good forest management practices, forest management, integrated pest management, and fire control.

Finally, since 2023, the [Reforestation Information Management System \(SIGIR\)](#), developed by the Ministries of Environment and Economy, Planning, and Development, has been implemented. This system allows for six-monthly monitoring of reforestation activities, integrating data on physical targets (area reforested), budgets executed, and geolocation of interventions. SIGIR strengthens inter-institutional coordination and facilitates strategic planning and the search for medium-term financing, especially in border areas.

Table 8 Summary matrix of compliance with social and environmental safeguards in the Vice Ministry of Forest Resources

Safeguard Category	Measure Applied by the VMFR	Instrument/Support
1. Compliance with the legal and regulatory framework	Enforcement of Laws 64-00 (environmental) and 57-18 (forestry). Technical review of Forest Management Plans.	National laws, regulations, application forms
2. Transparent and effective forest governance	Supervision by MMARN technicians and forest rangers; formal registration and documentation of all applications and deliveries.	Technical forms, databases, Excel reports
3. Full and effective participation of stakeholders	Inclusion of local producers, the private sector, NGOs, and women in forest brigades.	Lists of beneficiaries, calls for applications, inclusive brigades
4. Recognition of community rights and gender equity	Equal treatment of men and women; individualized registration of beneficiaries.	Plant delivery protocols, lists of beneficiaries

5. Conservation of biodiversity and ecosystem services	Use of native species, reforestation in watersheds, soil health care, and forest species care.	Reforestation plans, technical guides, field reports
6. Environmental and social risk mitigation	Identification of risks in the planning of each project and phytosanitary monitoring of plantations.	Management plans, reports from managers, technical monitoring
7. Monitoring, reporting, and verification (MRV)	Field supervision by MMARN technicians and semi-annual monitoring through the SIGIR system with geolocation.	SIGIR (Reforestation Information Management System), reports every six months

Legal framework

1. General Law on the Environment and Natural Resources (Law No. 64-00)
 - a. establishes the general framework for environmental management in the Dominican Republic.
 - b. Regulates the conservation, protection, improvement, and restoration of the environment and natural resources.
 - c. Creates the Ministry of Environment and Natural Resources (MMARN).
 - d. Requires environmental impact studies and the implementation of mitigation and compensation measures.
2. Forest Law (Law No. 57-18)
 - a. Regulates the conservation, protection, increase, use, and sustainable development of forest resources.
 - b. Defines the role of the Forest Regent.
 - c. Establishes the requirements for Forest Management Plans, including technical, social, and environmental criteria.
 - d. Promotes reforestation and restoration of degraded ecosystems.
3. Forest Law Regulation (Decree No. 163-19)
 - a. Details the procedures for the preparation, approval, implementation, and monitoring of Forest Management Plans.
 - b. Regulates the actions of Forest Regents and responsible technicians.
4. Sectoral Law on Protected Areas (Law No. 202-04)
 - a. applies when forestry activities are carried out within or near protected areas.
 - b. Guarantees the protection of biodiversity and sensitive ecosystems.
5. National Plan for Reforestation and Restoration of Forest Ecosystems
 - a. Although not a law, it is a planning instrument that has guided public policy on forestry since 2021.
 - b. Replaces the Quisqueya Verde Plan as the main strategy.

The REDD+ Coordinating Office (RCO) has held several working meetings with the Vice Ministry to support the establishment of beneficiary selection criteria, considerations for the creation of beneficiary committees, monitoring and compliance with safeguards, report preparation, participation in the NBSC, and training for technical staff.

The RCO collaborates on an ongoing basis with the Vice Ministry, which it has supported in organizing meetings with potential beneficiaries in the different areas of action in the country. These activities seek to continue promoting the program, publicizing its opportunities, ensuring compliance with safeguards, explaining the benefit sharing plan, and guiding locals on their participation in implementation. Workshops on safeguards and the management of the SRI and SIS systems have also been held (section 4.1).

To strengthen compliance with safeguards, the following documents were prepared with the Vice Ministry: the “Technical Guide to Good Environmental and Social Practices for Reforestation in the Context of REDD+,” the “Technical Guide to Good Environmental and Social Practices for Natural Regeneration in Degraded Areas in the Context of REDD+,” and the “Technical Guide on Good Environmental and Social Practices for Forest Plant Production in Nurseries in the Context of REDD+,” in coordination and follow-up with the RCO. .

- **General Directorate of Livestock (DIGEGA) and the National Council for the Regulation and Promotion of the Dairy Industry (CONALECHE)**

DIGEGA and **CONALECHE** have played a key role in promoting and implementing sustainable livestock practices through silvopastoral systems as part of REDD+ activities in the country. These actions are part of the forest conservation and emissions reduction approach in the agricultural sector, recognizing that livestock is the primary productive activity occupying the largest area of the national territory.

Both entities have collaborated closely in the implementation of projects such as [GANACLIMA](#) (FAO-GEF) and [MEGALECHE](#), which have incorporated sustainable methodologies with technical, environmental, economic, and social criteria, including gender mainstreaming. As a result, the adoption of good practices has increased, with a rise in the integration of women in training processes, from 4% to 10% female participation.

As with the other executing entities (EE), the RCO supports and monitors the legal and financial processes related to the program. This includes defining the criteria for selecting beneficiaries, guidelines for forming beneficiary committees, monitoring compliance with safeguards, preparing technical reports, and actively participating in the NBSC. Training activities related to safeguards and the use of the SRI and SIS systems were also developed for technical staff.

Training, technical assistance, and community participation

DIGEGA provides ongoing technical support to beneficiary producers through teams distributed nationwide, composed of five federations, 42 extension workers, and six coordinators. Activities include:

- Regular training and outreach in different provinces, including the training of multipliers.
- Monitoring of livestock farms, although the lack of systematization and georeferencing during the reporting periods covered by this annex was identified as a weakness.
- Tree planting and establishment of living fences, with follow-up through technical records.
- Pest management actions.
- Registration of the number of farms intervened and people trained, and 42 demonstration farms.

The planning of silvopastoral activities is carried out considering compatibility with the habitat of vulnerable or endangered species, following the guidelines established by the Vice Ministry of Forest Resources of the Ministry of Environment and Natural Resources (MMARN).

DIGEGA carries out pest management activities on beneficiary livestock farms, paying special attention to the controlled use of herbicides and other agrochemicals. These activities are part of the technical support aimed at improving the environmental sustainability of the silvopastoral system.

DIGEGA and CONALECHE have a focal point for environmental and social safeguards for REDD+, responsible for ensuring compliance with the principles of no harm and the integration of equity and sustainability approaches. Within the framework of the **GANACLIMA** project (implemented between 2019 and 2022 with FAO support), DIGEGA/CONALECHE developed a participatory process for gathering technical information on livestock farms, which was considered a key input for the implementation of REDD+ type actions.

Monitoring and follow-up activities on livestock farms are carried out periodically by technical staff in the field. However, during the reporting periods covered by this annex, the limited georeferencing of the farms involved was identified as a weakness. This situation was mainly due to a lack of systematization and the fact that, at the time, its relevance for climate reporting purposes had not been prioritized.

DIGEGA/CONALECHE also participated in national training on the use of the **REDD+ Beneficiary Registration System**, strengthening its institutional capacity to ensure traceability and transparency.

The DIGEGA Climate Change Department prepares quarterly technical reports documenting activities carried out under sustainable livestock programs, including training, technical monitoring, and institutional strengthening.

Detailed technical records are kept on tree planting and the establishment of living fences on livestock farms. In addition, regular meetings are held with producer federations and associations to develop training and capacity building for multipliers, especially on topics such as forest conservation, silvopastoral systems, good livestock practices, and climate change adaptation, with a special emphasis on the northern part of the country.

The planning of silvopastoral activities includes ecological compatibility criteria, particularly in relation to the habitat of vulnerable and endangered species. DIGEGA has a technical list of forest species recommended for tree planting, giving priority to native or naturalized species. The use of introduced species such as *Leucaena leucocephala* is discouraged, as is the establishment of fruit crops and plantations for timber purposes that are not in line with conservation objectives.

Under the **MEGALECHE** program, a system of standardized forms is maintained to collect information on:

- i) federations and associations that incorporate trees on their land;
- ii) beneficiary owners;
- iii) area covered and species used; and
- iv) technical excursions and cultural practices adopted, including good environmental and social practices for sustainable livestock farming.

The RCO maintains ongoing coordination with DIGEGA and CONALECHE, providing technical support for meetings with producers through the country's federations and associations. These activities are intended to continue promoting the program, disseminating the opportunities it provides, ensuring compliance with safeguards, socializing the benefit sharing plan, and guiding producers on their participation in implementation (see section 4.1).

Registration, monitoring, and institutional response mechanisms

CONALECHE and DIGEGA maintain institutional registration and documentation systems to ensure the traceability and transparency of their interventions. These include:

- MEGALECHE forms with information on participating federations and associations, owners, land area, and species used.
- Records of tree planting and technical training events.
- Annual institutional reports, quarterly technical reports, and monitoring reports by DIGEGA's Climate Change Department.

Both institutions have channels for receiving complaints and suggestions, including: The 311 system, as the Dominican government's institutional channel for channeling grievances, complaints, and suggestions, including those related to the REDD+ program.

- Physical suggestion boxes and institutional satisfaction surveys.

- The SAIP system, a single portal for requesting access to public information, which centralizes the records of the services offered by entities, supervised by the General Directorate of Ethics and Government Integrity (DIGEIG).
- Environmental cases are referred to the MMARN through the Green Line mechanism.

To strengthen compliance with safeguards, the “Technical Guide on Good Environmental and Social Practices for Silvopastoral Systems and Afforestation of Livestock Farms” was developed with both EE in the REDD+ Framework, in coordination and follow-up with the RCO.

Applicable regulatory framework

CONALECHE and DIGEGA's actions are carried out in accordance with the national legal framework, including:

- Law No. 200-04 on Free Access to Public Information, which guarantees transparency and access to information related to the implementation of public programs.
- Law No. 64-00 on the Environment and Natural Resources, which establishes the powers of the MMARN in the regulation of forestry and environmental activities.
- Technical regulations and procedures established by the Vice Ministry of Forest Resources for forest plantations in agricultural systems.

MAG- Cacao Department

The Cacao Department of the Ministry of Agriculture has demonstrated its commitment to implementing the environmental and social management measures established in the REDD+ Program Safeguard Plans, ensuring that cacao production in the country is sustainable and compatible with conservation principles. Collaboration with producer organizations, ongoing training, and field supervision visits are essential to achieving the program's objectives. Although there are operational challenges related to the availability of technical personnel, the Department continues to work to improve its supervision and monitoring capacity, with the aim of ensuring that cacao produced in the country meets the highest standards of quality and sustainability.

With regard to compliance with environmental and social safeguards, both those of the program and those inherent in the EE's operations, the Cacao Department implements various practices that ensure that cacao production is sustainable and aligned with environmental conservation principles. Cacao producers are selected at the request of stakeholders who express an interest in joining the cacao production system promoted by the Ministry of Agriculture. Although not all production is certified, most of the country's cacao production is organic, which contributes to the conservation of natural resources and promotes biodiversity in the country. In addition, the certification programs that are applied require producers to comply with strict environmental and social standards, which ensures that production is carried out with respect for the environment. Throughout the process, the Food Safety Department of the Ministry of Agriculture assumes responsibility for promoting best agricultural practices, including those for cacao cultivation, so that they are performed under ecologically responsible standards.

The Department's technical staff, as well as technicians from producer organizations, have received specific training in best environmental and social practices as defined in the Environmental and Social Management Frameworks (ESMF). This training also covers the management of the Safeguards Information System and the functioning of the Grievance and Conflict Resolution System, enabling technicians to act as knowledge multipliers and transfer technology directly to cacao producers.

One of the Department's priorities is to ensure that reforestation and cacao cultivation activities are compatible with the conservation of natural habitats, especially for vulnerable or endangered species. This is integrated into the planning of agroforestry activities, where the species planted and agricultural practices are adapted to the ecological requirements of the areas involved.

The active participation of stakeholders, such as producers and social organizations, is key to the implementation of the program. The cacao Department works closely with producer organizations such as the Dominican Cacao Growers Consortium (CONACADO), the Cibao Producers Association (APROCACI), and the Dominican Organic Producers Foundation (FUNDOPO), among others. These organizations bring together more than 7,000 certified organic cacao producers who follow strict standards for sustainable production.

On the other hand, there is the National Cacao Commission, which is a coordination and decision-making body involving the government, producers, and trading companies.

The aforementioned associations play a vital role in the development and implementation of farm management plans. Technicians from the Cacao Department, in coordination with technicians from the various producer organizations, make regular visits (at least three times a year) to producers' farms to ensure compliance with good agricultural practices, such as zero use of agrochemicals, use of non-invasive species, and proper management of natural resources. These visits not only validate compliance with environmental standards, but also certify cacao as organic, guaranteeing its quality and respect for the environment.

Field monitoring and supervision are key aspects of compliance with safeguards and ensuring that cultivation and reforestation activities follow established standards. To this end, the Cacao Department establishes a system of monthly records that include data on the production and distribution of cacao plants, field visits by technicians, and any events that may affect production (such as rain, drought, or the presence of pests).

The technical staff (MAG, Cacao Department, and producer organizations) who carry out these visits are mainly agricultural engineers, agribusiness engineers, and forestry engineers, who have specialized training to supervise the implementation of good agricultural practices and compliance with safeguard standards. In the case of the Ministry of Agriculture, the team of technicians makes between 300 and 400 visits per month to different producers, including cacao producers, and each visit generates a detailed report that is compiled and sent to the Ministry's evaluation and monitoring departments. These visits make it possible to monitor the condition of the plantations, verify compliance with phytosanitary protocols, and ensure the implementation of good practices on the farm.

To strengthen compliance with safeguards, the "Technical Guide to Good Environmental and Social Practices for Shade-grown Cacao Production under REDD+" and the "Technical Guide to Good Environmental and Social Practices for the Use and Management of Pesticides under REDD+" were developed in coordination and follow-up with the Department and the RCO.

Table 9 Summary matrix of compliance with social and environmental safeguards by the Cacao Department of the Ministry of Agriculture

Safeguard Category	Measure Applied by the Cacao Department of the Ministry of Agriculture	Instrument/Support
1. Compliance with the legal and regulatory framework	Compliance with organic certification standards that require good environmental and social practices. Training for more than 8,000 producers and technicians, improving their capacity in organic production and pest management.	Organic production certifications, compliance with local and international regulations. Training reports, attendance records, and beneficiary data.

2. Full and effective participation of stakeholders	Stakeholders (producers) request to participate, and local associations play an active role in decision-making.	Records of participation by producers and local associations, activity reports. National Cacao Commission
3. Recognition of community rights and gender equity	There is no discrimination in access to benefits. Women and men are treated equally in the production system.	The MAG has a Women's Office and non-discrimination protocols and training programs for all producers regardless of gender.
4. Conservation of biodiversity and ecosystem services	Most cacao production is organic, without the use of agrochemicals, and non-invasive species are promoted.	Organic farm management plans, technical visit reports, and organic plantation records.
5. Conflict prevention and resolution	There is a Grievance and Conflict Resolution System that facilitates the resolution of problems between producers and entities.	Grievance system, conflict resolution protocols.
6. Monitoring, reporting, and verification (MRV)	Regular (monthly) visits are made to monitor compliance with agricultural practices and the quality of the plantations.	Technical visit reports, field records, and monitoring of planted crops.
7. Transparency and accountability	Monthly reports are prepared on activities, including plant production and field visits. Producers are grouped through associations such as CONACADO, APROCACI, and FUNDOPO, which represent cacao producers.	Monthly reports on plant production and distribution, field visits. Registration of producer associations (CONACADO, APROCACI, FUNDOPO).

Regulatory framework

Decree No. 641-20

This presidential decree declares the cultivation and export of cacao to be of high national interest, recognizing its economic, social, and environmental importance. It highlights that cacao is an emblematic product for Dominican exports and emphasizes its contribution to rural development and climate change mitigation.

National Cacao Commission (CNC)

Established by Decree No. 2280 of August 19, 1976, the CNC's primary function is to formulate national cacao policy and collaborate with the Cacao Department of the Ministry of Agriculture in the promotion and rehabilitation of cacao plantations, as well as in improving product quality.

National Sustainable Cacao Development Plan

Implemented in collaboration with the Ministry of Agriculture and the National Cacao Commission, this plan seeks to promote sustainable agricultural practices, improve the productivity of cacao farms, and build community capacity. It includes actions such as training for producers, rehabilitation of cacao plantations, and promotion of associations in the sector.

European Union Regulation 2023/1115

Although not national legislation, this European Union regulation establishes requirements for cacao-exporting countries, including the management of social aspects, product risk identification and management, farm georeferencing, and monitoring systems. The Dominican Republic is adapting its practices to comply with these requirements and maintain its presence in the European market.

Association for Sustainable Forest Restoration Development (ASODEFOREST)

The activities carried out by ASODEFOREST respond directly to the demands of its members and are planned based on defined technical criteria, including:

- Having land that is already planted or suitable for planting;
- Having a forest management or timber utilization plan;
- Having land with forestry potential, preferably with natural forest;
- And complying with the association's ethical procedures manual.

This executing entity also plays a prominent role in integrating young people as co-beneficiaries of the REDD+ program and actively strives to promote women's participation. In fact, it is the entity with the highest representation of women among its main beneficiaries, reaching 33% of its eligible population, in addition to having an even greater number of women participating as co-beneficiaries.

The Association makes constant efforts to remind and reinforce the rights of its members to participate, hold land, and use natural resources within the framework of the REDD+ Program, in line with the Sustainable Forest Management approach it promotes.

The RCO also collaborates with this EE in monitoring legal and financial aspects of the program, including defining criteria for beneficiary selection, forming beneficiary committees, monitoring compliance with safeguards, preparing technical reports, and participating in the NBSC. In addition, training processes were developed on safeguards and the management of the SRI and SIS systems for both technicians and members.

ASODEFOREST maintains the following records: i) Management plans in the process of formulation, ii) Management plans pending approval, iii) Management plans approved by the Vice Ministry of Forest Resources, iv) Volume of timber approved and used, v) Area, number of plants and species used to reforest new areas; vi) Forest fires and phytosanitary control

Plantation management is conducted in accordance with a management plan approved by the Ministry of Environment and Natural Resources, ensuring the legality and sustainability of interventions. Many of the actions implemented are carried out within the framework of cooperation projects, which involves adopting the technical standards and requirements established by donors.

Technical training is organized according to the needs identified among members, promoting the adoption of good forestry, environmental, and social practices. Incidents are reported to the Association's Board of Directors and, where appropriate, to the Ministry of Environment. Certain complaints and minor conflicts are resolved internally through mechanisms established by the organization. A reforestation plan is developed that incorporates ecological compatibility criteria, ensuring that forestry operations and the species selected are appropriate for the habitat of vulnerable and endangered species. In this regard, forest management programs explicitly integrate measures for biodiversity conservation, both in the planning and execution of activities.

Plantations also include technical and sanitary thinning, in which severely affected individuals that are not viable for recovery are removed. Dead plants are replaced in each rainy season. Reforested sites—especially those of 10 hectares or more—are subject to specific protection measures.

Coarse woody material is retained on the ground to promote the formation of microhabitats. Ecological connectivity is maintained and promoted in the landscape, ensuring the integrity of critical habitats, with an emphasis on those that harbor threatened species of flora and fauna.

ASODEFOREST currently has four specialized technicians who directly monitor sustainable forest management activities on producers' plots. However, the availability of this personnel depends largely on the existence of active projects, either at the institutional level or through individual management plans of members.

ASODEFOREST's technical staff is made up of professionals in the fields of forestry engineering, agronomy, and agroforestry, with specialization in:

- Forest and plantation management;
- Forest nursery operation;
- Use of geographic information systems (GIS);
- Soil conservation;
- Community work and rural extension;
- Project management;
- Preparation of technical reports;
- Management of GPS devices.

During the implementation of active projects, ASODEFOREST technicians make an average of six visits per year per producer. Each technician can provide technical follow-up to up to 20 producers per year, which translates into a potential of up to 240 technical visits per year per technician. These visits represent a key opportunity for monitoring environmental and social safeguards in the field, as well as for collecting relevant climate information.

Any incidents are reported to the Association's Board of Directors and to the Ministry of Environment and Natural Resources. In other cases, complaints and conflicts are resolved within the Associations.

A reforestation plan is carried out, ensuring that forestry activities and the species to be planted are compatible with the habitat requirements of vulnerable and endangered species. Forest management programs explicitly address aspects of biodiversity conservation in forest planning and implementation processes.

The use of the Green Line as the REDD+ Program's GRM is promoted.

The REDD+ Coordination Office (RCO) has coordinated and supported ASODEFOREST in strengthening its capacities, with the aim of enabling it to participate fully as an organization, alongside its partners in the Program and beyond. This support has included promoting the opportunities offered by the program, developing a business plan, and providing support through the ENABLE initiative to strengthen the administrative and organizational structure. To strengthen compliance with safeguards, the "Technical Guide to Good Environmental and Social Practices for Sustainable Forest Management in the Context of REDD+" was developed with ASODEFOREST and the San Ramón Forestry Association, in coordination and follow-up with the RCO.

Nacional Legal Framework

Law No. 64-00 on the Environment and Natural Resources. Establishes basic standards for the conservation and sustainable use of natural resources, including forest resources.

[Law No. 57-18 Forest Sector](#): Regulates the management and use of forest resources, including timber products. Establishes requirements for the preparation and approval of forest management plans, control of harvesting, and corresponding permits.

[Technical Standards for Forest Management](#): Issued by the Vice Ministry of Forest Resources of the Ministry of the Environment. Establishes technical steps and criteria for the design, approval, implementation, and monitoring of management plans.

[Technical Guidelines for Good Environmental and Social Practices](#). Includes recommended species, practices compatible with biodiversity conservation, and ecological sustainability criteria.

San Ramón Forestry Association

The San Ramón Forestry Association has demonstrated significant technical and operational capacities for implementing and supervising activities related to the REDD+ Program, especially in the Sustainable Forest Management component focused on the use of timber products. In its most recent evaluation for 2021, the Association reported an area of 1,595.43 hectares under forest management and detailed the planning, implementation, and monitoring tools it has in place to ensure compliance with environmental and social safeguards.

The Association currently has two field technicians, both forestry engineers with master's degrees, who are in charge of directly supervising REDD+ activities in the field. These professionals are responsible for tasks such as land preparation, clearing, barrier construction, crown pruning, and other silvicultural activities, as well as submitting monthly reports to both the project's general administration and the technical team. In accordance with its forest management plan, the Association, which owns 61,386.77 tareas (3,860 hectares), has proposed to reforest a total of 10,272 hectares over a period of 10 years, subject to climatic, financial, and human resource availability. Field technicians cover an average of 120 tasks per month, allowing for an annual coverage of approximately 1,200 tasks. This capacity allows us to affirm that, under ideal conditions, the executing entity can cover 100% of the area under management within a year. However, factors such as climate, availability of plants in nurseries, number of field staff, financial resources, and transportation logistics can affect the pace of implementation. Based on this analysis, the Association recognizes that it would not be possible to conduct comprehensive monitoring every three months, as it would only be able to cover about 30% of the area in that period.

However, it considers it feasible to monitor 50% of the area every six months or 100% annually, which is in line with its actual operational capacities.

The Association also has robust management tools and verification means to support its environmental management. These include a Forest Management Plan and Annual Operating Plans approved by the Ministry of the Environment, intervention maps, monthly technical reports, and a Forest Sanitation Plan for the control of the pine bark beetle (*Ips calligraphus*), supported by photographic evidence and ongoing field monitoring.

These activities are carried out in accordance with the regulatory framework in force in the Dominican Republic, including the General Law on the Environment and Natural Resources No. 64-00, the Forestry Sector Law No. 57-18, the procedures of the Vice Ministry of Forest Resources for sustainable use, as well as the National REDD+ Strategy.

Figure 7 Information on the monitoring of safeguards by the San Ramón Forestry Association



INFORMACIONES RELEVANTES TIPO REDD+ PARA EL REPORTE DEL
AÑO 2021 EN EL AREA DEL PROYECTO.

Superficie intervenida Bajo Manejo Forestal Sostenible	658.91 hectáreas

Políticas Operativas sobre la Aplicación Salvaguardas Ambientales

Temas	Instrumentos de Gestión	Medios de verificación
Sobre Bosques	✓ Plan de Manejo forestal aprobado por el Ministerio de Medio Ambiente. ✓ Plan Operativo Anual sobre el aprovechamiento forestal y actividades de reforestación.	• Plan de manejo físico aprobado • Mapas del área de intervención • Plan operativo anual aprobado • Reportes mensuales de actividades de aprovechamiento y reforestación.
Sobre Manejo de Plagas y Enfermedades	✓ Plan de Saneamiento sobre el ataque del gorgojo de la corteza del pino (Ips calligraphus). ✓ Instructivo como reconocer, prevenir y controlar plagas. ✓ Monitoreo constante al bosque.	Plan de saneamiento aprobado por el Ministerio de medio ambiente. Mapa del área intervenida bajo saneamiento forestal Fotos de áreas afectadas por causa de la plaga Ips calligraphus.

Presentado por:

Ing. Juan Bienvenido Azcona
Técnico Forestal del Proyecto

The RCO maintains an ongoing relationship with the San Ramón Association, which it has helped organize meetings with partners to promote the program, publicize opportunities, ensure compliance with safeguards, explain the benefit sharing plan, and guide producers on how to become involved in implementation processes. This is particularly true in terms of capacity building, with the development of a Business Plan for institutional strengthening. Similarly, the “Technical Guide to Good Environmental and Social Practices for Sustainable Forest Management in the Context of REDD+” was developed with ASODEFOREST and the San Ramón Forestry Association, in coordination and follow-up with the RCO.

The RCO, in line with its support to other executing entities (EE), also contributes to the monitoring and support of the program's regulatory and financial processes. This includes establishing criteria for beneficiary selection, designing guidelines for the establishment of beneficiary committees, technical monitoring of safeguard compliance, preparing progress reports, and participating in the NBSC. The RCO has also provided specific training on safeguards and the operation of the SRI and SIS systems.

Technical Unit for the Implementation of Agroforestry Development Projects UTEPDA

UTEPDA implements Sustainable Agroforestry Systems (mainly coffee and cacao) in coordination with the Ministry of Agriculture and the Dominican Coffee Institute (INDOCAFE). For proper management, a distinction was made between beneficiaries under the direct responsibility of UTEPDA and those served by other REDD+ program executing entities.

In terms of capacity building, multiple training sessions on REDD+ were held in 2021, including on the use of systems and the dissemination of good practice guides. The dissemination of these materials continued in 2022.

In terms of gender, UTEPDA promotes equity through its land titling program, which seeks to increase equitable land tenure by providing support and training to women on their property rights.

Between 2021 and 2022, three specific training sessions were held in the provinces of Independencia, Bahoruco, and Hondo Valle. Project closure reports include a specific section on women's participation and role.

The organization maintains active community participation spaces as part of its community participation plans, with an average of three meetings per month per beneficiary group.

UTEPDA has specialized technicians for each agroforestry development project, totaling seven projects. The number of technicians per project varies depending on the POA, the number of beneficiaries, and coordination needs. All technicians have training in forestry or agroforestry. For example, in the municipality of Sabaneta, there is a team of 15 technicians.

Agrochemicals are delivered directly to beneficiaries, which ensures proper pest management. In 2021, personal protective equipment was distributed, and the responsible use of these inputs is regularly promoted, including the dissemination of more sustainable alternatives.

UTEPDA is subject to annual audits that verify compliance with environmental and social criteria, as well as beneficiary eligibility requirements. This reinforces the application of good practices in the implementation of its programs.

The UTEPDA incentive model seeks to protect and safeguard production cycles by preventing deforestation. This principle is the main eligibility criterion for beneficiaries.

To monitor and track its beneficiaries, UTEPDA has operated a Beneficiary Registry since 2021. This system differentiates producers according to their production system (coffee, cacao, among others), assigning them a unique georeferenced forest plot code. In addition, the system records input deliveries, training received, and general producer data.

UTEPDA has technical staff trained in monitoring environmental and social safeguards linked to REDD+, although these instruments were originally developed for its own agroforestry projects.

The territorial technical units, known as Agroforestry Development Plans (PDA), record the delivery of plants, the names of producers, planting location (municipality and location), species planted, and areas planted (in tasks) in the Integrated Data Management and Monitoring System (SDIGEM). Technicians conduct field visits to verify planting, the state of plant development, and the presence of pests or diseases. In several cases, planting is supported by brigades paid by the Vice Ministry of Forest Resources.

Technical monitoring is guided by an Environmental Management Plan and an Environmental Management Framework designed by UTEPDA for its projects. Although these were not developed specifically for REDD+, they apply to all relevant interventions and their results are documented in databases, technical reports, and annual institutional reports.

With regard to the origin of plant material, UTEPDA obtains plants from the Ministry of the Environment (MMARN), INDOCAFÉ, and its own production. These plants are grown from certified seeds, with phytosanitary controls, avoiding the use of invasive species and minimizing the use of agrochemicals.

In 2021, UTEPDA's Agroforestry Development Project established a total of 9,383,905 plants on 96,491.77 **tareas** *****. Of these, 45,575.77 **tareas** were planted with coffee, avocado, cacao, and mango, with a total of 6,916,868 plants established. (Source: UTEPDA 2021 Institutional Report).

In terms of communication, UTEPDA has placed posters and billboards in communities, organized a media tour in national media, and used a bus with a loudspeaker in the intervention areas to strengthen the dissemination of its programs.

The Technical Unit for the Implementation of Agroforestry Development Projects (UTEPDA) established a Grievance Redress Mechanism (MAQ) in 2021, which operates through a form available on its website. This mechanism was designed after a consultation process with stakeholders to identify the channels preferred by beneficiaries and communities for expressing complaints, suggestions, or comments. Although the system does not explicitly refer to REDD+, communities have been informed that they can use this channel, as well as the REDD+ Program's 311 Hotline and Green Line, to report any related incidents.

UTEPDA compiles the complaints in an annual Excel spreadsheet. To date, no complaints, comments, or suggestions related to REDD+ have been received.

As part of its coordinating role, the RCO maintains ongoing coordination with UTEPDA, with whom it has worked jointly to hold meetings with producers in the different project units. The purpose of these meetings is to continue promoting the program, disseminating its potential benefits, ensuring compliance with safeguards, communicating the benefit sharing plan, and guiding producers on their active participation in its implementation (see section 4.1).

***** "Tarea" is a surface measurement used in the Dominican Republic that is equivalent to 628.86 m2.

Figure 8 Screenshot of SDIGEM

The screenshot displays the 'Beneficiarios' (Beneficiaries) section of the SDIGEM system. The interface includes a top navigation bar with links to 'Beneficiarios', 'Titulaciones', 'Entrega de plantas', and 'Entrega de agroinsumos'. Below the navigation bar, there are buttons for 'Editar' (Edit) and 'Crear' (Create), along with 'Imprimir' (Print) and 'Acción' (Action) options. The main content area shows a beneficiary profile form with the following sections:

- Datos del beneficiario** (Beneficiary Data):
 - Apodo: [Redacted]
 - Tipo de documento: Cédula
 - Número: [Redacted]
 - Status: [Redacted]
 - Fecha de ingreso: [Redacted]
 - Fecha nacimiento: 05/05/2000
 - Provincia: BARAHONA
 - Municipio: BARAHONA
 - Comunidad: [Redacted]
 - Tiene parcela en lote: ☒
 - Sustituir beneficiario: Nuevo beneficiario
 - Sexo: Femenino
 - Lugar de nacimiento: [Redacted]
 - Estado civil: [Redacted]
 - Dirección de residencia: [Redacted]
 - Email: [Redacted]
 - Celular: [Redacted]
 - Teléfono: [Redacted]
 - Otro contacto: [Redacted]
 - Proyecto: BARAHONA
 - Coordinador: [Redacted]
- Datos de creación** (Creation Data):
 - Origen de creación: ODK
 - Fecha creación: [Redacted]
 - Fecha creación ODK: [Redacted]
 - Usuario creación: [Redacted]
- Validación** (Validation):
 - Fecha de validación gabinete: 22/06/2020
 - Usuario validado: YANET

At the top right of the form, there are summary statistics: 19 Parcelas, 1 Entrega insu..., and 3 Entrega plantas.

Challenges in verification and implementation

One of the main obstacles was that the compliance matrix was designed to be applied *in situ* to formally registered producers. The absence of beneficiary records, resulting from legal impediments that were subsequently overcome, limited the possibility of applying this matrix effectively and comprehensively. The EE could not carry out specific field monitoring without knowing who the formal beneficiaries of the program were, which would have required data collection at the national level beyond the logistical capabilities of the entities.

In November 2024, the computer systems (including the SIS) were formally linked, and training was provided. Despite this, at the end of the reporting period, no beneficiaries had yet been registered and, as the SIS depends on the SRI, compliance with safeguards was not systematically recorded through the System, beyond testing with the EE. Therefore, although institutional records and narrative reports exist, there is no consolidated and digitized evidence of full compliance with safeguards by program beneficiaries (as they have not yet been registered).

The RCO provides technical assistance and monitoring of the program's legal and financial processes, in coordination with the EE. This includes defining eligibility criteria for beneficiaries, creating beneficiary committees, monitoring compliance with safeguards, drafting technical reports, and institutional participation in the NBSC. It also includes training activities on safeguards and on the use of the SRI and SIS systems.

However, challenges remain:

- The documentation and details on the quality of participation need to be improved, as it is currently difficult to objectively assess its depth and representativeness.
- Not all EEs have trained or sufficient staff to continuously implement environmental and social plans, for the reasons already described in this annex.

- The effective integration of monitoring and participation results into official systems such as the SIS is limited by the lack of digitization, integration of the formats required for the program with those of the EEs, and limitations in providing long-term technical support.
- The EEs reported (in their usual institutional reports) the application of good practices in a generic manner and linked to their activities, but not specifically to the Program.

The table below summarizes the main mitigation measures identified in the Environmental Compliance Matrix, organized according to REDD+ activities. This systematization seeks to provide an overview of the level of implementation of these measures during the period evaluated, based on the available information and documentary evidence collected for each intervention.

It is worth noting that this assessment is general and preliminary, as the final operational version of the Compliance Matrix was not yet available during the implementation of activities, and the safeguards information system's digital platform (SIS) was still under development. In addition, a consolidated beneficiary registry was not in place, which limits detailed traceability at the beneficiary level. The considerations presented are therefore organized by type of REDD+ activity and draw on the documented elements that made it possible to infer compliance or identify gaps in each area evaluated.

REDD+ activity	Permits and authorizations	Supervision and monitoring of safeguards	Involvement of local stakeholders	Training and environmental awareness
Sustainable Forest Management (Sustainable Forest Use)	It is assumed that REDD+ activities complied with the corresponding mitigation measures, provided that these form part of the requirements established by current national regulations. Obtaining environmental permits and authorizations is a mandatory step in the administrative procedures for implementing interventions in the territory, and it is therefore assumed that the activities undertaken complied with this regulatory framework as a precondition for their implementation.	Safeguard monitoring activities focus on avoiding monoculture and the use of inappropriate species, as well as preventing soil erosion. The San Ramón Forestry Association, one of the EEs that conducted this activity during the 2021 reporting period, submitted its pest control plans (pine weevil – <i>Ips calligraphus</i>); annual forest utilization operational plan; and monthly reports on utilization and reforestation activities. This information is not available for ASODEFOREST and VMRF. Corrective	This information is not specifically available. Corrective action is included in the improvement action plan for compliance with safeguards to ensure that the EE provides the information to the RCO. It is expected that the EEs will also use the SIS that is now operational. ASODEFOREST has mainstreamed a gender perspective in its activities and promotes women's participation in leadership roles, promotes their rights to land tenure, access to benefits from the REDD+ program, and also to be represented and engaged with their counterparts as co-beneficiaries. ASODEFOREST has the highest percentage of women registered as beneficiaries of the REDD+ program as a	This information is not available. Corrective action is included in the improvement action plan for compliance with safeguards to ensure that the EE provides the information to the RCO. EEs are also expected to use the SIS that has become operational.

		action is included in the action plan for improvement of safeguard compliance to ensure that the EE provides the information to the RCO. It is expected that the EEs will also use the SIS that is now operational.	result of constant, daily, and inclusive awareness-raising, achieving 33% female participation. Likewise, under the EnABLE program, work was done on social inclusion and gender equity. In collaboration with the Federation of Farmers for Progress and the Association for Sustainable Forest Development and Restoration (ASODEFOREST), this component focused on empowering women, young people, and people with disabilities to ensure that their voices are heard in forums on climate change and to highlight their role in community development and resource management.	
Conserve forests in priority protected areas together with social stakeholders		No such information is available. Corrective action is included in the improvement action plan for compliance with safeguards to ensure that the executing entity	No such information is available. Corrective action is included in the improvement action plan for compliance with safeguards to ensure that the executing entity provides the information to the RCO. Executing	No such information is available. Corrective action is included in the improvement action plan for compliance with safeguards to ensure that the executing entity provides the information to the RCO. Executing entities are also expected to use the SIS that is now operational.

		provides the information to the RCO. Executing entities are also expected to use the SIS that is now operational.	entities are also expected to use the SIS that is now operational.	
Reforestation under REDD+ framework (Reforestation with right for logging))		No such information is available. Corrective action is included in the improvement action plan for compliance with safeguards to ensure that the executing entity provides the information to the RCO. Executing entities are also expected to use the SIS that is now operational.	No such information is available. Corrective action is included in the improvement action plan for compliance with safeguards to ensure that the executing entity provides the information to the RCO. Executing entities are also expected to use the SIS that is now operational.	This information is not available. Corrective action is included in the improvement action plan for compliance with safeguards to ensure that the EE provides the information to the RCO. The EEs are also expected to use the SIS that is now operational.
Assisted natural regeneration of degraded areas		No such information is available. Corrective action is included in the improvement action plan for compliance with safeguards to ensure that the executing entity provides the information to the RCO. Executing entities are also expected to use the	No such information is available. Corrective action is included in the improvement action plan for compliance with safeguards to ensure that the executing entity provides the information to the RCO. Executing entities are also expected to use the SIS that is now operational.	This information is not available. Corrective action is included in the improvement action plan for compliance with safeguards to ensure that the EE provides the information to the RCO. The EEs are also expected to use the SIS that is now operational.

		SIS that is now operational.		
Agroforestry systems (shade-grown coffee and cacao production)		There is no mechanism for monitoring environmental and social safeguards at INDOCAFE, at least for 2021, except for the one that will be used for the program. CONACADO uses a specific system to monitor compliance with safeguards required for certain projects and programs.	No such information is available. Corrective action is included in the improvement action plan for compliance with safeguards to ensure that the executing entity provides the information to the RCO. Executing entities are also expected to use the SIS that is now operational.	Technical assistance to 23,271 producers: (men: 18,617; women: 4,654). A total of 12,156 extension and training activities were carried out, involving 19,285 producers, of whom 17,170 were men and 2,115 were women. https://indocafe.gob.do/transparencia/index.php/plan-estrategico/memorias-institucionales/category/917-2021. Página 10
Silvopastoral systems (tree planting on livestock farms)		This information is not available. Corrective action is included in the improvement action plan for compliance with safeguards to ensure that the executing entity provides the information to the RCO. Executing entities are also expected to use the SIS that is now operational.	This information is not available. Corrective action is included in the improvement action plan for compliance with safeguards to ensure that the executing entity provides the information to the RCO. Executing entities are also expected to use the SIS that became operational.	A gender-sensitive livestock extension plan was developed and disseminated to promote climate-smart livestock farming in the Dominican Republic (355 people, 70 women). As part of the GANACLIMA Project, a training program on climate change and livestock farming was developed for producers in the Yuna River basin, covering the period from January to December 2021. In addition, other training courses were provided for technicians and producers.

10.1.8 2.4 Confirm that the GRM is functional, backed by evidence that it tracks and documents grievances, responds to concerns or complaints

The **Grievances and Redress Mechanism (GRM)** was designed as an integral part of the **Environmental and Social Management Framework (ESMF)** of the REDD+ program and formally approved in 2019. This mechanism establishes the principles, procedures, and institutional channels through which stakeholders can file grievances, claims, or report conflicts related to the implementation of REDD+ activities, ensuring their timely, transparent, and fair management. Since the REDD+ came into effect, the GRM has been available as a formal tool to channel and address concerns from communities, local actors, and other interested groups.

The Complaints, Claims, and Conflicts System (GCRS) was initially proposed for the digital implementation of the GRM, with the aim of facilitating the registration, monitoring, and resolution of cases in a more agile, systematic, and traceable manner.

The Grievance and Conflict Resolution System (GCRS) proposed in the REDD+ Program design was not implemented as originally conceived due to technological incompatibilities with the Ministry of Environment's website. During the first monitoring cycle (March 1 to December 31, 2021), the GCRS was still at the design phase, managed by a company contracted by the MMARN. Once completed, incompatibilities in the programming language were detected that were impossible to correct due to the high cost and time required, and the original contract did not include warranty clauses for the supplier to handle such corrections within the framework of the contract. Given this situation, the MMARN's Technology Department recommended discarding the tool.

As an institutional alternative, the MMARN already had the Green Line operating since 2017, a service for handling complaints and claims operated by telephone, in provincial and municipal offices, and through its website (<https://lineaverde.gob.do>). In addition, a Green Line app is available on Android and iOS for download, allowing citizens to file grievances and track the status of the concerns raised.

It is important to mention that the Green Line has been operational since the beginning of the reporting period and was communicated as the primary channel for submitting all REDD+ queries and complaints. While the full systematization of the GRM was not yet in place, the Green Line was fully open and accessible to all citizens, ensuring that community members and stakeholders had a functional mechanism to raise concerns throughout the period. The Green Line also offers the opportunity to file anonymous grievances, filter complaints directly related to REDD+, provide evidence by uploading files, and track complaints using a complaint code.

In 2024, this system incorporated specific visibility for the REDD+ Program, so that anyone submitting a complaint could label it as related to REDD+.

Over the following years, the Executing Entities (EE) channeled their own grievances, claims, or requests for information through the Green Line. Among the Executing Entities, the San Ramón Association, ASODEFOREST, and the Vice Ministries of Forest Resources and Protected Areas of the MMARN, use the Green Line.

Synchronously, the other EEs established internal grievance mechanisms: UTEPDA operates its own Grievance and Claims Mechanism (MAQ) and Community Relations and Participation Plan (PRPC), with a similar format: registration forms, field follow-ups, and resolution reports that are filed in its technical unit. DIGEGA, CONALECHE, INDOCAFE, and the Ministry of Agriculture referred their grievances to the government's 311 hotline. These two channels have been recognized as part of the REDD+ GRM, making it a three-entry system.

Due to this change from an initially single, centralized platform to three different mechanisms or channels, the RCO is committed to updating the GRM manual, creating user guides for each of the three platforms, and agreeing with the EE on a protocol for the periodic exchange of information where grievances and queries from the three platforms are reported. The RCO will compile the information for the GRM Integrated Report every six months, including all

grievance registration channels from all EEs (Green Line, Line 311, and UTEPDA). This must be validated by June 2025.

Although the GRM as a single platform never became operational, and the alternative systems are neither unified nor linked, there is evidence that grievances are tracked and documented (date, content, person responsible, and corrective actions) both in the Green Line and in the mechanisms of various EE, but in a fragmented manner.

Operation of the Green Line

Currently, the Green Line operates from the former Directorate of Social Participation, now called the “Directorate of Citizen Services and the Environment,” which reports directly to the Office of the Minister of MMARN and has an integrated department for the management of grievances, reports, suggestions, and claims, which in turn includes the Green Line Division. This is in accordance with the provisions of the ESMF.

Figure 9 Organizationl chart of the Green Line Divison at MMARN



The following table summarizes the steps taken by the GRM once Green Line receives a complaint related to REDD+.

Figure 10 GRM steps. Taken from the GRM Manual, February 2025 version.

Pasos del Sistema

1

Recepción: se recibe la información completa que suministra el reclamante a través de un formulario donde se registran todos los datos necesarios (nombre, teléfono, cédula, comunidad, tipo de actividad REDD+, fecha y hora de solicitud de reclamo).

2

Registro: una vez recibido y registrado el reclamo, el reclamante recibe un número único con el cual podrá solicitar cualquier otra información adicional o para saber en qué va su caso. Importante no dejar perder su ticket porque facilita cualquier tipo de solicitud que usted quisiera hacer.

3

Evaluación inicial: examina si la misma está relacionada con el Programa REDD+ y a cuál Entidad Ejecutora se relaciona.

4

Análisis del caso: la unidad directamente responsable designa un técnico que realizará una visita al lugar donde se entrevistará con todos los involucrados y realizará un reporte donde debe presentar los elementos del análisis y sus recomendaciones de solución.

5

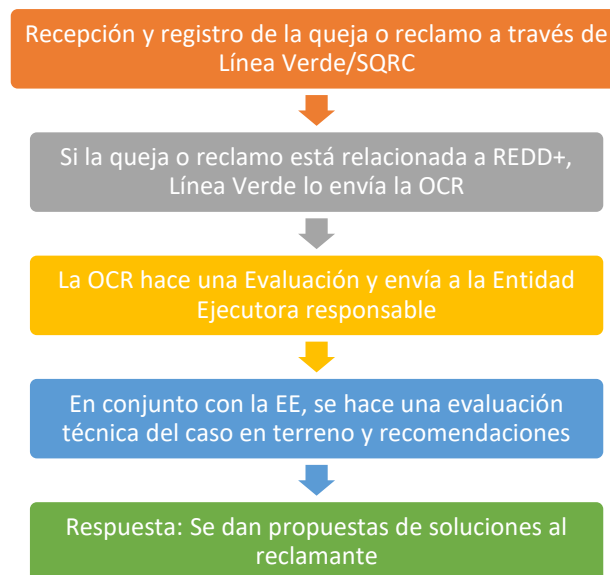
Monitoreo: en todo momento el reclamante puede dar seguimiento a su caso, usando los datos registrados y con el número de recepción.

6

Respuesta: el reclamante recibe una propuesta de solución. Como puedes ver en esta REDD+ tenemos un paquete todo incluido y de manera clara el abordaje se hace desde una visión de derecho, no pierda la oportunidad de poner a prueba estos mecanismos que al final del día contribuyen a fortalecer criterios democráticos.

The executing entities and institutions responsible for implementing programs and projects play an important role throughout the process. That is, from receiving to responding to users who have filed grievances and reports, in such a way that throughout the process the possibility of conflicts arising is reduced. The involvement of EE is explained in the following chart:

Figure 11 Diagram of the integration of the EE into the GRM process. According to information available by February 2025



Finally, this response action is coordinated with the RCO, which in turn works closely with the PREDD+ executing entities and verifies whether the responses provided meet the Safeguards compliance criteria.

The following is a summary of the interventions undertaken for each reporting period under this system:

Table 11 Summary of grievances received per year through the GRM Green Line

Año	Details of grievances received
2021	No complaints related to REDD+ were reported
2022	No information is available on complaints related to REDD +
2023	No grievances related to REDD+ were reported by the Green Line. However, the RCO indicates that five complaints were received via email from the social safeguards specialist requesting that the REDD+ program accelerate its implementation. Six messages were also received via WhatsApp, three of them sent to the executing entities (one to CONALECHE, one to INDOCAFE, and one to DIGEGA, through the focal points of these EEs) and the other three directly to the RCO, to the social safeguards specialist. All were received before November and requested information about the implementation of the program. All these requests were forwarded to the RCO and responded to by email or direct calls to the petitioners by the social safeguards specialists.
2024	For the period January to November 2024, the Green Line system recorded 2,068 grievances, of which 1,439 were resolved, 629 were unresolved, 5 were not assigned to any of the ministry's areas, and 247 were awaiting a final report. Of this total, 92 complaints were recorded for illegal tree cutting, 22 associated with deforestation of forests or wooded areas, and seven for mangrove cutting. There were also seven grievances about the appearance of forest pests.

	In total, the system recorded 129 grievances related to the use and exploitation of forests and forest plantations, but none were associated with REDD+ activities or with any of the communities related to the territories of the protected areas, which are also included in the list of areas prioritized by the program.

Other mechanisms used by the Executing Entities

While UTEPDA uses an internal Grievance and Claims Mechanism (MAQ) and Community Relations and Participation Plan (PRPC), due to institutional commitments made with the Inter-American Development Bank, DIGEGA, CONALECHE, INDOCAFE, and the Ministry of Agriculture referred their grievances to the central government's [Line 311](#) d However, these executing entities generate quarterly statistical reports, which must be shared with the RCO when the information transfer protocol is agreed upon.

Although the GRM does not currently operate as a single, centralized system for receiving and managing grievances, claims, and conflicts related to REDD+, the existence of specific mechanisms in some executing entities allows for a certain level of traceability in the handling of these cases. However, significant challenges remain, such as the absence of differentiated channels to explicitly identify grievances related to REDD+ within existing systems, as well as the lack of a formalized and regular flow of information to ensure the timely transmission of these records to the REDD+ Coordination Office (RCO).

These limitations affect the efficiency of systematic monitoring and follow-up of resolution processes. Below is a summary of REDD+-related incidents recorded in each period.

Table 12 Summary of the number of grievances, claims or complaints related to REDD+ and received through the Executing Entities

Executing Entity	Number of grievances, claims or complaints received related to REDD+			
	2021	2022	2023	2024
DIGEGA	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
CONALECHE	0	0	0	0
UTEPDA	0	0	0	0
INDOCAFE	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Ministry of Agriculture - Cacao Department	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>

To ensure full traceability, the recommendation is to: Approve an integrated GRM manual and train the executing entities in its use, as well as establish mandatory reporting protocols.

The objectives and results outlined in the safeguard plans have been achieved

3.1 Assess the overall effectiveness of the management and mitigation measures established in the safeguard plans

The Dominican Republic has formally established mechanisms for quality assurance, monitoring, and oversight of the implementation of safeguards, as defined in the Environmental and Social Management Framework (ESMF). These mechanisms include the Environmental Compliance Matrix, its corresponding compliance form, and the Safeguards Implementation Report Form for Executing Entities (EE).

These instruments technically comply with the requirements of the REDD+ program and establish clear procedures for identifying risks, monitoring commitments, and correcting deficiencies. However, during 2021, 2022, 2023, and 2024, these mechanisms were not implemented in practice as expected. This is mainly due to the late registration of beneficiaries, the absence of a digital platform for the safeguards information system and a functional registration system, as well as the overlap between the preparation phase led by the UTG and this first reporting period for 2021, which hampered the practical implementation of the mechanisms. Added to this is the frequent turnover of staff, which weakened institutional ownership of the established instruments.

The systems are now operational and have registered and continue to register program beneficiaries, once the issues relating to notarization have been resolved. With regard to staff turnover, a corrective measure has been included in section 5 of this annex to address this issue.

During the reporting period, the PREDD+ executing entities implemented various management and mitigation measures within the framework of their specific activities, which, although not always formally integrated with the instruments established in the ESMF, contributed to the prevention or reduction of environmental and social impacts and to the strengthening of local capacities. Among the measures implemented, the following stand out: ongoing technical assistance, community awareness days, implementation of good agroforestry and livestock practices, and regular technical monitoring. These were conducted using methodologies specific to each executing entity, adapted to its institutional and sectoral context, which allowed for constant operational monitoring and the adoption of corrective recommendations in the field, particularly in the coffee, cacao, livestock, and forestry subsectors.

These actions addressed key issues such as natural resource conservation, improvement of production systems, and the progressive involvement of beneficiaries. A participatory approach was also promoted through community meetings and technical visits, which fostered dialogue with producers and strengthened local ownership of the interventions.

While these initiatives contributed positively at the local level, the impact of these actions could not be formally assessed as per the absence of integration with safeguard reporting instruments, such as the Environmental Compliance Matrix and the Safeguard Implementation Indicators (IAS).

In summary, the measures implemented to date have contributed to important progress, including basic registration by REDD+ activity type and the application of good practices. At the same time, their overall effectiveness could not be fully assessed for the period covered by this annex, mainly due to limited coordination with the mechanisms established in the ESMF and the lack of standardized documentation and reporting. These factors restricted the generation of verifiable evidence on impact; however, there is no indication of material negative or adverse E&S effects.

To address this gap, the main focus of the proposed safeguards action plan focuses on corrective measures for collecting, reporting, and systematizing information through the already functional SIS.

Section 2.3 of this annex provides details on the management and mitigation measures implemented.

Comments provided by executing entities (EE):

- **DIGEGA and CONALECHE:** Implemented World Bank policies within the framework of GANACLIMA, with a focus on good practices. Processes are being institutionalized, but with limitations in formal feedback and systematization.
- **UTEPDA:** Has its own Environmental Management Manual and applies equity measures. It has solid technical monitoring and environmental planning systems under IDB guidelines.
- **INDOCAFE and Cacao Department:** They have international certifications (Rainforest Alliance, Bio Suisse) that require strict environmental, social, and labor protocols.
- **VMRF:** Implements forest management plans with regular monitoring and technical control. Uses institutional criteria for supervision.
- **VMAPyB:** Applies co-management regulations, with participatory management plans, feedback mechanisms, and a gender focus.
- **ASODEFOREST and San Ramón Association:** Good practices in the field and technical support. Must comply with the provisions of forest management plans. They are in the process of systematically formalizing monitoring reports.

General observations:

- Most executing entities implemented technical management measures in the field on a regular basis, mainly through technical support and field visits.
- Awareness-raising activities and feedback mechanisms were more common in entities with strong community roots, such as ASODEFOREST, INDOCAFE, and the vice ministries.
- There is still a lack of systematic documentation and explicit incorporation of cross-cutting approaches (gender, youth, interculturality), except in some entities with specific projects.
- No executing entity reported these measures in a structured manner through the official ESMF instruments until 2024, which limits the national traceability of their implementation.
- The RCO has maintained constant communication with the executing entities to coordinate the different activities and guide the request for information relevant to the program and the preparation of the corresponding reports. This has been done through coordination and working meetings, email exchanges, and telephone calls, including the use of chat rooms.

3.2 Are quality assurance, monitoring, and oversight mechanisms effective in identifying and correcting deficiencies in cases where ER Program activities are not implemented in accordance with the Safeguard Plans?

During the implementation period of the Emissions Reduction Program (PREDD+), the executing entities applied monitoring and supervision mechanisms that, although not formally aligned with the instruments defined in the ESMF, promoted good practices in their associated activities. These mechanisms included methodological procedures that, although not always fully systematized, allowed for continuous monitoring of activities, generated lessons learned, and enabled the timely application of corrective measures when necessary.

It should be noted that, although these internal monitoring mechanisms are valuable in practice, opportunities still exist to strengthen the integration of these systems with the institutional instruments defined in the ESMF.

In particular, the lack of formal application of the Safeguards Implementation Report Format (IAS) during the years 2021 to 2023 limited the possibility of consolidating and systematizing information under a common approach. It was not until October 2023 that, with the approval of the format and the launch of efforts for its implementation,

the foundations were laid for greater coordination between the executing entities and the REDD+ Coordination Office (RCO). At that time, the RCO began collecting data for 2021, assisted by the executing entities.

A summary of the findings by executing entity of this data collection exercise is found in section 3.3. The systematization for the years 2022, 2023, and 2024 is not yet available.

3.3 *Describe the oversight mechanisms to ensure that the Safeguard Plans and, where applicable, subsequent environmental and social documents prepared during program implementation are applied. Are these oversight mechanisms effective (e.g., do they provide meaningful feedback to executing entities to enable corrective action)?*

In operational terms, many executing entities have internal mechanisms for alerting, monitoring, and applying good practices associated with their respective type activities. These oversight mechanisms were explained in detail in sections 2.2 and 2.3 of this annex.

However, the RCO's follow-up on the quality control mechanisms employed by the executing entities could be strengthened through more structured monitoring strategies that allow for the consolidation of information in a uniform manner, facilitating the evaluation and continuous improvement of processes. Despite these challenges, the efforts made indicate a sustained commitment to the effective implementation of safeguards within the program.

The summary matrix of the Safeguards Implementation Reports prepared by the executing entities under the monitoring of the OCR in 2023 is provided below to outline the activities for the reporting period from March to December 2021. Information is still being compiled for the upcoming monitoring periods.

This delay in reporting until 2023 is due to the need for capacity building, given the lack of IT systems in the SIS and SRI at the time. It was not until October 2023 that the Safeguards Implementation Report (IAS) format was finalized to address this gap.

Table 13 Summary of information reported by executing entities using the Safeguards Implementation Report Form for the reporting period from March to December 2021

	INDOCAFE	UTEPDA	DIGEGA/ CONALECHE	Cacao Departament	V. Forest Resources	V. Protected Areas	San Ramón Forestry Association	ASODEFOREST
NUMBER OF BENEFICIARIES	2,818	3,339 according to lists provided	204	1664, according to Conacado data	284, tentative	Undetermined. 15 priority areas	Single property 70 beneficiaries	60 partners
ESTIMATED HECTARES TO BE REGISTERED UNDER THE PERIOD	2493	6,000	4,803	3,000	2500	77,000	1595	1700
REDD+ ACTIVITY OF THIS EXECUTING ENTITY	Shade-grown coffee	Shade-grown coffee and cacao	Silvopastoral system	Shade-grown cacao	Reforestation and Natural Restoration of Degraded Areas	Forest conservation with the participation of local communities	Sustainable forest management	Sustainable forest management

	INDOCAFE	UTEPDA	DIGEGA/ CONALECHE	Cacao Department	V. Forest Resources	V. Protected Areas	San Ramón Forestry Association	ASODEFOREST
List the number and topics of training sessions provided to extension workers/technical advisors of the executing entity on the application of good environmental, social, occupational health and safety practices and pesticides, according to the type of activity	Manejo y protección del medio ambiente Manejo de Plaga Integradas El documento no especifica cuanto por temas Participaron 2255 en talleres, 1903 hombres, 352 mujeres. En charlas 1,872 personas, de las cuales 1,569 fueron hombres y 303 mujeres. En total se realizaron 152 talleres y 197 charlas.	Salvaguardas del BID Atención y manejo de quejas y reclamos. Manejo Integrado de plagas del café con énfasis en la Broca. Inducción sobre los proyectos agroforestales para facilitadores, técnicos y auditores https://utepda.gov.b.do/transparencia/phocadownload/PlanEstrategico/Memoria%20Institucional%20UTEPDA%202021_30.12.2021.pdf	Good livestock practices with a focus on CGI. Awareness-raising on climate change and sustainable livestock farming (275 people, including 41 women), 630 producers trained on livestock farming and climate change and climate-smart good practices	Agronomic Management of cacao Shade Control of cacao Soil Conservation	Reforestation Restoration of degraded areas Nursery management Forest fires	Participatory management Forest conservation Ecotourism and protected areas	Sustainable forest management Pest management Timber harvesting and other uses of plantations	Sustainable forest management Pest management Timber harvesting and other uses of plantations Watershed management

Records of knowledge exchange events on good environmental, social, occupational health and safety practices, and pesticides, carried out by the executing entity involving its beneficiaries. (e.g., visits to demonstration farms, field work days, courses, workshops, expert talks, discussions among beneficiaries). As a minimum, the following information must be reported for each training: · Topic/name of event · Date · Place · Number of participants (men /women)	A total of 541 demonstrations of methods (pest traps, application of agrochemicals, proper post-harvest management) were conducted, benefiting a total of 2,475 individuals (2,230 men and 245 women). A total of 343 demonstrations of the results of these applications were conducted, benefiting 1,396 people (1,278 men and 118 women).	Introduction to agroforestry projects on conservation and repopulation of natural resources in the environment; Institutional introduction; Workshop on avocado cultivation; Workshop on road rehabilitation; Training on the Grievance and Conflict Resolution System and Mechanism; Workshop on Agroforestry System and Farms; Workshop on Basic, Intermediate, and Advanced Excel; Workshop on Beekeeping; Workshop on conflict management. We did not have access to detailed information on numbers or gender. Same institutional report from UTEPDA 2021.	18 livestock schools implemented on pilot farms participating in the project, 119 training sessions attended by 355 people (21% women) on good livestock practices with a focus on IGC.	According to the Memoria Institucional 2021 (page 18), the Cacao Department conducted 2,114 training activities, benefiting 8,348 producers. In addition, 17,853 technical assistance activities were conducted.	No information available	No information available	No information available	No information available

Record of training and awareness-raising on natural resource conservation and sustainable management practices. As a minimum, the following information must be reported for each training session: • Training topic • Date • Place • Number of participants (men /women)		Introduction to agroforestry projects on conservation and repopulation of natural resources in the environment; Institutional introduction; Workshop on avocado cultivation; Workshop on road rehabilitation; Training on the Grievance and Conflict Resolution System and Mechanism; Workshop on Agroforestry System and Farms; Workshop on Basic, Intermediate, and Advanced Excel; Workshop on Beekeeping; Workshop on conflict management. We did not have access to detailed information on numbers or gender. Same institutional report from UTEPDA 2021	Six livestock exchange meetings were held with the participation of 79 producers (10% women livestock farmers), technical staff, and managers from public and private organizations to showcase the results of the pilot farms and share experiences and lessons learned.	According to the Memoria Institucional 2021 (page 18), a través del IDIAF, through IDIAF, a course on cacao technology management was held with the participation of 29 producers. In addition, 42 producers were trained in agronomic cacao management, including soil management and conservation.	According to the Memoria Institucional 2021 (page 49), during 2021, in coordination with some external projects and partner institutions, and with the support of this Ministry, seven courses on “Basic Techniques for Forest Fire Control” were held, with the participation of 231.	According to the Memoria Institucional 2021 (page 82), training was provided to 168 community members living near protected areas, increasing their skills to offer Nature Interpreter Guide services. The Department of Ecotourism and Public Use coordinated courses with the participation of technicians from different areas of the Ministry. They also conducted awareness campaigns about protected areas and ecotourism, biodiversity, pink rescue, and community environmental leadership through social media (Memoria Institucional 2021, page 84).	No information available	No information available

Describe any additional safeguards training needs that may be required by the personnel of the executing entities. As a minimum, specify the topic.	Technicians must be trained and were trained in the management of information systems associated with REDD, for the registration of beneficiaries, monitoring of safeguards, and the GRM. These systems have not worked.	Technicians must be trained and were trained in the management of information systems associated with REDD, for the registration of beneficiaries, monitoring of safeguards, and the GRM. These systems have not worked.	Country Safeguards Information System (SIS), including instruments for reporting and monitoring compliance with safeguards Scope of the SIS Its importance for monitoring the World Bank's safeguards and operational policies Forest Monitoring System in the Dominican Republic National Forest Inventory National commitments regarding forest governance in the Dominican Republic Operational policies and safeguards associated with the type of project of the executing entities that you should be aware of for ongoing monitoring of their activities. Types of reports for REDD+ Monitoring indicators in REDD+, documentation, reports.	Country Safeguards Information System (SIS), including instruments for reporting and monitoring compliance with safeguards Scope of the SIS Its importance for monitoring the World Bank's safeguards and operational policies Forest Monitoring System in the Dominican Republic National Forest Inventory National commitments regarding forest governance in the Dominican Republic Operational policies and safeguards associated with the type of project of the executing entities that you should be aware of for ongoing monitoring of their activities. Types of reports for REDD+ Monitoring indicators in REDD+, documentation, reports.	Country Safeguards Information System (SIS), including instruments for reporting and monitoring compliance with safeguards Scope of the SIS Its importance for monitoring the World Bank's safeguards and operational policies Forest Monitoring System in the Dominican Republic National Forest Inventory National commitments regarding forest governance in the Dominican Republic Operational policies and safeguards associated with the type of project of the executing entities that you should be aware of for ongoing monitoring of their activities. Types of reports for REDD+ Monitoring indicators in REDD+, documentation, reports.	Country Safeguards Information System (SIS), including instruments for reporting and monitoring compliance with safeguards Scope of the SIS Its importance for monitoring the World Bank's safeguards and operational policies Forest Monitoring System in the Dominican Republic National Forest Inventory National commitments regarding forest governance in the Dominican Republic Operational policies and safeguards associated with the type of project of the executing entities that you should be aware of for ongoing monitoring of their activities. Types of reports for REDD+ Monitoring indicators in REDD+, documentation, reports.	Country Safeguards Information System (SIS), including instruments for reporting and monitoring compliance with safeguards Scope of the SIS Its importance for monitoring the World Bank's safeguards and operational policies Forest Monitoring System in the Dominican Republic National Forest Inventory National commitments regarding forest governance in the Dominican Republic Operational policies and safeguards associated with the type of project of the executing entities that you should be aware of for ongoing monitoring of their activities. Types of reports for REDD+ Monitoring indicators in REDD+, documentation, reports.	Country Safeguards Information System (SIS), including instruments for reporting and monitoring compliance with safeguards Scope of the SIS Its importance for monitoring the World Bank's safeguards and operational policies Forest Monitoring System in the Dominican Republic National Forest Inventory National commitments regarding forest governance in the Dominican Republic Operational policies and safeguards associated with the type of project of the executing entities that you should be aware of for ongoing monitoring of their activities. Types of reports for REDD+ Monitoring indicators in REDD+, documentation, reports.

			- Indicators for REDD+ Safeguards - Reporting and monitoring sheets - Grievances and Redress Mechanism.	- Indicators for REDD+ Safeguards - Reporting and monitoring sheets - Grievances and Redress Mechanism.	- reports. - Indicators for REDD+ Safeguards - Reporting and monitoring sheets - Grievances and Redress Mechanism.	- Indicators for REDD+ Safeguards - Reporting and monitoring sheets - Grievances and Redress Mechanism	- Indicators for REDD+ Safeguards - Reporting and monitoring sheets - Grievances and Redress Mechanism - Safeguards and reports related to the BSP.	- Indicators for REDD+ Safeguards - Reporting and monitoring sheets - Grievances and Redress Mechanism - Safeguards and reports related to the BSP.

How does the executing entity monitor the work? Record of compliance with good environmental practices (safeguards), occupational health and safety, pesticides, gender. Describe type of record and frequency.	There is no mechanism for monitoring environmental and social safeguards in INDOCAFE, at least for 2021, except for the one that will be used for the program. Corrective action is included in the action plan for improving compliance with safeguards to ensure that the executing entity provides the information to the RCO. The executing entities are also expected to use the SIS that is now operational.	UTEPDA keeps records of environmental and social safeguards associated with the requirements of the Inter-American Development Bank (IDB). Documents published on the entity's website (two in 2021). They basically deal with the following issues: local roads, air quality, and noise. Soil erosion (all related to road construction, including health and protection, and the displacement of communities, see https://www.utepda.gob.do/index.php/publicaciones/category/22-evaluacion-ambiental-y-social-y-politica-de-salvaguardas#	Field technicians supervise on site and verify that the environmental requirements of the Gana Clima program are being met. They report their findings, which are then uploaded to Excel and consolidated into reports.	CONACADO uses a specific system to monitor compliance with safeguards that must be met in certain projects and programs. https://www.conacado.com.do/wp-content/uploads/2015/04/Codigo-de-Etica-de-CONACADO-1.pdf	There is no system. Everything is done through management plans and logging permits. The technician, known as a development agent, is responsible for recording whether the producer meets the established requirements.	This information is not available. Corrective action is included in the improvement action plan for compliance with safeguards to ensure that the executing entity provides the information to the RCO. Executing entities are also expected to use the SIS that is now operational.	This information is not available. Corrective action is included in the improvement action plan for compliance with safeguards to ensure that the executing entity provides the information to the RCO. Executing entities are also expected to use the SIS that is now operational.	This information is not available. Corrective action is included in the improvement action plan for compliance with safeguards to ensure that the executing entity provides the information to the RCO. Executing entities are also expected to use the SIS that is now operational.

Describe with as much detail as possible the good environmental, social, occupational health and safety, pesticide, waste management, and gender practices routinely applied by the executing entity during the implementation of the type of activity. The Emissions Reduction Program Compliance Matrix should be used to report and describe the good practices effectively implemented.	Integrated Pest Management. This mainly includes trapping, repelling, and applying chemical products, with the primary objective of reducing insect infestation rates, which impacted 83,000 coffee plots. Coffee Harvest and Post-Harvest Management https://indocafe.gob.do/transparencia/index.php/plan-estrategico/memorias-institucionales/categoría/917-2021	As explained, the construction of local roads is being monitored. Protective equipment is used for workers on local roads, large-scale tree cutting is avoided, contractors do not have hazardous waste storage facilities and have a plan for disposing of the oils they use for heavy vehicle maintenance. Slopes will be kept stable during the course of the works, with monitoring and maintenance carried out periodically as required.	Within the framework of the Ganaclima Project, these institutions promoted good practices in livestock management, particularly through silvopastoral systems. To this end, they trained technicians and livestock farmers. As part of the requirements, at least 10% of the participants had to be women.	This information is available from CONACADO, but we have not had access to it.	The vice ministry has a National Fire Management Program for the prevention and control of forest fires. To this end, it has fire brigades that include community members (Memoria Institucional 2021, page 47). It also has 51 forest nurseries, which are managed sustainably, with minimal tillage, to provide seedlings for various programs within and outside the Ministry (Memoria Institucional 2021, page 40).	Strengthening civil society participation in the administration and management of protected areas through co-management agreements (Memoria Institucional 2021, page 85). Promoting ecotourism to guarantee and facilitate access for citizens, ecotourism services, and public use of the National System of Protected Areas, in accordance with current regulations (Memoria Institucional 2021, page 80).	This information is not available.	This information is not available.

	INDOCAFE	UTEPDA	DIGEGA/ CONALECHE	Cacao Department	V. Forest Resources	V. Protected Areas	San Ramón Forestry Association	ASODEFOREST
Record of training provided to men and women participating in REDD+ activities to improve the visibility and valuation of women's contributions to agroforestry production chains. At a minimum, the following information must be reported for each training session: • Training topic • Date • Place • Number of participants (men /women)	Technical assistance provided to 23,271 producers (18,617 men and 4,654 women). A total of 12,156 extension and training activities were conducted, involving 19,285 producers, of whom 17,170 were men and 2,115 were women. https://indocafe.gob.do/transparencia/index.php/planes-estrategico/memorias-institucionales/categoría/917-2021. Page 10	We have not had access to that information	The gender-sensitive livestock extension plan was developed and disseminated to promote climate-smart livestock farming in the Dominican Republic. 355 people, 70 women. As part of the GANACLIMA Project, a training program on climate change and livestock farming for producers in the Yuna River basin, was developed, covering the period from January to December 2021. In addition, other training courses were provided for technicians and producers.	We have not had access to that information	This information is not available.	This information is not available.	This information is not available.	This information is not available.

[illegible]

	INDOCAFE	UTEPDA	DIGEGA/ CONALECHE	Cacao Departament	V. Forest Resources	V. Protected Areas	San Ramón Forestry Association	ASODEFOREST
Record of training for men and women to reduce gaps in women's access to land tenure, ownership, and use linked to productive activities in projects prioritized by REDD+. At a minimum, the following information must be reported for each training session: · Training topic · Date · Place · Number of participants (men/women)	No related activities were conducted.	No related activities were conducted.	A gender-sensitive livestock extension plan was developed and disseminated to promote climate-smart livestock farming in the Dominican Republic.	No related activities were conducted.	No related activities were conducted.	No related activities were conducted.	No related activities were conducted.	No related activities were conducted.

	INDOCAFE	UTEPDA	DIGEGA/ CONALECHE	Cacao Department	V. Forest Resources	V. Protected Areas	San Ramón Forestry Association	ASODEFOREST
Clarify whether there is a registry of information requested, grievances, and claims regarding REDD+ that have been received directly by the executing entity or through technical advisors or extension agents. If so, please specify what information is recorded. Number of grievances received or requests for information in 2021	There is a green line managed by MMARN, but this is not handled directly by INDOCAFE. In addition, the agency uses Line 311 to receive grievances and claims.	In 2021, there was no grievance mechanism related to REDD. There is a Grievances and Claims Mechanism, which records complaints from people affected by activities related to the construction of local roads.	It does not exist. They use Line 311, but there are no reports related to REDD+.	The cacao department, like the entire Ministry of Agriculture, uses Line 311.	The MMARN green line is used.	The MMARN green line is used.	This information is not available.	This information is not available.
	Does not exist for Line 311, but has its own records.	Five complaints were registered regarding the dumping of material or wire fences during the construction of local roads.	No report available	No report available	The available registry is not related to REDD+	The available registry is not related to REDD+	No report available	No report available

	INDOCAFE	UTEPDA	DIGEGA/ CONALECHE	Cacao Departament	V. Forest Resources	V. Protected Areas	San Ramón Forestry Association	ASODEFOREST
Please clarify what type of grievances has the executing entity received regarding the REDD+ Program.	None received	None received	None received	None received	None received	None received	None received	None received
Specify the percentage of grievances related to item 12 that were resolved successfully.	No report available	There were no related complaints.	No report available	No report available	There were no related complaints.	There were no related complaints.	No report available	No report available
Were there any incidents or accidents at work during the reporting period? Were these reported to the RCO? Please clarify what action was taken.	There were no reports	No	There were no reports	There were no reports	No	No	There were no reports	There were no reports

	INDOCAFE	UTEPDA	DIGEGA/ CONALECHE	Cacao Department	V. Forest Resources	V. Protected Areas	San Ramón Forestry Association	ASODEFOREST
Title of the institutional registry that supports the information included in the REDD+ Registry System (if there is no established registry, please describe the database format and indicate when it was established)	The registration is done on Excel spreadsheets, where details can be verified. Name, ID number, area sown or renewed, territorial or geographical location (not referenced).	The registration is done on Excel spreadsheets, where details can be verified. Name, ID number, area sown or renewed, territorial or geographical location (not referenced).	The registration is done on Excel spreadsheets, where it can be verified. Name, ID number, area sown or renewed, territorial or geographical location (not referenced).	The registration is done on Excel spreadsheets, where details can be verified. Name, ID number, area sown or renewed, territorial or geographical location (not referenced).	The registration is done on Excel spreadsheets, where details can be verified. Name, number of plants delivered, and territorial or geographical location (not referenced).	National Protected Areas System Registry	Association members are registered in Excel spreadsheets, where their details can be verified. Name, ID number, number of tasks planted or renewed, geographical location.	Association members are registered in Excel spreadsheets, where their details can be verified. Name, ID number, number of tasks planted or renewed, geographical location.
Beneficiary data collected (e.g., name, ID number, land title/ownership number, family data, location of farm/plot (indicate the type of information recorded), gender information, etc.)	Name, ID number, area sown or renewed, territorial or geographical location (not referenced), gender.	Name, ID number, area sown or renewed, territorial or geographical location (not referenced), gender.	Name, ID number, area sown or renewed, territorial or geographical location (not referenced), gender.	The document provided by CONACADO includes name, ID number, gender, association, location (municipality, community), and type of document.	Name, number of plants delivered, area sown or renewed, territorial or geographical location (not referenced).	When training and workshops are held, the following information is collected: name, community, gender, organization to which they belong, contact telephone number.	In this case, ownership is shared by all members. The membership registry contains: Name and ID number.	The membership registry contains: Name, ID number, number of tasks, territorial or geographical location (not referenced).

	INDOCAFE	UTEPDA	DIGEGA/ CONALECHE	Cacao Departament	V. Forest Resources	V. Protected Areas	San Ramón Forestry Association	ASODEFOREST
Describe the type of indicator recorded for each REDD+ activity that the executing entity used to determine the participation of beneficiaries in the implementation of that activity during the reporting period (e.g., area of silvopastoral systems, number of trees per task, or pasture management systems, beneficiary name, proof of land title/ownership, etc.)	Number of tasks (hectares) Title or document of ownership	Location of the plot, sown area, plants delivered, whether it is coffee or cacao	Number of trees delivered, sown area.	Agroforestry area (CACAO), name	Number of plants delivered for reforestation. Territorial location of the plot. Name of the beneficiary.	Communities related territorially and by productive activities to the prioritized protected area. Existing organizations and local recognition.	Become a member, names of each member	Become a member, names of each member
Describe the institutional registry or database management protocol (include the manual if available, or a link	An Excel file is used for data entry purposes.	Used to register an Excel file and register beneficiaries through the Integrated Digital Management and Monitoring System (SDIGEM)	An Excel file is used for data entry purposes.	An Excel file is used to record business entities.	An Excel file is used for data entry purposes.	An Excel file is used for data entry purposes.	An Excel file is used for data entry purposes.	An Excel file is used for data entry purposes.

to the manual on the website).	INDOCAFE	UTEPDA	DIGEGA/ CONALECHE	Cacao Departament	V. Forest Resources	V. Protected Areas	San Ramón Forestry Association	ASODEFOREST

The design and implementation of compliance monitoring mechanisms for REDD+ activities in the Dominican Republic have included a set of specific tools and instruments for each executing entity (EE), along with verifiable technical criteria and predetermined monitoring timing intervals.

The mechanisms applied by each EE from 2021 to date are described below, with an emphasis on their effectiveness, traceability, and alignment with national and international regulatory frameworks. These mechanisms were applied in the day-to-day operations of the executing entities and were not developed specifically to comply with the requirements of the REDD+ program, although they include them, as noted above.

Vice Ministry of Forest Resources (VFR)

Reforestation and restoration activities

The VFR unit implemented a technical monitoring system through quarterly field visits, carried out by the Reforestation Directorate, in accordance with the Institutional Procedure for Monitoring and Evaluation of Reforestation Projects (2020 version). The visits are documented on standardized forms, which record:

- Identity of the beneficiaries of the plant deliveries.
- Number of tasks planted.
- Number and type of plants delivered, verifying that they come from nurseries officially registered in the National Forest Plant Production System (SNPF-VRF).
- Geographical coordinates and ecological conditions of the planting site (rainfall >1,000 mm/year, altitude appropriate for the species, soil type, vegetation cover).
- Survival rates by species, recorded in quarterly and annual reports.
- Corrective measures applied in case of mortality >30%, such as replanting or pest control.

Sustainable Forest Management

The VFR applies Forest Law 57-18 (Articles 62 to 80), which establishes the mandatory requirement for certified forest managers to prepare Forest Management Plans (FMP). Supervision is based on:

- Verification on the field of the area proposed for management by VFR forest technicians.
- Technical approval of the FMP, which contains objectives, timelines, corrective actions, and monitoring mechanisms.
- Semiannual reports on FMP compliance, submitted by the forest manager.
- Documentary and technical review of the reports by the VFR's Technical Forestry Directorate.

Technical Unit for the Implementation of Agroforestry Development Projects (UTEPDA)

UTEPDA implemented its monitoring system based on the Environmental and Social Management Manual (2018 version), developed with support from the Inter-American Development Bank (IDB). Among the tools used are:

- Field verification sheets to measure compliance with social and environmental safeguards.
- Inclusive participation indicators (target: at least 35% of beneficiaries are women).
- Environmental impact matrix, including indicators such as habitat fragmentation, impact on biodiversity, and water quality.
- Quarterly monitoring of interventions on local roads in critical areas.
- Environmental and social management plan for each project, with documented follow-up.
- Assessment of compliance with IDB criteria, documented in the biannual reports of the IDB-4206/OC-DR agroforestry project.

Ministry of Agriculture – Cacao Department

The country's cacao companies, such as the CONACADO Group, implement compliance systems geared towards international certification requirements, especially those of Bio Suisse AG (ICB AG). This includes:

- Records of agrochemical application, prohibiting substances not authorized by the European Union and Bio Suisse.
- Verification of the use of native or naturalized species as shade (e.g., *Inga spp.*, *Gliricidia sepium*).
- Annual audits by external certifiers (e.g., IMO Control).
- Labor compliance assessment protocols, including:
 - Prohibition of child labor (under 16 years of age).
 - Inspection of working conditions and infrastructure (bathrooms, rest areas, PPE).
- Traceability reports for each cacao batch exported.

INDOCAFE

Maintains monitoring mechanisms under Rainforest Alliance and UTZ Certified standards, including:

- Biological pest control, using traps, plant barriers, and organic products.
- Promotion of women's participation (at least 30% of beneficiaries in plantation renovations).
- Technical supervision of the planting of shade species: mandatory use of *Erythrina spp.*, *Musa spp.*, and native species.
- Annual report on compliance with sustainability criteria, available to certifiers.

DIGEGA and CONALECHE – Climate-Smart Livestock Program (GANACLIMA)

The General Directorate of Livestock and CONALECHE, with support from UNEP, implemented the World Bank's Operational Policies during the period from March to December 2021. The mechanisms implemented include:

- Environmental and social verification form for each beneficiary farm.
- Monitoring of silvopastoral practices, with indicators such as:
 - % of tree cover (>15% per farm).
 - Pasture quality (assessed by biomass index).
- Participation of women livestock farmers (>20% of total beneficiaries).
- Evaluation of results through a technical audit led by UNEP (GANACLIMA Report 2021, pp. 18-21), concluding that 92% of environmental criteria were met.

Protected areas – Ministry of the Environment (VAPyB)

In conservation areas, Management Plans are implemented, as well as the Regulations for Co-Management of Protected Areas (Decree 618-16, Articles 8 and 12), when there is a co-management agreement. Mechanisms include:

- Inclusion of local communities as co-managers, even without legal status.
- Participation documented through community meeting minutes.
- Six-monthly assessment of compliance with the management plan, including:
 - Ecotourism activities.
 - Regulated use of non-timber resources.
 - Conflict mitigation measures (e.g., access to buffer zones).
- Progress reports must be submitted to the MMARN every six months, in accordance with the [Regulations for Co-Management of Protected Areas – FAOLEX DOM179070](#)

Conclusions

The mechanisms described show significant progress in the implementation of measures to ensure compliance with social and environmental safeguards, as well as the traceability of good practices within the framework of the REDD+ Activity. Among these advances are the existence of standardized protocols, periodic monitoring systems, international certifications, structured community participation spaces, and external audits, which represent valuable elements that can strengthen future validation by a third-party audit.

During the period covered by this annex, the absence of a REDD+ Initiatives Registration System (SRI), a fully operational Safeguards Information System (SIS), and the limited use of the Safeguards Compliance Matrix (Excel format) meant that national mechanisms showed varying levels of alignment and implementation with the ESMF. This represents a clear opportunity to enhance documentation, reporting, and systematization going forward, through a commitments and actions formalized in a safeguards action plan (SAP). However, as highlighted before, there is no evidence of non compliance with the environmental or social safeguards.

In particular, detailed information on measures implemented by ASODEFOREST and the San Ramón Association is limited. Actions outlined in this chapter aim to strengthen protocols for information collection and ensure the use of the Safeguards Information System to assess compliance more systematically.

The program activities present emerging environmental and social risks and impacts that were not identified or anticipated in the Safeguard Plans prepared prior to the signing of the ERPA.

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

The SESA provided a comprehensive list of environmental and social risks and corresponding mitigation measures. The measures in the Strategy were developed as a result of the processing and synthesis of this information. The scope of the identified risks and potential impacts has been maintained and remains relevant to the activities of the ER Program.

4.2 Have any activities of the ER Program during implementation given rise to risks or impacts that were not previously identified in the Safeguard Plans prepared prior to the signing of the ERPA? If so, what are the proposed measures to manage the previously unanticipated risks and impacts?

The ER Program did not generate any significant new risks or adverse impacts during the reporting period. However, **during part of the Program's implementation, eligibility criteria were considered that required land ownership with a perfect title, excluding landholders with precarious titles.** Had this eligibility criterion been applied to participate in the Program, it would have posed a risk of excluding the most vulnerable population (small-scale producers) from the Program's benefits.. This issue was promptly addressed, and after a review, the provisions already in the program documents were ratified. The experience has informed enhancements to existing procedures to prevent similar situations in the future, strengthening both risk management and safeguard compliance.

To ensure the adequate inclusion of social risks, i.e. the risk of outstanding land claims within PAs, as part of the Safeguards Action Plan, provided jointly with this annex, the Safeguards Compliance Matrix will be socialized in the form of capacity building sessions.

Corrective measures and improvements needed to increase the effectiveness of safeguard plans.

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

During the period covered by this report, the lack of disaggregated information on the implementation of the REDD+ Program made it challenging to adequately assess compliance with safeguards. While institutional and technical efforts aimed at applying good environmental and social practices within the framework of the Program have been identified, significant challenges remain related to the systematic collection of information, its documentation, and the structured reporting of results.

The executing entities (EE) have applied environmental and social practices aligned with the safeguards, mainly through technical visits, guidance to producers, and some actions contained in institutional plans or internal protocols. However, the lack of systematic application of the Safeguards Compliance Matrix, combined with the absence of the Safeguards Information System (SIS) during the period evaluated, significantly affected the traceability and formal monitoring of these actions.

Likewise, during the period covered by this report, the unit responsible for monitoring and accompanying the executing entities (EE) was the Technical Management Unit (TMU), which was focused on closing the preparation phase, which had been extended due to the effects of the pandemic. As a result, it was not possible to carry out the technical and operational monitoring required for the first implementation period after the signing of the ERPA. This was compounded by the absence of key tools such as the Safeguards Compliance Matrix, the beneficiary registration system, and the safeguards information system, which further limited the capacity for monitoring and structured reporting at this initial stage. This is particularly true in the monitoring of the Vice Ministry of Protected Areas and Biodiversity, for which it is recommended that its specific challenges as an executing entity be thoroughly assessed, especially in relation to the social risks associated with **Operating Policy OP 4.12** (Involuntary Resettlement), particularly with regard to restricting access to natural resources in protected areas and involving local communities.

Given the persistence of these challenges, for example, as part of the selection process for the five Protected Areas prioritized for ER transfer, a restrictive criterion was applied based on the absence of evidence of non-compliance with safeguards, particularly with regard to human settlements or land claims by third parties. However, this does not imply that the SINAP as a whole has demonstrated systematic compliance with the PREDD+ safeguards, but rather that it was a precautionary measure in the absence of consolidated information.

Nevertheless, any potential impacts related to restrictions in access to natural resources or land claims within the PAs were carefully monitored through the existing REDD+ governance and safeguard mechanisms. No evidence of material adverse impacts was identified. As part of the SAP commitments, this risk will be continuously monitored to ensure that any emerging issues are addressed promptly.

Other general areas for improvement identified in this self-assessment include:

- **Use and integration of the Safeguards Information System, which include the Safeguards Compliance Matrix** by the executing entities and the RCO, taking into account the registration of beneficiaries.
- **Overcome technological and information access problems** that limited the consolidation of reports and registration in common systems, improving transparency in access to PREDD+ documents.
- **Achieve formal and periodic reporting by all executing entities through the SIS**, due to both operational limitations and the lack of registered beneficiaries in the initial stages of the program.

- **Complete and expand the number and skills of staff in the Program Coordination Office (RCO)**, as there was limited capacity for monitoring and technical support to the executing entities. This was particularly true with regard to technical assistance for compliance with environmental safeguards and the consolidation of information for reports. It is necessary to supplement this with staff for field monitoring (at least two technicians).
- **Having sufficient field technicians with installed capacity in the executing entities**, hindering verification and monitoring in the field.
- **Effective implementation of data collection systems**, which was compromised by the need to reengineer previously created systems, involving the redoing or adaptation of platforms that were not operational at the beginning of the period.
 - **The use of the specific Grievance and Redress Mechanism (GRM) was ruled out**, and the institutional hotline was used instead, reducing the capacity to track complaints directly related to the program.
 - **Delayed implementation of the digital SIS**, which, although linked in November 2024, was not fully utilized due to a lack of practical training and operational adjustments.

Despite these limitations, good practice guidelines aligned with the safeguards indicators were developed and generally applied in the field, although they were not directly linked to a structured program monitoring system. The matrix was shared among the executing entities in 2022, but its original Excel format was not functional in the field, which affected its adoption.

In conclusion, while there is no evidence of non-compliance with safeguards, due to the multiple constraints explained, a robust SAP has been developed and agreed with the Bank in order to strengthen the E&S aspects of the program and ensure its alignment with the ESMF. The SAP includes actions related with:

- The operationalization and full use of the reporting instruments that constitute the SIS.
- The strengthening of institutional capacities, including training in monitoring and follow-up of environmental and social safeguards for RCO and executing entity staff.
- The standardization of reports and evidence records (list of activities, monitoring and follow-up reports, etc.).
- An updated registry of beneficiaries and focal points by executing entity, and
- Ensuring sufficient and reliable human resources in the RCO and executing entities.
- Strengthen the capacity of executive entities and other relevant officers to use the Matrix for Safeguards compliance and revised accordingly and if needed.
- Strengthen the relevant E&S related instruments to address potential risks of restricted access to natural resources in Protected Areas (PAs), including the Process Framework.
- Review and socialize the Bank's ESIRT (Environmental and social incident reporting toolkit) process and requirements within the OCR, EEs, and other relevant stakeholders, and develop the necessary processes to ensure requirements are fully and timely met, when necessary.

5.2 List corrective actions and areas for improvement. Be careful to distinguish between: (i) corrective actions to ensure compliance with the Safeguard Plans; and (ii) improvements needed in response to unforeseen risks and impacts

During the period covered by this report, there have been no negative or unforeseen impacts resulting from the implementation of Program activities, and therefore no response measures are proposed for unforeseen situations. Likewise, no significant gaps were identified in the implementation of the Safeguard Plans.

However, a significant limitation was identified in the recording, systematization, and automation of the information needed to conduct a robust assessment of compliance with these plans. This situation underscores the need to take specific corrective actions and advance structural improvements that strengthen institutional capacity for monitoring, documentation, and reporting of safeguards in future implementation periods.

(i) Corrective actions to ensure compliance with the Safeguard Plans

- 1. Operational activation of the Safeguard Information System (SIS):**
 - Ensure its continuous and operational functioning.
 - Provide practical training to the executing entities on its use.
 - Ensure interoperability with other institutional systems..
- 2. Mandatory and systematic use of the Safeguard reporting tools - compliance matrix:**
 - Implement guidelines requiring its use in the field.
 - Establish the individuals responsible for monitoring and follow-up by each executing entity..
- 3. Strengthening the REDD+ Program Coordination Office and the executing entities:**
 - Conduct an analysis, using the safeguards compliance format, to determine the safeguards training needs for each executing entity.
 - Promote the hiring of the necessary technical staff in the RCO.
 - Assign specific staff for monitoring and technical assistance in the executing entities.
 - Design and implement a practical induction plan for new staff in the executing entities.
 - Strengthen capacities for the use of formats and reporting for benefit sharing to both the RCO and the EEs.
 - Establish basic databases concerning the different records of awareness-raising and training activities of the EEs, with the relevant categorization for both the program and the EEs.
- 4. Reactivation and adaptation of the Grievance and Redress Mechanism (GRM):**
 - Promote the use of the Green Line, 311, and the MAQ as platforms for the REDD+ Program and include direct access from the executing entities' official webpages and platforms.
 - Establish a continuous feedback procedure from the executing entities to maintain a centralized record in the RCO.
- 5. Definition and monitoring of registered beneficiaries:**
 - Overcome legal obstacles to land tenure that prevented their timely registration.
 - Maintain an updated database shared with the executing entities.
- 6. Standardization and reporting requirements for executing entities:**
 - Establish a mandatory reporting schedule with standardized formats.
 - Incorporate mechanisms to verify the quality of the information reported.
- 7. Strengthening risk management tools for the REDD+ activity “Conserving Forests in Protected Areas with the participation of local actors”,**
 - Update the Process Framework included in the Resettlement Policy Framework.
- 8. Strengthening governance bodies:**
 - Propose that the members of the Steering Committee appoint a representative to streamline its operations.
 - Update the composition of the TAC in accordance with the provisions of the last meeting and arrange a session as soon as possible.
- 9. Implementation of activities of the Gender Action Plan:**
 - Determine with each executing entity the relevant activities that can be implemented in the short term under the PAG.

(ii) Areas for improvement to strengthen the overall implementation of the safeguards system

- 1. Technological adjustments and simplification of tools:**
 - If the use of the compliance matrix with the verification criteria that it entails turns out to be quite laborious for the capacity of the executing entities and the RCO, a process can be initiated to update and improve the compliance matrix and the SIS to formats that are more user-friendly to use in the field.
- 2. Ongoing training and technical support for executing entities:**
 - Establish an annual training plan on safeguards and the use of digital tools by the executing entities.
 - Strengthen ownership of the safeguards approach at the technical and management levels.
- 3. More integrated alignment between safeguards and productive activities:**
 - Align reports on productive actions with specific indicators of safeguards compliance.
 - Include these elements in contracts or collaboration agreements with beneficiaries.
- 4. Better inter-institutional coordination:**
 - Establish formal mechanisms for information exchange between executing entities, the RCO, and other Ministry agencies to facilitate joint monitoring.
 - Design a database of activities led by the RCO.
 - Conduct awareness-raising activities to reactivate the Steering Committee.

5.3 Describe the timeline for conducting the corrective actions and improvements identified above.

Action	Main person responsible	Estimated time frame	Observations
Operational activation of the Safeguards Information System (SIS) Reactivation and adaptation of the Grievance and Redress Mechanism (GRM)	RCO with external technical support	Short term (3 months)	Ensure that the system is available, functional, and that executing entities understand how to use it.
Technical training on the use of the compliance matrix and the information records required to monitor safeguards	RCO with external technical support	Short term (3 months)	Practical training in digital use, related to productive activities.
Issue guidelines for mandatory use of the matrix and the SRI, GRM, and SIS systems. Establish a mandatory reporting schedule and information transfer protocol for the GRM.	RCO with external technical support	Short term (3 months)	Requires institutional validation and awareness-raising among executing entities.

Strengthening the RCO and executing entities (human resources)	Ministry of Environment + EE	Medium term (6 months)	Prioritize hiring technical staff on safeguards.
Annual plan for ongoing training on safeguards	RCO +EE with external technical support	Medium term (starts in 6 months)	Should include digital and face-to-face modules and also train RCO staff.
Definition and monitoring of registered beneficiaries	RCO + EE	Short term (3 months)	Continue with registration and use of the system
Strengthening PA risk management instruments	RCO + VMAPyB with external technical support	Medium term (start in 4 months)	Requires external support and joint work with VMAPyB
Strengthening governance bodies	RCO+CD+ Ministerio de Medio Ambiente	Short term (3 months)	Hold meetings before benefit sharing
Implementation of activities under the Gender Action Plan	RCO + EE with external technical support	Medium term (starts in 4 months)	As identified by each executing entity

Corrective actions and improvements are described in more detail in the Safeguards Action Plan described below which is aligned with the provisions of section 5.

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

I. FCPF REQUIREMENTS REGARDING BENEFIT SHARING PLANS

As part of EN-REDD and the REDD+ Program, the Government of the Dominican Republic developed a [Benefit Sharing Plan \(BSP\)](#)¹⁰⁴ with the aim of ensuring that the benefits generated by the implementation of the Program are received in a transparent and equitable manner by the different stakeholders who will make the necessary efforts to achieve emissions reductions.

The BSP was designed in line with the implementation approach of the Dominican Republic's REDD+ Program, considering the current national legal framework and institutional capacities for its execution. It was also formulated in response to the commitment to social and environmental safeguards established by the United Nations Framework Convention on Climate Change (UNFCCC) and the World Bank's operational safeguard policies.

The Emissions Reduction Payment Agreement (ERPA) was signed on March 01, 2021. The ERPA¹⁰⁵ covers the period from the date of signing in 2021 to December 31, 2025, for which there will be three reporting periods on the emissions reductions achieved. These periods are: (i) March 1 to December 31, 2021, (ii) January 01, 2022 to December 31, 2023, and (iii) January 01 to December 31, 2024.

Results-based payments were scheduled for 2022, 2024, and 2025, subject to verification of the corresponding Emissions Reduction Monitoring Reports (ERMRS). However, to date, no disbursements have been made due to delays in the completion of the verification process and the transfer of reduced emissions (described in section 6.1 of this ERMRS). At the beginning of 2025, the verification of the ERMRS and Annex 4 was completed, with Annexes 1, 2, and 3 pending. It is estimated that the first payment could be made no later than the third quarter of 2025.

Within this context, the present annex focuses on documenting the progress made by the Dominican Republic in preparing the necessary conditions for the effective implementation of the benefit sharing mechanism.

Payment is based on Emissions Reductions (ERs) achieved relative to the REDD+ Program's Reference Level (RL), estimated at 6,321,442 tCO₂e. The RL includes emissions from deforestation, degradation, and absorption from increased carbon stocks from afforestation/reforestation activities. After the respective deductions, the total expected ER volume is 4.74 million tCO₂e. The ERPA was negotiated for a target of 5 million tCO₂e.

The BSP is important to ensure that payments generated by the implementation of the REDD+ Program are distributed in a transparent and equitable manner to the different stakeholders involved in generating ERs within this framework.

The BSP specifically expects that:

- Individuals and families, small and medium-sized forest producers, individual or associated agricultural producers, will receive the most significant share of ERPA revenues.
- The benefits obtained will be used to reward the efforts of those who contributed to generating emissions reductions and/or increasing carbon sequestration relative to the reference level.

The current version of the BSP has not been modified since its publication in 2022. The recognition and use of land and customary mechanisms are established in the Benefit Sharing Plan, so they do not entail any changes to it.

¹⁰⁴ (Ministerio de Medio Ambiente, 2022) - (Ministry of the Environment, 2022)

¹⁰⁵ (Ministerio de Medio Ambiente, 2022) - (Ministry of the Environment, 2022)

The procedure for the use and occupation of customary lands is through the notarization of the transfer of emissions deeds, the costs of which are borne by the Dominican Ministry of Environment and Natural Resources.

II. MONITORING AND REPORTING REQUIREMENTS

1. Preparation for the Benefit Sharing Plan

1.1. Confirm that the BSP has been completed and approved by all relevant parties. Are there any aspects of the BSP that remain unclear or require further review for approval by beneficiaries or other stakeholders? Is the BSP available to the public?

The Benefit Sharing Plan (BSP) is a fundamental element within the operational framework of the REDD+ Program in the Dominican Republic. Its main purpose is to establish clear and transparent principles, criteria, and mechanisms for the allocation and management of benefits derived from emissions reductions in the forestry sector, ensuring equitable and legitimate distribution among the various stakeholders involved.

Although the BSP establishes robust institutional architecture and procedures, some operational aspects remain to be addressed specifically and in greater depth through the approval and implementation of the Project Operating Manual (POM). This manual is intended to complement the BSP, addressing any operational or technical gaps to ensure the effective implementation, monitoring, and accountability of the benefit sharing process. These include:

- Estimated operating costs;
- Criteria for the use and distribution of the contingency fund;
- Details on criteria for the distribution of net benefits among the Executing Entities (EE);
- Procedure for registering one or two activities in the REDD+ Initiative Registration System (IRS) and its user manual;
- Procedures and user manual for the Safeguards Information System (SIS);
- Procedures for the Grievance Redress Mechanism (GRM)
- REDD+ plan within protected areas;
- Procedure for establishing Beneficiary Committees (BCs);
- Methodology for monitoring and reporting on the performance of benefit sharing and its forms;
- Benefit sharing schedule.

The completion and approval of the POM is a key step in moving toward full system operability, ensuring that all entities involved have clear guidelines and an updated regulatory framework to address challenges and ensure the program's success. As explained above, the POM seeks effective implementation of the BSP and benefit sharing. Therefore, when appropriate, estimates, timelines, and some processes should be updated to address these needs as they are identified. Given that this will be the first benefit sharing for the country, the first version of this POM will be completed before requesting the first payment.

The BSP was approved in January of 2022. Its development and dissemination process was participatory, with broad representation from key organizations and institutions involved in the implementation of the REDD+ Program. Through meetings and workshops, opportunities for dialogue were promoted to gather information on perceptions, challenges, and opportunities, with a view to ensuring a fair and effective distribution of the benefits generated by the program.

For the dissemination of the BSP, in addition to the socialization and follow-up meetings described below, it was widely distributed digitally (via email and chat) and is available on the [official website of the Ministry of Environment and Natural Resources](#).

This participatory approach has demonstrated the Dominican Republic's strong commitment to the implementation of REDD+, with the active participation of relevant stakeholders from various social sectors and levels of governance.

Table 5 Summary of participants in activities related to the BSP

Entity	Sector	Grup of stakeholders by entity
Ministry of Environment and Natural Resources	Public	Minister, Deputy Ministers, Directors, Managers, Technicians, and Internal and External Consultants
Ministry of Finance	Public	Deputy Ministers, Directors, Managers, Technicians
Ministry of Economy, Planning, and Development	Public	Ministers, Deputy Ministers, Directors, Managers, Technicians
Ministry of Agriculture	Public	Ministers, Deputy Ministers, Directors, Managers, Technicians
Ministry of Women	Public	Analyst
INDOCAFE	Public	Directors, Managers, Technicians
UTEPDA	Interinstitutional	Director, Technicians and Specialists
San Ramon Forestry Association	Private	General Manager and Technical Staff
ASODEFOREST	Private	President and Technical Staff
CONALECHE	Public	Manager, Technicians
External consultants	Private	EnABLE, INSUCO through the World Bank and the GGGI Project
Associations, Federations	Private	Producers
Nacional Statistics Office	Public	Analyst

Below is a summary of the number of participants:

2021-2025 Period	Number
Men	1054
Women	284
Total participants	1338

Consultation and participation

The preparation of the BSP considered the opinions expressed through regional and national consultations from the SESA workshops held between 2018 and 2020. During these years, technical and feedback meetings were held with the authorities of the Ministry of the Environment and the EE, both bilaterally and collectively, in addition to sectoral and intersectoral workshops with the Technical Advisory Committee (TAC) and its members.

The consultation process with different stakeholders focused on defining: (i) beneficiaries; (ii) criteria for regulating BSP; (iii) types and proportions of monetary and non-monetary benefits; (iv) beneficiary requirements; (v) decision-making mechanism for benefit sharing; (vi) institutional arrangements; and (vii) flow of information and the process for reporting and verifying emissions. Many of the delays in the BSP consultations were due to COVID-19 restrictions.

In addition to these [consultation activities](#), in 2021, a consultation was held with each EE, where a proposal for additional criteria and a method for weighting the criteria for benefit sharing was presented. After receiving the comments and observations, a multi-stakeholder and multi-sectoral National Workshop was held by the TAC on November 4, 2021, where the additional criteria and the proposed weighting method for benefit sharing were presented and validated, prior to submission to the National Committee for Benefit Sharing (NCBS) for final approval.

A National Workshop (virtual) was also held with the TAC to review and validate the Roadmap (see Annex 7 of the BSP¹⁰⁶) developed for the establishment of the first NCBS in March 2022.

1.2. In cases where capacity building initiatives have been included as part of the BSP, confirm whether the program entity has completed the capacity building measures required to ensure the effectiveness of the system. What other measures remain pending?

In 2021, a training plan was carried out with the EE, where various workshops were held, coordinated by the RCO, in specific cases with the support of the World Bank, with the main purpose of strengthening their capacities in:

- Training on Environmental and Social Safeguards: Environmental and Social Management Plans (ESMP) and Compliance Matrix.
- Use of platforms: SIS, SRI, and GRM.
- Raising awareness of good practices and REDD+ activities.
- Strengthening technical and administrative capacities in the case of San Ramón and ASODEFOREST associations.

Capacity building for EE and San Ramon and ASODEFOREST associations.

During the implementation period of the REDD+ Program, as well as during support missions, one-on-one sessions have been held with each EE ¹⁰⁷ to update the preparation status for the implementation of the Benefit Sharing Plan and identify barriers.

These sessions included the program focal points, the individuals responsible for monitoring the safeguards designated by the EE, the legal representatives, and those responsible for the financial aspects of each EE. The main capacity gaps to be strengthened were identified as follows:

1. The EEs have staff with initial skills; however, given the particular characteristics of the program, training is needed on inter-institutional financial management of program resources and reporting. Training should also continue for new staff on monitoring compliance with safeguards, grievance and redress mechanisms, and use of the SRI, GRM, and SIS platforms.
2. When Beneficiary Committees are formed, it is important that they have sufficient skills and tools for decision-making, governance, monitoring, and reporting on benefit sharing.

¹⁰⁶ (Ministerio de Medio Ambiente, 2022) - (Ministry of the Environment, 2022)

¹⁰⁷ These meetings were held throughout the implementation period, as well as during support missions. For the preparation of this annex, sessions were also held on the implementation of the BSP and to gather information to supplement this document.

These gaps will be addressed through the development of training plans tailored to each EE and for the various Beneficiary Committees (BCs), with support from the REDD+ Coordination Office (RCO), the Ministry of Finance (MF), the World Bank (WB), and other relevant stakeholders.

In May 2022, the [Final Report on Institutional Capacity Building for the Association of Sustainable Forest Restoration Development \(ASODEFOREST\) and the San Ramón Forestry Association](#) was released. This work focused on the following areas: a) Development and implementation of Institutional Strengthening Plans in the San Ramón Forestry Association and the Association for Sustainable Forest Restoration (ASODEFOREST); b) Training on basic technical and administrative processes and on the vision of the economic, environmental, and social sustainability potential of these organizations; and c) Development of business plans for San Ramón and ASODEFOREST. These three (3) components of the consultancy were addressed simultaneously throughout the process.

The business plans developed by both institutions can be found at the following links:

- [Business Plan for the San Ramón Forestry Association](#)
- [Business Plan for the Association for Sustainable Forest Restoration Development \(ASODEFOREST\).](#)

1.3. When applicable, confirm whether the changes agreed upon in the benefit sharing agreement identified during the reporting period have been completed

This is the first completed report. During the reporting period, no changes to the BSP have been identified or agreed upon. Therefore, it is confirmed that the plan remains unchanged since its initial approval.

2. Institutional Arrangements

2.1. Confirm that the institutional arrangements agreed upon in the BSP are fully in place and that the Executing Agencies have adequate resources to fulfill their respective responsibilities.

The institutional arrangements established in the BSP of the REDD+ Program are currently in place, and the designated Executing Entities have the basic resources necessary to fulfill their responsibilities.

The EE currently active are those established in the 2022 Benefit Sharing Plan, as detailed in the following table:

Table 2 Current Executing Entities

No.	Executing Entity	Plan, System, Program/ Project	Type
1	MMARN- Vice Ministry of Forest Resources	Quisqueya Verde Nacional Plan (PNQV) ¹⁰⁸	Govermental
2	MMARN – Vice Ministry of Protected Areas and Biodiversity	Nacional System of Protected Areas (SINAP)	Govermental
3	UTEPDA – (Ministry of Agriculture, MMARN, and Ministry of the Presidency)	Presidential Agroforestry Development Project (PAP)	Govermental (interministerial structure)
4	Ministry of Agriculture – Cacao Department	Agroforestry system with shade-grown cacao (CACAO)	Govermental
5	Dominican Coffee Institute (INDOCAFÉ)	Agroforestry system with shade-grown coffee (CAFÉ)	Govermental

¹⁰⁸ Este plan ya concluyó y transicionó a la Estrategia Nacional de Reforestación en junio 2023

6	National Council for the Regulation and Promotion of the Dairy Industry (CONALECHE)	Silvopastoral system and forest conservation on livestock farms	Govermental
7	General Directorate of Livestock	MEGALECHE Program (Silvopastoral system and forest conservation on livestock farms)	Gubernamental
8	San Ramón Forestry Association	La Celestina Project	Privada
9	Association for Forest Restoration and Development (ASODEFOREST)	Sustainable forest management plan	Privada

Following confirmation of each EE's commitment through the signing of Letters of Intent between December 2019 and early 2020, Inter-institutional Agreements were signed with the Ministry of Environment and Natural Resources (MMARN). In these agreements, the EEs formally agreed to comply with the responsibilities and criteria defined for the implementation of strategic options and enabling actions established in the National REDD+ Strategy (EN-REDD+). All Letters of Intent are available for consultation at the following [link](#).

Subsequently, each EE signed an additional Inter-institutional Agreement with MMARN, defining the rights and obligations related to the implementation of REDD+ safeguards and World Bank operational policies, as well as the specific activities to be carried out by each EE. In the case of the EEs that are part of the Ministry itself, a letter of commitment was formalized and signed by the Vice Ministries of Forest Resources and of Protected Areas and Biodiversity.

For the activities of each EE, there are mechanisms to verify compliance with and monitoring of these arrangements, such as: a project management system, working groups composed of representatives of the signing parts of each commitment, and follow-up and monitoring by the Board of Directors, according to the type of each EE.

Table 6 Inter-institutional agreements signed between MMARN and EE

No.	Executing Entity	Validity period (*)
11	San Ramon Association	April 12, 2023-December 31, 2025
22	General Directorate of Livestock	March 21, 2023-December 31, 2025
33	INDOCAFE	July 13, 2023- December 31, 2025
44	Environment—Vice Ministry of Forest Resources	November 02, 2023- December 31, 2024(**)
5	CONALECHE	November 15, 2023- December 31, 2025
6	Environment—Vice Ministry of Protected Areas	November 22, 2023- December 31, 2025
7	UTEPDA	February 05, 2024- December 31, 2025
8	Ministry of Agriculture	January 11, 2024- December 31, 2025
9	Association for Sustainable Forest Restoration Development, INC (ASODEFOREST)	March 28, 2023- December 31, 2025
(*) The following Executing Entities signed a new addendum to extend their validity until December 31 st of 2025: INDOCAFÉ, CONALECHE, Viceministry of Protected Areas, Ministry of Agriculture and UTEPDA. All interinstitutional agreements will be updated with a new addendum according to the ERPA extension (24 months, which is currently under discussion).		

(**)Addenda still pending. According to the Vice Ministry of Forest Resources, the request for no objection submitted by the OCR was not promptly included in the corresponding agenda for signature due to an inadvertent error, causing a delay in the processing process. However, it is already being addressed, and the signed addendum is expected by the last week of October or the first week of November

To date, inter-institutional agreements have been signed with the executing agencies, and addenda to these agreements have been signed with the following executive agencies: INDOCAFE (December 9, 2024), Ministry of Agriculture (December 10, 2024), and CONALECHE (December 10, 2024), effective until December 31, 2025. As for the Vice-Ministries of Forest Resources and Protected Areas and Biodiversity, and UTEPDA, as they are branches of the MMARN, efforts are underway to sign the corresponding addenda, which will be ready during the month of May.

Both the transfer agreements from San Ramón and from the National System of Protected Areas (SINAP) were signed on December 12, 2024.

With regards to the institutional arrangements for the implementation of the BSP, the NBSC has been formed and is operational, actively participating in the supervision and decision-making related to the BSP.

The REDD+ Program Coordination Office, attached to MMARN, also acts as the technical and operational entity responsible for monitoring the conditions necessary for disbursement and benefit sharing.

The executing entities, both territorial and thematic, have been formally notified of their functions and have received technical assistance to facilitate their effective participation in the program.

Finally, a [Grievance Redress Mechanism \(GRM\)](#) was also developed, and approved in 2019 and implemented through the Grievance, Redress and Consultations System (GRCS), a digital tool designed as an accessible channel for anyone affected by the implementation or results of REDD+ activities to submit (in writing), any disagreement or possible violation of their rights and integrity, whether as an individual, producer, or citizen.

As for the GRCS, it was initially conceived as a single, centralized platform. In practice, it was a system that encompassed three platforms: the Green Line (with its REDD+ section for 2024), Line 311, and the UTEPDA Complaint Response Mechanism. Due to delays in the availability of the planned software, it was necessary to migrate from the digital platform created during the preparation phase due to software language incompatibility with the development context of MMARN. Access to REDD+ has been created and connected to the general Green Line system, with its user manual.

We emphasize that the Green Line continues to have the capacity to collect information directly through the various provincial offices throughout the country, as well as by telephone and via the renewed web platform.

It's important to note that, the Beneficiary Committees already formed already have access to the GRM and those are: two in Protected Areas, (1) in the San Ramón Foresters Association and (1) in ASODEFOREST. All future Beneficiary Committees will have access to the GRM. However, the Beneficiary Committees are still being formed, and their regulations approved, a process that is dependent on progress in the formal registration of program beneficiaries.

The Executing Entities have assigned staff and operational resources to efficiently receive and execute the first payment for emissions reductions, as well as technical assistance from the World Bank to strengthen administrative, monitoring, and grievance resolution capacities. This is reflected in the progress made in the Operating Manual, which defines the procedure that each EE will follow to ensure an efficient and transparent process.

Benefit sharing will be carried out at three levels, as described below:

- Level 1: From the Carbon Fund (CF) to the Ministry of Finance;
- Level 2: From the Ministry of Finance to the executing entities;
- Level 3: From the executing entities to the beneficiaries (federations, associations, cooperatives, and individuals).

Table 7 List of stakeholders and responsibilities

Institución	Responsabilidades
Carbon Fund (CF)	-Transfer payments to the Single Treasury Account administered by the Ministry of Finance based on the report produced by RCO submitted to the Ministry of Finance.
Ministry of Environment – Ministry of Finance (MF)	- Transfers benefits to each EE in accordance with the report on the application of benefit sharing criteria prepared by the NBSC. - Sends the report about transfers received and made to the Ministry of the Environment (RCO), providing data and proof of the transfers.
Ministry of Environment – REDD+ Coordination Office (RCO)	- Unit responsible for coordinating, implementing, and supervising the REDD+ Program. - Participates in the preparation of the BSP's POM. - Participates in the design of procedures for establishing the NBSC and its rules. - Participates in the design of BC procedures with EE and beneficiaries. - Facilitates dialogue between the EE that is part of the NBSC, and between the NBSC and the BCs. - Manages the REDD+ Initiative Registry, the SIS, and the SQRC. - Coordinates and supervises the Communication and Dissemination Program on the BSP at different levels. - Provides technical support to the EE in the preparation of reports and monitoring of the implementation of activities. - Supervises the implementation, procedures, and requirements established in the Environmental and Social Management Framework (ESMF) and the ESMP corresponding to REDD+ activities in both the EE and the beneficiaries. - Provides technical assistance to the EE on compliance with safeguards when necessary. - In coordination with the EE, conducts field sampling to verify the data provided by them. - Reviews and compiles EE progress reports and consolidates the information into a general report. Sends it to NBSC and the CF. - If necessary, requests clarifications or revisions from beneficiaries or EE. - Prepare a general report on benefit sharing for each period and send it to the NBSC for review and then to the CF and ensure its publication on the website.

	- Produce Monitoring, Reporting and Verification (MRV) system reports and submit them to the Ministry of Finance. - Review the report on payments made by the Ministry of Finance to the EE
Executing Entity (EE)	-Sign the inter-institutional agreement with MMARN as a participant in the REDD+ Program. - Enroll in the REDD+ Initiative Registry. - Participate in the NBSC and comply with the rules established for its operation. -Coordinates the establishment of BCs and participates in them. - Calls for potential beneficiaries to disseminate the BSP in coordination with the RCO and collects letters of intent. - Prepares and publishes annual calls for participation in the ER Program, considering the criteria and requirements for social inclusion to ensure that potential beneficiaries have the capacity to carry out the proposed activities. - Receives and organizes proposals submitted by potential beneficiaries and forwards them to the BCs for evaluation. - Collects information on the type of benefit participants want and negotiates this with the BCs - Enrolls selected beneficiaries in the REDD+ Initiative Registry. -Signs agreements with federations, associations, cooperatives, and individual beneficiaries for their participation in the REDD+ Program. - Ensures that funds obtained from results-based payments reach beneficiaries regardless of their land tenure status (formal or de facto recognition of possession). - Applies MRV instruments and the SIS and SQRC of projects in accordance with the procedures presented by the RCO for monitoring and systematization of information in the REDD+ Initiative Registry. - Applies the procedures and requirements established in the ESMF and ESMP of the REDD+ Program to ensure that they are aligned with the safeguards of the United Nations Framework Convention on Climate Change (UNFCCC) and the operational policies of the World Bank. - Participates in periodic evaluations coordinated and conducted by the RCO to verify compliance with UNFCCC safeguards and World Bank operational policies.

	- Prepares and submits reports on the performance of REDD+ activities carried out with its support and eligible for benefit sharing, at the frequency and in the formats determined for this purpose by the NBSC. - Submits the reports required by the BSP at the agreed frequency and in the agreed formats. - Participates in the RCO training program aimed at strengthening institutional capacities. - Monitors actions implemented directly, including compliance with safeguards, validates and reports the number of hectares where activities have been carried out. - Monitors the application of benefit sharing among beneficiaries to confirm that it has been carried out in accordance with the agreement with the beneficiaries. - Prepares, with the approval of the corresponding BC, a report on the program's performance for the period, documenting benefit sharing and incidents that occurred during the distribution process. - Submits the general report to the RCO and the NBSC
National Benefit Sharing Committee (NBSC)	- Establish criteria and rules for the formation of the NBSC - Ensure the effective and representative participation of women, youth, and vulnerable minorities in the composition of the NBSC. - Approve the NBSC's operating regulations and any amendments thereof and ensure that its requirements are respected. - Ensure the fair, equitable, and transparent distribution of benefits derived from the implementation of the BSP, within the framework of the REDD+ Program, as well as from the marketing and sale of greenhouse gas emissions reductions generated by the country, properly incorporated into the reductions registry established, regardless of whether the resources come from the ER market. - Apply the criteria for benefit sharing established in the BSP and propose and approve additional criteria deemed appropriate in order to better differentiate and weight the amount to be compensated, so that the Ministry of Environment and Natural Resources can request the transfer of the corresponding funds from the CF, in accordance with the REDD+ activity in question and always respecting the principles of equity, transparency, and continuous improvement expressed in the BSP (Chapter 5.2 of the BSP), within the framework of the possible modifications mentioned above. - Prepare the fund allocation report for each EE based on the ER results obtained and the application of the approved benefit sharing criteria. - Request the Ministry of Environment and Natural Resources to proceed with the processing of funds for benefit sharing with the Ministry of Finance;

	- Ensure that consolidated reports on benefit sharing submitted by the country are published and made available to any interested party; - Oversee the implementation of benefit sharing, as agreed with the beneficiaries, and verify that the benefits have been used for the established purposes and that the distribution was carried out in accordance with the principles and conditions set out in the BSP; - Facilitate the implementation of the BSP at the national level and report on its performance to the REDD+ Program Steering Committee; - Decide on the modification or update of the BSP, subject to approval by the REDD+ TAC;
Beneficiary Committee (BC)	- Decide on the type of benefits and how they will be distributed among the beneficiaries of each EE, in accordance with the distribution criteria and scenarios established in the BSP and those that may be determined in the future. - Propose additional criteria for benefit sharing, for consideration by the NBSC, explaining the circumstances and providing clear justification; - Contribute to monitoring benefit sharing as agreed with the beneficiaries and verify that the benefits have been used for the purposes established and that the distribution has been carried out in accordance with the principles and conditions established in the BSP; - Ensure compliance with the procedures and requirements established in the ESMF and ESMP corresponding to REDD+ activities; - Contribute to implementing, supervising, and auditing the BSP at the REDD+ activity level and corresponding Executing Entity; - Establish and approve the BC's operating rules, in line with those established in the POM and by the NBSC, including benefit sharing with associations, federations, cooperatives, and other individual and group beneficiaries; - Report to the RCO and the NBSC any non-compliance by the corresponding EE with the general guidelines for participating in the REDD+ Program, where applicable; - Prepare a report on the benefit sharing carried out in each period and submit it to the RCO; - Request clarifications and additions from the EE in case the consolidated reports of the EE are inaccurate or incomplete; - Decide on the modification or adaptation of these Regulations for the Operation of the Beneficiary Committees, considering and respecting the criteria and principles of the BSP;

	- Comply with the procedures to be established in the POM. - Define the methodology and procedures for decision-making in cases where necessary. - If necessary, verify that beneficiaries are duly registered in the REDD+ Initiatives Registry and that they comply with the requirements established in the BSP and the REDD+ Program, particularly with regard to demonstrating ownership or possession rights to the land on which REDD+ activities are being implemented, as well as those requirements related to the transfer of ownership of emissions reductions (also known as carbon rights); - If necessary, verify the transfers of ownership signed between the beneficiaries or group of beneficiaries and the corresponding EE.
Beneficiaries	- Attend information meetings convened by the RCO and EE. - Express interest in participating in the REDD+ program through the corresponding EE. - Attend the corresponding call for proposals, meet the requirements, and submit a proposal. - Sign an agreement transferring ownership of the ER to the EE to comply with the requirements established for participation in the REDD+ Program, execute the agreement transferring ownership of the ER to the EE, and follow the BSP guidelines for benefit sharing. - Comply with the procedures and requirements established in the ESMF and ESMP corresponding to the development of the respective REDD+ activity. - Prepare and submit an annual progress report following the methodology and formats established for this purpose in accordance with the BSP, including the type of benefits received and any mishaps or anomalies in the process identified using the GRM, and deliver them to the EE representative. - Where applicable, associations, federations, and cooperatives of producers eligible to receive benefits must follow their own procedures for distributing benefits among their members. - Participate in the BC or NBSC when elected and respect the rules established for its proper functioning.

The main challenges regarding the implementation of the BSP addressed in the 2021-2025 reporting period were:

- **Validation of legal documentation for beneficiary registration**

As part of the guidelines established in the BSP for participation in the REDD+ program, the Executing Entities are responsible for ensuring that beneficiaries comply with applicable legal and administrative requirements. One of the main challenges identified was the difficulty many beneficiaries had in demonstrating formal rights of ownership or possession over the land where they planned to implement REDD+ activities. This situation represented a significant risk of exclusion of key stakeholders from the program.

This obstacle was overcome in 2025, when, after a consultation process with MMARN's Legal Department and with the support of legal specialists from the World Bank, it was determined that for the program, which recognizes the transfer of emissions reduced by the type of activity carried out on the property and based on the country's customary regulatory guidelines, it is possible to carry out this transfer by demonstrating the legitimacy of the user during the period in which the ERs are to be transferred. In these cases, the Emissions Reduction Transfer Agreements between the EE and the beneficiaries contain specific clauses to enable this condition.

- **Operationality of the SRI platform**

After validating the legal and administrative documents and verifying that the area where the REDD+ activity takes place can generate emissions reductions, the EE must register each beneficiary on the REDD+ Initiative Registration System platform. This platform became operational in 2024 due to incompatibility with the programming language.

This limited the work of the RCO, delaying the beneficiary registration process, a requirement for receiving results-based payments. The registration of initiatives began operating under the Kobotoolbox platform in August 2024 and is currently operational.

- **Notarization of ER transfer deeds**

Each beneficiary wishing to receive a payment for emissions reductions must sign a transfer deed, agreeing to transfer the emissions reduced through the implementation of REDD+ activities in exchange for a payment proportional to the amount of emissions reduced, as established in the BSP.

However, the notarization of the transfer deeds, which is how they are certified, was significantly delayed. This was because the beneficiaries, through their respective EE, reported their inability to bear these transaction costs. In addition, there was a delay in the validation of the legal documentation for the registration of beneficiaries. In 2025, the Ministry of Environment and Natural Resources decided to assume these transaction costs.

For beneficiaries to be registered for the 2021 period, the transfer deeds are expected to be signed and notarized within a maximum of three months after the request for the first payment. It should be noted that, due to these delays, the transfer of ER was carried out from public lands in protected areas and from the San Ramón Forestry Association (which holds titles to the lands and these belong to the organization); therefore, the signing of these transfer deeds will allow for the distribution of benefits to stakeholders outside these areas.

- **Systematization and documentation of administrative and financial procedures and processes associated with cash flow.**

Although the Dominican Republic has not received payment for reduced emissions, in preparation for implementing benefit sharing and through various consultation processes with the entities responsible for the country's financial management (Ministry of Finance, General Budget Office, General Government Accounting Office, National Treasury, the Directorate for Management of the Integrated State Financial Administration System (SIAFE), the Ministry of the Environment as the executing entity of the REDD+ Program, and technical advice from World Bank

specialists), the “Procedure for the registration of resources under the Emissions Reduction Payment Agreement (ERPA)” was developed, with the purpose of:

“Determine the treatment for the budgetary and accounting record of income and expenditure from resources to be received from the sale of carbon emissions reductions, according to the criteria of the emissions reduction payment agreement, establishing the activities, roles and tasks of the entities and agencies involved.”

This describes the activities to be carried out by each entity, the steps necessary for the flow of funds, and the evidence supporting each action, using the country's Financial Management Information System (SIGEF), so that payment reaches the EE. This procedure will be available at the POM and, once approved, will be made publicly available on the website of the Ministry of Environment and Natural Resources.

On the other hand, the EE have shown interest in receiving the funds through their active participation in workshops, training sessions, and follow-up meetings. Specific capacity building activities have also been carried out with EE such as ASODEFOREST and the San Ramón Forestry Association. However, it is necessary to demonstrate that they have the operational and financial capacity to administer these funds, from the Ministry of Finance to the beneficiary.

As for government entities, they have their own financial management processes, which, although not exclusive to the REDD+ Program, have the capacity to record and process transfers. In the case of UTEPDA, this is also linked to its Integrated Digital Management and Monitoring System (SDIGEM). Regarding private entities, San Ramón has an administrative accounting system for fund management, while ASODEFOREST uses a database and Excel records, each with its respective supporting documentation.

This management is being strengthened by each EE developing its own “Administrative and financial procedure for benefit sharing under the REDD+ Program,” which, within its current processes, identifies specific treatment for the management of funds to beneficiaries, bearing in mind the provisions of the BSP and the procedure described above. These procedures will be completed before the first benefit sharing, which is estimated for September 2025.

- **Systematization and documentation for verification of the use of funds from emissions reduction payments.**

Derived from the previous challenge, as part of the provisions of the POM draft, it is expected that the EE will not only have processes for receiving funds, but also mechanisms for verifying the use of funds, preferably through a third party or other transparency and accountability mechanism.

In the case of governmental EE, they have accounting and financial control mechanisms through internal audits, external audits, cross-checks, and bank reconciliations. As for private EE, the San Ramón Association conducts annual external audits; however, it will be necessary to implement this in the case of ASODEFOREST.

As in the previous case, it is necessary to identify precisely what each EE will apply for benefit sharing, including verification and monitoring. These considerations will be reflected in the aforementioned “Administrative and financial procedure for the distribution of benefits from the REDD+ Program.”

2.2. Confirm that the necessary regulatory or administrative approvals have been obtained to implement the BSP.

The financial management session held during the World Bank's implementation support mission on November 25, 2024, aimed to review and confirm that the financial management arrangements agreed upon during the preparation of the operation remain in place to ensure that the benefit sharing system is adequate. As of the date of the mission, there is agreement among the relevant parties on the definition of the account in which the payments will be registered, and the accounting account has been included in the Central Government's catalog of accounts.

The procedure for registering resources under emissions reduction payment agreements was reviewed by the World Bank and discussed at meetings with the RCO and representatives of the Ministry of Finance. It has been confirmed that public institutions must expand their budgets in a timely manner, through the corresponding modification

processes, to execute the ERPA agreement funds associated with the specific account created. To execute the expenditure, they must first incorporate it into the Integrated Financial Management System (SIGEF), in compliance with the requirements and procedures established in Resolution No. 219-2024, which establishes the regime for budgetary modifications to the General State Budget.

Mission was informed that three entities have been designated to request disbursements: the Minister of Finance, the Administrative and Financial Coordinator, and the Financial Director of MMARN. The official letter was sent by the Ministry of Finance to the World Bank in May 2025.

In addition, it was reported that the specific source has been linked to the SIGEF and the government entities have been linked to the specific source, and that a collective account has been created at the Central Bank. In the case of ASODEFOREST, the opening of an exclusive bank account for PREDD+ is stipulated, while the San Ramón Forestry Association is still evaluating whether to use its general account or create an exclusive one, the latter being recommended.

Carbon Assets Tracking System (CATS) and Client Connection

Currently, the Ministry of Environment and Natural Resources, the Ministry of Finance, and the World Bank are coordinating the registration of the Program in these systems.

Program Operating Manual (POM)

The BSP aims to clearly establish the general principles and guidelines governing the institutional arrangements and mechanisms that the REDD+ Program will use to distribute benefits in a transparent, fair, and efficient manner. As part of its implementation, the BSP will be accompanied by a Program Operating Manual, which details the specific procedures related to the formation and operation of the governance bodies responsible for benefit sharing, as well as detailing:

- Estimation of operating costs;
- Criteria for the use and distribution of contingency funds;
- Criteria for the distribution of net benefits among the EE;
- Detailed procedure for registering one or two activities in the REDD+ Initiative Registration System and its user manual;
- Procedures and user manual for the Safeguards Information System;
- Procedures and user manual for the Grievance and Redress Mechanism;
- Benefit sharing within protected areas;
- Procedure for establishing BCs;
- Methodology for monitoring and reporting on the performance of benefit sharing and related forms;
- Benefit sharing schedule.

Currently, there is an advanced draft of the POM, designed to serve as a technical and regulatory tool for individuals and institutions responsible for implementing the REDD+ Program and its BSP. This manual establishes the mechanisms, procedures, and operating rules that govern the entire implementation of the program. It includes administrative, fiduciary, technical, and inter-institutional coordination provisions, as well as expected results. The provisions of the POM are applicable to the RCO, the EEs and any other institution or organization involved in the implementation of the REDD+ Program and its BSP.

Approval of the POM by the World Bank is a prerequisite for enabling results-based payments. During 2024, the POM was in its final stage of development, and the RCO is expected to submit a final version in September 2025 for approval by the WB and dissemination to the NBSC.

Preparation of the Regulations for the Beneficiary Committees and the National Benefit Sharing Committee

For the execution, supervision, and verification of its implementation during the reporting period, a National Benefit Sharing Committee has been created, and Beneficiary Committees are in the process of being formed.

The BCs will be composed of beneficiaries or producers participating in the emissions reduction effort. BCs operate at the local level and, in order to be constituted, must have beneficiaries registered with the SRI. Once this has occurred, the EE technicians and beneficiaries will be assigned tasks, as established in their regulations and set out in the BSP, of which the NBSC is aware.

In June 2023, at a meeting held at the premises of CONALECHE, the NBSC approved its regulations. In the case of BCs, and after consultation with EE technicians, the RCO has prepared a draft of the regulations. These documents can be consulted in this [link](#).

The NBSC regulations were approved by the Committee members on July 18, 2023. The regulations for the BCs must be approved by their members at their first meeting, which must take place before the first benefit sharing, estimated for November 2025.

Eligibility requirements for beneficiaries

A document containing the specific eligibility requirements for program beneficiaries is being developed in collaboration with the executing agencies, in addition to the general requirements already established in the BSP. The RCO must convene the NBSC to approve these requirements after they have been approved by the World Bank. In addition to the specific requirements for each type of activity, the selection of beneficiaries by the executing agencies must consider the following general eligibility requirements, which apply to all participants:

- a) **Land rights:** The potential beneficiary must be able to demonstrate ownership or possession rights over the land on which the REDD+ activities will be implemented, through the corresponding EE. *No distinction is made based on nationality*; both Dominican citizens and foreigners are eligible, provided they meet the other requirements.
- b) **Coordination with the Executing Entity:** The beneficiary must carry out its REDD+ activities under the coordination of the EE that is part of the REDD+ Program and corresponds to that activity. In other words, only actions carried out within the framework of the official programs/projects of the EEs will be considered.
- c) **Environmental and social compliance:** The procedures and requirements established in the **Environmental and Social Management Framework** must be complied with, as well as the corresponding **Environmental and Social Management Plans** for the development of the REDD+ activity in question. This compliance ensures that interventions are carried out in accordance with the agreed environmental and social safeguards.
- d) **Mitigation potential:** The land where the REDD+ activity will be carried out must have a **mitigation potential** compatible with the type of activity proposed, and valid during the reporting period considered. In the case of activities aimed at reducing **deforestation**, the EE must take into account the analysis of the causes and agents of deforestation, or other relevant data, when choosing the regions or areas where potential beneficiaries will be identified (that is, priority will be given to critical areas where the intervention will have the greatest impact on emissions reduction).
- e) **Signing of agreement and transfer of emissions:** Once the applicant meets all the requirements and is found eligible, they must **sign an Emissions Reduction Transfer Agreement** with the relevant EE. In this agreement, the beneficiary commits to complying with the terms established in the call for proposals, including technical and safeguard obligations, and to legally transfer ownership of the reduced emissions generated by its activity to the Program (as the basis for results-based payment).

2.3. Assess whether all BSP stakeholders (beneficiaries and managers) clearly understand their obligations, roles, and responsibilities associated with the BSP. This assessment could be based, for example, on the findings and information received during field implementation support missions, during interviews with beneficiaries, issues raised in public consultation meetings, monitoring of beneficiaries, or grievance mechanisms.

During the evaluated period, communication and coordination with key stakeholders involved in the implementation of the Benefit Sharing Plan were strengthened, achieving significant progress in clarifying roles and responsibilities, especially among EE.

a) Beneficiaries' understanding of rights and eligibility criteria

The registration of beneficiaries is in the process of being activated, so the phase of direct communication with all beneficiaries about their rights and eligibility criteria has not yet been completed. However, the registration system is now fully functional and the EE have been empowered to facilitate traceability and ownership of the process by beneficiaries through the NBSC and the BC.

In addition to the outreach and consultation activities carried out during the project preparation phase, which included benefit sharing, several specific meetings were held for the BSP, with a total of 471 participants (372 men and 99 women).

During the last series of consultations, participants agreed on the following conclusions: (i) they prefer collective rather than monetary benefits; (ii) they agree with the inclusion of the four additional criteria in the BSP; and (iii) they consider the governance and decision-making mechanisms of the BSP to be adequate and that BC members should represent the interests of producers, and that they (the producers) should participate in the selection of their representatives.

Activities to strengthen understanding among beneficiaries will continue, as indicated in section 1.2.

b) Understanding of the operational and accountability role of the EE and committees

The EEs have already been formally notified of their roles within the BSP and have received technical assistance from the REDD+ Coordination Office through technical missions, bilateral meetings, and feedback sessions held between 2021 and to date. It has been confirmed that the EEs understand their role as benefit channelers, including responsibilities related to compliance with safeguards, verification of conditions, and operational accountability. To date, it has been confirmed that the various communication and coordination channels between the EEs and the RCO, such as email, messaging groups, direct calls, and meetings, are active to facilitate the effective implementation of the BSP.

Upon approval of the “Procedure for the registration of resources under the ERPA,” which establishes guidelines for transparent, coordinated management of ERPA resources in accordance with current regulations, the steps necessary for managing the specific source of financing and the collective account where ERPA resources will be deposited were defined in detail. This procedure was developed through several consultation processes, reviewed and approved by the Ministry of Finance, the General Directorate of Budget, the General Directorate of Government Accounting, the National Treasury, the Directorate of Management of the SIAFE (Integrated State Financial Management System) and the Administrative and Financial Coordinator of the MMARN. This document was subsequently sent to and approved by the World Bank.

This protocol clearly establishes that the EEs will be required to make public all information related to benefit sharing, including progress reports on the implementation of activities, minutes and resolutions of the BCs of the respective EEs, and proof of transfer of resources to beneficiaries, as well as information on internal and external audits carried out. This is reinforced by the commitment of each EE to develop its own “Administrative and financial procedure for the distribution of benefits from the REDD+ Program.”

A Guide for the formation of Beneficiary Committees (BCs) – REDD+ Program has been developed, which is detailed in the Program Operations Manual (MOP).

The document establishes guidelines for the creation and operation of Beneficiary Committees (BCs), local bodies responsible for implementing, supervising, and monitoring the distribution of benefits from the REDD+ Program in coordination with the Implementing Entities (EEs).

Guiding Principles

BCs are formed based on justice, equity, transparency, solidarity, inclusion, effectiveness, and democratic participation, according to the Operating Regulations.

Formation Process

- Formal written invitation to beneficiaries registered in the REDD+ System.
- Constituent session:
 - o Explanation of the program and the Benefit Sharing Plan (BSP).
 - o Debate and approval of the BC Regulations.
 - o Election/ratification of representatives.
 - o Constitution and oath of the BC.
 - o Development of a work plan with a schedule, communication channels (e.g., virtual groups), and monitoring mechanisms.

General Composition of the CBs

- A representative of the Executing Entity (CB chair).
- Representatives of federations, associations, cooperatives, and community groups.
- Representatives of unorganized beneficiaries.
- Representatives of women's organizations.
- Additional representation based on local relevance.

Territorial Composition Criteria

- Area dedicated to REDD+ activities.
- Existence and type of local organizations.
- Number of registered producers.
- Distance between communities and accessibility.
- Inclusion of women and vulnerable groups.

Functioning

- Each CB acts as a territorial decision-making and monitoring body.
- Multiple CBs can be formed in a territory depending on needs.
- Their functions include coordination, fair benefit distribution, accountability, technical monitoring, and representation of local interests.

Application in Different Executing Entities

The document details specific examples of the formation and operation of various EEs:

- ASODEFOREST (Restauración, Dajabón): integration with active members and leadership of its board.
- San Ramón Association (La Celestina, Santiago): distribution under a collective ownership regime.
- UTEPDA: one CB for each Agroforestry Development Program.
- INDOCAFÉ: CBs based on Coffee Extension Offices.
- Ministry of Agriculture – Cacao Department: CBs in cocoa-growing sub-zones.
- Livestock Directorate and CONALECHE: CBs in livestock federations.

- Vice Ministry of Protected Areas (VAPyB): Adapted to protected areas plan included in the MOP.
- Vice Ministry of Forest Resources (VRF): CBs in provincial and municipal directorates of the MMARN.

Common Rules

All CBs must:

- Comply with the Beneficiary Committee Regulations.
- Comply with the guidelines of the National Benefit-Sharing Committee (CNDB).
- Ensure inclusive, equitable, and representative participation of local stakeholders.
- Maintain transparency and accountability mechanisms for beneficiary communities.

For Protected Areas, an Investment Plan for benefit-sharing has been developed with the participation of local communities; this is also included in the MOP.

c) Assessment of understanding and tools applied

During World Bank missions and implementation support meetings, qualitative information was gathered that shows a growing level of ownership of the BSP by the EE. Although no structured surveys were conducted, technical interviews identified good practices and specific challenges.

During the visits made in April 2025 to complete Annex 1 of the first report, the EE requested additional support to improve fiduciary management and documentation of the benefits channeled.

Relevant operational decisions have been made, such as assigning staff to monitor the BSP within some EE (especially within the accounting and finance departments), which demonstrates a growing level of institutional ownership.

Subsequently, information was gathered (report in preparation) indicating that the EEs recognize their role in implementing the BSP and are all equipped with the necessary human resources. Although no financial resources have yet been allocated, the EEs plan to address this issue before benefit sharing and supplement it with funds from the program's operating costs. They have also received training and technical support from the RCO, the WB, and the ENABLE project.

The EEs have identified that these staff members should provide the necessary support to beneficiaries through direct technical assistance, on-site training on good practices and safeguards, provision of inputs, registration in the SRI, handling/referral of grievances and complaints; and, in the case of private EEs, institutional strengthening of technical and administrative capacities and of relations between communities and associations. They will also support Beneficiary Committees to facilitate their organization, training, and democratic functioning, ensuring that they act as effective representative bodies for producers and communities.

d) Challenges and improvement measures

Challenges remain in terms of a uniform understanding of the BSP, particularly in relation to safeguards, inter-institutional coordination, and financial procedures. To address these challenges, the following actions have been prioritized:

- Completion and implementation of the POM, currently in the final review stage.
- Incorporation of a training module in the Safeguards Action Plan focused on BSP rights, roles, and criteria.
- Application of an institutional self-assessment questionnaire to the EE to identify operational gaps and build capacity.

These actions are already in progress and will ensure that all stakeholders fully understand their responsibilities and contribute to fair, transparent, and effective benefit sharing.

2.4. Confirm that a system for recording the distribution of benefits and related obligations to eligible beneficiaries is in place. For example, do payment information systems, payment tracking and monitoring systems, bank accounts, accounting and financial control mechanisms, and payment modalities exist and function?

The Dominican Republic has made significant progress in establishing the regulatory and institutional framework necessary for implementing the benefit sharing system, within the context of the approved BSP. Although no results-based payments have yet been made under the ERPA, a solid foundation has been laid to ensure effective and transparent implementation once the first disbursements are received.

Currently, there is a clear regulatory framework defining roles, eligibility criteria, payment modalities, and control mechanisms, which are included in the **POM**. This instrument is in the final stages of review for approval by the World Bank and dissemination to the NBSC, and includes detailed provisions, financial control mechanisms, and the use of standardized formats for monitoring transfers and obligations.

There is also a “Procedure for recording resources under emissions reduction payment agreements (ERPA),” which describes the steps necessary for the flow of funds and the evidence supporting each action, using the country's Financial Management Information System, SIGEF. This is part of the POM. As part of this procedure, a specific source has been created in the SIGEF under the name “Carbon Emissions Reduction Program Fund” and the collective account “Direct collection resources from the Forest Carbon Emissions Program Fund.” This will be used to monitor and track the distribution of benefits.

Although no pilot or partial benefit sharing has yet taken place, this procedure considers the use of SIGEF and monitoring and auditing mechanisms (internal and external), bank reconciliations, and cross-checks between the responsible institutions, including the Ministry of the Environment and the Ministry of Finance. These mechanisms are currently used in the day-to-day operations of the EEs; however, in the specific case of the Program, they will be activated once the first results-based payment is made, which is scheduled for the third quarter of 2025. In addition, each EE is developing its own “Administrative and financial procedure for the distribution of benefits from the REDD+ Program,” which provides for the application of these mechanisms.

To date, there has been no feedback on the operation of the payment mechanism, as no payments have been made for reduced emissions.

On the other hand, according to the BSP: Each time the EE distributes benefits related to a Carbon Fund (CF) payment, each EE (with the approval of the corresponding BC) must prepare and submit to the MMARN a report on the allocation made, following a format previously agreed with the RCO, which is included in the POM and is based on the reporting format to be used for the CF.

The report will include the results of benefit sharing (how benefits were distributed), proof of the respective transfers, and information on any incidents that occurred during the distribution process and how they were resolved (both in interaction with the MF and with the beneficiaries). This report shall also detail how the EE complied with each of the requirements established in the guidelines for EE participation in the REDD+ Program. Once submitted to the RCO, the report will be consolidated and submitted to the NBSC for approval and must be made public. The CF requires the submission of reports six months after receiving the first ERPA payment and one year after subsequent payments.

The RCO is the unit designated within the REDD+ Program to provide technical assistance for report preparation and monitoring of activity implementation. In addition, this unit is responsible for reviewing the progress reports of the EEs. If necessary, the RCO may request clarifications or revisions. To the extent necessary, the EEs and the RCO will conduct field sampling to verify the data provided by the EEs.

Once all progress reports from the EE have been approved, the RCO will prepare a general report on the performance of the REDD+ Program for the reporting period. The information will be contained in the REDD+ Initiative Registry and the SIS. The report and systems must contain information disaggregated by type of beneficiary and the type of REDD+ activity that has been carried out. This report must include information on compliance with safeguards

(including the participation of women and youth), the application of the GRM, and the monitoring of non-carbon benefits generated by the activities carried out (co-benefits).

After each payment, the EEs must prepare (with the approval of each BC), submit to the Ministry of Environment (RCO) and publish a report with the results of the application of the distribution criteria (including the type of land tenure, formal or recognition of de facto possessions, the type of benefits granted, i.e., monetary or non-monetary, and the amount), proof of respective transfers, and information on any incidents that occur during the allocation process. This report must also detail how the EE complied with each of the requirements established in the Guidelines for Participation in the REDD+ Program, as well as the applicable safeguards, including the GRM.

The Ministry of Finance, for its part, must send MMARN its own report, which will provide data and proof of transfers received and made, including the time and whether any incidents were encountered during the transfers. The Ministry of the Environment, through the RCO, will review and compile the reports produced by the EE and the MF and prepare a general report on how the benefits have been distributed to the beneficiaries in the corresponding period in the context of the REDD+ Program.

The NBSC must review the consolidated report by the RCO and, where appropriate, decide whether corrective measures are necessary if one or more of the EE have not complied with the general guidelines for participating in the REDD+ Program, or make modifications to the BSP. The decisions by the NBSC must be made public on the Ministry of Environment's website. As part of this process, the NBSC will also review any grievances related to benefit sharing submitted by the REDD+ Program's GRM. Based on this feedback, the NBSC will decide whether it is necessary to modify the BSP to improve its functioning and, where appropriate, will revise the plan as necessary, or suggest modifications to the functioning of the EE, the NBSC, or the Ministry of Finance in the context of the REDD+ Program.

2.5. Confirm that agreed accountability mechanisms are in place and functional (e.g., stakeholder participation agreements; agreed procedures for public disclosure of information; independent third-party monitoring and/or performance audit mechanisms; dispute resolution and grievance redress mechanisms).

The accountability mechanisms defined in the BSP have already been established and are at various stages of implementation. Formal agreements have been signed with the executing entities, clearly establishing their roles, responsibilities, and eligibility criteria, which form the basis for informed participation and institutional accountability.

Furthermore, progress has been made in **defining public disclosure procedures**. The POM, currently in its final review stage, incorporates specific guidelines on the publication of key information, including distribution reports, audits, and performance evaluations, through the platforms of the Ministry of Environment and Natural Resources.

In terms of independent monitoring and audits, the system is expected to have external evaluation mechanisms, including financial audits and technical reviews to be contracted by the REDD+ Program in coordination with the World Bank, once the results-based payment cycle has begun.

The **Grievance and Redress Mechanism (GRM)** is active and managed by the Ministry's Social Participation Directorate, which is responsible for receiving, recording, monitoring, and resolving disputes related to program implementation. Although no cases related to benefit sharing have yet been registered under this mechanism (because payments have not yet begun), its operational structure is in place.

Finally, there is a **draft version of the regulations for the Beneficiary Committees (BCs)**, which will play a key role in social validation, monitoring, and feedback for the process. Their formal establishment will depend on progress in registering beneficiaries, which is currently underway. Once established, the BCs will further strengthen the participatory accountability of the system.

During the World Bank missions, it was emphasized that approval of the first disbursement for reduced emissions is subject to a review of the first monitoring report by a third party. The first Emissions Reduction Monitoring Report has been verified by the firm AENOR.

The transfer of ERs will be through the following institutional arrangements and instruments:

- i. [Letter on the DR's Capacity to Transfer Ownership of ERs and sign the ERPA](#). This document outlines the legal considerations related to the ownership of the ERs and the institutional capacity and competence to transfer these to the CF. This letter was signed on May 29, 2020. The Bank accepted this letter, along with other evidence provided to demonstrate compliance with the Conditions of Effectiveness of the Sale (CES).
- ii. [Joint Statement reaffirming the competence of National Institutions for the transfer of ER](#), dated November 5, 2019, based on the national legal and regulatory framework that grants institutional capacity to the Program Entity (Ministry of Finance) to sign the ERPA. It also confirms the authority of the MMARN as the entity responsible for transferring ER Titles to the CF and formalizing the contracts for the assignment and transfer of these titles with the beneficiaries through the Executing Entities and the Programs participating in the REDD+ Program.
- iii. [Acts of Assignment and Transfer of Ownership of ER](#) to transfer the ER titles from the beneficiaries and beneficiary groups to the corresponding Executing Entity and from the [Executing Entity of the ER Program to the MMARN](#). The MMARN, in turn, will transfer the titles to the CF.

All these instruments are verification and reporting tools that guarantee the benefit sharing of the PREDD+ and are fully in force and use.

The [Information Registration System](#) is now up and running and has been used by the EE to enter basic information on beneficiaries, including general data, land/plot locations, and supporting documentation. However, it has not yet been used to verify or validate compliance reports, as the operational cycle for benefit sharing has not yet begun. Furthermore, the BCs have not yet been constituted nor are they participating in the validation, supervision, or decision-making processes, so there is still no evidence of how beneficiaries are involved in these stages.

However, a set of **draft regulations for BCs** has been prepared, establishing mechanisms for their active participation in reviewing reports, validating beneficiary lists, and monitoring benefit sharing, which constitutes an important step toward participatory governance of the BSP. These regulations are expected to be finalized and implemented in parallel with the final registration of beneficiaries.

The SRI is administered by the RCO and is robust enough to prevent double counting of hectares under intervention. Detailed procedures for using the Initiative Registry are incorporated into a user guide and the POM.

With regard to benefit sharing, a financial protocol for PREDD+ was developed through a joint process with the country's financial institutions and the EE, which covers all administrative steps and control points for transfers until they reach the beneficiaries.

All key reports—including distribution reports, audits, and implementation results—will be published online through the official platforms of the Ministry of Environment and Natural Resources and the REDD+ Program.

2.6. Confirm that the Grievance and Redress Mechanisms (GRM) are functional for recording and addressing comments and grievances related to the implementation of the BSP. Confirm the number and types of grievances received and submitted to the GRM and how and whether they were addressed.

The Grievance and Conflict Resolution System (GCRS) provided for in the REDD+ Program design was not implemented as originally conceived due to technological incompatibilities with the Ministry of Environment's website.

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During the first monitoring cycle (March 1 to December 31, 2021), the GCRS was still in the design phase, by a company commissioned by MMARN. Once completed, incompatibilities in the programming language were detected that were impossible to correct due to the high cost and time required, and the original contract did not include warranty clauses for the supplier to carry out such corrections within the framework of the contract. Considering this situation, the MMARN's Technology Directorate recommended discarding the tool.

As an institutional alternative, MMARN launched the Green Line in 2017, a service for addressing grievances and complaints operated by phone, in provincial and municipal offices, and through its website (<https://lineaverde.gob.do>). In addition, a Green Line app (available since 2024) can be downloaded for Android and iOS, allowing citizens to file complaints and track the status of their complaints.

The Green Line also offers the opportunity to file anonymous complaints, provide evidence by uploading files, and track complaints using a complaint code.

In 2024, this system incorporated specific visibility for the REDD+ Program, so that anyone submitting a complaint could label it as related to REDD+. However, a user manual formally standardizing the Green Line with the original GRM has not yet been completed.

Over the following years, the Executing Entities (EE) channeled their own grievances, complaints, or requests for information through the Green Line. The EEs San Ramón Forestry Association, ASODEFOREST, and the Vice Ministries of Forest Resources and Protected Areas of the MMARN, use the Green Line.

At the same time, the other EEs established internal complaint mechanisms: UTEPDA operates its own Grievance and Complaint Mechanism (MAQ) and Community Relations and Participation Plan (CRPP), with a similar format: registration forms, field follow-ups, and resolution reports that are filed in its technical unit. DIGEGA, CONALECHE, INDOCAFE, and the Ministry of Agriculture referred their grievances to the government's 311 hotline. These two channels have been recognized as part of the REDD+ GRM, making it a three-entry system.

Due to this change from an initially single, centralized platform to three different platforms, to ensure consistency between this new arrangement, the RCO commits to updating the GRM manual, creating user guides for each of the three platforms, and agreeing with the EE on a protocol for periodic information exchange where incidents from the three platforms are reported. They were validated in August 2025.

Although the GRM as a single platform never became operational and the alternative systems are not unified or linked, there is evidence that grievances are tracked and documented (date, content, person responsible, and corrective actions) both in the Green Line and in the mechanisms of several EE, but in a fragmented manner.

Below is a summary of the interventions that were carried out for each reporting period under this system:

Table 8 Summary of complaints received per year under the GRM Green Line

Year	Details of complaints received
2021	No complaints related to REDD+ have been reported.
2022	There is no information on complaints related to REDD+.
2023	No complaints related to REDD+ have been reported by the Green Line. However, the RCO indicates that five complaints have been received via email from the social safeguards specialist requesting that the REDD+ program accelerate its implementation. Six messages were also received via WhatsApp, three of them sent to the executing agencies (one to CONALECHE, one to INDOCAFE, and one to DIGEGA, through the focal points of these EEs) and the other three directly to the RCO, to the social safeguards specialist. All were received before November, requesting information on the implementation of the

	program. All these requests were forwarded to the RCO and responded to by email or direct calls to the complainants by the social safeguards specialist.
2024	For the period between January to November 2024, the system recorded 2,068 complaints, of which 1,439 were resolved, 629 were unresolved, 5 were not assigned to any of the ministry's areas, and 247 were awaiting a final report. Of this total, 92 complaints were for illegal tree cutting, 22 were associated with deforestation of forests or wooded areas, and 7 were for mangrove cutting. There were also 7 complaints about the appearance of forest pests. In total, the system recorded 129 complaints related to the use and exploitation of forests and forest plantations, but none were associated with REDD+ activities or with any of the communities linked to the territories of the protected areas, which are also included in the list of areas prioritized by the program.

Other mechanisms used by the Executing Entities

While UTEPDA uses an internal system for handling grievances and complaints (MAQ) and a community relations and participation plan (CRPP) due to institutional commitments made to the Inter-American Development Bank, DIGEGA, CONALECHE, INDOCAFE, and the Ministry of Agriculture refer all complaints to the central government's [Line 311](#) hotline. However, these EEs generate quarterly statistical reports that must be shared with the RCO when the Information Transfer Protocol is agreed upon.

These limitations affect the efficiency of systematic monitoring and follow-up of resolution processes. Below is a summary table of REDD+ incidents recorded in each period. To ensure full traceability, the following will be approved: a GRM manual (integrating the relevant parts of the GRM, Green Line, and 311 hotline) and training for EE on its use, as well as the establishment of mandatory reporting protocols in August 2025.

Table 9 Summary of the number of grievances, complaints, or reports received by the EE related to REDD+

Executing Entity	Number of grievances, complaints, or reports received related to REDD+			
	2021	2022	2023	2024
DIGEGA	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
CONALECHE	0	0	0	0
UTEPDA	0	0	0	0
INDOCAFE	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>
Ministry of Agriculture - Department of Cacao	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>

Since 2024, the Green Line system has incorporated specific visibility for the REDD+ Program, so that anyone who submits a complaint can tag it as related to REDD+. On the other hand, both the NBSC and the BCs are responsible for reviewing, evaluating, and approving the corresponding EE reports on the performance of REDD+ activities, including those related to the GRM, as well as responding to inquiries and grievances or complaints submitted by beneficiaries or other members of the Committee.

For more information, see Annex I, sections 2.2. and 2.4.

2.7. Confirm that adequate human and financial resources have been allocated or maintained for the implementation of the BSP.

The BSP maintains its governance structure as approved. Each Executing Entity has assigned thematic focal points that represent a functional structure organized and consistent with the requirements of the BSP. This ensures broad institutional coverage, including representatives from each internal area required for the implementation of the REDD+ Program.

Currently, the focal points designated by each EE as contacts for the REDD+ Program are:

Table 10 . Focal points and technical staff assigned to REDD+.

Number	Executing Entity	Representative	Role as focal point
10.	MMARN – Vice Ministry of Protected Areas and Biodiversity	Thelma Alcántara	Safeguards and Registration (focal point)
		Carolina Alba y Thelma Alcántara	National Committee for Benefit Sharing (NCBS)
11.	MMARN- Vice Ministry of Forest Resources	Salvador Escarramán	Safeguards and Registration (focal point)
		Ramón Díaz	National Committee for Benefit Sharing (NCBS)
12.	Dominican Coffee Institute (INDOCAFÉ)	Omar Peña	Focal point and NCBS
			Safeguards and Registration
		José de la Cruz	Legal
13.	UTEPDA – (Ministry of Agriculture, MMARN, and Ministry of the Presidency)	Maydri Medina	Safeguards and Registration (NCBS)
		María Pérez	
		Abel Carvajal	Focal point
14.	Ministry of Agriculture – Cacao Department	Bolivio Rivas	Legal
		Enelvi Brito Sosa	Focal point and NCBS
		Rodrigo de la Cruz Guzmán	Safeguards and Registration Cacao department
		Dominga Zorrilla	National Committee for Benefit Sharing NCBS Agriculture
15.	National Council for the Regulation and Promotion of the Dairy Industry (CONALECHE)	Ironelis Arias	Safeguards and Registration
		Bernardo Santana	Comité Nacional de Distribución de Beneficios CNDB
		Cynthia Tejada	Legal

16.	General Directorate of Livestock	Alcibíades Feliz	National Committee for Benefit Sharing NCBS
		Martín Canals	Focal point
		Sofia Cuevas Gren	Safeguards and Registration
		Víctor Magallanes	Legal
17.	San Ramón Forestry Association	Juan Azcona	Safeguards and Registration NCBS
		Edinson Martinez	Focal point
		Karina Núñez	Financial
18.	Association for Forest and Restoration Development (ASODEFOREST)	Humberto Brito	Safeguards and Registration
		Ana Carrasco	Focal point
			National Committee for Benefit Sharing NCBS
		Carmen Eduardo	Financial
		Julio Cesar Vargas	Legal

The RCO technical team and the EE will register beneficiaries in the SRI and monitor benefit sharing processes.

To prepare for the implementation of the BSP, specific budgetary resources have been allocated within the overall framework of the REDD+ Program, both in the RCO and in the EE. These resources have been used mainly for REDD+ staff and the socialization, training, and consultation meetings mentioned throughout this annex. However, no specific funds have yet been disbursed for direct benefit sharing, as the first results-based payment under the ERPA has not been received yet.

In terms of the adequacy of resources and sustainability of the operational structure, it has been identified that, although technical staff are assigned to the RCO and the EE, in many cases their availability, access to adequate tools, and logistical resources (such as transportation and connectivity in the field) are limited, posing a risk to the full operation of the system once the distribution cycle begins. To address this, a capacity assessment was conducted with the EEs after the last World Bank mission on May 30, 2025, to consider the possibility of using separate resources for operating expenses to strengthen these capacities.

It is also expected that the POM, currently being finalized, will establish more detailed guidelines to ensure the continued and efficient allocation of resources throughout implementation.

During the REDD+ Program preparation period, the focal points of the EE and technical staff of the RCO have received technical support and training from the WB and the national team on key issues for the implementation of the Benefit Sharing Plan. This training includes the use of the Information Registration System, compliance with safeguards, the principles and procedures of the BSP, and the functioning of the Grievance and Redress Mechanism (GRM), as detailed in Section 2 of this report.

The technical and human resources currently available have been used and are expected to continue to be used in tasks directly related to the operation of the BSP, such as the consolidation and validation of compliance reports submitted by the EE, the verification of distribution criteria in accordance with the conditions of the ERPA, the handling of requests registered in the GRM, and future coordination with the Beneficiary Committees to validate information on beneficiaries. Although these functions have not yet been fully deployed, since benefit sharing has

not begun, a basic operational structure has been established, with defined tools and responsibilities, which will enable these processes to be activated once results-based payments are made.

The Dominican Republic has assigned multisectoral technical staff and has the initial budgetary resources for the implementation of the BSP. It is also in the process of strengthening these capacities and consolidating the sustainability of the system, in accordance with the standards established by the Carbon Fund.

3. Status of benefit sharing

3.1. Summarize the distribution of all monetary and non-monetary benefits during the reporting period.

At the time of this report, no payment for reduced emissions for the period 2021-2024 has been received.

However, the first payment for emissions reductions is expected to be distributed as follows: of the 80% of the total allocated to beneficiaries, up to 30% will be for Protected Areas (as previously agreed by the NBSC) and 70% will be distributed according to the proportion of beneficiaries registered in the SRI up to three months after the request for the first payment, provided they have carried out the type of activity in 2021.

Given that this first payment has taken much longer than expected, in order to achieve greater distribution and inclusion of beneficiaries, the NBSC has proposed including all producers who have carried out the type activities during the 2021 period, even if (for the reasons set out in section 2.1 regarding challenges), they have not yet transferred their reduced emissions. Once the universe of beneficiaries for this period has been defined and the distribution amount determined, the NBSC must decide whether or not to apply the additional criteria in the BSP to estimate the actual distribution percentage.

In the case of Protected Areas, a specific plan for the use and management of funds is being developed in accordance with the BSP, which will be completed before benefit sharing. This plan seeks to ensure community participation and compliance with safeguards.

Likewise, work is progressing on registering beneficiaries with the SRI, signing transfer agreements, and assessing human and administrative capacities for receiving funds.

3.2. Indicate in tabular form the number and type of beneficiaries who received benefits during the reporting period (use and expand examples of tables that will be used and further expanded).

This section is intentionally left blank, as no payments for reduced emissions have been made for the period 2021-2025.

3.3. Do beneficiaries receive adequate implementation support to help them manage and use the benefits distributed to them?

Currently, given that no benefit sharing has yet taken place under the ERPA, the operational component of direct support to beneficiaries in the use and management of benefits has not been activated. However, the BSP expressly provides that the EE shall provide technical support to beneficiaries during the implementation of REDD+ activities, as well as support the effective management of distributed benefits once implementation begins.

As part of the preparation, the EEs have received technical guidance and support from the RCO and the WB on aspects related to safeguards, technical and social monitoring, and the use of tools such as the SRI and the SIS. This training is key to ensuring adequate assistance to beneficiaries once payments are made.

The EE have also distributed educational materials (technical guides, booklets), basic tool kits for certain practices, and facilitate access to improved seeds and seedlings of tree species suitable for agroforestry systems that can serve as inputs for beneficiaries.

Although no payments for reduced emissions have yet been made, the EEs have assigned a specialized technical team to provide direct assistance to beneficiaries in: good agricultural practices, soil conservation, pruning techniques, plantation management, pest and disease control, and agroforestry systems, as well as community work and the supply of inputs. They also have the administrative staff necessary for financial management.

In addition, the POM, currently in its final review phase, details the procedures and tools that the EE should use to provide guidance to beneficiaries, including feedback mechanisms, participatory verification of activities, and validation of the use of benefits. Once the POM is approved and the system is activated, this support is expected to translate into technical assistance, local capacity building, and guidance on the investment of the resources received, in line with the objectives of the REDD+ Program and with principles of transparency and equity.

The funds allocated to beneficiaries will be used for cash distribution or training, technical assistance, the purchase of supplies, materials, or other items, as determined by the NBSC and the BCs. The allocation for operating expenses will be mainly for the maintenance and fuel of technicians' vehicles and the logistics of activities, meetings, and gatherings, as well as for improving the technical and administrative capacities of institutions and continuing to strengthen relationships with communities, ensuring efficient management and use of benefits.

3.4. Describe and evaluate the effectiveness of mechanisms to ensure transparency and accountability during the implementation of the BSP, such as participatory monitoring by beneficiaries.

Given that benefit sharing under the REDD+ program has not yet occurred, it is not possible to assess the effectiveness of transparency and accountability mechanisms. However, the BSP establishes solid institutional architecture and clear procedures to ensure these principles during implementation.

The National Benefit Sharing Committee and the Beneficiary Committees have been designed as key bodies to ensure accountability. They are empowered to receive, review, and validate reports prepared by the EE, which must include detailed information on the amounts distributed, beneficiaries, evidence of transfer, incidents, and compliance with BSP criteria. This information must be publicly disclosed through official platforms to ensure transparency.

Likewise, the REDD+ Grievance and Redress Mechanism is expected to channel observations, disagreements, or complaints from beneficiaries and other stakeholders. In addition, internal and external audit mechanisms, bank reconciliations, and cross-checks with agencies such as the Ministry of Finance are being considered.

During the preparatory stage, the RCO has actively promoted the participation of key stakeholders through public consultations, outreach sessions, and participatory design processes for the BSP. This has contributed to building local capacity for citizen monitoring and ownership of the process by beneficiaries.

The Beneficiary Program (BDP) consultation process was developed with the participation of community producers organized in local associations, federations, and other forms of local organizations. Individual producers and independent communities were also included. All stakeholders carry out activities aligned with REDD+ approaches, as established in the National REDD+ Program, and are supported by the Program's various Implementing Entities.

Once the operational implementation of the system begins, the functionality of these mechanisms will be evaluated and the necessary adjustments will be made to ensure transparent, fair, and participatory implementation, in accordance with the standards of the Carbon Fund and the World Bank.

3.5. Assess whether benefit sharing distributions remain relevant to the core objectives and legitimacy of the ER Program's objectives (e.g., benefit sharing is considered equitable and effective; seeks active participation of recipients; respects customary land rights; is widely supported by communities and indigenous peoples; benefit sharing incentivizes the adoption of emissions reduction measures, among others).

To date, the Dominican Republic has not initiated benefit sharing from the REDD+ Program, as it is in the preparatory phase for the first disbursement from the Carbon Fund. However, the technical, regulatory, and institutional foundations for equitable, legitimate, and socially inclusive distribution have been established.

The Benefit Sharing Plan was developed in a participatory manner, integrating principles aimed at ensuring that the allocation of benefits meets criteria of equity, relevance, and legitimacy in relation to the program's objectives. Direct participation by beneficiaries is anticipated through Beneficiary Committees, respect for local rights and customs, and the application of clear incentives linked to emissions reduction actions.

A key aspect of the Program's inclusive approach has been the effort to incorporate producers who own land without clear title deeds. To this end, processes based on customary rights and land use have been promoted and applied in the transfer of reduced emissions from beneficiaries to EE. In addition, MMARN decided to assume the costs of notarizing these acts, which reduces the pressure on beneficiaries and EE. This measure seeks to ensure that benefits effectively reach those who contribute on the ground to emissions reduction, broadening the base of direct beneficiaries and reducing structural barriers to access.

This process has been a major operational challenge, but it has also generated valuable lessons for other rural development programs. Experience suggests that, without the inclusion of landholders with imperfect titles, the universe of REDD+ program beneficiaries would be significantly limited, affecting both its effectiveness and its legitimacy and equity in access to benefits.

During the preparatory stage, the REDD+ Coordination Office and the implementing agencies have promoted opportunities for consultation, socialization, and capacity building to ensure that communities understand the distribution criteria. In addition, a system of continuous feedback has been planned through mechanisms such as the Grievance and Redress Mechanism, community reports, and future participatory review sessions, which will allow for the monitoring and adjustment of the legitimacy of the system.

These mechanisms will contribute to maintaining the coherence of the BSP with the objectives of the Emissions Reduction Program, adapting benefit sharing to the diversity of territorial realities and strengthening trust and ownership of the process by communities.

3.6. Describe the mechanisms in place to verify how benefits are used and whether these payments provide sufficient incentives or compensation to participate in program activities to change land use or reduce carbon emissions. To what extent are distribution mechanisms considered credible and reliable by beneficiaries?

To date, the Dominican Republic has not initiated benefit sharing under the REDD+ Program, so it is not yet possible to assess in practical terms the use of benefits or their impact as a direct incentive. However, the BSP establishes a technical and institutional architecture designed to verify the proper use of resources and ensure their alignment with program objectives.

The mechanisms provided include the responsibility of the EE to submit detailed distribution reports, supported by documentary evidence, field monitoring activities, and oversight processes by the BCs, the NBSC, and the RCO. This information must be made publicly available and will be subject to internal and external audits.

In addition, the EE are expected to implement the following measures:

- I. Provide support for the establishment of a formal procedure for tracking and monitoring BC agreements.

- II. Each EE will develop clear and transparent criteria for both monetary and non-monetary distribution, to be shared with and validated by the beneficiaries, including prioritization mechanisms and compliance with safeguards.
- III. In the case of Protected Areas, the specific distribution plan will detail the necessary verification mechanisms and ensure that activities are relevant to continuing emissions reductions with community participation.
- IV. The exclusion list described in the BSP will be shared and applied.
- V. Field visits will be conducted to verify the implementation of activities and the use of benefits, comparing the information with BC reports and documented evidence.

Furthermore, given the characteristics of the Dominican Republic's REDD+ Program in the selected activities, the benefits obtained will complement related programs and projects.

The BSP has been designed as an incentive system that recognizes concrete efforts in the implementation of REDD+ activities, considering both monetary and non-monetary benefits. Its design recognizes the diversity of stakeholders involved and seeks to direct resources toward sustainable activities that contribute effectively to emissions reduction.

Although the operational effectiveness of the system has not yet been evaluated, the participatory process of developing the BSP, the community consultations carried out, and the local representation spaces established have contributed to the proposed mechanisms being perceived as legitimate, viable, and reliable by key actors.

3.7. Do beneficiaries understand their ongoing obligations after benefit sharing has begun? Is there evidence of a gap between beneficiaries' expectations regarding the nature and value of the benefits to which they are entitled? What mechanisms are in place to manage these risks?

To date, the Dominican Republic's REDD+ Program has not initiated benefit sharing corresponding to the first payment from the Carbon Fund. Therefore, there is no direct evidence of possible gaps between beneficiaries' expectations and the degree of understanding of their ongoing obligations. However, proactive measures have been taken to prevent these risks and strengthen transparency and understanding of the process.

During the preparation and implementation of the BSP, multiple consultation and socialization processes were carried out with beneficiaries, addressing key aspects such as the type of benefits (monetary or non-monetary) and the eligibility criteria and conditional nature of payments linked to emissions reduction results. These activities included the participation of producer organizations, community representatives and leaders, and local associations, which helped establish a common understanding. Informational brochures have also been distributed in physical and virtual formats throughout the territory, both at the central offices of the EE and at their local offices, to potential beneficiaries and other key actors. In addition, all relevant information is available on the MMARN website.

Each Beneficiary Committee is responsible for ensuring that beneficiaries are informed about the conditions for receiving and managing benefits, and for applying the guidelines defined by the NBSC. In cases where benefits are delivered through producer associations or federations, these must apply internal procedures that have been previously verified by the EE.

To mitigate the risk of unrealistic expectations, the Program includes the following mechanisms:

- Operating manual and explanatory materials for the BSP in accessible language.
- Support for BCs in establishing clear processes for follow-up and monitoring of agreements.
- Active engagement of BCs in monitoring and communication with beneficiaries.
- Use of the REDD+ Grievance and Redress Mechanism (to receive and resolve questions or conflicts).
- Orientation sessions and technical assistance prior to distribution.

These mechanisms will ensure that beneficiaries understand their rights, but also their ongoing obligations related to the proper use of resources, compliance with safeguards, and active participation in the monitoring of the REDD+ Program.

4. Implementation of Environmental and Social Management Measures.

4.1. Assess the extent to which measures have been implemented to manage the environmental and social aspects of BSP activities. Refer to the applicable sections in the Safeguard Plans, where applicable.

During the implementation of the REDD+ Program, five Environmental and Social Management Plans were developed, in accordance with the provisions of the Environmental and Social Management Framework. As a complement to the safeguards instruments, nine Technical Guides were also developed to promote the application of good practices in the implementation of REDD+ activities. These guides systematize technical procedures aligned with the MGAS and were distributed and consulted with the EE.

A Compliance Matrix (in Microsoft Excel) was designed based on these plans, to follow up on the implementation of the measures established in the ESMP. This tool allows for monitoring progress in mitigating environmental and social impacts and risks and facilitates verification of compliance by implementing parties. This matrix was not used for the reporting periods associated with this annex due to the lack of technological systems for recording and reporting safeguards, as well as a lack of personnel at both the RCO and the EE.

In order to record and systematize compliance with the environmental and social safeguards of the REDD+ Program, the Safeguards Information System was designed, using the Compliance Matrix as the main input for completing the SIS form. Due to technical difficulties that prevented the original system from functioning properly, an alternative solution was implemented using the KoboToolbox platform, with technical support from the World Bank's Geo-enabling for Monitoring and Supervision (GEMS) team. This new version has been tested and verified in 2024 and meets the requirements and functionalities originally defined, allowing its use in reporting and monitoring activities.

This difficulty, along with other barriers such as staff shortages, led to gaps in the monitoring and reporting of the first safeguard compliance reports. It was not until October 2023 that the RCO, with support from the World Bank, simplified and made available to the EE a new "Safeguards Implementation Report Format." This format is aligned with the provisions of the MGAS and the Compliance Matrix, updated in its April 2022 version.

The gender approach has been mainstreamed through the development of a Gender Action Plan (GAP), which proposes concrete actions to reduce structural gaps in access, participation, and recognition of women's role in REDD+ activities.

During the period covered by this report, the implementation of safeguard plans has been partial and uneven. Although there are institutional and technical efforts aimed at applying good environmental and social practices within the framework of the Program, significant challenges remain that limit its full implementation and the capacity to monitor and report concrete results.

The EEs have applied environmental practices aligned with the safeguards, mainly through technical visits, guidance to producers, and some actions contained in institutional plans or internal protocols. However, the lack of systematic use of the Safeguards Compliance Matrix, combined with the non-operational use of the SIS during the period evaluated, significantly affected the traceability and formal monitoring of these actions. For more information, see Annex I on safeguard compliance.

In addition, an institutional self-assessment questionnaire is being developed for the EEs to identify operational gaps and build capacity for BSP implementation, as well as for environmental and social management measures. This will serve as input for the safeguards action plan (see ANNEX I, section 5).

5. Recommendations for improvements or modifications to the BSP.

5.1. Based on the experience gained during the period covered by this report, as well as comments from recipients, determine any specific recommendations to modify the substantive or procedural content of the BSP, if necessary. Substantive changes may include modifications to eligible beneficiaries; justification or rationale for benefit sharing; form or modality of benefit sharing; structure of specific funds established to distribute benefits; obligations of the recipient, among others.

As for the current BSP, since the first benefit sharing and monitoring have not yet occurred, there are no observations or recommendations in this regard.

5.2. Are there procedural or administrative obstacles to the timely distribution of benefits (e.g., adequacy of financial channels, capacity to use funds)? Are benefits distributed in a timely manner?

One of the most significant challenges in implementing the program has been the irregularity and lack of formal land titles for a significant number of potential beneficiaries. This situation has complicated the process of verifying legitimate tenure and including these beneficiaries in benefit sharing.

In particular, the notarization and formalization of ownership documents are costly and complex, both for communities and for the public administration, due to lengthy bureaucratic processes and the need to validate customary or traditional rights that are not always reflected in official records. This problem limits access by small producers and communities to the benefits of the program, reducing coverage, and the expected social impact.

To address this obstacle, in 2024 the Ministry of Environment and Natural Resources, with support from World Bank legal specialists, adjusted the acts of transfer of ERs from beneficiaries to EEs so that they could include as many beneficiaries as possible, considering land tenure and use rights. And in 2025, the MMARN assumed the costs associated with notarizing and formalizing ER transfer agreements, facilitating the integration of beneficiaries without full title and with limitations on assuming the costs of this process. This measure has been key to advancing toward a more inclusive distribution that respects customary rights, favoring the participation of a greater number of direct stakeholders.

There are also potential issues with how funds get to the EEs, because of bureaucratic procedures and delays in budget allocation and disbursement within each of the institutions responsible. These administrative obstacles affect the timeliness and fluidity of resource delivery, which requires attention to ensure the efficiency of the distribution process. To reduce this risk, the EEs are preparing a document that sets out the administrative and financial procedures to ensure the timely distribution of benefits.

Another challenge is the lack of a budget allocated by the EEs to coordinate REDD+ program activities at the national level, which would allow for the development of benefit sharing logistics through calls for proposals, training, and field monitoring, since the EE identified these expenses as part of the operating costs to be covered by the corresponding payments from the transfer of ER.

5.3. Is there evidence of other emerging risks that could affect the sustainability or effectiveness of the BSP?

Although the RCO has made the necessary efforts to ensure the timely submission and validation of the first monitoring report, the systems for collecting data, the delayed operationalization of data collection systems (SRIR, SIS, GRM) until 2024, and the lack of systematization of verifiable information to support the first report are gaps that need to be addressed to ensure the sustainability of the BSP.

It is therefore essential to clearly identify the information required, a standard for its presentation, timing, and processing in order to achieve the milestone of the first benefit sharing.

5.4. Provide a suggested timetable and outline of administrative arrangements for introducing any recommended changes.

At the time of this report, no payment has been received for reduced emissions for the period 2021-2024.

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

The Dominican Republic REDD+ Program aims to combat deforestation, improve forest management, and conserve carbon stocks. It aligns with REDD+ safeguards under the UNFCCC, targeting reduced CO₂ emissions through forestry, conservation, and low-emission agriculture from 2021 to 2025. The REDD+ Program supports sustainable local development, providing benefits beyond reducing Greenhouse Gases (GHG). In line with national policies, the REDD+ Program's Executing Entities (EE)¹⁰⁹ must promote inclusive, culturally appropriate, gender-sensitive, and intergenerational practices, and enhance forest landscape governance. These efforts yield socioeconomic and environmental advantages through sustainable rural development. The Dominican Republic identified non-carbon benefits of the REDD+ Program during its design phase.

Environmental:

- Conservation of biological diversity
- Improved provision of environmental services (regulation of the water cycle, carbon sequestration, landscape, climate regulation)
- Water quality improvement
- Improvement of production techniques (application of good practices)
- Soil conservation and stabilization
- Rehabilitation of degraded lands
- Restoring productive lands

Social:

- Improved agricultural, forestry and livestock productivity
- Enhancement of local forest culture for commercial purposes
- Improving national economies and reducing poverty
- Job creation
- Recognition of ownership rights to land
- Improved governance
- Institution building

From this broad range of non-carbon benefits, and in consultation with key institutional actors and civil society, priority was given to those for which data collection for monitoring and reporting is most viable:

- Biodiversity conservation
- Water conservation
- Green job creation

This selection considered technical, logistical, and technological constraints, along with the limited experience of most of the EEs in addressing all identified co-benefits. Priority was given to topics in which the country and EE have substantial experience, aligned with permanent institutional commitments, international agreements, and the

¹⁰⁹ There are nine EEs supporting the REDD+ Program, these are: Under the **Ministry of Environment and Natural Resources** (MMARN, in Spanish): (1) the vice ministry of Protected Areas and Biodiversity (VAPyB, in Spanish), and (2) the vice ministry of Forestry Resources (VRF, in Spanish). Under the **Ministry of Agriculture**: (3) the Cocoa Department, (4) The General Directorate of Livestock (DIGEGA, in Spanish), (5) the National Council for the Regulation and Promotion of the Dairy Industry, (CONALECHE, in Spanish), and (6) the Dominican Coffee Institute (INDOCAFE, in Spanish). Under the **Administrative Ministry of the Presidency** (7) the Technical Executing Unit for Agroforestry Development Projects (UTEPDA, in Spanish). And two **forest producers' associations**: (8) San Ramón Forest Association, and (9) the Association for Sustainable Forest Development (ASODEFOREST).

National Development Strategy (NDS).¹¹⁰ Given its importance, the right to land property was included as a non-carbon benefit, intended to enhance the legal security of informal property owners, who account for over 80% of cases in the Dominican Republic.

Methodology: Collection and analysis of information.

This report was prepared using information available on websites and data reported by public institutions associated with the REDD+ Program, including the EEs. The validity of these sources was corroborated by the REDD+ Coordination Office (OCR, in Spanish) together with the staff responsible for their management or publication.

For future reports, OCR plans to identify and verify sources of information that were previously inaccessible due to technical and personnel limitations. These limitations have affected the development and dissemination of a system for monitoring, verification, and reporting of the REDD+ Program co-benefits.

1. List the identified set of priority non-Carbon benefits and provide necessary details on activities for generation and enhancement of these non-Carbon benefits. (See questions in sections 2 and 3 below for examples of details on potential specific non-carbon benefits identified)

Table 1. Activities carried out for the generation and enhancement of non-carbon benefits under the REDD+ Program

Priority Non-Carbon Benefit	• Details on activities for generation and enhancement ○ Approach (as defined in ERPD including relevant indicators)
Biodiversity conservation	Implementation of practices such as forest conservation, sustainable management of forest plantations, reforestation, and the renewal and promotion of agroforestry activities contributes significantly to preserving biodiversity in forest ecosystems, both natural and planted, with community participation. The REDD+ program works at the territorial level with social and state actors to coordinate actions for the management of natural resources, including those protected by regulations, such as psrotected areas and watersheds. These actions are implemented by agencies of the Ministry of Environment and Natural Resources (MMARN, Spanish), one of the EEs. During the first Emission Reductions Payment Agreement (ERPA) reporting period, the Dominican Republic implemented actions to conserve biodiversity, including the management of an ecological corridor that integrates the basins of the Nizao and El Ozama rivers, connecting them with three protected areas of broadleaf forest. These areas guarantee an important flow of water for cities such as San Cristóbal and Santo Domingo, as well as conserving critical ecosystems such as Osteopilus vastus (known as the Hispaniola Frog) and other amphibians, reptiles vulnerable to climate change.^{111 112} https://bpp.org.do/nosotros/ The Dominican Consortium of Dominican Cocoa Growers (CONACADO, in Spanish) and the Technical Unit for Agroforestry Development Projects (UTEPDA, in Spanish)

¹¹⁰. View page 32 [Microsoft Word - LEY NO. 1-12 LEY ORGANICA DE LA ESTRATEGIA NACIONAL DE DESARROLLO 2030](#)

¹¹² <https://bpp.org.do/nosotros/>.

	provided OCR with lists of beneficiaries of the REDD+ Program. They reported renovating and promoting around 7,000 hectares, potentially an underestimated figure. Information from other private cocoa producer consortiums suggests there could be more than 10,000 hectares in total. On the other hand, according to the producers lists from Dominican Coffee Institute (INDOCAFÉ) —the governing body of the coffee sector— and the Technical Unit for the Execution of Agroforestry Development Projects (UTEPDA), over 5,000 hectares of coffee plantations were renewed and promoted during the same period. Together, cocoa and coffee plantations represent approximately 5% of the Dominican Republic's forest coverⁱ During the same period, silvopastoral practices were also implemented in the Yuna River basin, one of the largest in the country, benefiting over 200 livestock farmers, including 38 women. (Environmentally Smart Livestock Program¹¹³This initiative helped to reduce the risk of degradation and erosion in at least 2,000 hectares of land in sloping areas. In 2021, the National Reforestation Program planted five million trees, more than 95% native or naturalized non-invasive species, covering 2,515 hectares nationwide and creating habitats for local species. (Source: Institutional Report of the Ministry of Environment and Natural Resources, 2021¹¹⁴). Some 3,200 private hectaresⁱⁱ were managed under sustainable forest management standards and criteria, reducing the reduction of factors for the degradation of mountain forests, especially pine forests, and thus minimizing habitat loss. (Data reported to the REDD+ Program by the entity in 2021). Similarly, UTEPDA states in its 2021 reports having planted 70,000 tasks, of which 24% were timber and 76% strictly conservation. The number of plants planted in the forestry component was 2,467,037 plants for an equivalent of 50,916 ha. Reported data In 2021, progress was also made in the organization of the Endemic and Native Forest Seed Bank,¹¹⁵ processing 63,252 pounds of fruits that generated 9,397 pounds of seeds of different forest species, ensuring genetic material for the Reforestation Plan.¹¹⁶ In 2021, the Government of the Dominican Republic launched the 2021-2024 Institutional Strategic Plan, of the National Fund for the Environment and Natural Resources (MARENA Fund)¹¹⁷ This fund was established to promote public and

¹¹³ <https://ganaderiayclimard.do/ganaclima/>.

¹¹⁴ <https://ambiente.gob.do/portal-transparencia/plan-estrategico-institucional/memorias-institucionales/>

¹¹⁵ <https://presidencia.gob.do/noticias/medio-ambiente-cierra-el-2021-con-importantes-logros-y-avances-en-la-proteccion-de-los>.

¹¹⁶ <https://diecom.gob.do/dia-internacional-de-los-bosques-tropicales-conoce-cinco-acciones-desarrolladas-por-el-gobierno-para-preservarlos/>.

¹¹⁷ <https://www.fondomarena.gob.do/transparencia/phocadownload/PlanEstrategico/planInstitucional/Fondo%20Marena%20%20PEI%202021-2024.pdf>

	private investment in the development and financing of plans, programs, and projects that support effective environmental management. The strategic plan focuses on mobilizing resources for biodiversity conservation and climate change mitigation and adaptation, particularly in areas aligned with REDD+ activities, thereby strengthening the implementation of related policies, programs, projects and actions.				
Water Production and Conservation.	For some years, the country has implemented a Payment for Environmental Services (PES) Program focused on protecting water-producing areas in the upper watershed of the Yaque del Norte River. In 2021, this program continued its implementation, contributed to improved water quality and availability for Santiago de los Caballeros and other municipalities in Santiago province, directly benefiting at least 65 participant producers. This initiative is supported by Law 44-18 on PES¹¹⁸, which outlines a range of strategic actions, such as: (1) water regulation, protection and conservation of water sources; (2) conservation of ecosystems and wildlife habitats; (3) soil conservation; (4) capturing carbon and other GHG; and (5) scenic beauty or scenery.¹¹⁹ In 2021, MMARN developed the Integrated Management Plan for Priority Watersheds, aimed at restoring strategic ecological zones, recovering and maintaining forest cover in areas of high-water recharge, and ensuring the conservation and production of water resources.¹²⁰ In the same year, the Dominican Republic government prioritized 15¹²¹ watershed basins based on socioeconomic and environmental criteria. Artibonito, Nizao, Haina, Ozama, Yaque del Norte and Yaque del Sur were identified as critical due to their degraded conditions and their role in supplying water to a large part of the population (according to data from the MMARN website)¹²² Within the framework of the Integrated Management Plan, the Institutional Memory document records the following actions and achievements: <table border="1"> <thead> <tr> <th>Action</th><th>Description of achievements and scope</th></tr> </thead> <tbody> <tr> <td></td><td></td></tr> </tbody> </table>	Action	Description of achievements and scope		
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¹¹⁸ <https://bvearmb.do/bitstream/handle/123456789/344/Ley%20No.%2044-18%20que%20establece%20pagos%20por%20Servicios%20Ambientales.pdf?sequence=1&isAllowed=y>.

¹¹⁹ <https://ambiente.gob.do/portal-transparencia/plan-estrategico-institucional/memorias-institucionales/>.

¹²⁰ <https://presidencia.gob.do/noticias/medio-ambiente-cierra-el-2021-con-importantes-logros-y-avances-en-la-proteccion-de-los>.

¹²¹ [Presidente Luis Abinader da inicio al Plan de Manejo Integral de las Cuencas Hidrográficas | Presidencia de la República Dominicana](#)

¹²² On February 2021, the MMARN, through Resolution [0010-2021](#), declared the management watersheds and the adaptation of riverbeds across the country to be of high environmental priority. <https://www.diariolibre.com/actualidad/medioambiente/ministerio-de-medio-ambiente-intervendra-cuencas-hidrograficas-JI24792308>.

	Planted forest	A total of 5,371,746 tree species were planted across 101,891 hectares, including 46 hectares designed to implement sustainable forestry development programs.
	Renewal of the agreement with Fundación Sur Futuro.	A total of 3,475,700 forest seedlings were produced for distribution to producers in the deep south or southwest region of the Dominican Republic.
	Review of existing forestry legislation and regulations (Forest Law Regulations)	The Executive Branch enacted Decree No. 627-21, which approved the regulations under Law 57-18 on Forestry Promotion and Incentives. Three community meetings were held to socialize and disseminate the contents of the decree.
	Improvements in the management of low-emission activities	Maintenance and improvement of 1,606 sustainable coffee and cocoa agroforestry production activities.
	Implementing sustainable crops under drip irrigation	Twenty (20) hectares were implemented, including a change in the land use by producers who stopped planting in areas with steep slopes and forestry potential, benefiting 27 families. In addition, six (6) water storage reservoirs for irrigation were built with a total capacity of 2 million cubic meters, benefiting 50 agricultural producers in the community of Rio Arriba del Sur in the municipality of Vallejuelo, in collaboration with GIZ
	Implementation of the PES mechanism	PES proposals were developed for the following river basins: Yaque del Sur, Ocoa, Nizao, Baní, Nigua, Pedernales and Ozama - Isabela.
	Improving the Management of Protected Areas and Biodiversity	A ticket office was built in the Montaña la Humeadora National Park, financed by the Geos and Hayco groups. In addition, two ticket offices were constructed at the Pico Diego de Ocampo Natural Monument, and a bridge was constructed at the end of the trail of

	the Cabo Francés Viejo Natural Monument. Sociedad Ecológica del Cibao (SOECI). These efforts concluded with activities focused on monitoring degraded ecosystems. To date, ecological restoration has been implemented on approximately 45 hectares: 6.3 hectares in the Mangrove areas of Bajo Yuna (including dragon tree monitoring), 37 hectares in Las Abejas de la Sierra de Bahoruco, and three hectares in Cachón de la Rubia.																																																										
Source: 2021 Institutional Report.																																																											
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	Reserva Forestal Arroyo Cano	1,888.04	
	Total	77,077.25	
Green Job Development	As part of the REDD+ Program, and in collaboration with partner institutions and organizations, workshops were held to identify the strengths, weaknesses, risks and opportunities of the two EEs from civil society: ASODEFOREST and the San Ramón Associated. The objective was to support these organizations in increasing and diversifying forest-based products generated from the land plots managed by its members. As a result of this process, two business plans— one for each organization— were developed¹²³ defining the market profile, the opportunities and the strategies needed to achieve its objectives. During 2021, the Dominican State invested more than 26 million pesos (approximately US\$440,000) in the priority watersheds of the Integrated Watershed Management Plan , restoring 101 thousand tasks (6,500 hectares), generating 2,141 green jobs. https://cdn.com.do/nacionales/medio-ambiente-cierra-el-2021-con-importantes-logros-y-avances/. In the southwestern region of the country, agroforestry projects were implemented in seven sites to increase forest cover, recover watersheds, and improve, in the medium term, the flow and quality of water in key rivers. These efforts contributed to enhance environmental quality and better living conditions of rural, mountainous communities, through sustainable agroforestry production and generation of green jobs. The targeted basins included: Artibonito, Yaque del Sur, Lake Enriquillo/Sierra de Neyba and Nizaíto. Also, in 2021, the Vice Ministry of Forest Resources created 27 reforestation fronts, with 165 brigades and 1,815 brigades, with support by 29 forestry and agroforestry technicians. These efforts enabled the distribution of over 2 million plants and the planting of some 3,000 ha. (see page 47 of MMARN institutional report). During 2021, 27 reforestation fronts were formed with 165 reforestation brigades, comprising 1,815 brigade members, in addition to a technical staff of 29 forestry and agroforestry technicians. The table shows the progress made in establishing plantations in 2021. Memoria-institucional-2021 Page 57 / 2		

¹²³

<https://ambiente.gob.do/app/uploads/2022/08/Caracterizacion-Cuantificacion-y-Monitoreo-de-Empleos-Verdes-en-RD.pdf>.

Land titling	Land titling During the first ERPA reporting period, the Government of the Dominican Republic implemented a national program for the titling rural lands. As part of this effort, in the last quarter of 2021, the Executive Branch formalized the new structure of the Technical Executing Unit for State Land Titling (UTECT), through Resolution 2021-0. Previously operating as a commission, UTECT's institutionalization contributes to strengthening the institutional and regulatory framework for the implementation of the REDD+ Program. In that same year, UTECT issued more than 15,000 land titles across 23 provinces of the country (According to Presidential Report). As part of this effort, nearly 200 coffee producers associated with UTEPDA— particularly in the area of Hondo Valle, and Juan Santiago in the province of San Juan— were included in the titling process, facilitating their participation in the REDD+ Program. These producers received both financial and technical support from the relevant authorities to ensure recognition and enforcement of their land ownership rights.¹²⁴

Other non-Carbon benefits and additional information as linked to Monitoring and Evaluation Framework

2. If applicable linked to **any other (non-priority identified) non-Carbon benefits**, or if not already covered above linked to Priority Non-Carbon benefits, provide the following additional details:

Livelihood enhancement and sustainability

- 2.1. Is your CF program testing ways to sustain and enhance livelihoods (e.g. one of your program objective/s is explicitly targeted at livelihoods; your approach to non-carbon benefits explicitly incorporates livelihoods)?

The REDD+ Program aims to strengthen the production system and services of local producers involved in ER generation, thereby improving the livelihoods of their families and communities. As part of this effort, protected areas management plans have been updated and developed, focusing on practices that enhance environmental services through conservation, protection practices, and sustainable use of resources. These processes have been carried out with the active participation of surrounding communities.

Currently, at least 15 management plans are under review and are expected to be completed before the end of 2025. To facilitate this, the MMARN's Vice-Ministry of Protected Areas and Biodiversity (VAPyB, in Spanish) has adequately planned and budget the necessary activities.

In 2021, the MMARN's Vice Ministry of Forest Resources (VRF, in Spanish) strengthened forestry activities to support producers' livelihoods by providing access to high-quality seeds and seedlings, ensuring better tree survival rates. Additionally, significant progress was made in improving the production and care of planning materials, increasing availability to meet the growing demand from individuals, associations, and public and private entities engaged in reforestation and sustainable forest management.¹²⁵

To combat coffee pests and diseases, in 2021, the Government strengthened its program for the substitution and distribution of coffee plants resistant to drill bit (*Hypothenemus hampei*) and rust (*Hemileia vastatrix*).¹²⁶ Over 1,000

¹²⁵<https://ambiente.gob.do/portal-transparencia/wp/download/148/memorias-institucionales/19292/memoria-institucional-2021.pdf>. (pages 38 to 46)

¹²⁶<https://www.indocafe.gob.do/transparencia/index.php/plan-estrategico/memorias-institucionales/category/917-2021?download=3620:memoria-institucional-2021>. (pages 17 to 21)

producers were trained in integrated pest management and received more than 200,000 plants to support crop renewal. These efforts helped maintain and improve the productivity and quality, aligned with favorable domestic and international coffee prices in 2021. As a result, exports generated more than US\$12 million dollars in revenue¹²⁷.

Following the lifting of mobility restrictions and the national COVID-19 immunization campaign, the country launched a set of actions in 2021 to strengthen ecological and community-based tourism. This initiative leveraged shifting travel preferences and implemented strategies to attract visitors to natural areas, particularly those within the National System of Protected Areas (SINAP).

One key initiative was the Sustainable Community Tourism (TCS) project, a public-private initiative in the northern region of the country implemented by the Ministry of Tourism, the Ministry of Economy, Planning and Development (MEPYD), and the Technical Training Institute (INFOTEP) with financial support from the Japanese cooperation. It impacted 14 provinces, resulting in 21 tourist circuits, 31 tourism-related productive units, 82 pilot initiatives. In total the project benefitted 1,800 families and trained 3,234 individuals, including 52 community groups.^{128 129}

Another major achievement was the development of a long-term strategy to expand the sustainable-community tourism with a vision towards 2030, promoting its growth and visibility.¹³⁰

In 2021, the relaunch of ecotourism and environmental activity in protected areas focused on capacity building and strengthening of local tour guides and service providers, aiming to support small-scale sustainable enterprises that offered traditional meals, handicrafts, and forest-based products.¹³¹

According to the Department of Ecotourism and Public Use, more than one million people visited the country's protected areas in 2021. Of these, 29% were Dominican Republic nationals and 70% were international tourists (source: Department of Ecotourism and Public Use).¹³²

Biodiversity

- 2.2. Is your CF program testing ways to conserve biodiversity (e.g. one of your program objective/s is explicitly targeted at biodiversity conservation; your approach to non-carbon benefits explicitly incorporates biodiversity conservation)?

Yes. Detailed updates on biodiversity conservation benefits can be found in table 1 above.

Protected/conserved areas.

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

¹²⁷ <https://eldinero.com.do/249657/el-cafe-dominicano-se-encamina-a-la-autosuficiencia/>.

¹²⁸ <https://quemashago.com/turisteo/republica-dominicana/el-proyecto-de-turismo-comunitario-sostenible-en-cifras>.

¹²⁹ <https://eldinero.com.do/188686/el-turismo-comunitario-sostenible-una-opcion-para-el-desarrollo-de-los-destinos-emergentes/>

¹³⁰ <https://bvearmb.do/bitstream/handle/123456789/4930/Visi%C3%B3n%20Estrat%C3%A9gica%20TCS%202030.pdf?sequence=1&isAllowed=y>.

¹³¹ <https://ambiente.gob.do/portal-transparencia/wp/download/148/memorias-institucionales/19292/memoria-institucional-2021.pdf>.

¹³² <https://ambiente.gob.do/portal-transparencia/wp/download/148/memorias-institucionales/19292/memoria-institucional-2021.pdf> (page 83)

The Program includes 15 protected areas with a total of 635,674.00 hectares. For the first accounting period for reduced emissions in 2021, two more protected areas were included, covering an additional 7,967.00 hectares, for a total of 643,641 hectares.

However, to cover the 77,077.25 hectares established for this first accounting period for reduced emissions, the areas of only five protected areas were presented.

1. Criteria for the first reporting period:
 - a) Exclusion of PAs with unresolved land tenure issues: PAs with over 50% of their land under third-party legal titles, and where land regularization has not yet occurred, are excluded.
 - b) Conditional inclusion: PAs with less than 50% of land under third-party titles may be included, but only if there are no human settlements on state-owned land.
 - c) Definition of available area: The polygons listed in Table 1 represent the total area of each selected PA and the portion that qualifies for ER transfer. The “available area” is defined as land that has been fully validated and meets the criteria above.
2. Criteria for future reporting periods:
 - a) Areas with third-party titles: A detailed analysis will be conducted to determine the type of ownership. If landowners agree to maintain the land under SINAP management for the duration of the ERPA, a formal agreement will be signed with the Ministry of Environment and Natural Resources (MMARN). This document will be prepared by MMARN’s Legal Department to ensure compliance with national laws and REDD+ Program safeguards.
 - b) Areas with human settlements: These may be included only if:
 - a. An updated management plan exists that identifies the settlements and outlines strategies for their management.
 - b. An analysis has been conducted to assess gaps between the management plan and the REDD+ Program’s environmental and social safeguards.

Geographic focus of REDD+ activities: The REDD+ Program prioritized five regions for implementation, covering eight of the country’s ten administrative regions and 16 of the 32 provinces. These include:

- Higüamo Region: Municipalities of Bayaguana and Sabana Grande de Boyá (Monte Plata Province)
- Enriquillo Region: Municipalities of La Descubierta and Jimaní (Independencia Province), near the Haitian border

These five regions cover approximately 15,565 km² (1,556,546 hectares), equivalent to 32% of the national territory. This includes 4,998 km² (499,846 hectares) and 56 of the 126 protected area units within the SINAP. Notably, the region identified as Priority Area 3 (which includes municipalities in the provinces of San Juan, La Vega, Azua, San José de Ocoa, and San Cristóbal) accounts for 41% of the total prioritized area.

Criteria for Selecting Protected Areas:

- High rates of deforestation, forest degradation, or soil loss
- Strategic importance of watersheds in terms of:
 - Biodiversity and protected area coverage
 - Water supply and presence of key infrastructure (e.g., dams, aqueducts, irrigation canals)
- Size of the population benefiting from ecosystem services in the area
- High potential for REDD+ success due to:
 - Active institutional presence

- Positive track record of rural development, environmental, or natural resource management programs

Protected Areas Targeted for REDD+ Activities: the following 15 Protected Areas Identified for REDD+ Actions:

- National Parks: Sierra de Bahoruco, Nalga de Maco, José del Carmen Ramírez, Armando Bermúdez, Valle Nuevo, Loma La Humeadora, Los Haitises, Anacaona, Sierra de Neiba, Sierra Martín García, Francisco Alberto Caamaño Deñó, and Luis Quin.
- Natural Monuments: Las Caobas and Miguel Domingo Fuerte (Bahoruco Oriental)

Protected Areas Included in the first reporting period: five PAs were selected for inclusion in the first ER monitoring and carbon accounting cycle:

- Las Caobas Natural Monument (Independencia Province)
- Los Cacheos Natural Monument (Jimaní Municipality, Independencia Province)
- Arroyo Cano Forest Reserve (San Juan and Azua Provinces)
- Armando Bermúdez National Park (Management plan updated – Santiago and La Vega Provinces)
- Sierra de Neiba National Park (Bahoruco, Independencia, Elías Piña, and San Juan Provinces)

Although Sierra de Neiba National Park, Los Cacheos Natural Monument, and Arroyo Cano Forest Reserve were not listed in the original REDD+ Program priority documents, they were included after confirming their compliance with:

- The Environmental and Social Management Framework (ESMF)
- The Benefit-Sharing Plan (BSP)
- The Emission Reductions Program Document (ERPD)

These areas form part of SINAP and meet REDD+ Program eligibility criteria. Their inclusion also aligns with the national carbon accounting strategy, which spans nearly the entire country.

Re/afforestation and restoration

2.4. Total forest area re/afforested or restored through program.

Between March and December 2021, reforestation activities were carried out nation-wide by producers, with support from the VRF. These efforts included:

- Renovation and establishment of new coffee and cocoa areas under shade-grown agroforestry systems, in collaboration with INDOCAFÉ, Department of Cacao, and UTEPDA.
- Implementation of silvopastoral systems, guided by DIGEGA and CONALECHE
- Sustainable forest management activities, led by producers from ASODEFOREST and the San Ramon Association of Foresters/

In total, these actions covered 17,900 hectares dedicated to sustainable land use and forest conservation.

Table 2. Intervened areas reported by the EEAs in the March-December 2021 period

REDD+ type activity	Hectares
Reforestation and Forest Restoration	8,000
Agroforestry systems (coffee and cocoa)	6,000
Silvopastoral Systems	900
Sustainable Forest Management	3,000

Total	17,900

Sources. Own data provided to OCR by each REDD+ Program Executing Entity

Finance and Private Sector partnerships.

As of the date of this report, the Dominican Republic has not received results-based payments from the Carbon Fund, mainly due to legal obstacles to transferring 1,278,592 tons of carbon dioxide equivalent tCO₂e generated in the first reporting period (March-December 2021).

2.5. Update on CF program budget (as originally presented in ERPD), with updated detail on secured (i.e. fully committed) finance, in US\$

2.5.1. Detail the amount of finance received (including ER payments) in support of development and delivery of your CF program. Figures should only include secured finance (i.e. fully committed): ex ante (unconfirmed) finance or in-kind contributions should not be included:

Table 4. Estimated budget for implementation of the REDD+ program

Quantity (US\$)	Source note Name of Government Department)	Date committed (MM/YY)	Public or private money? (Delete as appropriate)	ERP, grant, loan, equity or other?
469,930.00	MMARN/SINAP/VMRF	Jan/Dec 2021	Public	National budget
517,241.00	INDOCAFE/UTEPDA	Jan/Dec 2021	Public	National budget
1,810.00	DIGEGA/GANA CLIMA	Jan/Dec 2021	Public	National budget/grant
862,068.00	Dept.de Cocoa/MAG	Jan/Dec 2021	Public	National budget
50,000.00	San Ramon Association	Jan/Dec 2021	Private	Equity

2.5.2 Not including ER payments from the FCPF Carbon Fund, what is the value of REDD+ ER payments that your CF projects have received, and that your country has received overall? x

Table 5. ER payments received to date.

	Total REDD+ ER payments received to date (\$US)
Carbon Fund project/s (i.e. ER payments from sources other than the Carbon Fund)	\$ 00
All other national REDD+ projects	\$ 00

- 2.5.3** How many formal partnerships have been established between your CF program and private sector entities? Formal partnerships are defined as:
- The partnership is based on a written MoU (or equivalent), and/or
 - The partnership involves tangible financial exchange/s, and/or
 - The partnership involves tangible non-financial exchange/s (e.g. in-kind contributions)

Among other EEs, the REDD+ program is being implemented by two forest producer associations—ASODEFOREST and the San Ramón Association—whose main activities focus on sustainable forest management and the use of forest plantations for the production of timber and non-timber forest products. In addition, public EEs are establishing sub-agreements with private producers who are implementing REDD+-type activities. In this context, both associations have reported that they have successfully managed, reforested, and restored approximately 6,000 hectares

Table 6. Formal partnerships established with private stakeholders

	Established in the last year. (March-December)	Total to date
Number of private sector partnerships involving financial exchange	0	0
Number of private sector partnerships involving non-financial exchange	2	2

Note. The amount in this table refers to the associations mentioned in the paragraph introducing this table.

3 Other non-Carbon benefits and additional information

Policy development

- 3.1** Is your CF program involved in the development, reform and/or implementation of policies to help institutions/people/systems/sectors? Please provide information on the approach and any other relevant or related indicators/results.

The Dominican Republic's REDD+ Program has carried out the following actions:

Institutional Agreements and Implementation: The EEs signed an agreement with MARN to comply with the REDD+ Program requirements. Following this, the following institutions and organizations were formally registered as program partners:

- Vice-Ministry of Forest Resources
- Vice Ministry of Protected Areas and Biodiversity
- Technical Executing Unit for Agroforestry Development Projects (UTEPDA)
- Department of Cocoa, Ministry of Agriculture
- Dominican Coffee Institute (INDOCAFÉ)
- General Directorate of Livestock (DIGEGA)
- National Council for the Regulation and Development of the Dairy Industry (CONALECHE)
- Asociación de Silvicultores San Ramón
- Asociación para el Desarrollo Forestal Sostenible de Restauración (ASODEFOREST)

Intersectoral coordination of land use and biodiversity conservation policies: The MMARN institutionalized the REDD+ Program through the establishment of the OCR, which consists of eight specialists and operates under the Directorate of Financial Mechanisms and Portfolio Management and the Vice Ministry of Climate Change and Sustainability. The OCR coordinates with productive sectors—such as cocoa, coffee, and livestock—that directly

affect the forest landscape, to align their activities with REDD+ objectives. The OCR also collaborates with national planning and development institutions, including the Ministry of Finance, Ministry of Economy, Planning and Development (MEPYD), and the Ministry of Women. The latter ensures that gender equity and social inclusion are integrated into public policies, particularly supporting women involved in the coffee sector. These efforts are key to promoting the conservation and sustainable use of forest resources and contribute to climate change mitigation.

Sustainable forest management: The REDD+ Program promotes sustainable forest management to enhance the health and resilience of forest ecosystems and their capacity to store carbon. The program collaborates with civil society organizations such as ASODEFOREST and the San Ramón Association, both of which have extensive experience in managing forest plantations and timber production. MMARN has signed agreements with these organizations to involve them in the collective management of REDD+ actions, including benefit-sharing and decision-making. Their members have been trained in business management, green jobs, organizational strengthening, and coordination with local MMARN authorities to improve forest management and plan monitoring. Moreover, REDD+ has elevated the role of these two organizations beyond the forestry sector, positioning them as eligible for direct benefits from the EnAble program, set to be implemented during 2024–2025.

Community participation: Community engagement is central to the REDD+ Program. The program ensures the meaningful involvement of local communities in decision-making and implementation of conservation activities, guaranteeing their inclusion in beneficiary committees and access to direct benefits. Key actions include:

1. Establishment of Beneficiary Committees. These committees allow communities to participate in decision-making regarding benefit-sharing and local REDD+ activities.
2. Free, Prior, and Informed Consent (FPIC). FPIC processes were carried out with Indigenous Peoples and local communities to ensure their understanding and voluntary participation in the program.
3. Training and Capacity Building. Communities received training in sustainable forest management, environmental monitoring, and resource governance. Environmental education was also promoted to build awareness of conservation benefits.
4. Benefit-Sharing Mechanisms. Economic and non-economic incentives were implemented, including investments in local infrastructure, sustainable livelihoods, and access to natural resources.
5. Community-Based Monitoring. Local community members were trained to monitor forest cover changes, enabling them to actively participate in environmental tracking.
6. Promotion of Sustainable Livelihoods. The program supported alternatives such as ecotourism, agroforestry, and non-timber forest product (NTFP) value chains.

Forest conservation: The REDD+ Program also implements measures to protect and conserve standing forests, to prevent forest carbon loss. It has contributed significantly to the review and legal adjustments required by the country regarding environmental services. The contributions of the REDD+ Program are presented below.

- Supporting the development of regulations for Forestry Law No. 57-18, which were enacted under Decree No. 627-21, streamlining forest use, conservation, and sustainable management, while encouraging communities' involvement in monitoring and follow up.¹³³
- Facilitating institutional reforms, including the creation of the Directorate of Financial Mechanisms and Portfolio Management through Resolution No. 0027-2021, under which the OCR operates, improving the management of REDD+ and other environmental programs.
- Participating in national consultations for a forthcoming Climate Change Law, alongside the Presidential Council on Climate Change, legal experts, members of Congress, and civil society.

¹³³ <https://bvearmb.do/handle/123456789/1384>.

Gender inclusion: At its inception, the REDD+ Program provided Executing Entities with a Gender Plan to support equitable policies and highlight the contributions of vulnerable groups, especially women. These efforts aimed to shift women's roles from primarily supportive to more active leadership in forest governance.¹³⁴

Land Use Policy and Legal Milestones: In 2022, the Dominican government approved a new Land Use Law (*Ley de Ordenamiento Territorial*) on December 22, promoting sustainable management, use, and exploitation of natural resources under principles of economic, environmental, and social sustainability. Stakeholders involved in REDD+ implementation actively contributed to the development of this legal framework.¹³⁵

Key results and indicators:

1. Reduced Deforestation: A measurable decline in forest cover loss due to program interventions.
2. Increased Forest Cover: Restoration of degraded areas and an overall increase in forested land.
3. Community Participation: Strong community involvement in forest management and local decision-making.
4. Co-Benefits: Additional gains such as improved biodiversity, enhanced water security, and better livelihoods for rural populations.

. As highlighted throughout this document, REDD+ activities involve a wide range of public and private stakeholders. This underscores the significant institutional and organizational efforts required—and already undertaken—not only to meet program commitments but also, importantly, to uphold the rights of participating individuals, communities, and organizations, as established under national regulations.

Key results achieved during the reporting period

- ✓ Carbon Market Readiness: The country's institutional capacity to manage and benefit from carbon markets has been significantly enhanced.
- ✓ Updated National Forest Inventory: The National Forest Inventory has been revised and now includes updated data on forest volume, biomass, and carbon content across major forest types.
- ✓ Capacity Building: Technical staff at the Ministry of Environment received training in carbon emissions analysis related to deforestation and environmental degradation.
- ✓ REDD+ Registry Systems Operational: New systems have been developed and are now operational to register beneficiary producers and track compliance with environmental and social safeguards.
- ✓ Gender Policy Guidance: A gender action plan has been developed to guide the integration of gender considerations into REDD+ implementation.¹³⁶
- ✓ National REDD+ Strategy Document: A comprehensive document outlining policies, strategies, objectives, and actions for the implementation of a National REDD+ Strategy has been published.¹³⁷ A document containing the policies, strategies, objectives, and actions for implementing a National REDD+ Strategy.¹³⁸

Capacity building

¹³⁴ <https://ambiente.gob.do/app/uploads/2024/06/Plan-de-Accion-de-Genero-Programa-REDD-Republica-Dominicana.pdf>.

¹³⁵ <https://mepyd.gob.do/las-145-preguntas-de-ley-ordenamiento-territorial/>.

¹³⁶ <https://ambiente.gob.do/app/uploads/2024/06/Plan-de-Accion-de-Genero-Programa-REDD-Republica-Dominicana.pdf>.

¹³⁷ <https://ambiente.gob.do/app/uploads/2024/06/Estrategia-Nacional-REDD-ENREDD.pdf>.

¹³⁸ <https://ambiente.gob.do/app/uploads/2024/06/Caracterizacion-Cuantificacion-y-Monitoreo-de-Empleos-Verdes-en-RD.pdf>.

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

The program included training for institutional technical staff in sustainable, environmentally friendly livestock practices. Technicians were also trained on the use of technical guidelines, which define good environmental practices and safeguards. These guidelines serve as compliance criteria that producers, technical experts, and authorities must follow to ensure REDD+ activities effectively contribute to reducing carbon dioxide emissions. Additionally, technical staff received training on the information systems used to register REDD+ initiatives, monitor compliance with safeguards, and record any grievances, complaints, or claims submitted by beneficiaries and producers affected by REDD+ implementation. Two key partner organizations in the program—ASODEFOREST and San Ramón Association of Foresters—were trained in green business management. This included strategies for taking advantage of existing and emerging markets through the diversification of forest-based products.

Other

3.3 Is your CF program involved in generation or enhancement of any non-carbon benefits not already covered in this annex? Please provide information on the approach and any other relevant or related indicators/results.
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ANNEX 4: CARBON ACCOUNTING - ADDENDUM TO THE ERPD

Technical corrections

The provisional inclusion of the Dominican Republic's Emission Reductions Program Document (ER-PD) into the portfolio of both Tranche A and Tranche B of the Carbon Fund was deemed approved upon fulfillment of the submission of a document to the Facility Management Team (FMT) detailing any proposed additional technical corrections to be made to the Reference Level before the first verification. In September 2019, the Dominican Republic presented a technical and methodological proposal responding to the conditions pointed out in resolution CFM/20/2019/5¹³⁹. The Technical Corrections Proposal addressed the following improvements:

4. Biennial data on deforestation of primary and secondary forest, degradation, restoration, deforestation, all data on a pixel basis wall-to-wall.
5. Monitoring and emission factors of soil organic carbon using a considerably improved methodological approach, especially given the significance of soil carbon in mangroves; and
6. Estimation of separate emission factors for the secondary and primary forest.

In response to the comments of the Chair summary report, a stepwise approach was used to update the reference level for the period 2006-2015. The technical corrections applied to the original Reference Level have been made following this technical and methodological proposal. All the technical modifications are in line with paragraph 2 of the "Guideline on the application of the methodological framework Number 2: Technical corrections to GHG emissions and removals reported in the reference period". Technical corrections do not compromise the consistency of GHG emissions and removals estimates between the Reference Period and monitoring periods, as both calculations apply the improvements. None of the improvements relate to a change in policy and design decisions affecting the Reference Level. Carbon pools and gases, GHG sources, reference period, forest definition, REDD+ activities, Accounting Areas, forest types remain unchanged.

Activity data on deforestation of primary and secondary forests and restoration: Corrections to historical activity data result from the use of reference data of higher spatial and temporal resolution than the one used at the time of submission of the final ER-PD. The methods used to estimate activity data are aligned with IPCC and GFOI guidance and guidelines.

Before deciding on using sampling-based estimates, deforestation and regeneration activity data based on pixel-based wall-to-wall was assessed. It was evaluated the option of using activity data calculated from the geographic comparison of biennial Forest Cover (FC) maps produced by TerraPulse for the Dominican Republic. TerraPulse developed biennial satellite-derived (FC) maps applying data extraction and automatic learning algorithms to large volumes of satellite images to monitor deforestation, reforestation, degradation, and forest recovery.

Based on biennial FC maps, a land-use change map was prepared for the Reference Period 2005 to 2015. This map was validated following Olofsson's (2014) guidelines¹⁴⁰. A systematic grid of 7,697 sampling points (2.5*2.5 km) was used to obtain reference data for the validation process. The land-use change map includes the following categories: Lakes and other water bodies (CUERPOSAGUA), Forest land remaining as forest since 2001 (B2001), Non-Forest converted to forest lands (BSEC), Forest land converted to non-forest lands (DEFOB2001), Secondary Forest converted to non-forest lands (DEFOBSEC), and Non-Forest lands remaining as non-forest lands (NOBOSQUE).

¹³⁹ The Technical and Methodological Proposal Responding to the Conditions Pointed out in Resolution CFM/20/2019/5 can be accessed at the following link:

https://www.forestcarbonpartnership.org/system/files/documents/DR_Technical%20note%20Responding%20to%20the%20Conditions%20Pointed%20out%20in%20Resolution%20CFM2020195.pdf

¹⁴⁰ Olofsson, P., Foody, G. M., Herold, M., Stehman, S. V., Woodcock, C. E., & Wulder, M. A. (2014). Good practices for estimating area and assessing accuracy of land change. *Remote Sensing of Environment*, 148, 42–57. <https://doi.org/10.1016/j.rse.2014.02.015>

All estimates of Land-use transitions and stable classes based on TerraPulse data fell outside the confidence intervals of the sampling-based estimates. According to the land-use change validation (see Table 4.1), deforestation and regeneration activity data based on pixel-based wall-to-wall maps present significant bias. The bias is above 47% for all land-use transitions except for permanent forests (B2001). Therefore, option 3 of the Technical and Methodological Proposal responding to the conditions in Resolution CFM/20/2019/5 was used to estimate stable land-use classes and land-use transitions.

Only sampling-based estimates and associated uncertainties were used to calculate the activity data. Annual activity data for deforestation and forest regeneration were derived from the sampling procedure (7,697 sampling grid), where years of transitions were recorded for each point.

Table A4.1: Validation of the land-use change map 2006-2015.

Category of land-use change for the period 2006-2015	code	Number of samples	Producers' accuracy	Users' accuracy	Map pixel count area (ha)	Sampling random estimate (ha)	90% Confidence interval (ha)	Map area fall inside CI	Bias
Lakes and other bodies of water	CUERPOSAGUA	113	0.88	0.85	72,130	70,834	10,881	Yes	1.80%
Forest land remaining as forest since 2001	B2001	2759	0.68	0.73	1,639,993	1,729,469	43,378	No	-5.46%
Non-Forest converted to forest lands	BSEC	406	0.36	0.14	642,975	254,500	20,222	No	60.42%
Forest land converted to non-forest	DEFOB2001	160	0.26	0.06	460,947	100,295	12,907	No	78.24%
Secondary Forest converted to non-forest lands	DEFOBSEC	3	0.67	0.01	204,890	1,881	1,786	No	99.08%
Non-Forest lands remaining as non-forest lands	NOBOSQUE	4253	0.59	0.86	1,802,019	2,665,977	44,972	No	-47.94%

Forest degradation activity data: Activity data used to calculate emissions and removals due to degradation and canopy recovery in forest remaining forests were also determined with sampling-based estimates (7,697 systematic grid). Canopy cover category maps for 2005 and 2015 were prepared, including three classes: 30-60%, 60-85%, and >85%. Canopy cover change map 2006-2015 was prepared from terraPulse FC maps considering only pixels with canopy cover probability of 90% or above. Both maps were geographically compared to obtain the canopy cover change map 2005-2015, including the following classes: i. Lakes and other bodies of water, ii. Stable Forest, iii. Forest with degraded canopy cover, iv. Forest with canopy cover recovery and v. non-Forest lands and Secondary Forest.

Table A4.2 compares the pixel count area of the canopy cover change map with the random sampling estimate based on 2,083 sampling points reference data. Reference data were based on the interpretation of high-resolution imagery. The canopy cover change map overestimates canopy cover transitions (more than 52% bias). However, the Stable Forest bias is 14%.

Considering that data based on pixel-based wall-to-wall could overestimate activity data, sampling-based estimates were used to determine degradation and canopy recovery (using 7,697 systematic grid). Also, considering that FC maps provide a more robust determination of Canopy Cover than high-resolution imagery interpretation, forest cover and its probability were extracted from FC maps for each sampling point located in a permanent forest in the systematic grid. This information made it possible to assign each point the canopy cover class 30-60%, 60-85%, and >85% for the later analysis of canopy cover change.

Table A4.2. Validation of the canopy cover change map 2006-2015.

Category of canopy cover change for the period 2006-2015	code	Number of samples	Producers' accuracy	Users' accuracy	Map pixel count area (ha)	Sampling random estimate (ha)	90% Confidence interval (ha)	Map area fall inside CI	Bias
Lakes and other bodies of water	CUERPOSAGUA	9	0.78	0.78	71,824.50	21,238.81	11,620.27	No	70%
Stable forest	ESTABLE	355	0.42	0.46	733,270.41	837,753.05	66,484.40	No	-14%

Forest with degraded canopy cover	DEGRADADO	40	0.15	0.06	249,131.97	94,394.71	24,310.27	No	62%
Forest with canopy cover recovery	RECUPERACION	97	0.24	0.12	477,467.91	228,907.17	37,314.42	No	52%
Non-forest lands and Secondary Forest	NOBOSQUEYRE GENERACION	1542	0.82	0.91	3,289,515.03	3,638,916.08	75,488.44	No	-11%

Revised methodological approach for estimating the annual stock change of Soil Organic Carbon (SOC): The annual change in the SOC pool estimate was technically corrected. The updated SOC pool change calculation is now based on Equation 2.25 from the 2006 IPCC Guidelines, Volume 4, Chapter 2. SOC emissions associated with deforestation now include the land-use changes occurring in the Reference Period and the emissions resulting from land-use changes in previous years (“legacy emissions”). Full implementation of this approach was possible since a long time series of deforestation activity data was available based on 1984-2021 annual FC maps that let going back at least 20 years before the start of the Reference Period to estimate legacy emissions correctly.

It was assumed that the Soil Organic Carbon stock change during the transition to a new equilibrium SOC occurs linearly over 20 years. The Land Units represent yearly classes from the land-use change analysis used in setting the reference level. Also, Land Units maintain the same forest types as those used in the land-use change analysis provided in the ER-PD.

Additionally, new SOC values (before and after forest transition) were collected to replace the original estimates sourced from National Forest Inventory. The soil organic carbon pool estimates in the NFI of the Dominican Republic presented errors and methodological limitations. NFI soil samples were collected from the upper 15 cm of soil. However, the soil organic carbon stock was calculated from the upper 30 cm. Generally, the SOC decreases with sampling depth. Also, the gravel content was ignored during the SOC pool calculation. Rock fragments do not have organic carbon, and the coarse stone percentage is sometimes very high. Calculate SOC at 30 cm using soil values taken at 15cm, and without considering the coarse volumetric ratio, overestimate the pool of SOC and, consequently, the deforestation emission factor.

To avoid the overestimation of SOC, two hundred sixty paired plots were established (130 in forest lands and 130 in non-forest use) to measure Soil Organic Carbon before and after deforestation, comparing the SOC between pairs by type of vegetation. Inventory plots were evenly distributed in landscape units according to soil type and land use. The soil was sampled at 15 cm and 30 cm depth in paired plots established for each landscape unit. Soil organic carbon stock (SOCS) was computed as the product of three variables, organic carbon content (SOC), bulk density (BD), and stoniness (S). Soil organic carbon stock (SOCS) was calculated with the following equation:

$$SOCS_i = SOC_i \times BD_i \times D(1 - S_i) \quad \text{Equation A4.1}$$

Where SOC is the soil organic carbon concentration percentage ($\text{g } 100\text{g}^{-1}$), BD is bulk density (g cm^{-3}), D is the thickness of the layer (30 cm), and S is the proportion of the volumetric coarse fragments fraction (g g^{-1}).

Finally, SOC stocks were compared between paired plots (forest cover and non-forest land-use) to estimate the carbon stock change for each transition. The exchange rate of SOC was also calculated, considering the time elapsed from deforestation based on the land-use history of the plot determined by interviewing the landowner and, where possible, validated with time-series satellite imagery.

Estimation of separate emission factors for the secondary and permanent forest:

TerraPulse developed annual forest cover maps based on the canopy cover and probability of change in forest cover from one year to another. This information offers long-term and consistent mapping and monitoring of forest cover. It allows the retrieval of historical reference scenarios from the satellite records and the detection of deforestation, degradation, and growth over time. Based on FC maps, a forest cover change analysis was prepared considering only pixels with > 90% probability of having a forest cover higher than 30%, 60% and 85%. Subsequently, forest

degradation classes and secondary forest cohorts were mapped into four categories: i. Intact forest (>85% crown cover), ii. Degraded forest (60-85% crown cover), iii. Highly degraded forest (30-60% crown cover) and Secondary forest.

All forest inventory plots in forest and tree-shaded crops were classified into four categories based on terraPulse data. By forest type and degradation class, carbon content was directly derived from the biomass sampling plots database (average and 90%CI). The mean annual increment of secondary forest and tree-shaded crops (tC/ha/yr.) was estimated by dividing standing biomass by the age determined from the forest cover change maps. In secondary forest types with less than ten sampling plots, additional forest plots were inventoried. A series of 32 secondary sampling units were inventoried in 2021, and age was determined from different sources: interviews and satellite information and secondary data. The standing biomass of these plots was divided by age to estimate mean annual increment rates (tC/ha/yr.).

Start Date of the Crediting Period

The start of the Crediting Period¹⁴¹ must coincide with the start date of the first Reporting Period under the ER Program. According to the Minimum Reporting Periods Amounts in Schedule 2 of Emission Reductions Payment Agreement, the first Reporting Period start the ERPA'S agreement date. ERPA signature was on March 1st, 2021.

This date meets the definition of the Start Date of the Crediting Period provided in the FCPF Glossary of Terms as follows:

- The start date is not earlier than the date first ER Program Measures begins generating ERs.
- This was confirmed by signing of the ERPA and resulted in this date being the start date in the ERPA
- It is not earlier than January 1st 2016.
- It does not fall within the Reference period 2006-2015.

¹⁴¹ Crediting Period Start Date: Also known as 'ER Program Start Date' under the FCPF ERPA General Conditions, is the start date of the first Reporting Period under the ER Program. (Forest Carbon Partnership Facility – Carbon Fund, 2020. Glossary of Terms. Version 1.)

7. CARBON POOLS, SOURCES AND SINKS

7.1 Description of Sources and Sinks selected

All significant sources and sinks are included in the Reference Level.

Table A4-7-0-1: Activities included in the reference level

Sources/Sinks	Included?	Justification/Explanation
Emissions from deforestation	Yes	Deforestation is the main source of forest emissions. The annual emissions average from this source is 2,703,708 tones CO ₂ e*year ⁻¹ .
Emissions from forest degradation	Yes	Emissions from forest degradation are estimated using the best data available, following the indication of the Carbon Fund Methodological Framework indicator 3.3. Emissions from forest degradation are calculated based on the estimate of the change in percentage of canopy cover, in stable forest. Tree-canopy cover was estimated through an automatic learning algorithm based on remotely sensed variables. The annual emissions average from this source is 745,945 tones CO ₂ e*year ⁻¹ .
Enhancement of carbon stocks in forest remaining forest	Yes	Carbon removal due to the recovery of canopy cover in the forest lands remaining as a forest is estimated with the same methodology used to calculate forest degradation emissions. The annual removals average from this source is -595,042.46 tons CO ₂ e*year ⁻¹ .
Enhancement of carbon stocks in land converted to forest land	Yes	It includes carbon removal in lands converted to forest land. This estimate does not include the accumulation of carbon in secondary forests that already existed before 2005. Forest plantations are part of this category. The annual removals average from this source is -1,840,160 tons CO ₂ e*year ⁻¹ .
Conservation of carbon stocks	No	Carbon emissions and removals in public or private conservation land, or land that is under forest management, are included in the estimations of emissions from deforestation and degradation; they are also included in the calculation of removals in forests that remain as forests and land converted to forest land.
Sustainable forest management	No	

7.2 Description of carbon pools and greenhouse gases selected

Table A4-7-0-2: Carbon pools included in the reference level

Carbon Pools	Selected?	Justification/Explanation
Above Ground Biomass (AGB)	Yes	The National Forest Inventory (NFI) ¹⁴² , the Assessment of Biomass and Carbon Content in Non-Forest Cover in the Dominican Republic" (ISNB) ¹⁴³ , and the Collection of information required for the technical correction of the Forest Reference Level of the Dominican Republic,

¹⁴² Ministry of the Environment. 2015. Inventario nacional forestal de la República Dominicana: Measure and assess forests in order to understand their diversity, composition, volume and biomass. Field Manual. Forest Monitoring Unit. REDD7CCAD-GIZ. Regional Project 48 pages

¹⁴³ Ministry of the Environment. 2017. Assessment of the biomass and carbon content in non-forest systems in the Dominican Republic. Field Manual. Forestry Monitoring Unit REDD+ Preparation Project. 54 pages

		2006-2015 (Technical Correction Inventory) ¹⁴⁴ . include the estimation of above-ground Biomass for the main types of forest and non-forest uses. According to these inventories, the above-ground biomass represents 78% of Total Biomass (AGB + BGB+ Litter + Deadwood).
Below Ground Biomass (BGB)	Yes	Below-Ground Biomass in forests and non-forest systems is calculated using the Cairns equation ¹⁴⁵ . The below-ground biomass represents 15% of the Total Biomass (AGB + BGB+ Litter + Deadwood).
Litter	Yes	The NFI , ISNB and the Technical Correction Inventory include the assessment of the carbon content in Litter and deadwood. According to these estimations, Litter and deadwood represent 7% of Total Biomass. This information is available for all land cover classes (forest and non-forest). No data are available on changes of Litter and Deadwood over time.
Dead Wood	Yes	
Soil Organic Carbon (SOC)	Yes	The estimation of soil carbon (SOC) was technically corrected. For the determination of the organic carbon balance of the soil after deforestation in the main types of soil, 260 plots were established in paired forest – non-forest plots. Sampling Plots were located ensuring at least five paired plots in each of the main transitions by soil type that add up to 80% of the area of change observed during the reference period (2006-15). The Soil Organic Carbon Linear decreasing rate was calculated based on the estimate of SOC before and after conversion with Equation 2.25 from the 2006 IPCC Guidelines, Volume 4, Chapter 2

Table A4-7-0-3: Greenhouse gases included in the reference level

GHG	Selected?	Justification/Explanation
CO₂	Yes	The ER Program account for CO ₂ emissions and removals
CH₄	No	The Reference level does not include emissions of non-CO ₂ gases resulting from forest fires. The available historic data are spatially explicit and there is no available data on the impact of fires, such as which fuel beds are affected, the % of fuel burned, etc. On the other hand, it is not possible to separately estimate the effect of fires on forest land converted to other use or on forests remaining as forests. Likewise, the CH ₄ and N ₂ O emissions represent 0.06% of the emissions estimated during the reference period (2,703,708.12 tCO ₂ e*year ⁻¹), according to the Third Communication (the CH ₄ y N ₂ O emissions are estimated to be 1,514 tCO ₂ e*year ⁻¹).
N₂O	No	

¹⁴⁴. Núñez, J.A.; Milla, F.; Navarrete, E. and Duarte, F. 2021. Collection of information required for the technical correction of the Forest Reference Level of the Dominican Republic, 2006-2015. LUKINVESTMENT SRL. Final Report.
<https://app.box.com/s/xfy8dkfil8c20gikcup3yf9846fifyt6>

¹⁴⁵ Cairns, M. A., Brown, S., Helmer, E. H., Baumgardner, G. A., Cairns, M. A., Brown, S., ... Baumgardner, G. A. (1997). Root Biomass Allocation in the World 's Upland Forests. *Oecologia*, 111(1), 1–11. <http://doi.org/10.1007/s004420050201>

8 REFERENCE LEVEL

The Reference Level is established at the national level and includes the emissions and removals produced because of forest land being converted to non-forest land (deforestation) and the conversion of non-forest land to forest land (increase of stocks) and carbon flows in forest lands that remain as forests (emissions from forest degradation and removals from canopy cover recovering).

Table A4-8-1: REDD+ activities considered in the reference level

Reference level	IPCC Categories	Dominican Republic Emissions Reduction Programme Actions
Deforestation	- Forest Land converted into other land (crops and grazing land). FL-AL and FL-OL	3.4. Reducing and/or halting deforestation and degradation in protected areas relevant to the conservation of forest resources. 3.5. Enhancing the programme for protection and surveillance in protected areas relevant to the conservation of forest resources. 3.9. Defining and putting into practice financial instruments and mechanisms for developing activities associated with production, conservation, and restoration of forestry ecosystems.
Degradation	- Forest lands that remain as forest. TF-TF	3.4. To reduce and/or slow down deforestation and degradation in major protected areas for the conservation of forest resources. 3.5. Enhancing the programme for protection and surveillance in protected areas relevant to the conservation of forest resources. 3.7. To establish a system for evaluating and monitoring forest management. 3.8 Promote the management of natural regeneration of tree species among private farms and community organizations. 3.12. Strengthen the phytosanitary protection programme in priority forest areas.
Increase in forest carbon stocks	- Forest lands that remain as such. TF-TF - Land converted to forest land. AL-FL and OL-FL	3.1. Strengthen reforestation and agroforestry plans and programmes such as the National Quisqueya Verde Plan and the Agroforestry Programme. 3.2. Promoting the incorporation of agroforestry systems for managing agricultural and cattle farms. 3.6. Rehabilitating forest ecosystems in fragile areas relevant for facilitating connectivity between forest fragments. 3.11. Developing the programme for restoring post-fire affected ecosystems.

8.1 Reference Period

The selected reference period is **2006-2015**:

Start date: January 1st, 2006.

End Date: December 31st, 2015.

This reference period was defined during preparing the final draft of the Emission Reduction Program Document (ER-PD). While preparing ER-PD's final draft version, the Ministry of the Environment of the Dominican Republic developed a consistent series of land use maps for 2005, 2010, and 2015 suitable for applying IPCC approach 3. The country decided to define the 2006-2015 reference period, considering the land-use change information available.

Even though the country later prepared a new land-use change analysis for the 2000-2018 period, to be consistent with Criterion 11 (indicators 11.1 and 11.2) of the Methodological Framework of the Carbon Fund, the Government of the Dominican Republic maintained the 2006-2015 reference period.

The reference period's end date must not be more than two years before the TAP starts the independent assessment of the draft ER Program Document and for which forest-cover data is available to enable IPCC Approach 3.

8.2 Forest definition used in the construction of the Reference Level

The development of the reference level uses the following operational definition of forest:

"Natural or planted ecosystem with biological diversity and enrichment of native species, which produces goods, provides environmental services and social services, whose minimum land surface is 0.5 ha (3x3 pixels measuring 30m), with a tree top coverage that surpasses 30% of the minimum surface, and trees and bushes with the potential to reach a minimum height of 5 meters in their maturity in situ, and 3 meters for dry forest. This definition includes agroforestry systems that fulfil these requirements".

This definition differs from the one adopted by the country in the forest resources assessment reports from the FAO¹⁴⁶. In the 2015 FRA report, the country adopted the following definition of forest:

"Lands extending over more than 0.5 hectares and containing trees of more than 5 meters in height, and with a forest canopy of greater than 10 percent, or containing in-situ trees capable of reaching this height. This does not include land that is predominantly being used for agricultural or urban purposes.

In the operational definition of forest in the ERP, the minimum forest area is greater (0.81 ha), forests with a forest canopy of less than 30% are excluded and this includes tree-shaded agricultural crops. The operational definition of forest needed to be adjusted according to i. the resolution of the satellite images used in land-use mapping (Landsat 30x30m); ii. achieving an appropriate separation of forest and non-forest use categories, and iii. the need to include the carbon stock gains in the reference level as a result of increasing the tree-shaded agricultural crops areas produced during the implementation of the ERP (see action 3.2 in Table A4-8.1).

Differences between the definition of forests are related to limits in canopy cover (FAO uses > 10%, ERPD uses >30%, which may cause a lower estimate of forested area in the ERPD) and the treatment of agroforestry systems that have a tree cover >30%. The area occupied by tree shaded crops has been estimated, including the transitions to and from other cover types over time, this in order to produce data that can be compared transparently between the different reporting systems, such as the FAO and the maps that are used in the country.

Below are the definitions of deforestation, degradation and reforestation considered in the Reference Level estimate:

Definition of deforestation: human-induced elimination of forest canopy cover that exceeds the 30% threshold of canopy cover established in the definition of forest. The elimination of coverage is long-term or permanent, and results in a non-forestry use of the land. Considering that the forest land includes the growth of cocoa, coffee and

¹⁴⁶ FAO. (2015). GLOBAL FOREST RESOURCES ASSESSMENT 2015 National Report. Dominican Republic.

other fruits, the estimation of emissions due to deforestation includes the transitions of these crops to non-forest land (woody vegetation and non-woody vegetation).

Definition of degradation: human-induced elimination of forest canopy cover that does not go below the 30% threshold of canopy cover established in the definition of forest. The elimination of coverage may be temporary and does not result in a land-use change. The carbon emission due to forest degradation and carbon removals due to canopy recovery is being estimated separately. Likewise, considering that the forest land includes the growth of cocoa, coffee and other fruits, the estimation of emissions due to degradation includes the transitions of tree-shaded crops to natural forest (moist, dry and pine) and vice-versa.

Definition of reforestation: Activities that lead to the conversion of non-forested land to forest: This includes the restoration of forests with a crown cover greater than 30% through natural and artificial means on deforested land. In addition, it includes the establishment of agroforestry systems with tree cover greater than 30% on lands that were previously deforested.

8.3 Average annual historical emissions over the Reference Period

Description of method used for calculating the average annual historical emissions over the Reference Period

Equations and parameters used to calculate GHG emissions and removals are listed below. These equations show the steps from the measured input to the aggregation into final reported values. Changes to the original calculation described in the ER-PD have been highlighted.

Change in total biomass carbon stocks in forest lands converted to other land-use (Deforestation):

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

$$\Delta C_{B_t} = \Delta C_G + \Delta C_{\text{CONVERSION}} - \Delta C_L \quad \text{Equation 11}$$

Where:

ΔC_{B_t}	Annual change of total biomass carbon stocks during the period, in tC*year ⁻¹ ;
ΔC_G	Increase in carbon stocks in biomass due to growth on land converted to another land-use category, in tC per hectare per year;
$\Delta C_{\text{CONVERSION}}$	Initial change in carbon stocks in biomass on land converted to another land-use category, in tC per hectare; and
ΔC_L	Decrease in biomass carbon stocks due to losses from harvesting, fuel wood gathering and disturbances on land converted to other land-use category, in tC per hectare per year.

Following the recommendations set in chapter 2.2.1 of the GFOI Methods Guidance Document for applying IPCC Guidelines and guidance in the context of REDD+¹⁴⁷, the above equation will be simplified, and it will be assumed that the change in total biomass carbon stocks (ΔC_B) is equal to the initial change in carbon stocks ($\Delta C_{\text{CONVERSION}}$). Considering equation 2.16 of the 2006 IPCC GL for estimating ($\Delta C_{\text{CONVERSION}}$) the change of biomass carbon stocks during the Reference Period was calculated with the following equation:

$$\Delta C_{B_{RP}} = \sum_{j,i} (B_{\text{Before},j} - B_{\text{After},i}) \times A(j,i)_{RP} \quad \text{Equation 12}$$

Where:

¹⁴⁷ https://www.reddcompass.org/documents/184/0/MGD2.0_English/c2061b53-79c0-4606-859f-ccf6c8cc6a83

$\Delta C_{B_{RP}}$

Change of biomass carbon stocks during the Reference Period, in tC.

 $A(j,i)_{RP}$

Area converted from forest type j to non-forest type i during the Reference Period, in hectares per year.

$$A(j,i)_{RP} = \frac{P(j,i)_{RP}}{N} \times AA$$

Equation 4.1

$P(j,i)_{RP}$: Number of points converted from forest type j to non-forest type i during the Reference Period, dimensionless.

N : Total of sampling point in the Systematic Grid used for the visual assessment of High-res imagery to estimate activity data.

AA : Emission Reduction Program accounting area (in hectares)

In this case, ninety-six forest land conversions are possible resulted from the combinations of the following forest and non-forest types:

Forest type	Non-forest types
Four forest types (forest present before 1984): • Wet broadleaf forest. • Dry broadleaf forest. • Pine forest, and • Mangrove forest. Three canopy cover categories: • Intact forest (>85%). • Degraded forest (60-85%), and • Very degraded forest (30-60%) Two cohorts of secondary forest • Cohort 4-21 years, and • Cohort 22-44 years.	Five types of non-forest land are considered: • Cropland. • Grassland. • Settlement; and • Woody vegetation.

Technical corrections applied this parameter: The deforestation activity data was updated with a new visual assessment on high-res imagery using a 2.5 x 2.5 km grid instead of the original 5 x 5 km grid, thus reducing the standard error in uncommon transitions.

 $B_{Before,j}$

Total biomass of forest type j before conversion/transition, in tons of C per ha. This is equal to the sum of aboveground biomass (AGB_{before}) of trees with a diameter at breast high (dbh) higher than 2 cm, belowground biomass (BGB_{before}), litter (L_{before}) and death wood (DW_{before}) and it is defined for each forest type.

Technical corrections applied to this parameter: The original calculation of change in biomass carbon stock only considered biomass density of the forest type, ignoring the forest's degradation condition. Also, this calculus did not consider the stand age. Carbon density in secondary forests varies with age, and primary forests usually present carbon densities higher than secondary. Ignoring forest degradation and forest age in the measure of change in biomass carbon stock overestimates the emission from deforestation. Therefore, total biomass was recalculated for each canopy cover category (>85%, 60-85%, and 30-60%) into each permanent forest type. Also, total biomass was calculated for each forest cohort.

 $B_{After,i}$

Total biomass of non-forest type i after conversion, in tons C per ha. This is equal to the sum of aboveground biomass (AGB_{after}) of trees with a diameter at breast high (dbh) higher than 2 cm, belowground biomass (BGB_{after}), litter (L_{after}) and death wood (DW_{after}) and it is defined for each of the five non-forest IPCC Land Use categories.

Technical corrections applied to this parameter: Total biomass of non-forest land uses did not consider the same carbon pools included in the $B_{\text{before},j}$. Carbon densities for non-forest IPCC Land Use Categories were recalculated to ensure carbon pools consistency between $B_{\text{after},i}$ and $B_{\text{before},j}$.

Change in the soil organic carbon pool in mineral soils associated with deforestation:

The total carbon stock change estimated in the ERPD was incorrect. It was assumed an EF of only 1/20 of SOC stock for the Reference Period (RP). The Dominican Republic ERPD did not include emissions from SOC of deforested areas before the reference period. A 20-year default legacy period was not used to estimate emissions from SOC of each deforested area during the Reference Period either.

The annual change in the SOC pool was technically corrected. The updated estimate of SOC pool change was made according to the following:

- SOC change was calculated based on Equation 2.25 from the 2006 IPCC Guidelines, Volume 4, Chapter 2.
- SOC emissions associated with deforestation now include the land-use changes occurring in the Reference Period and the emissions resulting from land-use changes that occurred in previous years ("legacy emissions"). Full implementation of this approach was possible since it was available a long time series of deforestation activity data that let going back at least 20 years before the start of the Reference Period to correctly estimate legacy emissions.
- It was assumed that the Soil organic C stock change during the transition to a new equilibrium SOC occurs in a linearly over a period of 20 years.
- The Land Units represent yearly classes from the land use change analysis used in setting the reference level.
- Land Units maintain the same forest types as the ones used in the land use change analysis provided in the ER-PD.

In accordance with the approach provided in the 2006 IPCC Guidelines, the following matrices and Equation 5 were used for determining the annual change in the soil organic pool associated with deforestation:

Land use change matrix

Land Unit	Year 1	...	Year n	...	Year 20	...	Year 20+n
LU_1	$A(j, i)_{1,1}$	...	$A(j, i)_{1,n}$	...	$A(j, i)_{1,20}$		
$\vdots$			$\vdots$	$\vdots$	$\vdots$	$\vdots$	
LU_n			$A(j, i)_{n,n}$	...	$A(j, i)_{n,20-n}$	...	$A(j, i)_{n,20+n}$
Stable Forest	SF_j		$SF(j)_{n-1} - \sum_{LU=1}^n A(j, i)_n$	...	$SF(j)_{19} - \sum_{LU=1}^n A(j, i)_{20}$	...	$SF(j)_{19+k} - \sum_{LU=1}^n A(j, i)_{20+n}$

×

SOC Value for each LU in a particular year

Land Unit	Year 1	...	Year n	...	Year 20	...	Year 20+n
LU_1	$SOC_j - S(j, i)$	...	$SOC_{j,1,n-1} - S(j, i)$	...	$SOC_{j,1,19} - S(j, i)$		

$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\vdots$		
LU_n		$SOC_j - S(j, i)$	$\cdots$	$SOC_{J_{n,19-n}} - S(j, i)$	$\cdots$	$SOC_{J_{n,19+n}} - S(j, i)$	
Stable Forest	SOC_j	$\cdots$	SOC_j	$\cdots$	SOC_j	$\cdots$	SOC_j

=

Multiplying the two tables leads to the following results for the application in Equation 2.25 to the Reference Level

Land Unit	Year 1	$\cdots$	Year n	$\cdots$	Year 20	$\cdots$	Year 20+n
LU_1	$TS(j, i)_{1,1}$	$\cdots$	$TS(j, i)_{1,n}$	$\cdots$	$TS(j, i)_{1,20}$	$\cdots$	
$\vdots$			$\vdots$	$\vdots$	$\vdots$	$\vdots$	
LU_n			$TS(j, i)_{n,n}$	$\cdots$	$TS(j, i)_{n,20-n}$	$\cdots$	$TS(j, i)_{n,20+n}$
Stable Forest	$TS(j)_1 + \sum_{LU=1}^n TS(j, i)_1$	$\cdots$	$TS(j)_n + \sum_{LU=1}^n TS(j, i)_n$	$\cdots$	$TS(j)_{20} + \sum_{LU=1}^n TS(j, i)_{20}$	$\cdots$	$TS(j)_{20+n} + \sum_{LU=1}^n TS(j, i)_{20+n}$

Applying the IPCC approach, annual changes in the Soil Organic Carbon pool are calculated as total SOC for year 0 – total SOC for the previous year (0-1), using the Equation 5.

$$AC_{Mineral_t} = \left[TS(j)_{n-1} + \sum_{LU=1}^n TS(j, i)_{n-1} \right] - \left[TS(j)_n + \sum_{LU=1}^n TS(j, i)_n \right] \quad \text{Equation 13}$$

Where:

$A(j, i)_{LU}$ Area converted/transited from forest type j to non-forest type i of the Land Unit LU, in hectares per year.

$$A(j, i)_{LU} = \frac{P(j, i)_{LU}}{N} \times AA \quad \text{Equation 5.1}$$

$P(j, i)_{LU}$: Number of points converted from forest type j to non-forest type i in the Land Unit LU, dimensionless.

N: Total of sampling point in the Systematic Grid used for the visual assessment of High-res imagery to estimate activity data.

AA: Emission Reduction Program Accounting Area (in hectares)

In this case, four forest land conversions are possible resulted from the combinations of the following forest and non-forest types:

Forest type	Non-forest types
Four forest types (forest present before 1984): - Wet broadleaf forest. - Dry broadleaf forest.	One type of non-forest land is considered: Non-forest land use

• Pine forest, and • Mangrove forest.	

Technical corrections applied to this parameter: The deforestation activity data was updated with a new visual assessment on high-res imagery using a 2.5 x 2.5 km grid instead of the original 5 x 5 km grid, thus reducing the standard error in uncommon transitions.

$S(j, i)$ Soil Organic Carbon Linear decreasing rate for transition j to i, in tons of C per ha per year.

$$S(j, i) = \frac{SOC_j - SOC_i}{D} \quad \text{Equation 5.2}$$

SOC_j Soil Organic Carbon of forest type j before conversion/transition, in tons of C per ha.

SOC_i Soil Organic Carbon of non-forest type i after conversion, in tons of C per ha.

Technical corrections applied to these parameters: The SOC values (before and after forest transition) were technically corrected to replace the original estimates sourced from National Forest Inventory. The soil organic carbon pool estimates in the NFI of the Dominican Republic presented errors and methodological limitations.

NFI soil samples were collected from the upper 15 cm of soil. However, the soil organic carbon stock was calculated from the upper 30 cm. Generally, the SOC decreases with sampling depth. Also, the gravel content was ignored during the SOC pool calculation. Rock fragments do not have organic carbon, and the coarse stone percentage is sometimes very high. Calculate SOC at 30 cm using soil values taken at 15cm, and without considering the coarse volumetric ratio, overestimate the pool of SOC and, consequently, the deforestation emission factor.

To avoid the overestimation of SOC, two hundred sixty paired plots were established (130 in forest lands and 130 in non-forest use) to measure Soil Organic Carbon before and after deforestation, comparing the SOC between pairs by type of vegetation.

D Time in years where SOC_j decrease linearly to a new equilibrium SOC_i . A period of twenty years is assumed for all types of forest to non-forest conversions.

$TS(j, i)$ Soil organic carbon remaining in the Land Unit in the transition j to i, in tons of C.

$$TS(j, i)_{n,n} = A(j, i)_{n,n} \times (SOC_j - S(j, i)) \quad \text{Equation 5.3}$$

$TS(j)$ Soil organic carbon remaining in the Stable Forest type j, in tons of C.

$$TS(j)_{n,n} = A(j)_{n,n} \times SOC_j \quad \text{Equation 5.4}$$

$A(j)$ Area of Stable Forest type j, in hectares.

$$A(j) = \frac{P(j)}{N} \times AA \quad \text{Equation 5.5}$$

$P(j)$: Number of points from forest type j, dimensionless.

N : Total of sampling point in the Systematic Grid used for the visual assessment of High-res imagery to estimate activity data.

AA : Emission Reduction Accounting Area (in hectares)

Technical corrections applied to this parameter: The Stable Forest area estimate was updated with a new visual assessment on high-res imagery using a 2.5 x 2.5 km grid instead of the original 5 x 5 km grid, thus reducing the standard error in uncommon transitions.

Carbon removals associated with natural and artificial regeneration, including plantations (Enhancement of forest carbon stocks):

Equation 6 is used to calculate annual carbon removals associated with regeneration. The net annual carbon removals are computed using equations 2.15 and 2.16 from the 2006 IPCC Guidelines, Volume 4, Chapter 2 (Equations 3 and 4). These equations are simplified by assuming that the conversion from non-forest to forest occurs during a period from average carbon stocks in non-forest to average carbon stocks in secondary forests and is equal to the net annual increase in total biomass ($\Delta C_G - \Delta C_L$). The removal estimate considers changes in carbon stocks in above- and below-ground biomass, dead organic matter, and litter. SOC in mineral soils is omitted.

The dataset used to estimate the annual change in carbon stocks in biomass on land converted to forest includes carbon densities of secondary forests. Stands' age ranges from 4 to 42 years. Considering the range of age of the secondary forest sampling plots, for all forest types, a period of 44 years is assumed for the stand to grow from the carbon stock levels of non-forest to the average biomass and litter pools of the secondary forest.

Land units have been created to track the area converted to forest land in a specific year and remains as forest during the reference and crediting period, considering deforestation in the secondary forest cohort. The Removals are calculated by multiplying the area of land planted with the tons of C per hectare.

Land Unit	Year 1	...	Year n	...	Year 44	...	Year 44+n
LU_1	$R(j, i)_{1,1} \times \Delta C_{RB_i}$	...	$R(j, i)_{1,n} \times \Delta C_{RB_i}$	...	$R(j, i)_{1,44} \times \Delta C_{RB_i}$	...	
$\vdots$			$\vdots$	$\vdots$	$\vdots$	$\vdots$	
LU_n			$A(j, i)_{n,n} \times \Delta C_{RB_i}$	...	$A(j, i)_{n,44-n} \times \Delta C_{RB_i}$	...	$A(j, i)_{n,44+n} \times \Delta C_{RB_i}$
Stable Forest	$\sum_{LU=1}^n R(j, i)_n \times \Delta C_{RB_i}$	...	$\sum_{LU=1}^n R(j, i)_n \times \Delta C_{RB_i}$	...	$\sum_{LU=1}^n R(j, i)_{44} \times \Delta C_{RB_i}$	...	$\sum_{LU=1}^n R(j, i)_{20+n} \times \Delta C_{RB_i}$

$$\Delta C_{RB_t} = \sum_{LU=1}^n R(j, i)_n \times \Delta C_{RB_i} \quad \text{Equation 6}$$

Where:

$R(j, i)_{LU}$ Area converted from non-forest type j to forest type i of the Land Unit LU, in hectares per year.

$$R(j, i)_{LU} = \frac{P(j, i)_{LU}}{N} \times AA \quad \text{Equation 6.1}$$

$P(j, i)_{LU}$: Number of points converted from non-forest type j to forest type i in the Land Unit LU, dimensionless.

N: Total of sampling point in the Systematic Grid used for the visual assessment of High-res imagery to estimate activity data.

AA: Emission Reduction Program Accounting Area (in hectares)

In this case, four forest land conversions are possible resulted from the combinations of the following forest and non-forest types:

Non-forest types <i>j</i>	Forest type <i>i</i>
One type of non-forest land is considered: Grasslands	Four forest types: - Wet broadleaf forest. - Dry broadleaf forest. - Pine forest, and - Mangrove forest.

Technical corrections applied to this parameter: The area estimate of other land converted to the forest was updated with a new visual assessment on high-res imagery using a 2.5 x 2.5 km grid instead of the original 5 x 5 km grid, thus reducing the standard error in uncommon transitions.

$$\Delta C_{RB_i} = \frac{B_{non-forest} - B_{forest_i}}{m} \quad \text{Equation 14.2}$$

ΔC_{RB_i}	Annual change in carbon stocks in biomass on land converted to forest <i>i</i> , in tC per ha per year;
$B_{non-forest}$	Soil Organic Carbon of forest type <i>j</i> before conversion/transition, in tons of C per ha;
B_{forest_i}	Soil Organic Carbon of non-forest type <i>i</i> after conversion, in tons of C per ha;
m	Time elapsed to reach B_{forest_i} , in years.

Technical corrections applied to these parameters: The ΔC_{RB_i} values were technically corrected to replace the original estimates sourced scientific literature. Now the net annual carbon removals are computed using equations 2.15 and 2.16 from the 2006 IPCC Guidelines, Volume 4, Chapter 2. These equations are simplified by assuming that the conversion from non-forest to forest occurs during a period from average carbon stocks in non-forest to average carbon stocks in secondary forests and is equal to the net annual increase in total biomass ($\Delta C_G - \Delta C_L$).

Based on FC maps, a forest cover change analysis was prepared, and secondary forest cohorts were mapped into two categories: i. Secondary Forest cohort 4-22 years, and ii. Secondary Forest cohort 22-44 years. All forest inventory plots in forest and tree-shaded crops were classified into these two categories. By forest type, carbon content was directly derived from the biomass sampling plots database (average and 90%CI). In secondary forest types with less than ten sampling plots, additional forest plots were inventoried. A series of 32 secondary sampling units were inventoried in 2021, and age was determined from different sources: interviews and satellite information and secondary data.

Change in total biomass carbon stocks in forest lands that remains as forest (Forest Degradation):

Following the recommendations set in chapter 2.2.1 of the GFOI Methods Guidance Document, for applying IPCC Guidelines and guidance in the context of REDD+, the equation 2.16 of the 2006 IPCC GL can be simplified by assuming that the change in total biomass carbon stocks (ΔC_B) is equal to the initial change in carbon stocks ($\Delta C_{CONVERSION}$). Thus, the change of biomass carbon stocks in forest lands that remains as forest during the Reference Period was calculated with the **Equation 4**:

$$\Delta C_{DegBRP} = \sum_{j,i} (B_{Before,j} - B_{After,i}) \times Deg(j,i)_{RP} \quad \text{Equation 15.2}$$

Where:

$\Delta C_{\text{DegB}_{RP}}$ Change in total biomass carbon stocks in forest lands that remains as forest during the reference period, in tC.

$\text{Deg}(j, i)_{RP}$ Area converted from forest with canopy cover j to forest with canopy cover i during the Reference Period, in hectares.

$$\text{Deg}(j, i)_{RP} = \frac{P(j, i)_{RP}}{N} \times AA \quad \text{Equation 4.3}$$

$P(j, i)_{RP}$: Number of points converted from forest with canopy cover j to forest with canopy cover i during the Reference Period, dimensionless.

N : Total of sampling point in the Systematic Grid used for the visual assessment of High-res imagery to estimate activity data.

AA : Emission Reduction Program accounting area (in hectares)

In this case, twenty-eight canopy cover transitions forest are possible resulted from the combinations of the following forest and canopy cover categories:

Forest type	Canopy cover category
Four forest types (forest present before 1984): - Wet broadleaf forest. - Dry broadleaf forest. - Pine forest, and - Mangrove forest. - Agricultural tree-shaded crops	Three canopy cover categories: - Intact forest (>85%). - Degraded forest (60-85%), and - Very degraded forest (30-60%) - Agricultural tree-shaded crops

Technical corrections applied this parameter: The degradation/enhancement of canopy cover activity data was updated with a new visual assessment on high-res imagery using a 2.5 x 2.5 km grid instead of the original 5 x 5 km grid, thus reducing the standard error in uncommon transitions. Also, considering that FC maps provide a more robust determination of Canopy Cover than high-resolution imagery interpretation, forest cover and its probability were extracted from FC maps for each sampling point located in a permanent forest in the systematic grid. This information made it possible to assign each point the canopy cover class 30-60%, 60-85%, and >85% for the later analysis of canopy cover change.

$B_{\text{Before},j}$ Total biomass of forest type j before transition, in tons of C per ha. This is equal to the sum of aboveground biomass (AGB_{before}) of trees with a diameter at breast high (dbh) higher than 2 cm, belowground biomass (BGB_{before}), litter (L_{before}) and death wood (DW_{before}) and it is defined for each forest type.

$B_{\text{After},i}$ Total biomass of forest type i after transition, in tons of C per ha. This is equal to the sum of aboveground biomass (AGB_{after}) of trees with a diameter at breast high (dbh) higher than 2 cm, belowground biomass (BGB_{after}), litter (L_{after}) and death wood (DW_{after}) and it is defined for each forest type.

Technical corrections applied to this parameter: The original calculation of emissions and removals resulting from canopy cover loss and gain was based on AGB-canopy cover linear regression models for broadleaf, dry, and pine forests. These models were applied to estimate the loss and gain of biomass during the reference period. Total biomass was recalculated for each canopy cover category (>85%, 60-85%, and 30-60%) for each forest type (omitting secondary forests). All forest inventory plots in forest lands were classified into four categories based on terraPulse data. By forest type and

degradation class, carbon content was directly derived from the biomass sampling plots database (average and 90%CI). Description of this parameter may be found in Annex 4 – Section XX.

Activity data and emission factors used for calculating the average annual historical emissions over the Reference Period

Activity data

Parameters:	$A(j, i)_{RP}$; $A(j, i)_{LU}$, $A(j)$ and $R(j, i)_{LU}$
Description:	$A(j, i)_{RP}$: Area converted from forest type j to non-forest type i during the Reference Period, in hectares. Equation 4.1. $A(j, i)_{LU}$: Area converted from forest type j to non-forest type i of the Land Unit LU, in hectares. Equation 5.1. $A(j)$: Area of Stable Forest type j, in hectares Equation 5.5 $R(j, i)_{LU}$: Area converted from non-forest type j to forest type i of the Land Unit LU, in hectares. Equation 6.1.
Data units:	Hectares
Source of data or description of the method for developing the data including the spatial level of the data (local, regional, national, international):	Spatial level of data: National Sources of data: Sampling-based estimates and associated uncertainties were used to calculate the activity data. Annual activity data for deforestation and forest regeneration were derived from the systematic sampling procedure (7,697 Permanent Sampling Units). Methods: Activity data estimate was made by applying the good practices and procedures identified by Olofsson et al. (2014)¹⁴⁸, GFOI (2016)¹⁴⁹ and GFOI (2021)¹⁵⁰. The Dominican Republic MRV team prepared a Standard Operation Procedure for the sample-based REDD+ activity data estimation¹⁵¹. Although good practice recommends a stratified sampling to ensure a minimum number of plots in small strata, a systematic 2.5 x 2.5 km grid was used to generate activity data. Stratified sampling was not implemented due to the low accuracy of the non-permanent categories of the land-use change map for the period 2006-2015 (see Table A4.1) and because the use of independent surveys and temporary sample units does not enable the consistent and explicit tracking of land use spatially and temporally. The density of the systematic grid was estimated from the analysis of 474 systematic sampling points collected by Ovalles (2018)¹⁵². According to this analysis, with a sample size of 1942, it is possible to achieve a standard error of global precision of $S(\hat{\theta}) = 0.01$. However, DIARENA established a 2.5 x 2.5 km grid with 7,697 sampling points to reduce the standard error in uncommon transitions.

¹⁴⁸ Olofsson, P., Foody, G. M., Herold, M., Stehman, S. V., Woodcock, C. E., & Wulder, M. A. (2014). Good practices for estimating area and assessing accuracy of land change. *Remote Sensing of Environment*, 148, 42–57.

<https://doi.org/10.1016/j.rse.2014.02.015>

¹⁴⁹ GFOI. (2016). Integración de las observaciones por teledetección y terrestres para estimar las emisiones y absorciones de gases de efecto invernadero en los bosques. Métodos y orientación de la Iniciativa Mundial de Observación de los Bosques (Edición 2.). Roma: Organización de las Naciones Unidas para la Alimentación y la Agricultura.

¹⁵⁰ GFOI. (2021). Issues and good practices in sample-based area estimation.

¹⁵¹ MIMARENA, 2019. Revisión de la propuesta de Protocolo de Evaluación Visual multitemporal para la obtención de datos de referencia para la estimación de la incertidumbre de los datos de actividad para el proceso REDD+. Programa Regional REDD+. GIZ. 26 p. <https://app.box.com/s/l7f9k83zf5ssgutwtkc7w8a0hex834x8>

¹⁵² Ovalles, P. (2018). Elaboración de mapa de Uso y Cobertura del Suelo 2015. Análisis de Cambios y Mapa de Deforestación en la República Dominicana. Informe Final. Santo Domingo, República Dominicana.

	Permanent Sample Units (PSU) of one hectare (100 x 100 meters) with a single evaluation point corresponding to the plot centroid was defined for the first phase¹⁵³. PSUs were visually interpreted through time to ensure the temporal tracking of land use. Land-use assessments were made for 2000, 2005, 2015, and 2018. The land-use class was interpreted with context and recorded for the individual pixel or point for t1 and t2. Using the land-use type at t1 and t2, the change class was determined for the pixel or point. Using single point Land-use change class information, areas of change were calculated for the population. Interpreters also collected the transition year in the PSUs with a land-use change registered between assessments. The Collect Earth Desktop (CED)¹⁵⁴ tool was used to perform the Multitemporal Visual Interpretation (MVI). Using Collect Earth Online¹⁵⁵ (CEO) was discarded. Unlike the CEO, CED provides access to high-resolution images from Google Earth, Bing Maps, and Planet, including medium (Sentinel) and low-resolution (Landsat) imagery from 2000 to 2018.																																										
Value applied:	More than 400 activity data were estimated for the calculation of annual net emissions from deforestation and forest regeneration: Deforestation (96 land conversion types), SOC change transitions (160 Land Units), Permanent Forest types (5 types), and Forest regeneration (160 transitions). A summary of activity data values by forest type is shown in the below tables. All values can be consulted in the Activity Data tool ((TF-OT, TF-TF, OT-TF, and SOC TF-OT sheets ¹⁵⁶. Table 8-2: Deforested and Permanent Forest areas for the Reference Period 2006-2015. <table><tr><th>Forest type</th><th>Deforested Area (ha) 2006-2015 (TF-OT) Total Biomass emissions</th><th>Permanent forest (ha) 2006-2015 (TF-TF)</th></tr><tr><td>Wet Broadleaf Forest</td><td>62,689</td><td>517,027</td></tr><tr><td>Dry Broadleaf Forest</td><td>31,655</td><td>358,753</td></tr><tr><td>Pine Forest</td><td>6,827</td><td>238,962</td></tr><tr><td>Agricultural Tree Crops</td><td>9,310</td><td>163,860</td></tr><tr><td>Mangroves</td><td>0</td><td>19,862</td></tr></table> Table 8-3: Deforested Area (ha) (TF-OT) for SOC inherited emissions calculation*. <table><tr><th>Forest type</th><th>1984-2000**</th><th>2001-2005</th><th>2006-2015</th></tr><tr><td>Wet Broadleaf Forest</td><td>269,375</td><td>16,758</td><td>49,654</td></tr><tr><td>Dry Broadleaf Forest</td><td>44,068</td><td>8,069</td><td>21,724</td></tr><tr><td>Pine Forest</td><td>0</td><td>4,345</td><td>3,724</td></tr><tr><td>Agricultural Tree Crops</td><td>0</td><td>621</td><td>8,069</td></tr><tr><td>Mangroves</td><td>0</td><td>0</td><td>0</td></tr></table>	Forest type	Deforested Area (ha) 2006-2015 (TF-OT) Total Biomass emissions	Permanent forest (ha) 2006-2015 (TF-TF)	Wet Broadleaf Forest	62,689	517,027	Dry Broadleaf Forest	31,655	358,753	Pine Forest	6,827	238,962	Agricultural Tree Crops	9,310	163,860	Mangroves	0	19,862	Forest type	1984-2000**	2001-2005	2006-2015	Wet Broadleaf Forest	269,375	16,758	49,654	Dry Broadleaf Forest	44,068	8,069	21,724	Pine Forest	0	4,345	3,724	Agricultural Tree Crops	0	621	8,069	Mangroves	0	0	0
Forest type	Deforested Area (ha) 2006-2015 (TF-OT) Total Biomass emissions	Permanent forest (ha) 2006-2015 (TF-TF)																																									
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¹⁵³ A 7x7 points SU was planned to be used for a second phase to assess canopy cover only at permanent forest areas identified in the first phase. However, the country did not complete this analysis because canopy cover maps were used as the source of data to estimate the carbon fluxes in the permanent forest lands.

¹⁵⁴ <https://openforis.org/tools/collect-earth/>

¹⁵⁵ <https://collect.earth/>

¹⁵⁶ DatosDeActividad-PR.xlsx tool can be accessed at the following link:

<https://app.box.com/s/3f82u0f27w0zbbx9g541cfmrufko98c6>

**Activity data used to estimate SOC emissions does not include secondary forest loss area*
*** Deforested Area between 1984-2000 was obtained using the annual canopy cover maps 1984-2021 as reference data to define the year of the forest loss.*

Table 8-4: Forest Gain 2006-2015 (ha) (OT-TF) for inherited removals calculation.

Forest type	1984-2000*	2001-2005	2006-2015
Wet Broadleaf Forest	209,790	230,273	338,892
Dry Broadleaf Forest	103,654	122,895	153,929
Pine Forest	60,206	64,551	85,033
Agricultural Tree Crops	76,344	78,826	98,688
Mangroves	1,862	1,862	2,483

** Forest Gain Area between 1984-and 2000 was obtained using the annual canopy cover maps 1984-2021 as reference data to define the year of change to new forest areas.*

QA/QC procedures applied

The Dominican Republic MRV team prepared a Standard Operation Procedure (SOP) for the sample-based REDD+ activity data estimation¹⁵⁷. This SOP includes a quality control and quality assurance (QA/QC) procedure and a visual interpretation decision tree for high-resolution and low-resolution imagery to ensure the analysts used the best imagery dataset during the photo-interpretation of the land-use class in the sampling point.

Analysts received training to calibrate the observations and make clear the procedures to collect accurate data. After completing the training, the analysts interpreted a sample of 50 points. An analysis of differences between analysts was made, and no significant differences (95% significance) were found between them. Thus, the consistency between analysts was ensured.

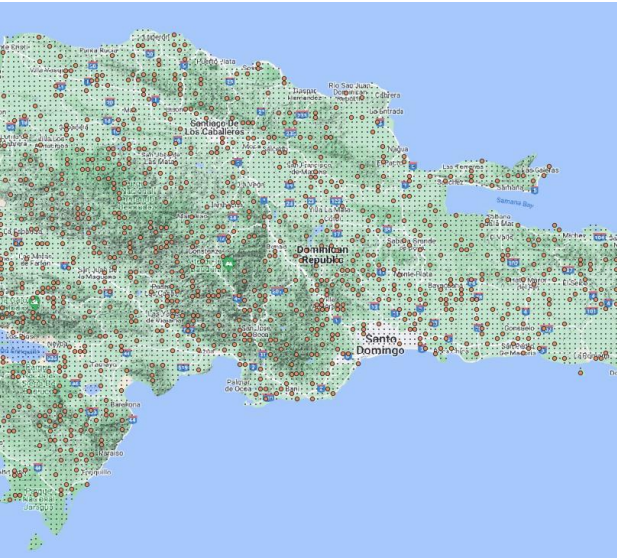
During the MVI process, a specialist with extensive experience supervised the work of the analysts. The supervisor reviewed monthly deliveries of photo-interpreted points. This review focused on identifying and correcting errors and checking transition consistency and the years of change registered.

Finally, according to QA/QC procedures, the minimum level of consistency between the analysts and the supervisor should be 90% on land-use interpretation. Once all sampling points were assessed, the supervisor selected 100 plots per assessment (year) for consistency verification. The land use definition for the whole period (2000-2118) had 95% consistency between analysts and the supervisor (see table 3-7).

¹⁵⁷ MIMARENA, 2019. Revisión de la propuesta de Protocolo de Evaluación Visual multitemporal para la obtención de datos de referencia para la estimación de la incertidumbre de los datos de actividad para el proceso REDD+. Programa Regional REDD+. GIZ. 26 p. <https://app.box.com/s/l7f9k83zf5ssgutwtkc7w8a0hex834x8>

	Table 8-5: General consistency between analysts and the supervisor on land-use interpretation. <table><tr><th>Assessment</th><th>Points interpreted consistently</th><th>n</th><th>%</th></tr><tr><td>2000</td><td>82</td><td>97</td><td>85%</td></tr><tr><td>2006</td><td>82</td><td>95</td><td>86%</td></tr><tr><td>2015</td><td>84</td><td>91</td><td>92%</td></tr><tr><td>2018</td><td>90</td><td>96</td><td>94%</td></tr><tr><td>Total</td><td>360</td><td>379</td><td>95%</td></tr></table>	Assessment	Points interpreted consistently	n	%	2000	82	97	85%	2006	82	95	86%	2015	84	91	92%	2018	90	96	94%	Total	360	379	95%																																										
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Uncertainty associated with this parameter:	Table 8-6: Estimation error of Deforested and Permanent Forest areas for the Reference Period 2006-2015. <table><tr><th>Forest type</th><th>Estimation error of Deforested Areas 2006-2015 (TF-OT) Total Biomass emissions</th><th>Estimation error of Permanent Forest areas 2006-2015 (TF-TF)</th></tr><tr><td>Wet Broadleaf Forest</td><td>20%</td><td>6%</td></tr><tr><td>Dry Broadleaf Forest</td><td>28%</td><td>8%</td></tr><tr><td>Pine Forest</td><td>66%</td><td>10%</td></tr><tr><td>Agricultural Tree Crops</td><td>55%</td><td>12%</td></tr><tr><td>Mangroves</td><td>NA</td><td>39%</td></tr></table> Table 8-7: Estimation error of Deforested Area (ha) (TF-OT) for SOC inherited emissions calculation. <table><tr><th>Forest type</th><th>1984-2000</th><th>2001-2005</th><th>2006-2015</th></tr><tr><td>Wet Broadleaf Forest</td><td>9%</td><td>39%</td><td>22%</td></tr><tr><td>Dry Broadleaf Forest</td><td>24%</td><td>60%</td><td>34%</td></tr><tr><td>Pine Forest</td><td>NA</td><td>89%</td><td>100%</td></tr><tr><td>Agricultural Tree Crops</td><td>NA</td><td>1271%</td><td>60%</td></tr><tr><td>Mangroves</td><td>NA</td><td>NA</td><td>NA</td></tr></table> Table 8-8: Estimation error of Forest Gain Area (ha) (OT-TF) for inherited removals calculation. <table><tr><th>Forest type</th><th>1984-2000*</th><th>2001-2005</th><th>2006-2015</th></tr><tr><td>Wet Broadleaf Forest</td><td>11%</td><td>10%</td><td>8%</td></tr><tr><td>Dry Broadleaf Forest</td><td>16%</td><td>14%</td><td>12%</td></tr><tr><td>Pine Forest</td><td>21%</td><td>19%</td><td>17%</td></tr><tr><td>Agricultural Tree Crops</td><td>18%</td><td>17%</td><td>16%</td></tr><tr><td>Mangroves</td><td>184%</td><td>184%</td><td>139%</td></tr></table>	Forest type	Estimation error of Deforested Areas 2006-2015 (TF-OT) Total Biomass emissions	Estimation error of Permanent Forest areas 2006-2015 (TF-TF)	Wet Broadleaf Forest	20%	6%	Dry Broadleaf Forest	28%	8%	Pine Forest	66%	10%	Agricultural Tree Crops	55%	12%	Mangroves	NA	39%	Forest type	1984-2000	2001-2005	2006-2015	Wet Broadleaf Forest	9%	39%	22%	Dry Broadleaf Forest	24%	60%	34%	Pine Forest	NA	89%	100%	Agricultural Tree Crops	NA	1271%	60%	Mangroves	NA	NA	NA	Forest type	1984-2000*	2001-2005	2006-2015	Wet Broadleaf Forest	11%	10%	8%	Dry Broadleaf Forest	16%	14%	12%	Pine Forest	21%	19%	17%	Agricultural Tree Crops	18%	17%	16%	Mangroves	184%	184%	139%
Forest type	Estimation error of Deforested Areas 2006-2015 (TF-OT) Total Biomass emissions	Estimation error of Permanent Forest areas 2006-2015 (TF-TF)																																																																	
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Uncertainty associated with this parameter:

Any comment:	Activity data estimate for reference and monitoring periods is based on land-use tracking from 2000 to 2024. The activity data includes two data sets: i. Reference Level consists of three subperiods 2000-2005, 2005-2015, and 2015-2018; ii. Monitoring Periods consist of three subperiods, 2018-2021, 2021-2023 and 2023-2024. The 2018 measurement is common to both activity data sets (Reference Level and Monitoring Periods), 2018 was reassessed in the monitoring period. Once the visual assessment was completed, the 2018 land-use of 985 points (13% of the 7,697 sampling points in the systematic grid), were not consistent between the two data sets. The availability of new high-resolution images in the 2022 measurement improved the interpretation of land use in the Monitoring Period dataset. The updated 2018 measurement affected the transitions and land-use assessments made in the Reference Period dataset. Therefore, it was necessary to revise the land-use interpretations and the transitions of the 985 inconsistent points in the two data sets (2000-2018 and 2018-2024).  Figure 8-1: Spatial distribution of 985 inconsistent points.

Parameter:	$Deg(j, i)_{RP}$:
Description:	$Deg(j, i)_{RP}$: Area converted from forest with canopy cover j to forest with canopy cover i during the Reference Period, in hectares per year. Equation 4.3.
Data unit:	Hectares
Source of data or description of the method for developing the data including the	Spatial level of data: National Sources of data: Sampling-based estimates and associated uncertainties were used to calculate the activity data. Forest cover annual maps were used as reference information to determine the canopy cover categories for each sampling point.

spatial level of the data (local, regional, national, international):	Methods: Annual activity data for degradation and carbon enhancement in permanent forest were derived from the systematic sampling procedure (7,697 Permanent Sampling Units) and Forest Cover (FC) annual maps. Activity data estimate was made by applying the good practices and procedures identified by Olofsson et al. (2014)¹⁵⁸, GFOI (2016)¹⁵⁹ and GFOI (2021)¹⁶⁰. The Dominican Republic MRV team prepared a Standard Operation Procedure for the sample-based REDD+ activity data estimation¹⁶¹. FC maps provide a more robust determination of Canopy Cover than high-resolution imagery interpretation. Therefore, forest cover and its probability were extracted from FC maps for each sampling point located in a permanent forest in the systematic grid to assign the canopy cover class 30-60%, 60-85%, and >85% for the later analysis of canopy cover change. One pixel was assigned to a canopy cover class if the probability of having a canopy cover above the threshold C was higher than 90%. Tree-canopy cover was estimated through an automatic learning algorithm based on a model f of remotely sensed variables X in any location i, $\hat{C}_i = f(X; \hat{\beta}) + \varepsilon$. $\hat{C}_i$ is the percentage of a pixel (i)'s area covered by trees; $\hat{\beta}$ is a set of empirically estimated parameters; ε is residual error or uncertainty; and X is a set of measurements of surface reflectance, derived indices (NDVI, NDWI, and MNDWI) and metadata describing acquisition and sensor characteristics (Sexton et al. 2013)¹⁶². This algorithm was applied to the stack of Landsat images available for each year, to prepare the Dominican Republic annual canopy cover wall-to-wall raster maps from 1984 to 2021, with 30*30 m resolution; each pixel has a canopy cover value and the probability estimate. Additionally, multiple high-resolution data sources such as Meta tree height data and NASA's GEDI data were combined to produce high-quality tree cover reference data. The process includes data collection, preprocessing, and standardization, resulting in a robust and comprehensive dataset. This integration addresses issues like uneven satellite observations, noise, and data gaps by employing temporal interpolation, noise-resistant algorithms, and data gap-filling techniques. These methods ensure a seamless time series for accurate forest monitoring in tree cover data production.

¹⁵⁸ Olofsson, P., Foody, G. M., Herold, M., Stehman, S. V., Woodcock, C. E., & Wulder, M. A. (2014). Good practices for estimating area and assessing accuracy of land change. *Remote Sensing of Environment*, 148, 42–57.

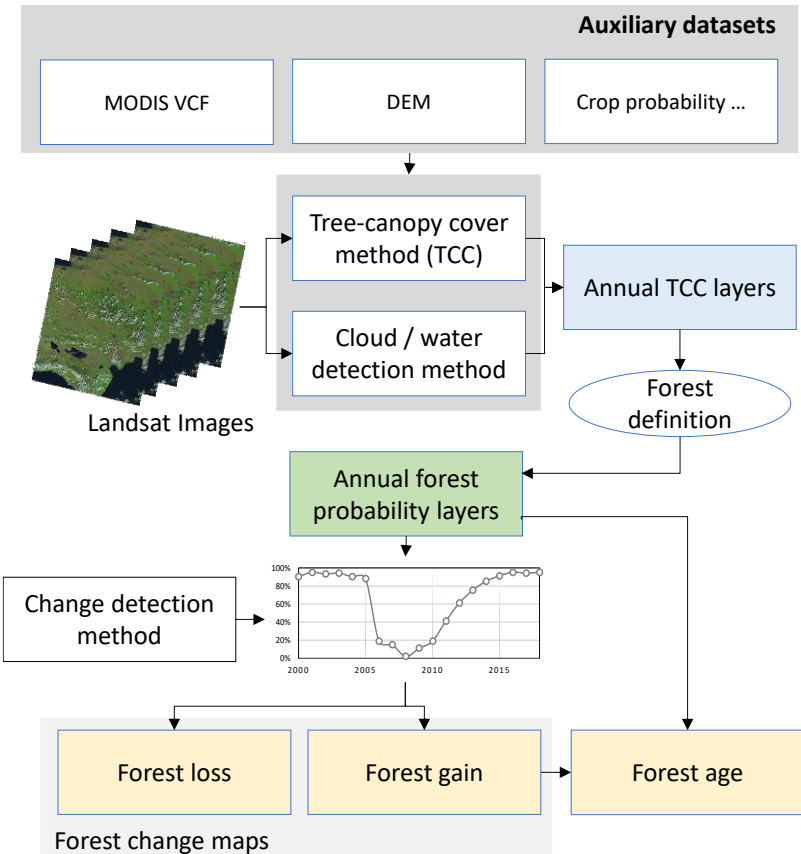
<https://doi.org/10.1016/j.rse.2014.02.015>

¹⁵⁹ GFOI. (2016). Integración de las observaciones por teledetección y terrestres para estimar las emisiones y absorciones de gases de efecto invernadero en los bosques. Métodos y orientación de la Iniciativa Mundial de Observación de los Bosques (Edición 2.). Roma: Organización de las Naciones Unidas para la Alimentación y la Agricultura.

¹⁶⁰ GFOI. (2021). Issues and good practices in sample-based area estimation.

¹⁶¹ MIMARENA, 2019. Revisión de la propuesta de Protocolo de Evaluación Visual multitemporal para la obtención de datos de referencia para la estimación de la incertidumbre de los datos de actividad para el proceso REDD+. Programa Regional REDD+. GIZ. 26 p. <https://app.box.com/s/17f9k83zf5s5gutwtkc7w8a0hex834x8>

¹⁶² Sexton, JO, X-P Song, M Feng, P Noojipady, A Anand, C Huang, D-H Kim, KM Collins, S Channan, C DiMiceli & JR Townshend. 2013a. Global, 30-m resolution continuous fields of tree cover: Landsat-based rescaling of MODIS continuous fields and lidar-based estimates of error. *International Journal of Digital Earth* 6: 427-448

	Further information on the preparation methods of canopy cover maps is detailed in Consultancy Report^{163, 164}.  Figure 8-2. Estimation of percent-tree cover as a standard normal distribution of cover (mean) and uncertainty (standard deviation) in each pixel (Sexton et al. 2015)¹⁶⁵.
Value applied:	More than 48 activity data were estimated for the annual emission of degradation and carbon enhancement in permanent forest. A summary of activity data values by forest type is shown in the following table. All values can be consulted in the Activity Data tool (TF-TF sheets)¹⁶⁶.

¹⁶³ terraPulse, 2018. Estimation of Activity Data on Deforestation, Forest Degradation and Enhancement of Forest Carbon Stocks of Dominican Republic using Annual Time Series Analysis of Landsat data. Technical Document. 12 p. <https://app.box.com/s/0i7wl8wss4l40mjl3299gfwp04i7djoz>

¹⁶⁴ terraPulse, 2025. DR tree cover methodology improvements. <https://app.box.com/s/c2tyvr6fdfflybyhnwn9ui3c28xglfan>

¹⁶⁵ Sexton, JO, P Noojipady, A Anand, X-P Song, C Huang, SM McMahon, M Feng, S Channan & JR Townshend. 2015. A model for the propagation of uncertainty from continuous estimates of tree cover to categorical forest cover and change. Remote Sensing of Environment 156: 418-425

¹⁶⁶ DatosDeActividad-PR.xlsx tool can be accessed at the following link: <https://app.box.com/s/3f82u0f27w0zbbx9g541cfmrufko98c6>

	Table 8-9: Canopy cover transition areas in permanent forest lands - 2006-2025																													
	Canopy cover transition in permanent forest lands		Area 2006-2015 (ha)																											
	Wet Broadleaf Forest	Enhancement	71,378																											
		Degradation	81,309																											
	Dry Broadleaf Forest	Enhancement	16,758																											
		Degradation	11,793																											
	Pine Forest	Enhancement	38,482																											
		Degradation	46,551																											
	Agricultural Tree Crops	Native forest	621																											
	Native forest	Agricultural Tree Crops	1,862																											
	Mangroves	Enhancement	-																											
		Degradation	4,965																											
QA/QC procedures applied	The same QA/QC procedures for deforestation and regeneration were applied to the estimate of degradation activity data. In this case, QA/QC procedures were focused on the interpretation of permanent forest areas.																													
Uncertainty associated with this parameter:	The canopy cover change category determination uncertainty for each sampling plot in the systematic grid was calculated at 6% for degradation and canopy cover recovery classes¹⁶⁷. This uncertainty was calculated by the bootstrap method, with 1000 simulations based on the bias estimate. The bias of the canopy cover in Forest Cover maps is 4.34%, with a standard deviation of 61.691. Likewise, the sampling error of estimating the areas of the canopy cover class change was also calculated (table below). Both uncertainties are included in the propagation error of the reference emission level. Table 8-10: Estimation error of canopy cover transition areas in permanent forest lands - 2006-2015 <table><tr><td colspan="2">Canopy cover transition in permanent forest lands</td><td>Area 2006-2015 (ha)</td></tr><tr><td rowspan="2">Wet Broadleaf Forest</td><td>Enhancement</td><td>18%</td></tr><tr><td>Degradation</td><td>17%</td></tr><tr><td rowspan="2">Dry Broadleaf Forest</td><td>Enhancement</td><td>39%</td></tr><tr><td>Degradation</td><td>48%</td></tr><tr><td rowspan="2">Pine Forest</td><td>Enhancement</td><td>25%</td></tr><tr><td>Degradation</td><td>23%</td></tr><tr><td>Agricultural Tree Crops</td><td>Native forest</td><td>1271%</td></tr><tr><td>Native forest</td><td>Agricultural Tree Crops</td><td>184%</td></tr><tr><td>Mangroves</td><td>Enhancement</td><td>NA</td></tr></table>			Canopy cover transition in permanent forest lands		Area 2006-2015 (ha)	Wet Broadleaf Forest	Enhancement	18%	Degradation	17%	Dry Broadleaf Forest	Enhancement	39%	Degradation	48%	Pine Forest	Enhancement	25%	Degradation	23%	Agricultural Tree Crops	Native forest	1271%	Native forest	Agricultural Tree Crops	184%	Mangroves	Enhancement	NA
Canopy cover transition in permanent forest lands		Area 2006-2015 (ha)																												
Wet Broadleaf Forest	Enhancement	18%																												
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Pine Forest	Enhancement	25%																												
	Degradation	23%																												
Agricultural Tree Crops	Native forest	1271%																												
Native forest	Agricultural Tree Crops	184%																												
Mangroves	Enhancement	NA																												

¹⁶⁷ The Excel tool used to estimate the canopy cover change category determination uncertainty by the bootstrap method can be accessed at the following link: <https://app.box.com/s/jdrs1h7quvi4ay1rauug1hg2wyyo2wvi>

	Degradation	81%	
Any comment:	There are no comments.		

Emission factors

Parameters:	$B_{Before,j}$; $B_{After,i}$; ΔC_{RB_i}
Description:	$B_{Before,j}$: Total biomass of forest type j before conversion, Equation 4. $B_{After,i}$: Total biomass of non-forest type i after conversion, Equation 4. ΔC_{RB_i}: Annual change in carbon stocks in biomass on land converted to forest i, Equation 6.2.
Data units:	$B_{Before,j}$; $B_{After,i}$ tons of C per ha ΔC_{RB_i} tons of C per ha per year
Source of data or description of the method for developing the data including the spatial level of the data (local, regional, national, international):	Spatial level of data: National Sources of data: Three sources of data were used to estimate total biomass in each of the land uses and the emission factors in the land-use change categories: a. The National Forest Inventory (NFI)¹⁶⁸, b Assessment of Biomass and Carbon Content in Non-Forest Cover in the Dominican Republic" (ISNB)¹⁶⁹, and c. Collection of information required for the technical correction of the Forest Reference Level of the Dominican Republic, 2006-2015 (Technical Correction Inventory)¹⁷⁰. Methods: The inventories were compiled using the same methodology, sampling unit, and nested plots in order to determine carbon density for each component recognized as a sink. Each carbon pool is estimated using the database at the tree level, taking the area of the sampling units into account. Allometric models used to estimate the above-ground biomass of the components recorded in these three inventories are listed above. Due to there being no specific allometric equations for broadleaf forests in the Dominican Republic, above-ground biomass (AGB) calculations are carried out using the allometric equations of Chave et al. (2014)¹⁷¹ in the three inventories. For pine trees, a local allometric equation is used. Allometric equations developed in Nicaragua and Costa Rica are used for coffee, cocoa, coconut, mango, avocado, and guava. The Cairns et al. (1997)¹⁷² equation is used to quantify below-ground biomass roots. In all inventories, the factor that is used to convert biomass to carbon content is the IPCC's default value (0.47).

¹⁶⁸ Ministry of the Environment. 2015. Inventario nacional forestal de la República Dominicana: Measure and assess forests in order to understand their diversity, composition, volume and biomass. Field Manual. Forest Monitoring Unit. REDD7CCAD-GIZ. Regional Project 48 pages

¹⁶⁹ Ministry of the Environment. 2017. Assessment of the biomass and carbon content in non-forest systems in the Dominican Republic. Field Manual. Forestry Monitoring Unit REDD+ Preparation Project. 54 pages

¹⁷⁰ Núñez, J.A.; Milla, F.; Navarrete, E. and Duarte, F. 2021. Collection of information required for the technical correction of the Forest Reference Level of the Dominican Republic, 2006-2015. LUKINVESTMENT SRL. Final Report.
<https://app.box.com/s/xfy8dkfil8c20gikcup3yf9846fifyt6>

¹⁷¹ Chave, J., Réjou-Méchain, M., Búrquez, A., Chidumayo, E., Colgan, M. S., Delitti, W. B. C., ... Vieilledent, G. (2014). Improved allometric models to estimate the aboveground biomass of tropical trees. *Global Change Biology*, 20(10), 3177–3190.
<https://doi.org/10.1111/gcb.12629>

¹⁷² Cairns, M. A., Brown, S., Helmer, E. H., Baumgardner, G. A., Cairns, M. A., Brown, S., ... Baumgardner, G. A. (1997). Root Biomass Allocation in the World's Upland Forests. *Oecologia*, 111(1), 1–11. <http://doi.org/10.1007/s004420050201>

With these three surveys a total of 573 plots¹⁷³ were collected, with estimations of the above-ground biomass (AGB), dead material (DM) and litter (L). Total biomass of forest types and non-forest types is equal to the sum of aboveground biomass (AGB_{before}) of trees with a diameter at breast high (dbh) higher than 2 cm, belowground biomass (BGB_{before}), litter (L_{before}) and death wood (DW_{before}) and it is defined for each forest type.

Table 8-11. Allometric models used to estimate the above-ground biomass of the components recorded in three biomass inventories (NFI, ISNB and Technical Correction Inventory).

Component	National Forestry Inventory (NFI) and Additional 32 biomass sampling plots	Evaluating the Biomass and Carbon Content in Non-Forest Cover (ISNB)
<i>Trees (DBH ≥ 5 cm) all species</i>	$AGB = (0.0673 * (GE * dap^2 * H_t)^{0.976})^{174}$ Pantropical	
<i>Trees of (2 > DBH < 5 cm) all species</i>	$\ln(AGB) = -9.37673 + 2.30119 \ln(dap) + 0.30297 \ln(H_t)^{175}$ Petén, Guatemala	
<i>Trees of P. occidentalis and P. caribaea. (>2 cm DBH)</i>	$\ln(AGB) = 1.17 + 2.119 * \ln(dap)^{176}$ Dominican Republic	Not applicable
<i>Coffee crop - Coffea arabica</i>	$\ln(AGB) = -2.39287 + 0.95285 * LN(dap) + 1.2693 * LN(H_t)^{177} (dap \text{ } 0,3 - 7,5 \text{ cm; HT } 0.31 - 3.40 \text{ m})$	$\log(AGB) = -1.181 + 1.991 * \log(d15))^{178}$ Matagalpa, Nicaragua
<i>Other crops: Cocoa - Theobroma cacao; Avocado - Persea americana; Guava - Psidium guajaba; Seville orange - Citrus aurantium, C. Sinensis; Mango - Mangifera indica.</i>	Not applicable	$\log(AGB) = -1.11 + 2.64 * \log(dap)^{179}$ Talamanca, Costa Rica
<i>Coconut - Cocos nucifera</i>	Not applicable	$\log(AGB) = 6.8414 * dap^{2.086} + 2.7340 * dap^{2.1837} + 2.7402 * dap^{1.9408}^{180}$ Costa Rica

TerraPulse developed annual forest cover maps based on the canopy cover and probability of change in forest cover from one year to another. This information offers long-term and consistent mapping and monitoring of forest cover. It allows the retrieval of historical reference scenarios from the satellite records and the detection of deforestation, degradation, and growth over time. Based on FC maps, a forest cover change analysis was

¹⁷³ A copy of the database used to estimate carbon densities can be obtained by following this link: <https://app.box.com/s/49fqku4tpmjo97bwm6px5zk988rlkutp>

¹⁷⁴ Chave, J., Réjou-Méchain, M., Búrquez, A., Chidumayo, E., Colgan, M. S., Delitti, W. B. C., ... Vieilledent, G. (2014). Improved allometric models to estimate the aboveground biomass of tropical trees. *Global Change Biology*, 20(10), 3177–3190. <http://doi.org/10.1111/gcb.12629>

¹⁷⁵ Arreaga, W. 2002. Almacenamiento de carbono en bosques con manejo forestal sostenible en la Reserva de Biosfera Maya, Petén, Guatemala. CATIE. Escuela de Postgrado. Tesis. 73p.

¹⁷⁶ Márquez (2000) citado por Brown (1996)

¹⁷⁷ Suarez (2002)

¹⁷⁸ Segura, M.; Kanninen, M.; Suárez, D. 2006. Allometric models for estimating aboveground biomass of shade trees and coffee bushes grown together. *Agroforestry Systems* 68(2): 143-150

¹⁷⁹ Andrade, H.J.; Segura, M.; Somarriba, E.; Villalobos, M. 2008. Valoración biofísica y financiera de la fijación de carbono por uso del suelo en fincas cacaoteras indígenas de Talamanca, Costa Rica.

¹⁸⁰ Ares, A., Boniche, J., Quesada, J., Yost, R., Molina, E. and Smyth, T. 2002. Estimacion De Biomasa Por Metodos Alometricos, Nutrientos Y Carbono En Plantaciones De Palmito En Costa Rica. *Agronomia Costarricense*, (26): 19-30.

prepared considering only pixels with > 90% probability of having a forest cover higher than 30%, 60% and 85%. Subsequently, forest degradation classes and secondary forest cohorts were mapped into four categories: i. Intact Forest (>85% crown cover), ii. Degraded forest (60-85% crown cover), iii. Highly degraded forest (30-60% crown cover) and iv. Secondary Forest.

All forest inventory plots in forest and tree-shaded crops were classified into these four categories based on terraPulse data. By forest type and degradation class, carbon content was directly derived from the biomass sampling plots database (average and 90%CI). The mean annual carbon change in secondary forest and tree-shaded crops (tC/ha/yr.) was estimated by dividing the carbon change between non-forest and secondary forest land use by the time elapsed to reach the maximum biomass of the secondary forest type determined from the forest cover change maps.

Value applied:

Table 8-12. Total forest biomass and non-forest land uses.

Land uses			Total Biomass (AGB+BGB+L+DW)		
			tC*ha ⁻¹	n	Error
Permanent Forest	Pine	Intact forest	69.79 ± 9.2	13	13%
		Degraded forest	62.42 ± 11.07	25	18%
		Very degraded forest	54.19 ± 15.46	7	29%
	Dry Broadleaf Forest	Intact forest	43.43 ± 7.85	6	18%
		Degraded forest	38.86 ± 10.52	7	32%
		Very degraded forest	34.28 ± 7	24	20%
	Wet Broadleaf Forest	Intact forest	83.02 ± 30.76	15	37%
		Degraded forest	64.93 ± 8.58	105	13%
		Very degraded forest	48.02 ± 10.94	62	23%
	Agricultural tree crops		64.93 ± 10.32	58	16%
Secondary Forest	Pine	4-22yr	37.97 ± 23.15	9	61%
		22-44yr	57.49 ± 14.33	14	25%
	Dry Broadleaf Forest	4-22yr	27.62 ± 7	19	25%
		22-44yr	30.2 ± 4.81	33	16%
	Wet Broadleaf Forest	4-22yr	25.04 ± 4.24	39	17%
		22-44yr	47.59 ± 8.69	59	18%
Non-forest lands	Wet broadleaf shrubland		23.02 ± 10.67	17	46%
	Dry broadleaf shrubland		18.54 ± 8.28	25	45%
	Coconut		35.1 ± 10.97	12	31%
	Grassland		9.68 ± 4.25	24	44%
	Annual crops		14.85 ± 0.27		7%
	Human settlements		9.68 ± 4.25	24	44%

573

Table 8-13. Annual change in carbon stocks in biomass on land converted to forest

Type of Forest			Average of C Removal (AGB+BGB+L+DW)	
			tg C/ha/yr	Error
Secondary Forest	Pine	8-22yr	1.29	49%
		22-44yr	1.09	22%
	Dry Broadleaf Forest	8-22yr	0.82	22%
		22-44yr	0.47	16%
	Wet Broadleaf Forest	4-22yr	0.70	17%
		22-44yr	0.86	17%
	Agricultural Tree Crops	4-22yr	1.75	22%
		22-44yr	1.13	17%

QA/QC procedures applied	NFI: The MMARN's Forest Monitoring Unit (UMF) developed a Field Manual¹⁸¹ and QA/QC¹⁸² procedures to reduce non-sampling errors. Since the beginning of the planning phase, courses on basic forest inventory techniques were given to 68 forestry technicians, half of them MMARN officials and the other half personnel who work outside the Ministry. Then, three-day training workshops were held on INF-RD Field Manual, with the participation of 97 technicians selected. Subsequently, the crews responsible for the field survey were designated and received rigorous training in the Field Manual and the Quality Control Manual. ISNB: The MMARN's Forest Monitoring Unit (UMF) developed a Field Manual¹⁸³ to reduce non-sampling errors. The crew members for the fieldwork received training for implementing inventory methodology and QA/QC procedures. The inventory methodology was explained, and field practices were carried out, including measurements and sampling exercises. During this training, the crew leaders were confirmed according to their abilities and capacities. Technical Correction Inventory: The quality control procedures during the implementation of the survey of the 32 additional plots have been made following the NFI’s Field Manual and QA/QC procedures prepared by the Ministry of Environment and Natural Resources. The Forest Monitoring Unit of the Ministry has formed a quality control brigade that applied the QA/QC procedures in these additional plots; Likewise, the MMARN QA/QC team and fieldwork crews were trained. Both teams worked together for two days, putting the inventory QA/QC protocol into practice.																																											
Uncertainty associated with this parameter:	The uncertainty associated with Total Forest biomass and non-forest land uses and Annual change in carbon stocks in biomass on land converted to forest are listed above in Tables 8-14 and 8-15. The Probability Distribution Function has been fitted for each Land-use carbon density class. Annual change in carbon stocks in biomass on land converted to the forest was calculated by combining uncertainties of land-use carbon densities before and after conversion, following IPCC approach 1 (addition and subtraction Eq 3.2). Table 8-14: Uncertainty of total forest biomass and non-forest land uses <table><tr><th colspan="2" rowspan="2">Land uses</th><th colspan="2">Total Biomass (AGB+BGB+L+DW)</th></tr><tr><th>tC*ha⁻¹</th><th>n</th></tr><tr><td rowspan="11">Permanent Forest</td><td rowspan="3">Pine</td><td>Intact forest</td><td>69.79 ± 9.2</td><td>13</td></tr><tr><td>Degraded forest</td><td>62.42 ± 11.07</td><td>25</td></tr><tr><td>Very degraded forest</td><td>54.19 ± 15.46</td><td>7</td></tr><tr><td rowspan="4">Dry Broadleaf Forest</td><td></td><td>43.43 ± 7.85</td><td>6</td></tr><tr><td>Intact forest</td><td></td><td></td></tr><tr><td>Degraded forest</td><td>38.86 ± 10.52</td><td>7</td></tr><tr><td>Very degraded forest</td><td>34.28 ± 7</td><td>24</td></tr><tr><td rowspan="4">Wet Broadleaf Forest</td><td></td><td>83.02 ± 30.76</td><td>15</td></tr><tr><td>Intact forest</td><td></td><td></td></tr><tr><td>Degraded forest</td><td>64.93 ± 8.58</td><td>105</td></tr><tr><td>Very degraded forest</td><td>48.02 ± 10.94</td><td>62</td></tr></table>	Land uses		Total Biomass (AGB+BGB+L+DW)		tC*ha ⁻¹	n	Permanent Forest	Pine	Intact forest	69.79 ± 9.2	13	Degraded forest	62.42 ± 11.07	25	Very degraded forest	54.19 ± 15.46	7	Dry Broadleaf Forest		43.43 ± 7.85	6	Intact forest			Degraded forest	38.86 ± 10.52	7	Very degraded forest	34.28 ± 7	24	Wet Broadleaf Forest		83.02 ± 30.76	15	Intact forest			Degraded forest	64.93 ± 8.58	105	Very degraded forest	48.02 ± 10.94	62
Land uses				Total Biomass (AGB+BGB+L+DW)																																								
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¹⁸¹ MMARN-GIZ. 2014. Manual de Campo del Inventario Nacional Forestal de la República Dominicana. Unidad de Monitoreo Forestal. Programa REDD CCAD GIZ. Santo Domingo, R.D. 61p. <https://app.box.com/s/e0jf1lb49wpbd2981f9iwwvo2gvbf0av>

¹⁸² MMARN-GIZ. 2018. Protocolo para el control de calidad del Inventario Nacional Forestal de Republica Dominicana 2018. Unidad de Monitoreo Forestal y Unidad de Gestión del Proyecto de Preparación REDD+ de la República Dominicana. 9p. <https://app.box.com/s/b9uoly8bpn5n4b8xivhtv2ob3z2gslub>

¹⁸³ MMARN, 2017. Manual de Campo: Evaluación del contenido de biomasa y carbono en sistemas de No Bosque en la Republica Dominicana. Unidad de Monitoreo Forestal. Proyecto de Preparación de REDD+. 54p. <https://app.box.com/s/056lacpm9rwyw2uh7a0aqz4a5yye9ol4>

	Agricultural tree crops				64.93 ± 10.32	58																								
	Secondary Forest	Pine	4-22yr	37.97 ± 23.15	9																									
			22-44yr	57.49 ± 14.33	14																									
		Dry Broadleaf Forest	4-22yr	27.62 ± 7	19																									
			22-44yr	30.2 ± 4.81	33																									
		Wet Broadleaf Forest	4-22yr	25.04 ± 4.24	39																									
			22-44yr	47.59 ± 8.69	59																									
	Non-forest lands	Wet broadleaf shrubland		23.02 ± 10.67	17																									
		Dry broadleaf shrubland		18.54 ± 8.28	25																									
		Coconut		35.1 ± 10.97	12																									
		Grassland		9.68 ± 4.25	24																									
		Annual crops		14.85 ± 0.27 ^[1]	-																									
		Human settlements		9.68 ± 4.25	24																									
	573																													
Table 8-15: Uncertainty of Annual change in carbon stocks in biomass on land converted to forest																														
<table><tr><th colspan="3">Type of Forest</th><th>Error</th></tr><tr><td rowspan="8">Secondary Forest</td><td rowspan="2">Pine</td><td>8-22yr</td><td>49%</td></tr><tr><td>22-44yr</td><td>22%</td></tr><tr><td rowspan="2">Dry Broadleaf Forest</td><td>8-22yr</td><td>22%</td></tr><tr><td>22-44yr</td><td>16%</td></tr><tr><td rowspan="2">Wet Broadleaf Forest</td><td>4-22yr</td><td>17%</td></tr><tr><td>22-44yr</td><td>17%</td></tr><tr><td rowspan="2">Agricultural Tree Crops</td><td>4-22yr</td><td>22%</td></tr><tr><td>22-44yr</td><td>17%</td></tr></table>						Type of Forest			Error	Secondary Forest	Pine	8-22yr	49%	22-44yr	22%	Dry Broadleaf Forest	8-22yr	22%	22-44yr	16%	Wet Broadleaf Forest	4-22yr	17%	22-44yr	17%	Agricultural Tree Crops	4-22yr	22%	22-44yr	17%
Type of Forest			Error																											
Secondary Forest	Pine	8-22yr	49%																											
		22-44yr	22%																											
	Dry Broadleaf Forest	8-22yr	22%																											
		22-44yr	16%																											
	Wet Broadleaf Forest	4-22yr	17%																											
		22-44yr	17%																											
	Agricultural Tree Crops	4-22yr	22%																											
		22-44yr	17%																											
Any comment:	Total biomass was recalculated for each canopy cover category (>85%, 60-85%, and 30-60%) into each permanent forest type and forest cohort. Also, the ΔC _{RB_i} values were calculated from biomass sampling plots to replace the original estimates sourced scientific literature.																													

Parameter:	$SOC_j, SOC_i, S(j, i)$
Description:	SOC_j : Soil Organic Carbon of forest type j before conversion Equation 5.2 SOC_i : Soil Organic Carbon of non-forest type i after conversion Equation 5.2 $S(j, i)$: Soil Organic Carbon Linear decreasing rate for transition j to i Equation 5.2
Data unit:	SOC_j and SOC_i tons of C per ha $S(j, i)$ tons of C per ha per year
Source of data or description of the method for developing	Spatial level of data: National

the data including the spatial level of the data (local, regional, national, international):	Sources of data: SOC Estimate for each forest type and non-forest classes is based on the Collection of information required for the technical correction of the Forest Reference Level of the Dominican Republic, 2006-2015 (Technical Correction Inventory) ¹⁸⁴ .				
	Methods: For the determination of the organic carbon balance of the soil after deforestation in the main types of soil, 260 plots were established in paired forest – non-forest plots. Sampling Plots were located ensuring at least five paired plots in each of the main transitions by soil type that add up to 80% of the area of change observed during the reference period (2006-15).				
	The following samples were obtained in each of these plots: a. SOC sample 0-15 cm, b. SOC sample 15-30 cm, c. Unaltered sample Bulk Density 0-15 cm and d. Unaltered samples' Bulk Density of 15 - 30 cm. 520 samples (altered samples) were taken for laboratory analysis to determine the SOC. Likewise, 520 unaltered samples were analyzed to determine the Bulk Density and the volumetric fraction of coarse fragments ¹⁸⁵ .				
	Organic Carbon Concentration (OCC) was estimated with the Walkley-Black colorimetric method under the NVN 575 standard. Bulk density (BD) was determined by relating the soil sample's dry weight (105°C) and the soil's volume.				
	The soil organic carbon stock was calculated as the product of organic carbon concentration (OCC), bulk density (BD), and the proportion of the volumetric fraction of coarse fragments (S). $SOC = OCC \times BD \times D(1 - S)$. OCC is in $g \times 100\ g^{-1}$, BD is in $g \times cm^{-3}$, D is the thickness of the layer (30 cm) and S is in $g \times g^{-1}$.				
	The Soil Organic Carbon Linear decreasing rate was calculated based on the estimate of SOC before and after conversion with Equation 2.25 from the 2006 IPCC Guidelines, Volume 4, Chapter 2. Average SOC before and after conversion was estimated by forest types. The determination of the year of land-use conversion in the SOC sampling plot is based on an analysis of time series of high-resolution satellite images and Landsat imagery repositories available on the Google Earth platform. The average SOC after conversion includes grasslands, annual crops, and shrublands. Only samples with a SOC decrease after conversion was considered (64 samples) ¹⁸⁶ .				
Value applied:	Table 8-16: Average SOC before and after conversion and SOC linear decreasing rate by forest types				
	Forest type	Soil Organic Carbon by forest type before conversion $tC*ha^{-1}$	Soil Organic Carbon by forest type after conversion $tC*ha^{-1}$	Soil Organic Carbon Linear decreasing rate $tC*ha^{-1}*yr^{-1}$	Number of sampling plots
	Wet Broadleaf Forest	23.10	11.31	0.48	34
	Dry Broadleaf Forest	34.37	22.45	0.67	15
	Pine Forest	29.26	12.02	1.18	10

¹⁸⁴. Núñez, J.A.; Milla, F.; Navarrete, E. and Duarte, F. 2021. Collection of information required for the technical correction of the Forest Reference Level of the Dominican Republic, 2006-2015. LUKINVESTMENT SRL. Final Report.

<https://app.box.com/s/xfy8dkfil8c20gikcup3yf9846fifyt6>

¹⁸⁵ A copy of the original database of SOC before and after conversion can be accessed at the following link: <https://app.box.com/s/a2ic2wqvrqyg36d3633poe8ziv1zdj8s>

¹⁸⁶ A copy of the final database used to estimate average SOC before and after conversion can be accessed at the following link: <https://app.box.com/s/07poveih5s7ifxjcrv7ciaqu20weq03>

	<table><tr><td>Agricultural Tree Crops</td><td>24.49</td><td>10.85</td><td>0.45</td><td>5</td></tr></table> Values for Wet Broadleaf Forest were used for Mangrove transitions.	Agricultural Tree Crops	24.49	10.85	0.45	5															
Agricultural Tree Crops	24.49	10.85	0.45	5																	
QA/QC procedures applied	The QA/QC procedure applied for the collection of SOC samples includes the following: a. Field check that the sampling site corresponds to the type of transition to be sampled. b. A field manual was prepared and implemented to collect 200 g soil samples at a depth of 0 to 15 cm and from 15 to 30 cm deep, as well as for the bulk density sample. c. All samples were labeled and stored. For further detail on QA/QC procedures, see section 3.2 of the consultancy report of the Technical Correction Inventory¹⁸⁷.																				
Uncertainty associated with this parameter:	Estimation error of SOC linear decreasing was calculated combining uncertainties of average SOC before and after conversion, following IPCC approach 1 (addition and subtraction Eq 3.2). Table 8-17: Estimation error of Average SOC before and after conversion and SOC linear decreasing rate by forest types <table><tr><th>Forest type</th><th>Estimation error of Soil Organic Carbon by forest type before conversion</th><th>Estimation error of Soil Organic Carbon by forest type after conversion</th><th>Estimation error of Soil Organic Carbon Linear decreasing rate</th></tr><tr><td>Wet Broadleaf Forest</td><td>28%</td><td>30%</td><td>21%</td></tr><tr><td>Dry Broadleaf Forest</td><td>25%</td><td>28%</td><td>19%</td></tr><tr><td>Pine Forest</td><td>62%</td><td>34%</td><td>45%</td></tr><tr><td>Agricultural Tree Crops</td><td>73%</td><td>46%</td><td>52%</td></tr></table>	Forest type	Estimation error of Soil Organic Carbon by forest type before conversion	Estimation error of Soil Organic Carbon by forest type after conversion	Estimation error of Soil Organic Carbon Linear decreasing rate	Wet Broadleaf Forest	28%	30%	21%	Dry Broadleaf Forest	25%	28%	19%	Pine Forest	62%	34%	45%	Agricultural Tree Crops	73%	46%	52%
Forest type	Estimation error of Soil Organic Carbon by forest type before conversion	Estimation error of Soil Organic Carbon by forest type after conversion	Estimation error of Soil Organic Carbon Linear decreasing rate																		
Wet Broadleaf Forest	28%	30%	21%																		
Dry Broadleaf Forest	25%	28%	19%																		
Pine Forest	62%	34%	45%																		
Agricultural Tree Crops	73%	46%	52%																		
Any comment:	There are no comments.																				

8.4 Estimated Reference Level

ER Program Reference level

Table A4-8-18: Technical corrected ER Program Reference level

Crediting Period year <i>t</i>	Average annual historical emissions from deforestation over the Reference Period (tCO _{2-e} /yr)	Average annual historical emissions from forest degradation over the Reference Period (tCO _{2-e} /yr)	Average annual historical removals by sinks over the	Adjustment, if applicable (tCO _{2-e} /yr)	Reference level (tCO _{2-e} /yr)

¹⁸⁷. Núñez, J.A.; Milla, F.; Navarrete, E. and Duarte, F. 2021. Collection of information required for the technical correction of the Forest Reference Level of the Dominican Republic, 2006-2015. LUKINVESTMENT SRL. Final Report.
<https://app.box.com/s/xfv8dkfil8c20gikcup3yf9846fifyt6>

			Reference Period (tCO ₂ - e/yr)		
2021	2,703,708	745,946	-2,435,203	NA	1,014,451
2022	2,703,708	745,946	-2,435,203	NA	1,014,451
2023	2,703,708	745,946	-2,435,203	NA	1,014,451
2024	2,703,708	745,946	-2,435,203	NA	1,014,451
<i>Total</i>	10,814,832	2,983,783	-9,740,812	NA	4,057,803

Calculation of the average annual historical emissions over the Reference Period

The following table describes the set of tools developed by the Dominican Republic to estimate emissions and removal from deforestation, degradation, and forest regeneration. Also is provided a step-by-step description of the monitoring parameters used to establish the Reference Level and estimate Emissions and Emissions reductions during the Monitoring Period for the Carbon Pools and greenhouse gases selected in the ER-PD.

Table A4-8-19: Step-by-step description of the monitoring parameter and data integration tools to establish the Reference Level and estimate Emissions and Emissions reductions during the Monitoring Period for the Carbon Pools and greenhouse gases selected in the ER-PD.

Monitoring parameters and Data Integration tools	Step	Description of the measurement and monitoring approach
Monitoring parameters	Step 0	The input dataset used to estimate net emissions for the reference and monitoring period include the following databases: • Forest and Non-Forest SOC sampling plots database¹⁸⁸ • Visual interpretation of hi-res imagery¹⁸⁹ • Forest biomass sampling plots database (National Forest Inventory (NFI)¹⁹⁰ and Additional sampling plots¹⁹¹) • Non-Forest biomass sampling plots database¹⁹² • Forest cover maps time series maps 1984-2021¹⁹³.
	Step 1	The visual interpretation of hi-res imagery to determine land-use change used to estimate activity data for the Reference Period is included in the

¹⁸⁸ The original database of soil organic carbon sampling plot data used to estimate the SOC linear decreasing rate estimate can be accessed at this link: <https://app.box.com/s/tfu8h53kx7wtg7lyll5wff153h9q8itu>

¹⁸⁹ The original database of visual interpretation of hi-res imagery to determine land-use change activity data during the reference and monitoring periods can be accessed at this link: <https://app.box.com/s/tvfjhxaa5o9vdkpak8cbivwjccce5be>

¹⁹⁰ The original NFI database used to estimate carbon densities can be accessed at this link: <https://app.box.com/s/f6b71lxsdq7w2h1xwhh8ln3m0z6b95nl>

¹⁹¹ The original database of the 32 additional sampling plots used to estimate carbon densities can be accessed at this link: <https://app.box.com/s/g6dq2i6yf5cdl2tqkye23m8srwkw6su>

¹⁹² The original Non-Forest Biomass Inventory database used to estimate carbon densities can be accessed at this link: <https://app.box.com/s/g6dq2i6yf5cdl2tqkye23m8srwkw6su>

¹⁹³ The time series of forest cover maps used to stratify the forest biomass sampling plot according to forest age and category of canopy cover can be accessed at this link: <https://app.box.com/s/yxb2jxnt3cf3r67gouyd26n9n7e67qddq> and <https://app.box.com/s/bkfw90jc4y58s8htpkxw8s287n04q5m>

Monitoring parameters and Data Integration tools	Step	Description of the measurement and monitoring approach
DatosDeActividad_PR.xlsx and DatosDeActividad_PM.xlsx		"DatosReferencia" sheet. This dataset is imported in CSV format from the database of interpreted points in Collect Earth Desktop.
	Step 2	Land-use change, degradation, deforestation, and regeneration analyses are included in the "DatosReferencia" sheet. These analyses are based on classification tables included in the "TablasClasification" sheet. Based on land-use change analyses, the calculation of deforestation, regeneration, and forest degradation is made in two activity data tools, one for Reference Period (PR) and another for the Monitoring Periods (PM). The activity data tool for PR includes the estimates for 1984-2000, 2001-2005, 2006-2015, and 2016-2018. PM tool includes 2016-2018, 2019-2021, 2022-2023, and 2024. Both tools are organized as follows: a. Deforestation: "TF-OT" sheet. b. Forest degradation: "TF-TF" sheet. c. Regeneration: "OT-TF" sheet. d. SOC change associated with deforestation: "SOC TF-OT" sheet.
COS_EF.xlsx	Step 3	Soil Organic Carbon linear decreasing rate estimate is in the "SOCEF" sheet of the SOC emission factor tool.
CarbonDensities_Tool.xlsx	Step 4	The estimate of different emission factors for the secondary and permanent forest is made in the "CarbonDensities" sheet. The calculation is based on the datasets included in the "Non-Forest Biomass Plots Data" and "Forest Biomass Plots Data" sheets.
"Deforestacion y Degradacion" Sheet in CalculoReduccionEmisionesRD.xlsx	Step 5	The estimate of emissions from deforestation and degradation is made in the "Deforestacion y Degradacion" sheet. The calculation is based on "TF-OT" and "TF-TF" sheet estimates made in the activity data tools (DatosDeActividad_PR.xlsx and DatosDeActividad_PM.xlsx) and "CarbonDensities" sheet in CarbonDensities_Tools.xlsx.
EmisionesHeredadasSOC Sheet in CalculoReduccionEmisionesRD.xlsx	Step 6	Estimate of change in the soil organic carbon pool in mineral soils associated with deforestation is based on the "SOC TF-OT" sheet calculation made in the activity data tools (DatosDeActividad_PR.xlsx and DatosDeActividad_PM.xlsx) and Soil Organic Carbon linear decreasing rate estimate in the "SOCEF" sheet of the SOC emission factor tool (COS_EF.xlsx).
"RemocionesHeredadas" Sheet in CalculoReduccionEmisionesRD.xlsx	Step 7	The estimate of carbon removal associated with natural and artificial regeneration is made in the "Remociones Heredadas" sheet. The calculation is based on the "OT-TF" sheet calculation made in the activity data tool (DatosDeActividad.xlsx) and Removal Factors in the "CarbonDensities" sheet of the Emission factor tool (FREL-RD_FOREST-CarbonDensities_Tool.xlsx).
CalculoReduccionEmisionesRD.xlsx	Step 8	The estimate of net emissions from deforestation, degradation and forest carbon stocks enhancement over the Reference and Monitoring Periods is made in "Calculo RE" based on "Deforestacion y Degradacion" , "EmisionesHeredadas" y "RemocionesHeredadas" sheets.
	Step 9	Emission reduction is also calculated in "Calculo RE" sheet. It is essential to clarify that a Pro-rata factor was applied to estimate the volume of ERs for the Reporting Period. The pro-rata factor corresponds to the fraction of the year 2021 between March 1 st and December 31 st .

Monitoring parameters and Data Integration tools	Step	Description of the measurement and monitoring approach
EstimacionIncertidumbre.xlsx	Step 10	A results summary of the uncertainty estimates, and sensitivity analysis is in the “ Calculo RE ” sheet of EstimacionIncertidumbre.xlsx. This tool is based on the CalculoReduccionEmisiones.xlsx tool. This excel file was modified to calculate 10,000 iterations for the Emission Reduction estimate. The dataset with iterations for the different REDD+ activities considered in Emission calculation is included in the “ Iteraciones ” sheet. Emission Reduction Uncertainty consider the pro-rata factor application.

Reference Level (RL_t)

Calculation of the average annual historical emissions over the Reference Period (RL_t) is estimated as the net change in total biomass carbon stocks and organic carbon pool in mineral soils during the reference period.

$$RL_t = \frac{\Delta C_{BRP} + \Delta C_{DegBRP} + \sum_t^{RP} \Delta C_{RBt} + \sum_t^{RP} \Delta C_{Mineralt}}{RP}$$

Equation 16

Where:

ΔC_{BRP}	=	Change in total biomass carbon stocks in forest lands converted to other land-use category during the Reference period, in tC;
ΔC_{DegBRP}	=	Change in total biomass carbon stocks in forest lands that remains as forest during the reference period, in tC;
$\Delta C_{Mineralt}$	=	Annual change in the soil organic carbon pool in mineral soils associated with deforestation; tC*year ⁻¹ ;
ΔC_{RBt}	=	Annual change in total biomass carbon stocks in non-forest lands converted to forest lands categories at year t; tC*year ⁻¹ ;
RP	=	Reference period; years.

8.5 Upward or downward adjustments to the average annual historical emissions over the Reference Period (if applicable)

Explanation and justification of proposed upward or downward adjustment to the average annual historical emissions over the Reference Period

Not applicable.

Quantification of the proposed upward or downward adjustment to the average annual historical emissions over the Reference Period

Not applicable.

8.6 Relation between the Reference Level, the development of a FREL/FRL for the UNFCCC and the country's existing or emerging greenhouse gas inventory

In accordance with the Dominican Republic Third National Communication for the UNFCCC, in the AFOLU sector the greenhouse gas emissions resulting from the following categories are considered: domestic livestock: enteric

fermentation and manure management; rice cultivation: flooded rice fields; required burning of savannah; field burning of agricultural residues; agricultural land; forest land; and biomass burning on forest land.

Forest land includes all land with mature vegetation with the thresholds used for the definition forest land. The NGGI considers emissions and absorptions resulting from changes in biomass, dead organic material and in the organic carbon in forest land soil. In order to calculate the annual increase in carbon in above-ground biomass (tC year⁻¹), the forested area in hectares (ha) is used for the emission factors presented in the 2006 IPCC Guidelines corresponding to each forest type and the vegetation it contains. The annual carbon stocks increase in biomass deriving from forest land is estimated for tropical rain forest, montane systems and dry forest. As regards forest emissions, only emissions resulting from the burning of biomass on forest land is considered

In accordance with the above, the NGGI does not take emissions associated with deforestation or forest degradation into account. In addition, the increase in biomass both for forests that remains as forest and for secondary forests is estimated. Emissions from deforestation (forest land converted to crops and pasture) and from degradation on land that remains as forest land are included with this method. Absorptions are estimated separately on land the remains as forest land and on land converted to forest land.

The country has just presented its Third Communication to the UNFCCC¹⁹⁴, in which forest emissions are reported using TIER 1 methodology (Ministry of Environment and Natural Resources, 2018)¹⁹⁵. Through a GEF project, the Ministry is currently developing the Dominican Republic First Biennial Update Report (fBUR)¹⁹⁶. The development of the fBUR does not envisage the inclusion of the FREL of the Emissions Reduction Programme¹⁹⁷. The methodologies harmonisation process requires political approval for transition from Tier 1 to Tier 2 of the FREL of the ERP. To ensure consistency between the ER Programme FREL and the INGEI, the activity data and emission factors used in the RL will be consistently applied with those used to estimate the net INGEI.

Finally, in 2020 the Government will present the FREL/FRL to the UNFCCC. To ensure consistency between the ER Programme FREL and the FREL/FRL, the latter will be developed based on the information set out in the ERPD.

9 APPROACH FOR MEASUREMENT, MONITORING AND REPORTING

The Measurement, Monitoring and Reporting (MMR) system of the ERP has three primary functions:

- Monitoring of the emissions reduction achieved by the ERP
- Monitoring of the multiple benefits: the monitoring indicators are i. Impact of the ERP on the conservation of biodiversity in endangered plants, ii. Impact of the ERP on the water resource and iii. Impact of the Green Jobs Programme
- Monitoring of safeguards: i. Natural habitats, ii. Forest, iii. Involuntary resettlement, iii. Natural and cultural resources and iv. Local communities

¹⁹⁴ United Nations Framework Convention on Climate Change

¹⁹⁵ Ministry of Environment and Natural Resources. (2018). Dominican Republic Third National Communication to the United Nations Framework Convention on Climate Change. 2014-2017.

¹⁹⁶ Dominican Republic First Biennial Update Report (fBUR).

<https://www.thegef.org/project/dominican-republic-first-biennial-update-report-fbur>

¹⁹⁷ Personal communication, Rafael Beriguete, officer in charge of the fBUR at the Dominican Republic Ministry of Environment and Natural Resources.

9.1 Measurement, monitoring and reporting approach for estimating emissions occurring under the ER Program within the Accounting Area

Figure A4-9.1 shows a line diagram with relevant monitoring points, parameters, and data integration until reporting.

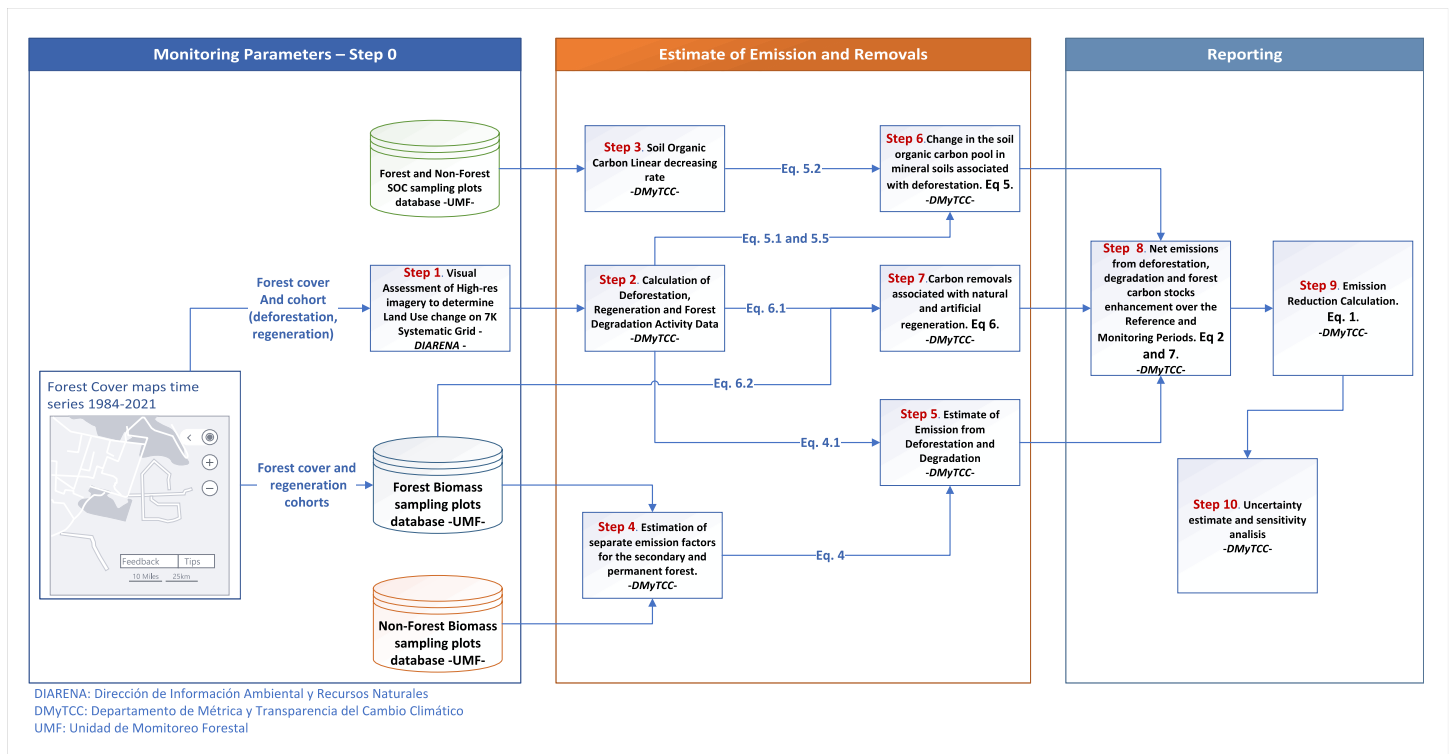


Figure A4-9-1: Line diagram with monitoring parameters, equations, and the integration of data until reporting.

Calculation steps

Emission reduction calculation ($ER_{ERP,t}$)

$$ER_{ERP,t} = (RL_t - GHG_t) \times \frac{44}{12} \quad \text{Equation 17}$$

Where:

- $ER_{ERP,t}$ = Emission Reductions under the ER Program in year t; $tCO_2e \cdot year^{-1}$.
- RL_t = Net emissions of the RL from over the Reference Period; $tCO_2e \cdot year^{-1}$. This is sourced from Annex 4 to the ER Monitoring Report and equations are provided below.
- GHG_t = Monitored net emissions at year t; $tCO_2e \cdot year^{-1}$;
- $\frac{44}{12}$ = Conversion of C to CO_2

Monitored emissions (GHG_t)

Annual gross GHG emissions over the monitoring period in the Accounting Area (GHG_t) are estimated as the in total biomass carbon stocks and organic carbon pool in mineral soils during the monitoring period.

$$GHG_t = \frac{\Delta C_{BMP} + \Delta C_{DegBMP} + \sum_t^{MP} \Delta C_{RBt} + \sum_t^{MP} \Delta C_{Mineral_t}}{T} \quad \text{Equation 18}$$

Where:

- ΔC_{BMP} = Change in total biomass carbon stocks in forest lands converted to other land-use category during the monitoring period, in tC;
- ΔC_{DegBMP} = Change in total biomass carbon stocks in forest lands that remains as forest during the monitoring period, in tC;
- $\Delta C_{Mineral_t}$ = Annual change in the soil organic carbon pool in mineral soils associated with deforestation; tC*year⁻¹;
- ΔC_{RBt} = Annual change in total biomass carbon stocks in non-forest lands converted to forest lands categories at year t; tC*year⁻¹;
- T = Number of years during the monitoring period; dimensionless.

Change in total biomass carbon stocks in forest lands converted to other land-use (Deforestation):

Following the 2006 IPCC Guidelines, the annual change in total biomass carbon stocks forest land converted to other land-use category (ΔC_B) is estimated through **Equation 3 4** above. Making the same assumptions as described above for the RL the change of biomass carbon stocks could be expressed with the following equation:

$$\Delta C_{BMP} = \sum_{j,i} (B_{Before,j} - B_{After,i}) \times A(j,i)_{MP} \quad \text{Equation 19}$$

Where:

- $A(j,i)_{MP}$ Area converted from forest type j to non-forest type i during the Monitoring Period, in hectares per year.

$$A(j,i)_{MP} = \frac{P(j,i)_{MP}}{N} \times AA \quad \text{Equation 9.1}$$

$P(j,i)_{MP}$: Number of points converted from forest type j to non-forest type I during the Monitoring Period, dimensionless.

N: Total of sampling point in the Systematic Grid used for the visual assessment of High-res imagery to estimate activity data.

AA: Emission Reduction Program accounting area (in hectares)

In this case, ninety-six forest land conversions are possible resulted from the combinations of the following forest and non-forest types:

Forest type	Non-forest types
Four forest types (forest present before 1984): - Wet broadleaf forest. - Dry broadleaf forest. - Pine forest, and - Mangrove forest. Three canopy cover categories: - Intact forest (>85%). - Degraded forest (60-85%), and	Five types of non-forest land are considered: - Cropland. - Grassland. - Settlement; and - Woody vegetation.

• Very degraded forest (30-60%) Two cohorts of secondary forest • Cohort 4-21 years, and • Cohort 22-44 years.	

$B_{Before,j}$ Total biomass of forest type j before conversion/transition, in tons of C per ha. This is equal to the sum of aboveground biomass (AGB_{before}) of trees with a diameter at breast high (dbh) higher than 2 cm, belowground biomass (BGB_{before}), litter (L_{before}) and death wood (DW_{before}) and it is defined for each forest type.

$B_{After,i}$ Total biomass of non-forest type i after conversion, in tons C per ha. This is equal to the sum of aboveground biomass (AGB_{after}) of trees with a diameter at breast high (dbh) higher than 2 cm, belowground biomass (BGB_{after}), litter (L_{after}) and death wood (DW_{after}) and it is defined for each of the five non-forest IPCC Land Use categories.

Change in the soil organic carbon pool in mineral soils associated with deforestation:

The matrices and **Equations 5, 5.1, 5.2, 5.3, 5.4, and 5.5** used for determining the annual change in the soil organic pool associated with deforestation in the reference period will be also used for the monitoring period.

Carbon removals associated with natural and artificial regeneration, including plantations (Enhancement of forest carbon stocks):

The matrices and **Equations 6, 6.1, and 6.2** used to calculate annual carbon removals associated with regeneration in the reference period will be also used for the monitoring period.

Change in total biomass carbon stocks in forest lands that remains as forest (Forest Degradation):

Following the recommendations set in chapter 2.2.1 of the GFOI Methods Guidance Document, for applying IPCC Guidelines and guidance in the context of REDD+, the equation 2.16 of the 2006 IPCC GL can be simplified by assuming that the change in total biomass carbon stocks (ΔC_B) is equal to the initial change in carbon stocks ($\Delta C_{CONVERSION}$). Thus, the change of biomass carbon stocks in forest lands that remains as forest during the Monitoring Period was also calculated with the **Equation 4**:

$$\Delta C_{DegB_{RP}} = \sum_{j,i} (B_{Before,j} - B_{After,i}) \times Deg(j,i)_{MP} \quad \text{Equation 9.2}$$

Where:

$\Delta C_{DegB_{MP}}$ Change in total biomass carbon stocks in forest lands that remains as forest during the Monitoring period, in tC.

$Deg(j,i)_{MP}$ Area converted from forest with canopy cover j to forest with canopy cover i during the Monitoring Period, in hectares per year.

$$Deg(j,i)_{MP} = \frac{P(j,i)_{MP}}{N} \times AA \quad \text{Equation 9.3}$$

$P(j,i)_{RP}$: Number of points converted from forest with canopy cover j to forest with canopy cover i during the Monitoring Period, dimensionless.

N : Total of sampling point in the Systematic Grid used for the visual assessment of High-res imagery to estimate activity data.

AA : Emission Reduction Program accounting area (in hectares)

In this case, twenty-eight canopy cover transitions forest are possible resulted from the combinations of the following forest and canopy cover categories:

Forest type	Canopy cover category
Four forest types (forest present before 1984): • Wet broadleaf forest. • Dry broadleaf forest. • Pine forest, and • Mangrove forest. • Agricultural tree-shaded crops	Three canopy cover categories: • Intact forest (>85%). • Degraded forest (60-85%), and • Very degraded forest (30-60%) • Agricultural tree-shaded crops

$B_{\text{Before},j}$

Total biomass of forest type j before transition, in tons of C per ha. This is equal to the sum of aboveground biomass (AGB_{before}) of trees with a diameter at breast high (dbh) higher than 2 cm, belowground biomass (BGB_{before}), litter (L_{before}) and death wood (DW_{before}) and it is defined for each forest type.

$B_{\text{After},i}$

Total biomass of forest type i after transition, in tons of C per ha. This is equal to the sum of aboveground biomass (AGB_{after}) of trees with a diameter at breast high (dbh) higher than 2 cm, belowground biomass (BGB_{after}), litter (L_{after}) and death wood (DW_{after}) and it is defined for each forest type.

Parameters to be monitored

Parameter:	$A(j, i)_{MP}$; $A(j, i)_{LU}$, $A(j)$ and $R(j, i)_{LU}$																		
Description:	$A(j, i)_{MP}$: Area converted from forest type j to non-forest type i during the Reference Period, in hectares. Equation 9.1. $A(j, i)_{LU}$: Area converted from forest type j to non-forest type i of the Land Unit LU, in hectares. Equation 5.1. $A(j)$: Area of Stable Forest type j, in hectares Equation 5.5 $R(j, i)_{LU}$: Area converted from non-forest type j to forest type i of the Land Unit LU, in hectares. Equation 6.1.																		
Data unit:	Hectares																		
Value monitored during this Monitoring / Reporting Period:	More than 400 activity data are estimated for the calculation of annual net emissions from deforestation and forest regeneration: Deforestation (96 land conversion types), SOC change transitions (160 Land Units), Permanent Forest types (5 types), and Forest regeneration (160 transitions). A summary of activity data values by forest type is shown in the below tables. Table 9-1: Deforested and Permanent Forest areas for the Reference Period 2006-2015. <table><tr><th>Forest type</th><th>Deforested Area (ha) (TF-OT) Total Biomass emissions</th><th>Permanent forest (ha) (TF-TF)</th></tr><tr><td>Wet Broadleaf Forest</td><td></td><td></td></tr><tr><td>Dry Broadleaf Forest</td><td></td><td></td></tr><tr><td>Pine Forest</td><td></td><td></td></tr><tr><td>Agricultural Tree Crops</td><td></td><td></td></tr><tr><td>Mangroves</td><td></td><td></td></tr></table>	Forest type	Deforested Area (ha) (TF-OT) Total Biomass emissions	Permanent forest (ha) (TF-TF)	Wet Broadleaf Forest			Dry Broadleaf Forest			Pine Forest			Agricultural Tree Crops			Mangroves		
Forest type	Deforested Area (ha) (TF-OT) Total Biomass emissions	Permanent forest (ha) (TF-TF)																	
Wet Broadleaf Forest																			
Dry Broadleaf Forest																			
Pine Forest																			
Agricultural Tree Crops																			
Mangroves																			

	Table 9-2: Deforested Area (ha) (TF-OT) for SOC inherited emissions calculation*.				
	Forest type	2016-2018	2019-2021	2022-2023	2024
	Wet Broadleaf Forest				
	Dry Broadleaf Forest				
	Pine Forest				
	Agricultural Tree Crops				
	Mangroves				
	<i>*Activity data used to estimate SOC emissions does not include secondary forest loss area</i>				
	Table 9-3: Forest Gain 2006-2015 (ha) (OT-TF) for inherited removals calculation.				
	Forest type	2016-2018	2019-2021	2022-2023	2024
	Wet Broadleaf Forest				
	Dry Broadleaf Forest				
	Pine Forest				
	Agricultural Tree Crops				
	Mangroves				
Source of data and description of measurement /calculation methods and procedures applied:	Spatial level of data: National Sources of data: Sampling-based estimates and associated uncertainties were used to calculate the activity data. Annual activity data for deforestation and forest regeneration were derived from the systematic sampling procedure (7,697 Permanent Sampling Units). Methods: Activity data estimate was made by applying the good practices and procedures identified by Olofsson et al. (2014)¹⁹⁸, GFOI (2016)¹⁹⁹ and GFOI (2021)²⁰⁰. The Dominican Republic MRV team prepared a Standard Operation Procedure for the sample-based REDD+ activity data estimation²⁰¹. The same methods used to generate activity data for the reference level are used for the monitoring period, including the systematic 2.5 x 2.5 km grid, and the use of Permanent Sample Units (PSU) of one hectare (100 x 100 meters) with a single evaluation point corresponding to the plot centroid. PSUs are visually interpreted through time to ensure the temporal tracking of land use. For the monitoring periods, land-use assessments are made for 2018, 2021, 2023, and 2024. The 2018 assessment has the same land-use interpretation collected in the time series analysis for the reference level estimation				

¹⁹⁸ Olofsson, P., Foody, G. M., Herold, M., Stehman, S. V., Woodcock, C. E., & Wulder, M. A. (2014). Good practices for estimating area and assessing accuracy of land change. *Remote Sensing of Environment*, 148, 42–57.

<https://doi.org/10.1016/j.rse.2014.02.015>

¹⁹⁹ GFOI. (2016). Integración de las observaciones por teledetección y terrestres para estimar las emisiones y absorciones de gases de efecto invernadero en los bosques. Métodos y orientación de la Iniciativa Mundial de Observación de los Bosques (Edición 2.). Roma: Organización de las Naciones Unidas para la Alimentación y la Agricultura.

²⁰⁰ GFOI. (2021). Issues and good practices in sample-based area estimation.

²⁰¹ MIMARENA, 2019. Revisión de la propuesta de Protocolo de Evaluación Visual multitemporal para la obtención de datos de referencia para la estimación de la incertidumbre de los datos de actividad para el proceso REDD+. Programa Regional REDD+. GIZ. 26 p. <https://app.box.com/s/l7f9k83zf5ssgutwtkc7w8a0hex834x8>

	(2000-2018). The Collect Earth Desktop (CED) ²⁰² tool is used to perform the Multitemporal Visual Interpretation (MVI) during the monitoring period.
QA/QC procedures applied:	The photo interpretation of the reference points will be carried out by DIARENA specialists with extensive field experience. The same quality control and assurance procedures will be applied for the Monitoring Periods: i. Control of photo interpretation bias, ii. Control of variability between photo interpreters, iii. Data consistency control. These controls will be implemented by applying the protocol for the reference classification of spatial assessment units (SOP for the sample-based REDD+ activity data estimation)²⁰³, discussed and agreed in advance with the personnel of DIARENA and the Forest Monitoring Unit. During the photo-interpretation process, a specialist with extensive experience will supervise the work of the analysts. The supervisor will review weekly deliveries of photo-interpreted points. This review will be focused on identifying and correcting errors and checking transition consistency and the years of change registered.
Uncertainty for this parameter:	The sources of uncertainty in the visual assessment of the systematic grid are associated with: i. Sample size (density of the systematic grid): original the land-use change estimate was based on 1,942 points. It was made a sampling intensification; now a systematic grid of 7,697 sampling points (2.5*2.5 km) is used to obtain activity data. ii. Photo-interpretation of the land-use: Bias in the photo interpretation of land use is controlled by means of criteria standardization and the establishment of decision trees for the visual assessment of high- and low-resolution images. In order to reduce variability between photo interpreters, prior to each monitoring event training exercises will be carried out using common samples, until satisfactory consistency is achieved. iii. Quality of the images available for the purposes of assessing the land-use: With the availability of Planet images on Collect Earth Online (http://collect.earth/), It is hoped that 100% availability of cloud-free images for all points on the systematic grid will be achieved.
Any comment:	Limitations to differentiate the mature and secondary forests present at the beginning of the reference period of the original methodological approach used to estimate DA and EF have been addressed. Based on Annual Canopy Cover maps information, mature and secondary forests present at the beginning of the reference period are differentiated. Also, separate emission factors for the secondary, intact, degraded, and high-degraded forest have been estimated.

Parameter:	$Deg(j, i)_{MP}$:
Description:	$Deg(j, i)_{MP}$: Area converted from forest with canopy cover j to forest with canopy cover i during the Monitoring Period, in hectares per year. Equation 9.3.
Data unit:	Hectares
Source of data or description	Spatial level of data: National

²⁰² <https://openforis.org/tools/collect-earth/>

²⁰³ MIMARENA, 2019. Revisión de la propuesta de Protocolo de Evaluación Visual multitemporal para la obtención de datos de referencia para la estimación de la incertidumbre de los datos de actividad para el proceso REDD+. Programa Regional REDD+. GIZ. 26 p. <https://app.box.com/s/l7f9k83zf5ssgutwtkc7w8a0hex834x8>

of the method for developing the data including the spatial level of the data (local, regional, national, international):	Sources of data: Sampling-based estimates and associated uncertainties will be used to calculate the activity data. Forest cover annual maps will be used as reference information to determine the canopy cover categories for each sampling point. Methods: Annual activity data for degradation and carbon enhancement in permanent forest will be derived from the systematic sampling procedure (7,697 Permanent Sampling Units) and Forest Cover (FC) annual maps. Activity data estimate was made by applying the good practices and procedures identified by Olofsson et al. (2014)²⁰⁴, GFOI (2016)²⁰⁵ and GFOI (2021)²⁰⁶. The Dominican Republic MRV team prepared a Standard Operation Procedure for the sample-based REDD+ activity data estimation²⁰⁷. FC maps provide a more robust determination of Canopy Cover than high-resolution imagery interpretation. Therefore, forest cover and its probability will be extracted from FC maps for each sampling point located in a permanent forest in the systematic grid to assign the canopy cover class 30-60%, 60-85%, and >85% for the later analysis of canopy cover change. Each pixel will be assigned to a canopy cover class if the probability of having a canopy cover above the threshold C was higher than 90%. Tree-canopy cover will be estimated through an automatic learning algorithm based on a model f of remotely sensed variables X in any location l, $\hat{C}_l = f(X; \hat{\beta}) + \varepsilon$. $\hat{C}_l$ is the percentage of a pixel (l)'s area covered by trees; β is a set of empirically estimated parameters; ε is residual error or uncertainty; and X is a set of measurements of surface reflectance, derived indices (NDVI, NDWI, and MNDWI) and metadata describing acquisition and sensor characteristics (Sexton et al.2013)²⁰⁸. This algorithm will be applied to the stack of Landsat images available for each year, to prepare the Dominican Republic annual canopy cover wall-to-wall raster maps from 2019 to 2024, with 30*30 m resolution; each pixel has a canopy cover value and the probability estimate. Additionally, multiple high-resolution data sources such as Meta tree height data and NASA's GEDI data were combined to produce high-quality tree cover reference data. The process includes data collection, preprocessing, and standardization, resulting in a robust and comprehensive dataset. This integration addresses issues like uneven satellite observations, noise, and data gaps by employing temporal interpolation, noise-resistant algorithms, and data gap-filling techniques. These methods ensure a seamless time series for accurate forest monitoring in tree cover data production.

²⁰⁴ Olofsson, P., Foody, G. M., Herold, M., Stehman, S. V., Woodcock, C. E., & Wulder, M. A. (2014). Good practices for estimating area and assessing accuracy of land change. *Remote Sensing of Environment*, 148, 42–57.

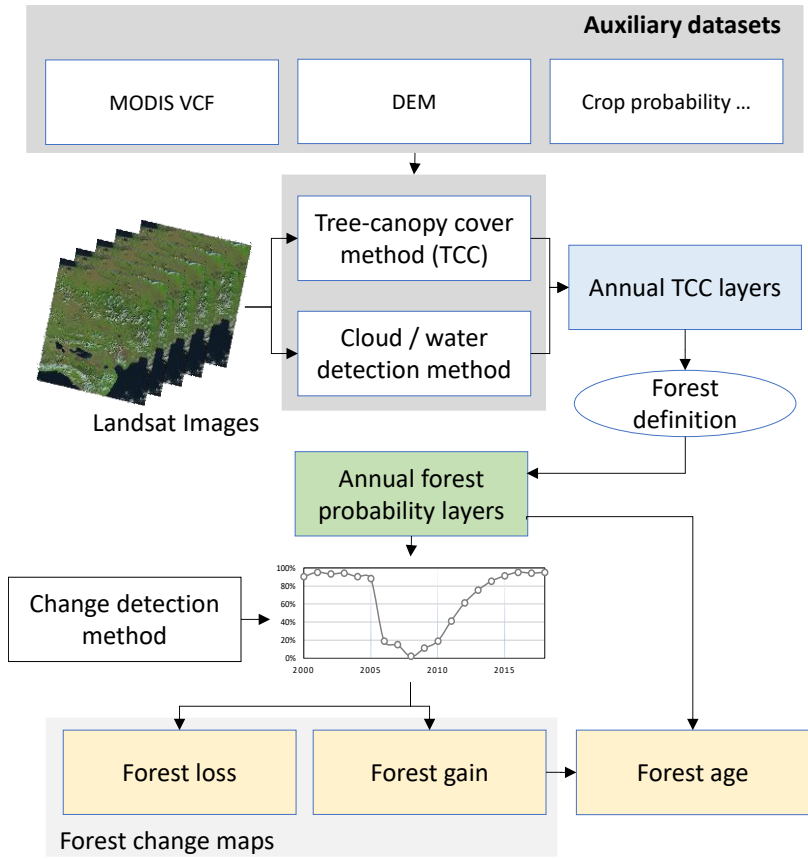
<https://doi.org/10.1016/j.rse.2014.02.015>

²⁰⁵ GFOI. (2016). Integración de las observaciones por teledetección y terrestres para estimar las emisiones y absorciones de gases de efecto invernadero en los bosques. Métodos y orientación de la Iniciativa Mundial de Observación de los Bosques (Edición 2.). Roma: Organización de las Naciones Unidas para la Alimentación y la Agricultura.

²⁰⁶ GFOI. (2021). Issues and good practices in sample-based area estimation.

²⁰⁷ MIMARENA, 2019. Revisión de la propuesta de Protocolo de Evaluación Visual multitemporal para la obtención de datos de referencia para la estimación de la incertidumbre de los datos de actividad para el proceso REDD+. Programa Regional REDD+. GIZ. 26 p. <https://app.box.com/s/l7f9k83zf5ssgutwtkc7w8a0hex834x8>

²⁰⁸ Sexton, JO, X-P Song, M Feng, P Noojipady, A Anand, C Huang, D-H Kim, KM Collins, S Channan, C DiMiceli & JR Townshend. 2013a. Global, 30-m resolution continuous fields of tree cover: Landsat-based rescaling of MODIS continuous fields and lidar-based estimates of error. *International Journal of Digital Earth* 6: 427-448

	Further information on the preparation methods of canopy cover maps is detailed in Consultancy Report^{209, 210}..  Figure 9-2. Estimation of percent-tree cover as a standard normal distribution of cover (mean) and uncertainty (standard deviation) in each pixel (Sexton et al. 2015)²¹¹.
Value applied:	More than 48 activity data will be estimated for the annual emission of degradation and carbon enhancement in permanent forest. A summary of activity data values by forest type is shown in the following table.

²⁰⁹ terraPulse, 2018. Estimation of Activity Data on Deforestation, Forest Degradation and Enhancement of Forest Carbon Stocks of Dominican Republic using Annual Time Series Analysis of Landsat data. Technical Document. 12 p. <https://app.box.com/s/0i7wl8wss4l40mjl3299gfwpo4i7djoz>

²¹⁰ terraPulse, 2025. DR tree cover methodology improvements. <https://app.box.com/s/c2tyvr6fdfflybyhnwn9ui3c28xglfan>

²¹¹ Sexton, JO, P Noojipady, A Anand, X-P Song, C Huang, SM McMahon, M Feng, S Channan & JR Townshend. 2015. A model for the propagation of uncertainty from continuous estimates of tree cover to categorical forest cover and change. Remote Sensing of Environment 156: 418-425

	Table 9-4: Canopy cover transition areas in permanent forest lands - 2019-2021 <table><tr><th colspan="2">Canopy cover transition in permanent forest lands</th><th>Annual Areas for 2019-2024 (ha)</th></tr><tr><td rowspan="2">Wet Broadleaf Forest</td><td>Enhancement</td><td></td></tr><tr><td>Degradation</td><td></td></tr><tr><td rowspan="2">Dry Broadleaf Forest</td><td>Enhancement</td><td></td></tr><tr><td>Degradation</td><td></td></tr><tr><td rowspan="2">Pine Forest</td><td>Enhancement</td><td></td></tr><tr><td>Degradation</td><td></td></tr><tr><td>Agricultural Tree Crops</td><td>Native forest</td><td></td></tr><tr><td>Native forest</td><td>Agricultural Tree Crops</td><td></td></tr><tr><td rowspan="2">Mangroves</td><td>Enhancement</td><td></td></tr><tr><td>Degradation</td><td></td></tr></table>	Canopy cover transition in permanent forest lands		Annual Areas for 2019-2024 (ha)	Wet Broadleaf Forest	Enhancement		Degradation		Dry Broadleaf Forest	Enhancement		Degradation		Pine Forest	Enhancement		Degradation		Agricultural Tree Crops	Native forest		Native forest	Agricultural Tree Crops		Mangroves	Enhancement		Degradation	
Canopy cover transition in permanent forest lands		Annual Areas for 2019-2024 (ha)																												
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	Degradation																													
Dry Broadleaf Forest	Enhancement																													
	Degradation																													
Pine Forest	Enhancement																													
	Degradation																													
Agricultural Tree Crops	Native forest																													
Native forest	Agricultural Tree Crops																													
Mangroves	Enhancement																													
	Degradation																													
QA/QC procedures applied	The same QA/QC procedures for deforestation and regeneration were applied to the estimate of degradation activity data. In this case, QA/QC procedures were focused on the interpretation of permanent forest areas.																													
Uncertainty associated with this parameter:	The canopy cover change category determination uncertainty for each sampling plot in the systematic grid was calculated at 6% for degradation and canopy cover recovery classes²¹². This uncertainty was calculated by the bootstrap method, with 1000 simulations based on the bias estimate. The bias of the canopy cover in Forest Cover maps is 4.34%, with a standard deviation of 61.691. Likewise, the sampling error of estimating the areas of the canopy cover class change will be also calculated. Both uncertainties are included in the propagation error of the emission reduction calculation. Table 9-5: Estimation error of canopy cover transition areas in permanent forest lands - 2019-2021 <table><tr><th colspan="2">Canopy cover transition in permanent forest lands</th><th>Annual Area for 2019-2024 (ha)</th></tr><tr><td rowspan="2">Wet Broadleaf Forest</td><td>Enhancement</td><td></td></tr><tr><td>Degradation</td><td></td></tr><tr><td rowspan="2">Dry Broadleaf Forest</td><td>Enhancement</td><td></td></tr><tr><td>Degradation</td><td></td></tr><tr><td rowspan="2">Pine Forest</td><td>Enhancement</td><td></td></tr><tr><td>Degradation</td><td></td></tr><tr><td>Agricultural Tree Crops</td><td>Native forest</td><td></td></tr></table>	Canopy cover transition in permanent forest lands		Annual Area for 2019-2024 (ha)	Wet Broadleaf Forest	Enhancement		Degradation		Dry Broadleaf Forest	Enhancement		Degradation		Pine Forest	Enhancement		Degradation		Agricultural Tree Crops	Native forest									
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Pine Forest	Enhancement																													
	Degradation																													
Agricultural Tree Crops	Native forest																													

²¹² The Excel tool used to estimate the canopy cover change category determination uncertainty by the bootstrap method can be accessed at the following link: <https://app.box.com/s/ex2otzykk4u32armla8rory8as9iu7ti>

		Native forest	Agricultural Tree Crops	
	Mangroves		Enhancement	
			Degradation	
Any comment:	There are no comments.			

9.2 Organizational structure for measurement, monitoring and reporting

The Ministry of Environment and Natural Resources is the designated national authority and focal point for climate change. The organizational structure of the Emission Reduction Monitoring Report (ER-MR) is made up primarily of agencies of the Ministry of Environment: Department of Climate Change, Department of Environmental Information and Natural Resources (DIARENA), Forest Monitoring Unit "FMU", Department of Biodiversity and Wildlife and the

Department of Social Participation. Figure A4-9-3 and Table 2.1 present roles and responsibilities of each of these agencies for collecting, processing, consolidating, and reporting GHG data and information.

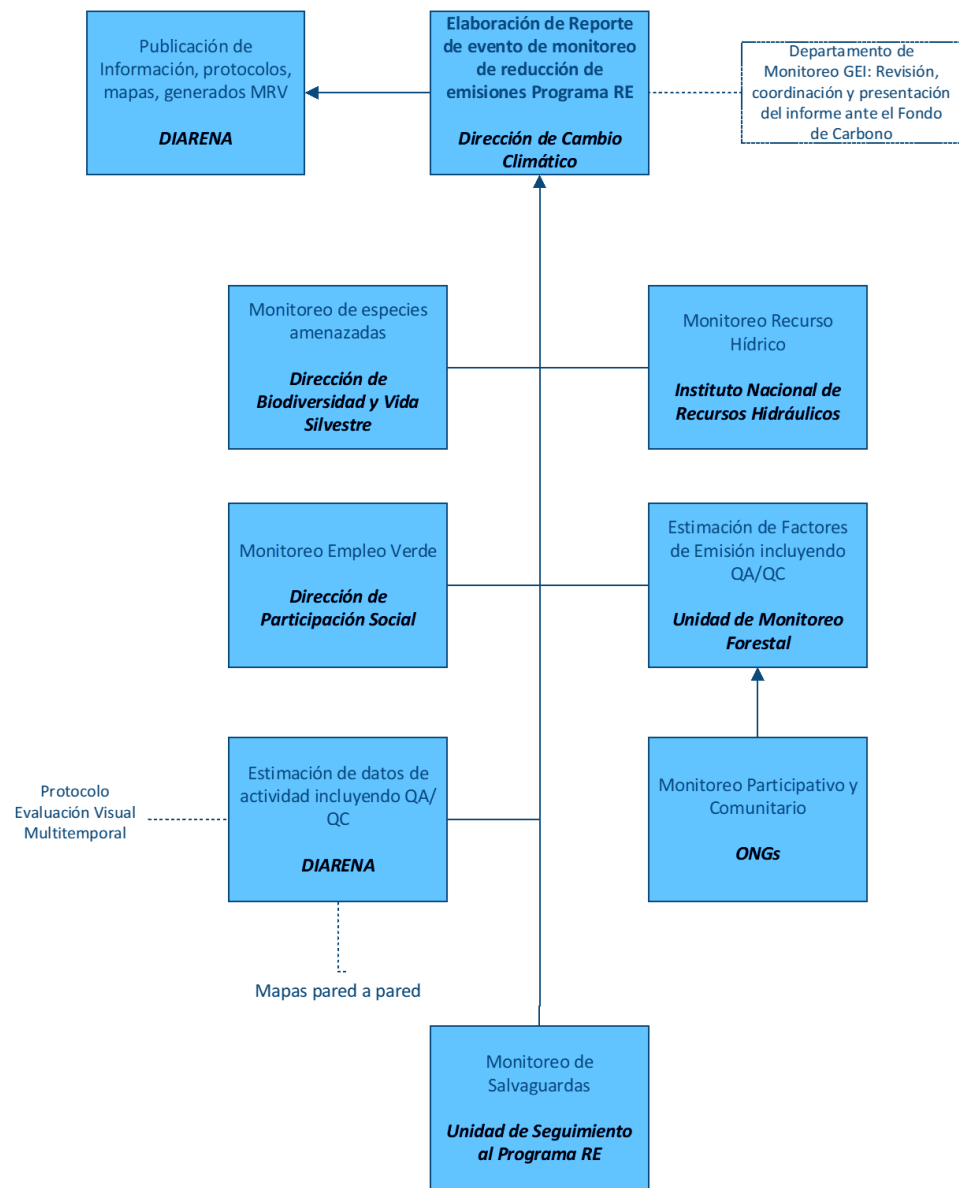


Figure A4-9-3: Organizational structure for ER-MR measurement, monitoring, and reporting in the Dominican Republic.

Table A4-9-6: Institutions in charge of the monitoring and reporting of the Emissions Reduction Program.

Monitoring function	Institution	Department	Technical team
Emissions reduction monitoring (Forest Monitoring system)			
Official reporting of emissions reduction to the Carbon Fund	The Ministry of Environment is the designated national	Coordinated by the Department of Climate Change of the Ministry of Environment	GHG Department (Revision, coordination and presentation of the ER Report to the Carbon Fund)

Monitoring function	Institution	Department	Technical team
	authority and focal point for climate change		
Publication of the information, protocols and maps generated in the monitoring system for the estimation of forest emissions reduction	Ministry of Environment	Environmental Information System, creation of REDD+ sub-portal operated by DIARENA (technical manager)	1 technical specialist
Estimation of emission and removal factors (including quality control and assurance and the management and estimation of uncertainty)	Ministry of Environment	Vice-Ministry of Forest Resources, Forest Monitoring Unit Estimation of rates of growth of secondary forest, forest fires, management plans	Forest Monitoring Unit 2 forest specialists, strengthening required (3 additional specialists). This team carries out the estimation of forest emissions for each monitoring event.
Estimation of activity data (including quality control and assurance and the management and estimation of uncertainty)	Ministry of Environment	DIARENA Generation of activity data and estimation of uncertainty, QA/QC	Technical team (3 remote sensing and GIS specialists). The technical team requires strengthening; a needs assessment is currently in progress.
Participatory and community monitoring	Non-Governmental Organizations Ministry of Environment	Forest Monitoring Unit (FMU)	NGO personnel Communities: monitoring of hot spots jointly with FMU 1 technician designated as Forest Monitoring liaison in 37 local offices, trained and equipped (instruments and equipment). (Office of the Minister of Environment)
Monitoring of multiple benefits			
Biodiversity (endangered species of flora)	Ministry of Environment	Department of Biodiversity and Wildlife	Ongoing monitoring programs
Water (INDRHI monitoring system)	INDRHI		63 telemetric water flow monitoring networks
Green Jobs	Ministry of Environment	Coordination by the Department of Social Participation	This requires institutional strengthening, and the Ministry of Labor must include this statistic
Monitoring of safeguards			
Natural habitats	Ministry of Environment	Monitoring Unit at the ERP.	Specialists from the Department of Social Participation 1 Social Specialist with responsibility for monitoring and following up on the MGAS and IRPF Support of the Technical Advisory Committee
Forest			
<i>Involuntary resettlement</i>			
Natural and cultural resources			
<i>Local communities</i>			

9.3 Relation and consistency with the National Forest Monitoring System

The institutional procedures and arrangements established for MMR will be used as the basis for the design and establishment of the National Forest Monitoring System, which will use the same methodologies; in fact, the MRV system of the ERPD is based on the national forest monitoring system.

12 UNCERTAINTIES OF THE CALCULATION OF EMISSION REDUCTIONS

12.1 Identification and assessment of sources of uncertainty

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

Source of uncertainty	Systematic	Random	Analysis of contribution to overall uncertainty	Contribution to overall uncertainty (High / Low)	Addressed through QA/QC?	Residual uncertainty estimate
Activity Data						
Measurement	✓	✓	Land-use photo-interpretation: Land-use visual assessment uncertainty is associated with the photo-interpretation consistency and the quality of the imagery dataset used for the assessment. Bias in the photo-interpretation of land use was mitigated by employing criteria standardization and decision trees for visual evaluation of high- and low-resolution images. Before each monitoring event, training exercises were carried out using common samples until satisfactory consistency is achieved to reduce variability between photo interpreters. During the land-use visual interpretation process, a specialist with extensive experience supervised the work of the analysts. The supervisor reviewed monthly deliveries of photo-interpreted points. This review focused on identifying and correcting errors and checking transition consistency and the years of change registered. According to QA/QC procedures, the minimum level of consistency between the analysts and the supervisor should be 90% on land-use interpretation. Regarding imagery quality, Planet images on Collect Earth Online (http://collect.earth/) provided 100% availability of high-res cloud-free images for all sampling points on the systematic grid.	High	Yes	No
Measurement	✓	✓	Canopy cover determination: Canopy Cover was extracted from Tree Canopy Cover maps developed by terraPulse for each sampling point located in the permanent forest class in the systematic grid. TCC maps were used to mitigate the potential errors in canopy cover determination due to analyst interpretation bias or lack of hi-res imagery in the sampling plot. The uncertainty determination of the total sampling point assigned to each canopy cover change class was made with the bootstrap method, with 1000 simulations based on the bias estimate ²¹³ . The bias of the canopy cover in Forest Cover maps is 4.34%, with a standard deviation of 61.691. Tree canopy cover reference data collected by the Dominican Republic team was overlaid with coincident terraPulse tree canopy cover estimates. The reference data from the terraPulse estimates were subtracted to calculate the bias of each terraPulse data point to estimate the bias. The scipy open-source python package (https://scipy.org) was used to fit a normal	Low	Yes	Yes

²¹³ The Excel tool used to estimate the canopy cover change category determination uncertainty by the bootstrap method can be accessed at the following link: <https://app.box.com/s/ex2otzvkk4u32armla8rory8as9iu7ti>

Source of uncertainty	Systematic	Random	Analysis of contribution to overall uncertainty	Contribution to overall uncertainty (High / Low)	Addressed through QA/QC?	Residual uncertainty estimate
			distribution of the terraPulse bias using Maximum Likelihood to estimate the mean and variance parameters.			
Representativeness	✓	✓	Sampling-based estimates and associated uncertainties were used to calculate the activity data. Annual activity data for deforestation, degradation, and forest regeneration were derived from the systematic sampling procedure (7,697 Permanent Sampling Units) to ensure the representativeness of the activity data estimate. However, due to time limitations, this report was prepared with only 6712 from the 7,697 sampling points of the systematic grid. The activity data required to prepare the ER-MR report includes two data sets: i. Reference Level consists of three subperiods 2000-2005, 2005-2015, and 2015-2018; ii. Monitoring Periods consist of four subperiods 2015-2018, 2018-2021, 2021-2023, and 2023-2024. The 2018 measurement is common to both activity data sets (Reference Level and Monitoring Periods); 2018 was reassessed in the monitoring period. Nine hundred eighty-five points, 13% of the 7,697 sampling points in the systematic grid, were not consistent between the two data sets. The availability of new high-resolution images in the 2022 measurement improved the interpretation of land use in 2018. It is essential to remember that activity data estimate for reference and monitoring periods is based on land-use tracking from 2000 to 2024. Any change in the 2018 measurement affects the evaluations made in the past (2000-2015) and the future (2018-2021-2023-2024). Revising the land-use interpretations and the transitions of the 985 inconsistent points in the two data sets (2000-2018 and 2018-2024) requires revisiting 4925 sampling points (985 points per evaluation date). These 985 sampling points are randomly distributed. The calculation of the activity data using only 6712 points varies between -8% and 15% concerning the estimate made with the 7697 points for the Reference Period. Also, the sampling error increases slightly, affecting the calculation of uncertainty. However, using only valid points excluded false positives in land-use transitions (reforestation and regeneration) from the estimation process.	Low	Yes	No
Sampling		✓	The density of the systematic grid was estimated from the analysis of 474 systematic sampling points collected by Ovalles (2018) ²¹⁴ . According to this analysis, with a sample size of 1942, it is possible to achieve a standard error of global precision of $S(\delta) = 0.01$. However, DIARENA established a 2.5 x 2.5 km grid with 7,697 sampling points to reduce the standard error in uncommon transitions.	High	Yes	Yes
Extrapolation	✓		Annual activity data for deforestation, degradation, and forest regeneration were derived from the systematic sampling procedure (7,697 Permanent Sampling Units). Activity Data were estimated with no stratification. No extrapolation of the AD estimate was necessary.	NA	NA	NA
Approach 3	✓		Permanent Sample Units (PSU) of one hectare (100 x 100 meters) with a single evaluation point corresponding to the plot centroid was used for the land-use visual assessment. PSUs ensured the temporal tracking of land use . Land-use assessments were made for 2000, 2005, 2015, 2018 and 201. The land-use class was interpreted with context and recorded for the individual pixel or point for t1 and t2. Using the land-use type at t1 and t2, the change class was determined for the pixel or point. Using single point Land-use change class information, areas of change were calculated for the population. Interpreters also collected the transition year in the PSUs with a land-use change registered between assessments.	Low	Yes	No

²¹⁴ Ovalles, P. (2018). Elaboración de mapa de Uso y Cobertura del Suelo 2015. Análisis de Cambios y Mapa de Deforestación en la República Dominicana. Informe Final. Santo Domingo, República Dominicana.

Source of uncertainty	Systematic	Random	Analysis of contribution to overall uncertainty	Contribution to overall uncertainty (High / Low)	Addressed through QA/QC?	Residual uncertainty estimate
Emission Factors						
DBH measurement	✓	✓	Three sources of data were used to estimate total biomass in each of the land uses and the emission factors in the land-use change categories: a. The National Forest Inventory (NFI)²¹⁵, b Assessment of Biomass and Carbon Content in Non-Forest Cover in the Dominican Republic" (ISNB)²¹⁶, and c. Collection of information required for the technical correction of the Forest Reference Level of the Dominican Republic, 2006-2015 (Technical Correction Inventory)²¹⁷. The three inventories were compiled using the same methodology, sampling unit, and nested plots in order to determine carbon density for each component recognized as a sink. Each carbon pool is estimated using the database at the tree level, taking the area of the sampling units into account. NFI: The MMARN's Forest Monitoring Unit (UMF) developed a Field Manual²¹⁸ and QA/QC²¹⁹ procedures to reduce non-sampling errors. Since the beginning of the planning phase, courses on basic forest inventory techniques were given to 68 forestry technicians, half of them MMARN officials and the other half personnel who work outside the Ministry. Then, three-day training workshops were held on INF-RD Field Manual, with the participation of 97 technicians selected. Subsequently, the crews responsible for the field survey were designated and received rigorous training in the Field Manual and the Quality Control Manual. ISNB: The MMARN's Forest Monitoring Unit (UMF) developed a Field Manual²²⁰ to reduce non-sampling errors. The crew members for the fieldwork received training for implementing inventory methodology and QA/QC procedures. The inventory methodology was explained, and field practices were carried out, including measurements and sampling exercises. During this training, the crew leaders were confirmed according to their abilities and capacities. Technical Correction Inventory: The quality control procedures during the implementation of the survey of the 32 additional plots have been made following the NFI's Field Manual and QA/QC procedures prepared by the Ministry of Environment and Natural Resources. The Forest Monitoring Unit of the Ministry has formed a quality control brigade that applied the QA/QC procedures in these additional plots; Likewise, the MMARN QA/QC team and fieldwork crews were trained. Both teams worked together for two days, putting the inventory QA/QC protocol into practice.	Low	Yes	No
H measurement	✓	✓		High	Yes	No
Plot delineation	✓	✓		Low	Yes	No

²¹⁵ Ministry of the Environment. 2015. Inventario nacional forestal de la República Dominicana: Measure and assess forests in order to understand their diversity, composition, volume and biomass. Field Manual. Forest Monitoring Unit. REDD7CCAD-GIZ. Regional Project 48 pages

²¹⁶ Ministry of the Environment. 2017. Assessment of the biomass and carbon content in non-forest systems in the Dominican Republic. Field Manual. Forestry Monitoring Unit REDD+ Preparation Project. 54 pages

²¹⁷ Núñez, J.A.; Milla, F.; Navarrete, E. and Duarte, F. 2021. Collection of information required for the technical correction of the Forest Reference Level of the Dominican Republic, 2006-2015. LUKINVESTMENT SRL. Final Report.

<https://app.box.com/s/xfy8dkfil8c20gikcup3yf9846fifyt6>

²¹⁸ MMARN-GIZ. 2014. Manual de Campo del Inventario Nacional Forestal de la República Dominicana. Unidad de Monitoreo Forestal. Programa REDD CCAD GIZ. Santo Domingo, R.D. 61p. <https://app.box.com/s/e0jf1lb49wpbd2981f9iwwvo2gvbf0av>

²¹⁹ MMARN-GIZ. 2018. Protocolo para el control de calidad del Inventario Nacional Forestal de Republica Dominicana 2018. Unidad de Monitoreo Forestal y Unidad de Gestión del Proyecto de Preparación REDD+ de la República Dominicana. 9p. <https://app.box.com/s/b9uoly8bpn5n4b8xivhtv2ob3z2gslub>

²²⁰ MMARN, 2017. Manual de Campo: Evaluación del contenido de biomasa y carbono en sistemas de No Bosque en la Republica Dominicana. Unidad de Monitoreo Forestal. Proyecto de Preparación de REDD+. 54p. <https://app.box.com/s/056lacpm9rwyw2uh7a0aqz4a5yye9ol4>

Source of uncertainty	Systematic	Random	Analysis of contribution to overall uncertainty	Contribution to overall uncertainty (High / Low)	Addressed through QA/QC?	Residual uncertainty estimate
Wood density estimation	✓	✓	Wood density was obtained from the literature, mainly from Chave et al. (2006) ²²¹ . Gender or family values were used for not-found species (genus/species). For species unknown or not found at any taxonomic level, all found species average density was used.	High	No	No
Biomass allometric model	✓	✓	There are no specific allometric equations for broadleaf forests in the Dominican Republic. Above-ground biomass (AGB) calculations are carried out using the allometric equations of Chave et al. (2014) ²²² in the three inventories. For pine trees, a local allometric equation is used. Allometric equations developed in Nicaragua and Costa Rica are used for coffee, cocoa, coconut, mango, avocado, and guava. None of the non-local allometric equations are validated. The uncertainty of allometric equations was not propagated in the MC analysis. It is pending the propagation of this error in the MC simulation, increasing the sampling uncertainty of AGB and BGB by 10% at a 90% confidence level using the quadrature approach.	High	No	No
Sampling		✓	Sampling plots were randomly located. A total of 573 plots were collected, with estimations of the above-ground biomass (AGB), dead material (DM), and litter (L). This sample size allowed robust estimates of carbon densities for the different forest types (permanent and secondary) and non-forest land uses.	Low	Yes	Yes
Other parameters (e.g. Carbon Fraction, root- to-shoot ratios)			The Cairns et al. (1997) ²²³ equation is used to quantify below-ground biomass roots. In all inventories, the factor that is used to convert biomass to carbon content is the IPCC's default value (0.47).	High	Yes	No
Representativeness	✓		Based on Canopy Cover maps, a forest cover change analysis was prepared considering only pixels with > 90% probability of having a forest cover higher than 30%, 60%, and 85%. Subsequently, forest degradation classes and secondary forest cohorts were mapped into four categories: i. Intact Forest (>85% crown cover), ii. Degraded forest (60-85% crown cover), iii. Highly degraded forest (30-60% crown cover) and iv. Secondary Forest. All forest inventory plots in forest and tree-shaded crops were classified into these four categories based on terraPulse data. By forest type and degradation class, carbon content was directly derived from the biomass sampling plots database (average and 90%CI) to ensure the representativeness of carbon density estimates. Also, the mean annual carbon change in secondary forest and tree-shaded crops (tC/ha/yr.) was estimated by dividing the carbon change between non-forest and secondary forest land use by the time elapsed to reach the maximum biomass of the secondary forest type determined from the forest cover change maps.	Low	Yes	No
Integration						
Model	✓		Control Mechanisms of material errors have been included in emission and removal calculations tools; i.e., sums of sampling points by forest type coincide with sample size ensuring no double counting in the sample-based activity data estimate.	Low	Yes	No
Integration	✓		Activity Data and Emission Factors are fully comparable. Carbon densities have been estimated according to the forest types (permanent and secondary), and non-forest land uses interpreted in the visual assessment of hi-res imagery and Forest Cover maps.	Low	Yes	No

²²¹ Chave, J. 2006. Medición de densidad de madera en árboles tropicales. Proyectos Pan Amazonía - RAINFOR. 7 pp.

²²² Chave, J., Réjou-Méchain, M., Búrquez, A., Chidumayo, E., Colgan, M. S., Delitti, W. B. C., ... Vieilledent, G. (2014). Improved allometric models to estimate the aboveground biomass of tropical trees. *Global Change Biology*, 20(10), 3177–3190. <https://doi.org/10.1111/gcb.12629>

²²³ Cairns, M. A., Brown, S., Helmer, E. H., Baumgardner, G. A., Cairns, M. A., Brown, S., ... Baumgardner, G. A. (1997). Root Biomass Allocation in the World's Upland Forests. *Oecologia*, 111(1), 1–11. <http://doi.org/10.1007/s004420050201>

12.2 Quantification of uncertainty in Reference Level Setting

Parameters and assumptions used in the Monte Carlo method

Dominican Republic ER Program applied Monte Carlo methods (IPCC Approach 2) for quantifying the Uncertainty of the FREL/FRL. Because the MC propagation analysis includes more than 700 parameter values, it has been provided access to uncertainty and emission factor calculation tools to see all parameter values used in the analysis. The sources of uncertainty propagated in the Monte Carlo (MC) analysis are provided in the following Table.

Parameter included in the model	Parameter values	Range of Sampling Error / Standard Error / CI		Error sources quantified in the model (e.g. measurement error, model error, etc.)	Probability distribution function	Source of assumptions made
		Lower	Upper			
Permanent Forest's Degradation and carbon Enhancement Activity Data	Twenty-one values for the Reference Period were included in MC analysis. See all values in the Uncertainty calculation tool ²²⁴ , "Deforestacion y Degradacion" Sheet – (Reference Period cells M11..O58)	14%	1271%	The error of Tree Canopy Cover change classes (estimated with the bootstrapping method) ²²⁵ and Sampling Error of activity data estimate was included in Monte Carlo error propagation	Normal	Truncated Normal distribution (values > 0) was assumed for sample-based activity data estimate and the bias of Tree Canopy Cover maps.
Deforestation Activity Data	Thirty values for the Reference Period were included in MC analysis. See all values in the Uncertainty calculation tool "Deforestacion y Degradacion" Sheet – (Reference Period cells M59..O122)	712	2,844	Standard error of activity data estimate	Normal	Truncated Normal distribution (values > 0) was assumed for sample-based activity data estimate
Activity Data for estimating SOC emissions associated with deforestation	The MC analysis included 167 Deforestation SOC Activity Data values and 4 values of Permanent Forest areas estimate. See all values in the Uncertainty calculation tool "EmisionesHeredadasSOC" Sheet – (Wet BL forest cells A23..E64; Dry BL forest cells A169..E210; Pine forest cells A315..E356; Tree-shaded crops cells A461..E502)	712	22,243	Standard error of activity data estimate	Normal	Truncated Normal distribution (values > 0) was assumed for sample-based activity data estimate
Activity Data for estimating inherited removals	The MC analysis included 442 Activity Data values for estimating inherited removals. See all values in the Uncertainty calculation tool "RemocionesHeredadas" Sheet – (Wet	712	5210	Standard error of activity data estimate	Normal	Truncated Normal distribution (values > 0) was assumed for

²²⁴ Uncertainty calculation tool can be accessed at the following link:

<https://app.box.com/s/6p2srq5eq6zpbuigtbuxc3ckcz4d857e2>

²²⁵ Error of Tree Canopy Cover change classes estimation tool can be accessed at the following link:

<https://app.box.com/s/ex2otzvkk4u32arm1a8rory8as9iu7ti>

Parameter included in the model	Parameter values	Range of Sampling Error / Standard Error / CI		Error sources quantified in the model (e.g. measurement error, model error, etc.)	Probability distribution function	Source of assumptions made
		Lower	Upper			
	BL forest cells A25..Q62; Dry BL forest cells A78..Q115; Pine forest cells A131..Q167; Tree-shaded crops cells A184..Q220; Mangroves A237..Q274)					sample-based activity data estimate
Deforestation and Degradation Emission Factors	The MC analysis included 21 Carbon density values for forest types (secondary and permanent) and non-forest land uses categories considered in emission estimate. See all values in the Uncertainty calculation tool "FactoresEmission" Sheet – (cells E6..E26)	0.27	23.15	90% Confidence Interval of Carbon density estimate.	Normal	Truncated Normal distribution (values > 0) was assumed for all carbon density estimates.
Soil Organic Carbon Linear decreasing rate	The MC analysis included 4 SOC Linear decreasing rate values. See all values in the SOC Emission Factor calculation tool ²²⁶ "SOCEF" Sheet cells J7..J10.	19%	52%	Estimate error calculated combining uncertainty of SOC content before and after land-use transition with IPCC's Approach 1 equation 3.2.	Normal	Truncated Normal distribution (values > 0) was assumed for SOC linear decreasing rate estimates.
Removal factors	The MC analysis included 8 Removal factors. See all values in the Carbon Densities calculation tool ²²⁷ "CarbonDensities" Sheet cells G45..G62.	16%	49%	Estimate error calculated combining uncertainties of non-forest land use and secondary forest carbon density with IPCC's Approach 1 equation 3.2.	Normal	Truncated Normal distribution (values > 0) was assumed for Removal factors estimates.

Quantification of the uncertainty of the estimate of the Reference level

		Deforestation	Forest degradation	Enhancement of carbon stocks
A	Median	1,423,324	935,564	-709,666
B	Upper bound 90% CI (Percentile 0.95)	1,831,652	1,625,727	-570,066
C	Lower bound 90% CI (Percentile 0.05)	1,055,475	408,281	-882,150
D	Half Width Confidence Interval at 90% (B – C / 2)	388,088	608,723	156,042
E	Relative margin (D / A)	27%	65%	-22%
F	Uncertainty discount	4%	12%	4%

²²⁶The SOC Emission Factor calculation tool can be accessed at the following link:

<https://app.box.com/s/7gynk2iz594xtwgkptgabhc04jvo9vo8>

²²⁷ The Carbon densities calculation tool can be accessed at the following link:

<https://app.box.com/s/x4dhc9qynotu4rwmn82mulysneirvrhv>

Sensitivity analysis and identification of areas of improvement of MRV system

The sensitivity analysis can be found in Section 5 UNCERTAINTY OF THE ESTIMATE OF EMISSION REDUCTIONS of this report.

Document history

Version	Date	Description
2.3	December 2021	- Section 5.2 was adjusted to allow the reporting of the uncertainty estimates for both the reporting period and the crediting period. - Section 8 has been adjusted to clarify that countries can also report ERs jointly and not only in separate calendar years.
2.2	August 2021	- Cross-references have been corrected - Information about the start date of the crediting period has been requested in annex 4.
2.1	November 2020	Aspects on uncertainty analysis were revised based on the guidelines on uncertainty analysis.
2	June 2020	Version approved virtually by Carbon Fund Participants. Changes made: - Update to consider the changes made to the Methodological Framework (Version 3.0) and Buffer Guidelines (Version 2.0) - Update to consider the changes made to the Validation and Verification Guidelines
1	January 2019	The initial version approved by Carbon Fund Participants during a three-week non-objection period.

ⁱ This information on the number of hectares and beneficiaries provided by these Executing Entities and a private organization is part of the information compiled by the OCR and is available to any legal or natural person who so requires.

ⁱⁱ Data provided by foresters' associations San Ramon and ASODEFOREST.