

**Forest Carbon Partnership Facility (FCPF)
Carbon Fund**

Emission Reductions Program Document (ER-PD)

ER Program Name and Country: Dominican Republic

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UTG Team

Zoila González de Gutiérrez, Biologist, Master in Oceanography
Pedro García Brito, Forestry Engineer, Master in Public Administration
Mercedes Socorro Pantaleón Inoa, Chemist, Master in Environmental Chemistry
Ramón Ovidio Sánchez Peña, Biologist, Master Scientiae in Natural Resources and PhD in Natural Sciences
Piedad Ma. Castillo, Social Worker, Master in Public Administration
Jean-Alexis Gaugé Quiñones, Lawyer, Master in Politics, Environmental Management and Governance
Mencía Smelin Reyes Valerio, Social Communicator, Master in Corporate Communication
Benedito Antonio Faña, Bachelor Degree in Forestry
Vicenta Reyes Santana, Geographer, specialized in natural resources and ecotourism
Joan E. Beras Severino, Financial Economist
Janibel Muñoz Torres, Ecologist and Environmental Manager
Dalina L. Perez Castillo, Ecologist and Environmental Manager

Support Team

Angelo Sartori
Carol Franco Billini
Tropical Agriculture Research and Teaching Centre (CATIE) – AGROFORSA, SRL
REDD+ Technical Advisory Committee (CTA-REDD+)
Climate Law & Policy, Winrock International, PRONATURA consortium
Sud Austral Consulting SpA and Centro de Estudios y Servicios (CRESER) consortium
Sud Austral Consulting SpA and Forest Finest Impact Land Use Consulting consortium
Department of Environmental Information and Natural Resources (DIARENA)
Econometría, S.A.
German Obando Vargas
Ludovino López
Janina Segura Paniagua
Manuel Estrada
Pablo José Ovalles Ureña
Roberto Sánchez Percinal
Forest Monitoring Unit, Environment
Carlos Rodríguez Olivet

WB specialists

Rodrigo Martínez
Bernardus de Jong
Lilian Pedersen
Dora Patricia Andrade
Laura Calderón Etter
Julián Gonzalo Jiménez
Gustavo A. Vargas Victoria



General information on completing the ER-PD

Purpose of the ER-PD

ER Programs that have been included in the pipeline of the FCPF Carbon Fund are expected to provide detailed information on the design of the ER Program using the template provided in this document. By completing and sending the ER Program Document, a REDD Country Participant or its authorized entity officially submits the ER Program to the Carbon Fund.

The ER Program Document, in combination with other documents such as the country's Readiness Package, provides the information required by the Carbon Fund Participants to decide whether to proceed to negotiating an ERPA for the proposed ER Program.

One type of information that ER Programs are expected to provide in order to be considered in the FCPF Carbon Fund, is a demonstration of conformity with the FCPF Carbon Funds' Methodological Framework. This Framework contains a set of criteria and indicators (C&I) that will be used by Carbon Fund Participants to select ER Programs. The ER-PD will assist ER Programs to provide information on how it meets the criteria and indicators of the Methodological Framework and it will assist review by the Carbon Fund. For ease of reference, and where applicable, the sections in this ER-PD refer to the corresponding criteria specified in the MF.

The Methodological Framework contains a glossary, which defines specific terms used in the Methodological Framework. Unless otherwise defined in this ER-PD template, any capitalized term used in this ER-PD template shall have the same meaning ascribed to such term in the MF.

Guidance on completing the ER-PD

Please complete all sections of this ER-PD. If sections of the ER-PD are not applicable, explicitly state that the section is left blank on purpose and provide an explanation why this section is not applicable.

Provide definitions of key terms that are used and use these key terms, as well as variables etc., consistently using the same abbreviations, formats, subscripts, etc.

The presentation of values in the ER-PD, including those used for the calculation of emission reductions, should be in international standard format e.g. 1,000 representing one thousand and 1.0 representing one. Please use International System Units (SI units – refer to http://www.bipm.fr/enus/3_SI/si.html) and if other units are used for weights/currency (Lakh/crore etc.), they should be accompanied by their equivalent S.I. units/norms (thousand/million).

If the ER-PD contains equations, please number all equations and define all variables used in these equations, with units indicated.

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ACRONYMS

AD: Activity data

AFOLU: Agriculture, Forestry and Other Land Uses

AGB: Above-ground biomass

ASODEFOREST: Association for the Sustainable Development of Forest Restoration (*Asociación para el Desarrollo Forestal Sostenible de Restauración*)

BCRD: Central Bank of the Dominican Republic (*Banco Central de la República Dominicana*)

BDP: Benefit Distribution Plan

BGB: Below-ground biomass

CAD: Dominican Environmental Consortium

CDM: Clean Development Mechanism

CEDAF: Centre for the Development of Agriculture and Forestry

CNCCMDL: National Council on Climate Change and Clean Development Mechanism

CNMSF: National Committee for the Application of Sanitary and Phytosanitary Measures (*Comité Nacional para la Aplicación de Medidas Sanitarias y Fitosanitarias*)

CONACADO: National Confederation of Dominican Cocoa Producers (*Confederación Nacional de Cacaocultores Dominicanos*)

CONALECHE National Council for the Regulation and Promotion of the Dairy Industry (*Consejo Nacional para la Reglamentación y Fomento de la Industria Lechera*)

CONATEF: National Technical Forestry Commission

CoP: Conference of the Parties

CRC: Conflict Resolution Committee

CREES: Regional Centre for Sustainable Economic Strategies (*Centro Regional de Estrategias Económicas Sostenibles*)

CTA: REDD+ Technical Advisory Committee

DECCCC: Economic Development Plan Compatible with Climate Change

DBH: Diameter at breast height

DFD: Deforestation and Forest Degradation

DIARENA: Department of Environmental Information and Natural Resources

DIGEGA: General Directorate of Livestock.

DMTRS: Data Management and Transaction Registry Systems

DR: Dominican Republic

ECLA: Economic Commission for Latin America (*Comisión Económica para América Latina*)

EFs: Emission Factors

ER: Emissions Reduction

ERP: Emissions Reduction Programme

ERPA: Emissions Reduction Payment Agreement

ERPD: Emissions Reduction Programme Document

ER-PIN: Emissions Reduction Project Idea Note

ESMF: Environmental and Social Management Framework

ETM: The LandSat Enhanced Thematic Mapper

FAO: The Food and Agriculture Organization of the United Nations



fBUR: Dominican Republic First Biennial Update Report

FCPF: Forest Carbon Partnership Facility

FEPROBOSUR: Federation of Dry Forest Producers of the South West (*Federación de Productores de Bosque Seco del Suroeste*)

FGRM: Feedback and Grievance Redress Mechanism

FREL: Forest Reference Emission Level

GDP: Gross Domestic Product

GdRD: Government of the Dominican Republic

GHG: Greenhouse Gases

GRM: Grievance Redress Mechanism

IAD: Dominican Agrarian Institute

IB: Implementing Body

ICT: Information and Communication Technology

IE: Implementing Entities

INDC: Intended Nationally Determined Contributions

INDOCAFE: Dominican Coffee Institute

INDRHI: Dominican Water Resources Institute

INGEI: National Greenhouse Gas Inventory

IPCC: Intergovernmental Panel of Experts on Climate Change

IRPF: Involuntary Resettlement Policy Framework

ISNB: Evaluating the Biomass and Carbon Content in Non-Forest Cover in the Dominican Republic

JICA: Japanese International Cooperation Agency

LCM: Land Change Modeler

LULC: Land Use and Land Cover

LULCC: Land-Use Land-Cover Changes

MA: Ministry of Agriculture

Masl: Metres above sea level

Medio Ambiente: Ministry of the Environment and Natural Resources

MEPyD: Ministry of Economy, Planning and Development

MIS: Geographic Information System

MLP: Multi-Layer Perceptron

MM: FCPF Methodological Framework

MMR: Measurement, Monitoring and Reporting

MRV: Monitoring, Reporting and Verification

MTR: Mid-Term Report

NDC: Nationally Determined Contributions

NFI: National Forestry Inventory

NGO: Non-Governmental Organisation

NS-REDD+: National REDD+ Strategy

OCR: REDD+ Coordinating Office

OLI: Operational Land Imager

ONE: National Statistics Office

PAs: Protected Areas

PMA: Environmental Management Plan

PNQV: National Quisqueya Verde Plan



PSA: Payment for Environmental Services

PSA-CYN: Payment for Environmental Services – Yaque del Norte watershed (Project)

QA/QC: Quality Assurance/Quality Control

RCCP: Regional Climate Change Programme

REDD+: Reducing Emissions from Deforestation and Degradation

R-PP: Readiness Preparation Proposal

SC: Programme Steering Committees

SDG: Sustainable Development Goals

SEESCYT: Secretary of Higher Education, Science and Technology

SEMARENA: Secretary of Environment and Natural Resources

SESA: Social and Environmental Strategic Assessment

SFM: Sustainable Forest Management

SINAP: National System of Protected Areas

SIS: Safeguards information System

TL: Transept line

UNDP: United Nations Development Programme

UNFCCC: United Nations Framework Convention on Climate Change

UN-REDD: United Nations Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries

UTG: Technical Management Unit

VCS: Verified Carbon Standard

WB: World Bank

Executive SUMMARY

The Dominican Republic began its process to join the Forest Carbon Partnership Facility (FCPF) through an Expression of Interest Letter that was formally submitted in 2013 through the Ministry of Environment and Natural Resources. As a result, and following the review made by the World Bank (in its capacity as Delivery Partner), the FCPF Participants Committee (PC) and the Technical Assessment Panel (TAP), the country submitted its final version of the *Readiness Preparation Proposal* (R-PP) in 2014. Between 2014 and 2018, the country made significant progress through the REDD+ preparation phase. During September and October 2018, following a difficult consolidation process and progress in various studies, alliances and institutional arrangements, the country developed its Readiness Package for REDD+ (*R-Package*) which included the most significant steps that it had carried out in each of the four components that the FCPF had set out in order to monitor the progress of REDD+. The *R-Package* includes an analysis of the results obtained in an *Assessment Workshop* based on the criteria set out in the “Guide to the FCPF Preparation Assessment Framework.” Representatives from the public and private sector, production sector, academia, research groups and civil society attended, thereby demonstrating that the country has made a satisfactory level of progress in the REDD+ preparation phase. The Dominican Republic’s R-Package was approved by the FCPF Participants Committee in the PC27 held in March 2019 (Resolution PC/07/2019/4), as a formal demonstration that DR has made sufficient progress in the REDD+ preparation phase.

Meanwhile, the country also decided to make progress in the *Results-Based Payments* (RBP) phase that the FCPF includes through the Carbon Fund, by developing and submitting its Emissions Reduction Project Idea Note (ER-PIN) in 2015. Therefore, in June 2016 the Letter of Intent (LOI) was signed between the World Bank and the Dominican Republic Ministry of Economy, Planning and Development (MEPyD): *Potential Purchase of Emission Reductions from the “Emission Reduction Program of the Dominican Republic: Contributions to Sustainable Livelihoods of Rural Communities and Carbon Enhancements*. Through this Letter of Intent, the country submits its Emissions Reduction Programme (ERP) to the FCPF.

This Programme has been formulated through a participatory process with key parties and is based on results from the following basic studies:

- *Map analysis on historical series of use and land use change, 2005-2015.*
- *Analysis into causes of deforestation and forest degradation, and strategic mitigation actions.*
- *National Forestry Inventory.*
- *Evaluating the carbon content in non-forest cover.*
- *Cost-benefit evaluation and preparation of the ERP funding plan.*
- *Environmental and social characterisation and management plan in prioritised REDD+ geographic areas.*
- *Institutional and legal analysis within the context of REDD+.*
- *Environmental and Social Management Framework (ESMF): Strategic Environmental and Social Assessment (SESA) and Safeguards Information System (SIS).*
- *Benefit distribution: benefits arrangements and plan within the ERP framework.*
- *Forest carbon ownership, legal nature and transfer of emissions reduction credits.*



- *Land tenure assessment for the ERP.*
- *Setting a reference level, estimating the potential emissions reduction/reservoir increase, and basic forest emissions monitoring system.*
- *National REDD+ Strategy: Preliminary phase.*

Commitments made before the United Nations Framework Convention on Climate Change (UNFCCC) have led the country to arrange actions to mitigate climate change and adapt to its effects. These objectives are set out in its Nationally Determined Contribution (NDC) which the country submitted to the UNFCCC in 2015 and which includes actions for the forest and agricultural sector. The Emissions Reduction Programme is currently the most significant component in the Dominican Republic's REDD+ Strategy, which will be implemented on a national scale. The main objective of the Programme is to significantly reduce Greenhouse Gas (GHG) emissions resulting from deforestation and forest degradation and to substantially increase carbon reservoirs by implementing strategic actions aiming to boost coverage regeneration in degraded areas, sustainable forest management and the creation of coffee, cocoa and silvopastoral systems. This set of strategic actions aims to convert the country into a net carbon reservoir in the *Land Use, Land-Use Change and Forestry* sector (LULUCF) from the second or third year of the Programme's implementation.

At the same time, the Programme aims to improve the quality of life in Dominican rural communities and increase the resilience of the natural ecosystems against climate change. The Programme is considered a key instrument in increasing the flow of funds for the environmental sector, which will allow the Government to strengthen its national and international position.

In view of this, the Emissions Reduction Programme is considered to be a basis for the National REDD+ Strategy, which is being developed with the assistance of various key parties. The ERP includes fulfilling and implementing three *Strategic Options* and 22 *Strategic Actions*, which will comply with the core part of the National REDD+ Strategy.

The Strategic Options included are:

1. *To strengthen the legal and institutional framework for the conservation of natural heritage and the sustainable use of natural resources - includes 6 actions.*
2. *To establish, strengthen and apply public policies in order to limit and/or contain the expansion of agricultural and livestock frontiers and of infrastructure in forest areas - includes 4 actions.*
3. *To promote natural resource management models that contribute to forest conservation and sustainable use and to the increase of forest coverage - comprises a total of 12 actions.*

The first two options will generate legal and institutional conditions in order to meet the established reduction goals, while the third includes actions to be carried out in the field through successful plans, programmes and projects being developed by the country. All of the above corresponds with the objectives of the *National Development Strategy*, particularly in terms of reducing vulnerability, adapting to *climate change* and helping to *mitigate its causes*. Within a five-year period (2020-2024), the ERP is aiming for a national net reduction of **5,267,868** tCO₂e.

ENTITIES RESPONSIBLE FOR THE MANAGEMENT AND IMPLEMENTATION OF THE PROPOSED ER PROGRAM

1.1. ER Program Entity that is expected to sign the Emission Reduction Payment Agreement (ERPA) with the FCPF Carbon Fund

Name of body	Ministry of Finance
Type and description of organisation	Type: Governmental Functions: 1. To design and propose the taxation policy. 2. To propose policies and issue opinions on the approval of rates, patents, contributions or any other kind of public income. 3. To monitor compliance with national tax laws and regulations in coordination with the General Directorate of Internal Revenue and the General Customs Directorate. 4. To participate in the State's tax and tariff-related negotiations and agreements, as part of the integration agreements and other preferential trade schemes. 5. To propose guidelines and directives on tax exemptions. 6. Analyse and resolve tax exemption requests that, in accordance with legal standards, are within its jurisdiction, while ensuring to establish full transparency and appropriate supervision. 7. To issue opinions on the drafting of bill proposals that include the granting of tax exemptions. 8. Governing body of the Public Credit System to assist the Government in decision-making and in funding expenditure through borrowing.
Main contact person	Mr. Donald Guerrero Ortiz
Title	Minister of Finance
Address	Address: Calle México # 45, between calle Pedro A. Lluberes and calle Federico H. Carvajal, Gascue, Santo Domingo, Dominican Republic
Telephone	+1 809 687-5131.
E-mail	info@hacienda.gov.do
Website	www.hacienda.gob.do

1.2. Organization(s) responsible for managing the proposed ER Program

Same entity as ER Programme Entity identified in 1.1 above?	No
If no, please provide details of the organizations(s) that will be managing the proposed ER Program	
Name of organization	Dominican Republic Ministry of Environment and Natural Resources (Medio Ambiente).
Type and description of organisation	Type: Governmental Functions:

	1. To regulate management of the environment, ecosystems and natural resources in order to contribute to sustainable development and to the assets that make up the country's national heritage. 2. To implement and oversee national policies on the environment and natural resources. 3. To manage the natural resources owned by the State that have been assigned to them. 4. To gradually improve management, administration and regulation relating to land, air and water contamination, in order to conserve and improve environmental quality. 5. To develop regulations, review existing ones and supervise the effective application of legislation, in order to ensure the conservation and sustainable use of natural resources and to improve environmental quality. 6. To direct, promote and encourage preservation, restoration, conservation and the sustainable use of the environment as well as the protection of natural resources within private institutions, community-based and non-governmental organisations, adapting their activities to the policies, objectives and goals relating to the environment and natural resources. 7. To promote the integration of civil society and community-based organisations into plans, programmes and projects for the preservation and improvement of the environment. 8. To put forward the nation's positions to the Executive Power in relation to international negotiations on environmental issues and on the nation's participation in Conferences of the Parties on international environmental agreements; to propose signings and ratification; to be the focal point for the same; and to represent the country in international environmental forums and bodies in coordination with the Secretary of State for Foreign Relations. Specifically, the Ministry of Environment and Natural Resources is the national body for REDD+ and the focal point for the UNFCCC; it also acts as the REDD+ focal point for the FCPF and the UN-REDD.
Organizational or contractual relation between the organization	The relationship between the Ministry of Finance and the Ministry of Environment and Natural Resources is primarily determined by the provisions of Law No. 64-00 (Articles 63, 65, 68 and 70) that set out

and the ER Program Entity identified in 1.1 above	compensation and incentive mechanisms for the implementation of conservation measures that ensure environmental quality and the sustainable use of natural resources. The acknowledgement of environmental services, the investment activity aiming to protect natural resources, the import of machinery or use of clean technology in production processes, the dissemination of environmental education campaigns, and other activities that can be carried out by the Ministry of Environment and Natural Resources, will be subject to payment via compensation, partial or total exemption from import tax and/or tariffs, VAT or other kinds of tax incentive. The implementation of these mechanisms involves institutional coordination with the Ministry of Finance, given that it is the governmental body with the power to issue guidelines and directives on tax exemptions and on the implementation of national fiscal policy.
Main contact person	Mr. Ángel Estévez
Title	Ministry of Environment and Natural Resources
Address	Cayetano Germosén Ave. & Gregorio Luperón Ave. El Pedregal, Santo Domingo, D.R.
Telephone	(809) 567-4300, (809) 567-0555
E-mail	ministro@ambiente.gob.do
Website	www.ambiente.gob.do

1.3. Partner agencies and organizations involved in the ER Program (ERP)

The institutional bodies involved in the design and implementation of the ERP are described below. Other involved parties are detailed in Table 3.6: **Stakeholders and their role in the ERP**, in Chapter 3.

Table 1.3.1 Organisations involved in the design and implementation of the ERP

No.	Name of partner	Contact name, telephone and e-mail	Core capacity and role in the ER Programme
International donors for technical and financial support			
1	World Bank	Rodrigo Martínez NRM Economist Global Practice on Environment and Natural Resources T: +1 (202) 458 2007 M: +1 (202) 631 7337 Web: www.worldbank.org	Technical and financial support for the development of the REDD+ Strategy and the ERP.
Key Institutions and Services for Implementation			
1	Ministry of Economy, Planning and Development	Mr. Isidoro Santana Minister Address: Av. México Esq. Dr. Delgado, Edificio de Oficinas Gubernamentales, Bloque B	The governing body of the National Planning and Public Investment System and the Land Planning and Development system. Creates the Development Strategy and

		Santo Domingo, R.D. Email: informacion@economia.gob.do Web: http://www.economia.gob.do +1 809 688-7000.	the National Multi-annual Public Sector Plan, including the necessary coordination at a municipal, provincial, regional, national and sectoral level, in order to ensure global consistency between policies, plans, programmes and actions. The functions of the MEPyD are specified in article 4 of law 496-06. (See more details at section 6.1)
2	Ministry of the Environment and Natural Resources	Mr. Ángel Estévez Minister Address: Cayetano Germosén Ave. & Gregorio Luperón Ave. El Pedregal, Santo Domingo, D.R. E-mail: ministro@ambiente.gob.do www.ambiente.gob.do Telephone numbers: (809) 567-4300, (809) 567-0555	The national body responsible for drafting national policies for the planning, management and supervision of forest resources and the environment in general. It is also the <i>national environmental authority</i> and the <i>Climate Change Focal Point</i>, and represents the country in the UNFCCC. It also has the responsibility of administering the Emissions Reduction Programme (ERP) and participates in the programme as an implementing body (IB), through its Vice Ministries and through the conservation, reforestation and Payment for Ecosystem Services programmes that the institution runs.
3	Ministry of Agriculture	Mr. Osmar Benitez Autopista Duarte Km 6 ½, Jardines del Norte, Santo Domingo, Rep. Dom., info@agricultura.gob.do +1 809 547-3888.	The institution responsible for developing and directing agricultural policies in accordance with the country's development plans. It participates in the ERP as an implementing body (IB) through programmes based on shade-grown cocoa and coffee

			agroforestry systems and resilient agriculture.
4	General Directorate for Livestock (DIGEGA)	Dr. Duarte Contreras Contreras Address: Autopista 30 de mayo, Ciudad Ganadera, Santo Domingo, R.D. Telephone number: 809-535-9689 E-mail: digeganaderia@gmail.com Web: http://www.ganaderia.gob.do/	Public institution responsible for development policies and programmes, promoting technical assistance and funding for the livestock sector in the country. It participates in the ERP with programmes based on silvopastoral systems and forest conservation in livestock farms.
5	National Council for the Regulation and Promotion of the Dairy Industry (CONALECHE)	Dr. Arnaldo José Gómez V. Director Address: Autopista 30 de mayo, Ciudad Ganadera, Santo Domingo, R.D Telephone numbers: 809 535-2546 809 535-5984 E-mail: a.gomez@conaleche.gob.do Web: www.conaleche.gob.do	Institute attached to the Ministry of Agriculture, dedicated to the development and protection of the dairy industry. It participates in the ERP with programmes based on silvopastoral systems and forest conservation in livestock farms.
6	The Dominican Institute of Coffee (INDOCAFE)	Mr. Marino Suarez Jorán Director Address: Calle Francisco Prats Ramírez Esq. Padre Emiliano Tardif Santo Domingo, R.D. Telephone number: 809 533-1984 E-mail: info@indocafe.gob.do Web: www.indocafe.gob.do	Independent public institution, responsible for the design, planning and execution of the country's coffee development policy. Participates in the ERP with programmes based on shade-grown coffee agroforestry systems.
7	Technical Implementing Unit for Agroforestry Development Projects (UTEPDA)	Major General Rafael de Luna Pichirilo Executive Director Address: Plaza Galerías Comerciales. Av 27 de Febrero, El Vergel, 4to nivel, Santo Domingo, D. R. Telephone number: 809 695-8042 E-mail: rafaeldeluna@presidencia.gob.do	Participates in the ERP with agroforestry and reforestation activities.

8	Dominican Forest Committee	Mr. George Alexander Nader Chair Address: General Eusebio Manzueta, Edificio Jazmín 1, Apto B-1, Jardines Metropolitano. Santiago, R.D. camaraforestalrd@gmail.com 809-697-8128/809-580-8855	Participates in the ERP as a union that brings together timber professionals, producers, associations and processors. It will be involved in sustainable forest management.
Private Producer Associations			
1	San Ramón Foresters Association (La Celestina)	Mr. Juan Carlos Rodriguez Chair Address: Carretera El Pinar, El Rubio 51000 Municipio San José de las Matas, Provincia Santiago de los Caballeros, R. D. Telephone number: 829 292-9017	Participates in the ERP with sustainable forest management actions.
2	Association for the Sustainable Development of Forest Restoration (ASODEFOREST)	Mr. Ángel Belliard Chair Address: Calle Los Bomberos Municipio de Restauración Provincia Dajabón, R.D. Telephone number: 829 659-1207 E-mail: asodeforest@hotmail.com	Participates in the ERP with sustainable forest management actions.

2. STRATEGIC CONTEXT AND RATIONALE FOR THE ER PROGRAM

2.1. Current status of the Readiness Package and summary of additional achievements of readiness activities in the country

The Dominican Republic began its process to join the FCPF initiative through an Expression of Interest Letter¹ that it submitted on 30 January 2013, which was filed by Dr. Bautista Rojas Gómez, Minister of Environment and Natural Resources (MEDIO AMBIENTE). As a result, and following the review made by the World Bank (in its capacity as Delivery Partner), the FCPF Participants Committee (PC) and the Technical

¹Ministry of the Environment and Natural Resources. 2011. Supplement to EoI in Joining the FCPF [PDF file]. Retrieved from: https://www.forestcarbonpartnership.org/sites/fcp/files/Documents/PDF/Jan2013/0.%20FCPF%20Info%20to%20Support%20Interest_Dominican%20Republic_29012013.pdf



Assessment Panel (TAP), the country submitted its final version of the *Readiness Preparation Proposal* (R-PP) in July 2014², allowing it to access an initial, non-refundable donation of USD 3.8 million.

Between July 2014 and January 2018, the Dominican Republic made significant progress through various elements included in the REDD+ preparation phase as part of the FCPF, submitting its Mid-Term Report (MTR)³ in January 2018. This was approved, which allowed the country to access a second non-refundable donation of USD 2.2 million.

During September and October 2018, following a difficult consolidation process and progress in various studies, alliances and institutional arrangements, the country developed its Readiness Package for REDD+ (R-Package) which included the most significant steps that it had carried out in each of the four components that the FCPF had set out in order to monitor the progress of REDD+ in the country.

Likewise, as part of the drafting of this document, a REDD+ Preparation Assessment Workshop was held on the 4 and 5 October 2018 in Santo Domingo, Dominican Republic, which included the participation of 56 representatives from the public sector, private sector, producers, academia, research groups and civil society. The R-Package therefore includes an analysis of the results obtained in the Assessment Workshop from a series of criteria and guiding questions specific to the national context of the Dominican Republic, based on what is set out in the “Guide to the FCPF Preparation Assessment Framework.”⁴

The Dominican Republic is expected to submit its R-Package for approval before the FCPF Participants Committee in the PC27 to be held in March, as a formal demonstration that it has made sufficient progress in the REDD+ preparation phase.

Meanwhile, the country also decided to make progress in the pilot phase of the Results-Based Payments (RBP) that the FCPF includes through the Carbon Fund, by developing, submitting and approving its Emissions Reduction Project Idea Note (ER-PIN)⁵ on 21 September 2015, and signing the Letter of Intent (LOI)⁶ between the World Bank and the Ministry of Economy, Planning and Development (MEPyD) on 2 June 2016, which is why it is currently developing its Emissions Reduction Programme Document (ERPD).

2.2. Ambition and strategic rationale for the ER Program

The Dominican Republic has a long and rich history of protecting its natural resources, having dedicated significant efforts to the conservation and development of its forests and its related resources such as

² Forest Carbon Partnership Facility. 2014. Readiness Preparation Proposal. [PDF file] Retrieved from:

https://www.forestcarbonpartnership.org/sites/fcp/files/2014/December/R-PP_%20Republica%20Dominicana.pdf

³ Ministry of the Environment and Natural Resources. 2018. Mid-Term Report (MTR) Dominican Republic. [PDF file]. Retrieved from:

https://www.forestcarbonpartnership.org/sites/fcp/files/2018/January/Dominican%20Republic%20MTR%20January%202018%20%20eng_FINAL%20VERSION%20%20.pdf

⁴ Forest Carbon Facility. 2013. *Guide to the FCPF Preparation Assessment Framework* [PDF file]. Retrieved from: <http://www.forestcarbonpartnership.org/sites/fcp/files/2013/July2013/FCPC%20framework%207-25-13%20SPA%20web.pdf>

⁵ Forest Carbon Partnership Facility. 2015. Emission Reductions Program Idea Note (ER-PIN) [PDF file]. Retrieved from: <https://www.forestcarbonpartnership.org/sites/fcp/files/2015/September/Dominican%20Republic%20ER-PIN%20Final.pdf>

⁶ The World Bank. 2016. Letter of Intent: Dominican Republic. [PDF file]. Retrieved from:

<https://www.forestcarbonpartnership.org/sites/fcp/files/2016/June/LOI%20Official%20Document%20signed%20Dominican%20Republic.pdf>

biodiversity, water and land. The legal provisions, administrative measures and institutional arrangements that support the efforts of the country in the conservation of its forest land began in colonial times and reached a degree of maturity from the 1960s, when provisions were put in place to expand protected areas and forest conservation measures were set up.

Over time, the protection of forest resources became a Government policy, supported by all of the governments that have taken office in the past 50 years.

In the most recent decades, it has become clear that the Dominican Republic is one of the countries that is more vulnerable to climate change. According to the Global Climate Risk Index⁷, in the past 5 years the country has ranked between the 8th and 11th most vulnerable country.

These factors, along with the commitments made before the United Nations Framework Convention on Climate Change (UNFCCC) have led the country to arrange actions to mitigate climate change and adapt to its effects. These objectives are set out in its Nationally Determined Contribution (NDC) which the country submitted to the UNFCCC in 2015 and which includes actions for the forest and agricultural sector. The NDC aims to reduce emissions by 25% by the year 2030, using 2010 as the base year.

The ERP is currently the most significant component in the Dominican Republic's REDD+ Strategy, which will be implemented on a national scale. The main objective of the Programme is to significantly reduce GHG emissions resulting from deforestation and forest degradation and to substantially increase carbon reservoirs by implementing strategic actions aiming to boost coverage regeneration in degraded areas and establishing coffee, cocoa and silvopastoral systems. This set of strategic actions aims to convert the country into a net carbon reservoir in the Land use, land-use change and forestry sector from the second or third year of the ERP's implementation (Table 2.2.1).

Table 2.2.1 Estimated net impact of the ERP between 2020 and 2025 (in tCO₂e). Positive emissions flow towards the atmosphere, negative emissions flow towards the biosphere.

ERPA term year t	Reference level (tCO ₂ - e/yr)	Estimation of expected emissions / removals under the ER Program (tCO ₂ -e/yr)					Emission Reduction	Estimation of expected set- aside to reflect the risk of reversal and level of uncertainty associated with the estimation of ERs during the Term of the ERPA (tCO ₂ - e/yr)	Estimated Emission Reductions (tCO ₂ -e/yr)
	FREL	Annual Emissions (t CO ₂ -e/yr)		Annual Removals (t CO ₂ -e/yr)		FREL projected			
		Forest lands converted to croplands / pastures	Lands that remains as forest	Lands converted to forest lands	Lands that remains as forest				
2020	662,545	3,020,604	561,641	(2,333,882)	(968.088)	280,274	382,271	63,712	318,559
2021	662,545	2,520,187	540,041	(2,527,694)	(968.088)	(435.554)	1,098,098	183,016	915,082
2022	662,545	2,452,745	517,962	(2,721,505)	(968.088)	(718.887)	1,381,431	230,239	1,151,193
2023	662,545	2,432,048	495,883	(2,915,317)	(968.088)	(955.474)	1,618,019	269,670	1,348,349
2024	662,545	2,424,334	473,804	(3,109,129)	(968.088)	(1,179,079)	1,841,623	306,937	1,534,686
Total	3,312,725	12,849,918	2,589,331	(13,607,527)	(4,840,440)	(3,008,720)	6,321,442	1,053,574	5,267,868

1.1. ⁷ **Global Climate Risk Index. 2015.** <https://germanwatch.org/en/cri>

The emissions in the forest sector with reference to the historical data were estimated to be at an average of 662,545 tCO₂e/year, with a total of 3,312,725 tCO₂e between 2020 and 2024. With the implementation of the activities planned for the ERP, the emissions and removals during that period account for 6,321,442 tCO₂e. By deducting the buffers and uncertainty, the calculations indicate that the programme would reduce **5,267,868** tCO₂e. This implies that with the ERP, the country will be a net carbon sink.

At the same time, the Programme aims to improve the quality of life in Dominican rural communities and increase the resilience of the natural ecosystems against climate change. The Programme is considered to be a key instrument in increasing the flow of funds for the environmental sector, which will allow the Government to strengthen its national and international position.

In view of this, the ERP is considered to be a basis for the National REDD+ Strategy, which is being developed with the assistance of various key parties. The ERP includes fulfilling three *Strategic Options* and 22 *Strategic Actions*, which will comply with the core part of the National REDD+ Strategy (see Chapter 4 for details of the strategic actions).

The Strategic Options included are:

4. To strengthen the legal and institutional framework for the conservation of the country's natural heritage and the sustainable use of natural resources (6 strategic actions).
5. To establish, strengthen and apply public policies in order to limit and/or contain the expansion of agricultural and livestock frontiers and the infrastructure in forest areas (4 strategic actions).
6. To promote natural resource management models that contribute to forest conservation and sustainable use and the increase of forest coverage (12 strategic actions).

The first two options are very important as they generate the legal and institutional conditions needed in order to meet the established reduction goals, while the third option includes specific core actions to be carried out in the field through plans, programmes and projects being run in the country (Table 2.2.2).

Table 2.2.2 Existing plans, programmes and projects that are part of the ERP, responsible authority and main types of actions included in the projects.

Plans, programmes and projects	Responsible ministry	Main types of actions
National Quisqueya Verde Plan	MEDIO AMBIENTE	Reforestation, agroforestry, social forestry
National System of Protected Areas	MEDIO AMBIENTE	Conservation of natural resources, PNA management plans
Agroforestry programme	Interministerial	Coffee/fruit plantations, reforestation
Shade-grown cocoa agroforestry systems	Ministry of Agriculture	Cocoa plantations
Shade-grown coffee agroforestry systems	Ministry of Agriculture	Coffee plantations

Silvopastoral systems and forest conservation in livestock farms	Ministry of Agriculture, DIGEGA, CONALECHE	Restoration, natural regeneration, conservation
Resilient Agriculture and Integrated Water Resources Management Project	Ministry of Economy, Planning and Development	Forest conservation, cocoa and coffee plantations
Sustainable Forest Management	MEDIO AMBIENTE	Forest management, reforestation
Payment for Environmental Services, Yaque del Norte Watershed	MEDIO AMBIENTE	Coffee plantations and management, forest conservation

The ERP will be implemented on a national level, although some components have an approach that requires special attention in 5 priority geographical areas, where an increase in the rate of deforestation and forest degradation is anticipated due to anthropic pressure. Furthermore, protected areas have been identified that experience a high pressure on its natural resources, which may result in deforestation and forest degradation (see the *Carbon Accounting* section in Chapter 4 for further details).

The ERP is not only directed towards decreasing or halting deforestation and forest degradation; it is also important to address the agriculture and livestock production systems, which are putting pressure on forest resources. The ERP will particularly be supported by agricultural and livestock projects that have nationwide objectives and actions and a sustainable development approach, as is the case with shade-grown cocoa and coffee production and silvopastoral systems. To this end, the ERP will play a fundamental role in promoting and achieving inter-institutional collaboration in order to contribute to the following objectives of the *National Development Strategy*:

- Protecting and using the country's ecosystems goods and services, biodiversity and the natural heritage in a sustainable manner.
- Promoting sustainable production and consumption.
- To reduce vulnerability and make progress in adapting to *climate change*, and to contribute towards *mitigating its causes*.

With the REDD+ strategic options it aims to contribute towards: i) increasing the quality of life for the rural population, ii) transforming into an equitable and sustainable society that is in harmony with its natural environment, iii) strengthening institutional capacities in support of human development.

2.3. Political commitment

The Dominican Republic's commitment to implementing REDD+

The Dominican Republic is committed to protecting the environment and its natural resources, which is evidenced by the 2010 National Constitution, specific national laws such as the General Law on Environmental and Natural Resources (Law 64-00) and the Sectoral Law of Protected Areas (Law 202-04), among other legal instruments.

The Constitution of the Dominican Republic grants a high level of commitment to the sustainable management of natural resources.⁸ Article 194 stipulates that *“The formulation and execution, through law, of a plan of territorial ordering that ensures the efficient and sustainable use of the natural resources of the Nation, in accordance with the necessity of adaptation to climate change, is a priority of the State.”* Article 17(2) states that *“The reforestation of the country, the conservation of the forests and the renewal of forestry resources are declared to be a national priority and in the social interest.”* Furthermore, Article 241 sets out the “Strategy of Development.” In 2012, the Executive Power developed and submitted a strategy of development to the National Congress that set out the nation’s long-term vision (Law 01-12).

The Emissions Reduction Programme (ERP) falls under these national development objectives. Article 6 of Law 01-12, which defines the **National Development Strategy 2010-2030 (END-30)**,⁹ states that *“The public policies shall be structured around four strategic axes, with their corresponding Objectives and Lines of Action, which define the sustainable development model to which the Dominican Republic aspires.”* The fourth axis proposes *“A society with a sustainable production and consumption culture that manages the risks and the protection of the environment and natural resources with equity and efficiency, and promotes an adequate adaptation to climate change.”* The objectives of this strategy include:

- Protecting and using the country’s ecosystems goods and services, biodiversity and the natural heritage in a sustainable manner.
- Promoting sustainable production and consumption.
- Reducing vulnerability, making progress in adapting to *climate change*, and contributing towards *mitigating its causes*.

These objectives contain various milestones relating to the execution and implementation of the ERP, which makes it a challenge to create institutional arrangements, policies and tools that make the Programme’s implementation viable.

On an international level, the country is signatory to agreements and conventions that aim to protect the environment and natural resources. The ratified and negotiated instruments include the Rio Declaration of 1992, which sets out the principles that shall guide the behaviour of the States and its societies towards achieving sustainable development. The Dominican Republic is also a member of the Convention on Biological Diversity, the Convention to Combat Desertification and the United Nations Framework Convention on Climate Change (UNFCCC). It also ratified the Kyoto Protocol (2012) and the Paris Agreement (2016). The country is also a member of the mechanisms created by the Convention on Climate Change, including the REDD+ Mechanism.

To date, the Dominican Republic has issued three national reports, the most recent being in 2017. It also actively participates in international negotiations to establish the REDD+ Mechanism. In terms of important actions in climate finance, the Dominican Republic was a part of the Caribbean Constituency and formed part of the first Governing Committee of the Green Climate Fund, among others.

⁸ <https://www.ifrc.org/docs/idrl/751ES.pdf>

⁹ National Development Strategy (*Estrategia Nacional de Desarrollo*)

<http://www.omg.com.do/files/Uploads/Documents/Ley%20No.%201->

[12,%20Que%20establece%20la%20Estrategia%20Nacional%20de%20Desarrollo%202030.pdf](http://www.omg.com.do/files/Uploads/Documents/Ley%20No.%201-12,%20Que%20establece%20la%20Estrategia%20Nacional%20de%20Desarrollo%202030.pdf)

Programme Steering Committee (SC)

The Programme Steering Committee will be composed of the Ministry of Economy, Planning and Development (MEPyD), the Ministry of Agriculture (MA) and the Ministry of Environment and Natural Resources (Medio Ambiente), the latter of which will chair the committee. These three institutions have strategic roles in the use of the national territory.

- Ministry of Economy, Planning and Development (MEPyD)

Designs, proposes, executes and assesses the country's economic and financial policy in order to reach the growth required as a basic condition for the sustainable economic development of the country. The main management instrument for this Ministry is the "National Development Strategy 2010-2030" which has four programme areas. Article 10 of this strategy states that "the fourth national development programme area is sustainable environmental management and an adequate adaptation to climate change." The strategy defines four objectives to reach this goal, namely: a) To protect and make use of natural resources in a sustainable manner and to improve environmental quality; b) To manage water resources in a rational and sustainable manner, c) To develop an efficient and comprehensive national risk management system, with active participation from communities, and d) To make progress in adapting to climate change and in mitigating its causes. In addition, it defines the policies, norms and procedures for international technical and financial non-reimbursable cooperation in the country. It also negotiates, agrees, monitors and evaluates the commitments with multilateral and bilateral organizations that are in the country.

- Ministry of Agriculture

Ministry of Agriculture (MA): This body is responsible for the comprehensive long-term rural development vision, that formulates and directs the country's agricultural policy in line with the general development plans, supports cooperation and coordination with the other sectors in the national economy, promotes the fundamental interrelationships that the agricultural sector must build with the potential for transforming the production structure, and assesses the rural environment, the sustainability of the development model and the human resources available.

- Ministry of the Environment and Natural Resources

The Ministry of Environment and Natural Resources is the national body at a political and technical level, in charge of drafting national policies that will be implemented for the planning, management and supervision of forest resources and the environment in general, and coordinating the effective implementation of these policies, including forest investments, with regional forest authorities. Furthermore, the Ministry of Environment is the *national environmental authority and climate change focal point*, and is therefore the institution responsible for representing the country in negotiations as part of the UNFCCC. According to the Constitution of the Dominican Republic (2010), it is the country's duty to prevent contamination and to protect and maintain the environment. Resolution 02-2002 created the *National Climate Committee* within the Ministry.

The SC will ensure that REDD+ is incorporated into decision-making levels when forming public policies related to forest management and to land use and land-use change, and will provide political and strategic support for the implementation of the ERP in this regard. The SC will also have a role to ensure that the National REDD+ Strategy is consistent with and in line with the sectoral programmes run by the institutions involved, with the development plans and policies and with the national policies and plans to reduce poverty.

REDD+ Technical Advisory Committee (CTA)

The role of the Technical Advisory Committee (TAC) is to provide consultancy and support. The CTA is an inter-institutional body composed of institutions from the public and private sectors. Its main objective will be to provide technical advice to the Steering Committee, facilitate inter-institutional coordination and monitor the implementation of REDD+ actions. The CTA will also facilitate and ensure the flow of information between the national institutions involved in the ERP implementation process.

Emissions Reduction Programmes and Projects

The Dominican Republic has programmes, plans and objectives led by the public sector, the most significant ones being the National Quisqueya Verde Plan, the Programme for the National System of Protected Areas, and the Agroforestry Development Programme (see Table 2.2.2). Meanwhile, the private sector develops forest management projects and programmes that combine protection with the development of productive forest activities. The projects with the highest impact and potential are: Plan Sierra - San Ramón Foresters Association (La Celestina project), the Association for the Sustainable Development of Forest Restoration (ASODEFOREST), El Zorzal Private Reserve, and the Water Fund.

Political commitment that supports the National REDD+ Strategy

The National REDD+ Strategy is part of the aforementioned policies, plans and projects and has a broad legal basis that is included in the mandate of the country's Constitution and serves as a general planning framework for the National Development Strategy.

The country has made a strong political commitment and has established institutional arrangements and instruments that will enable the correct implementation of climate change policies and actions. Instruments have already been created to help address the country's commitments and activities in terms of reducing deforestation and forest degradation, as well as promoting the restoration of forest coverage. The tools created include:

- a. National Climate Committee (Environment Resolution No. 02-02)¹⁰
- b. National Council on Climate Change and Clean Development Mechanism (Decree 601 -08)¹¹
- c. National Policy for Climate Change (Decree 269-15)¹²

¹⁰ <http://www.ambiente.gob.do/Transparencia/Legal/Paginas/Resoluciones.aspx>

¹¹ <https://ccclimatico.files.wordpress.com/2016/02/dec-no-601-08.pdf>

¹² <http://extwprlegs1.fao.org/docs/pdf/dom163790.pdf>

- d. Climate Change Directorate (Environment Resolution No. 011-10)
- e. Economic Development Plan Compatible with Climate Change (DECCC)¹³
- f. Department for Monitoring Greenhouse Gases - GHG (Environment Resolution No. 020-17)¹⁴
- g. National GHG Inventory System (Environment Resolution No. 17-14)¹⁵
- h. Sectoral Law of Protected Areas (Law 202-04)¹⁶
- i. Directorate of Social Participation and Access to Public Information (Environment Resolution No. 06/2009)¹⁷

3. ER PROGRAM LOCATION

3.1. Accounting Area of the ER Program

The accounting area for the Reducing Emissions from Deforestation and Degradation (REDD+) Programme for the Dominican Republic will be the entire national territory, with the exception of some small islands, keys and islets. The country occupies an area of 48,198 km² (4,819,800 ha), of which 47,733 km² will make up the accounting area. The Dominican Republic is located in the Caribbean on the island of Hispaniola, which it shares with the Republic of Haiti, between the geographic coordinates of 17° 36' – 19° 58' N and 68° 19' – 72° 01' W. Its perimeter is 1,963 km, of which 1,575 km is coast and 388 km are bordered with Haiti (Marcano, 2004). Its natural borders are the Atlantic Ocean to the north, the Caribbean Sea to the south, the Mona Passage to the east which separates it from Puerto Rico, and it has a land border with Haiti to the west.

In terms of planning and operation, the country is made up of 10 *Administrative Regions*. These regions were established through Presidential Decree No. 710-04, and are defined in the Territorial Division Document of 2015 by the National Statistics Office, belonging to the Ministry of Economy, Planning and Development (ONE, 2015). Five priority areas within these administrative regions have also been identified, with the aim of initiating interventions there. Further details on the priority areas are in Chapter 4.3.

¹³<https://www.forestcarbonpartnership.org/sites/forestcarbonpartnership.org/files/Documents/PDF/Jan2013/Hacia%20un%20crecimiento%20sostenible%20-%20El%20Plan%20DECCC%20de%20RD%20-%20Vers.pdf>

¹⁴<https://ambiente.gob.do/transparencia/base-legal/resoluciones/#>

¹⁵<https://ambiente.gob.do/transparencia/download/84/resoluciones/1274/resolucion-no-17-2014-que-crea-el-sistema-nacional-de-inventario-de-gases-de-efecto-invernadero-GHG-y-el-depto-de-monitoreo-y-verificacion-de-GHG.pdf>

¹⁶<http://www.ambiente.gob.do/Transparencia/Legal/Legal/Leves/Lev%20No.%20202-04.pdf>

¹⁷<http://extwprlegs1.fao.org/docs/pdf/dom104304.pdf>



Figure 3.1-1 Administrative Regions of the Dominican Republic. Source: ONE, 2016.

Table 3.1.1 Territorial extension of the Administrative Regions

MACROREGIONS	PLANNING REGIONS	AREA (KM ²)
North	Cibao Nordeste Region	4,146.10
	Cibao Noroeste Region	4,864.78
	Cibao Norte Region	5,454.64
	Cibao Sur Region	4,470.49
South west	El Valle Region	4,759.27
	Enriquillo Region	7,025.94
	Higuamo Region	5,174.77
South-east	Ozama or Metropolitan Region	1,393.17
	Valdesia Region	5,561.35
	Yuma Region	5,435.99

Source: National Statistics Office. 2012.

Forest cover refers to native woods, including pine forests, broadleaf forests, dry forests and mangrove. The pine forests are primarily made up of *Pinus occidentalis*, a species endemic to the island. The composition of the broadleaf forests is very diverse, with species such as *Didymopanax tremulus*, *Sloanea berteriana*, *Clusia rosea*, *Swietenia mahagoni*, and *Ocotea spp*. The dry forests include various species such

as *Prosopis juliflora*, *Guaiacum officinale*, and *Phylostilum braziliensis*. The mangrove forest is composed of *Rizophora mangle*, *Avicennia germinans*, *Laguncularia racemosa* and *Conocarpus erectus*.

76.15% of the accounting area is considered to be showing potential for capturing emissions through the following land uses (Obando, 2018):

- Forests: Conservation, sustainable use, planting.
- Shrubland: Forest development and restoration.
- Subsistence crops: Establishing agroforestry systems and forest plantations.
- Pasture: Interior forest conservation and establishing silvopastoral systems.

Emissions accounting on a national level will be supported by the implementation of 22 strategic REDD+ actions, which in turn will be supported by 9 programmes and projects that are being developed in the country. For further details, see Chapter 4.3.

3.2. Environmental and social conditions in the Accounting Area of the ER Program

3.2.1. Forest land and land-use dynamics

The total forest land, including tree-shaded crops such as cocoa and coffee, made up 2,435,931.85 ha in 2015, equivalent to 50.99% of the national territory. Of the forest land, 1,968,668.10 ha (41.21%) corresponds to land that has remained forest land, and the remaining 467,263.75 ha (9.78 %) corresponds to different types of vegetation that was converted to forest land in 2015.¹⁸ In addition, 184,851.39 ha (3.87 % of the land) stopped being forest land and started to be used for other purposes (Table 3.2.1 and Figure 3.2-1).

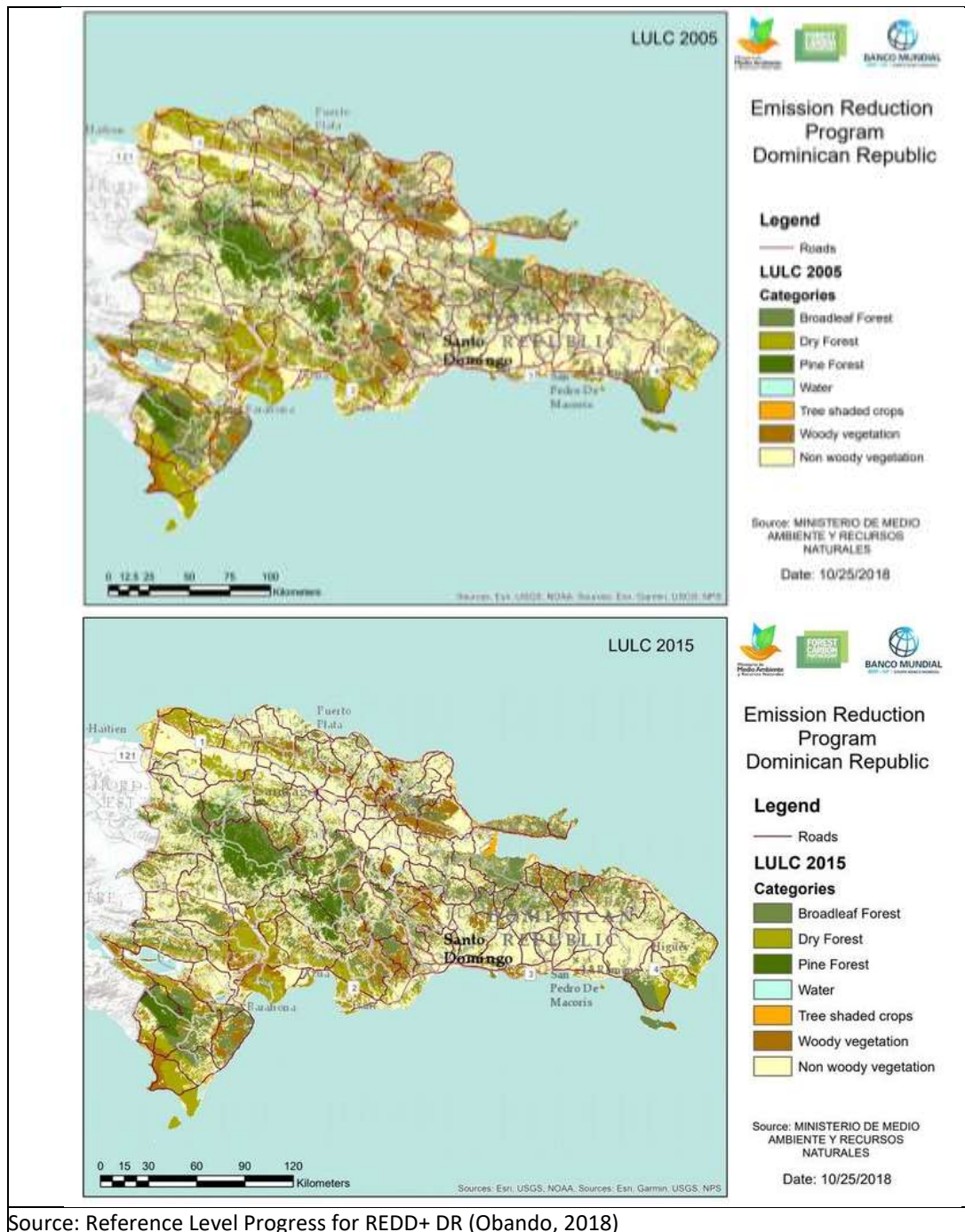
Table 3.2.1 Changes in forest cover during the 2005-2015 period

IPCC transition category	Change category	Area (ha)	Area (%)
Land that remained as forest land	Broadleaf forest	1,020,197.65	21.35
	Dry forest	372,137.03	7.79
	Coniferous Forest	266,872.55	5.59
	Tree-shaded crops	309,460.87	6.48
Subtotal		1,968,668.10	41.21
Forest land converted to non-forest land (deforestation)	Broadleaf forest to vegetation	41,128.34	0.86
	Broadleaf forest to non-woody veg.	88,183.87	1.85
	Dry forest to vegetation	22,157.69	0.46
	Dry forest to non-woody veg.	19,892.86	0.42
	Pine forest to vegetation	4,758.96	0.10
	Pine forest with non-woody veg.	8,729.67	0.18
Subtotal		184,851.39	3.87
Non-forest land converted into forest land	Woody veg. to broadleaf forest	135,988.50	2.85
	Woody veg. to dry forest	98,969.23	2.07

¹⁸ The forest coverage study for the reference level considers four transition categories in accordance with the IPCC (2006), namely: 1) land that remained as forest land throughout the analysed period (2005-2015), 2) forest land converted to non-forest land, 3) non-forest land converted to forest land, and 4) non-forest land.

	Woody veg. to pine forest	23,605.18	0.49
	Non-woody veg. to broadleaf forest	138,618.35	2.90
	Non-woody veg. to dry forest	34,823.72	0.73
	Non-woody veg. to pine forest	12,433.13	0.26
	Non-woody veg. to Tree-shaded crops	22,825.64	0.48
Subtotal		467,263.75	9.78
Non-forest land	Non-forest land	1,986,187.34	41.57
Transitions not considered		170,409.06	3.54
National territory without satellite information		42,420.36	0.88
Subtotal		2,199,016.76	45.6
Total		4,819,800.00	100.00

Territory with satellite information includes the Saona, Beata, Catalina and Cayo Levantado islands, and excludes other small islands, keys, islets and maritime boundaries. Source: Reference Level Progress for REDD+ DR (Obando, 2018)



Source: Reference Level Progress for REDD+ DR (Obando, 2018)

Figure 3.2-1 Map of forest cover 2005 and 2015

Forest area by administrative regions

Table 3.2.2 shows the forest cover for each *administrative region* in 2011.¹⁹ At that time, the region with the highest forest area compared to the national total was the Enriquillo Region, containing 18.03% of the country's forests. This region includes the Jaragua-Bahoruca-Enriquillo Biosphere Reserve, three national parks and other significant natural protected areas. This region is located on the border with Haiti and is also one of the poorest regions in the country, which puts further pressure and threats on its natural resources. The next largest forest areas are in the Cibao Norte Region (12.73% of the total), the Valdesia Region (12.63%) and the Cibao Sur Region (12.32%).

Table 3.2.2 **Forest cover by administrative region, 2011**

Region	Forest land by region (km ²)	Predominant forest type	% Forest per region
Ozama o Metropolitana Region	351.66	Moist broadleaf	1.8
Cibao Norte Region	2,432.76	Moist broadleaf	12.7
Cibao Sur Region	2,353.13	Conifers Moist broadleaf Cloud broadleaf	12.3
Cibao Nordeste Region	1,149.49	Moist broadleaf Cloud broadleaf Mangrove	6.0
Cibao Noroeste Region	1,885.07	Dry broadleaf Conifers Moist broadleaf	9.9
Valdesia Region	2,411.99	Dry broadleaf Moist broadleaf Conifers	12.6
Enriquillo Region	3,443.47	Dry broadleaf Conifers Moist broadleaf	18.0
Del Valle Region	1,982.7	Dry broadleaf Moist broadleaf Conifers	10.4
Yuma Region	1,328.26	Semi-moist broadleaf Moist broadleaf	7.0
Higuamo Region	1,765.04	Moist broadleaf	9.2
Totals	19,103.57		100

Source: Modified from the *Environment in Figures* document (2012)

¹⁹ Dominican Republic Environment in Figures (*Medio Ambiente en Cifras República Dominicana*), 2005-2011. Ministry of Environment and Natural Resources (2012).

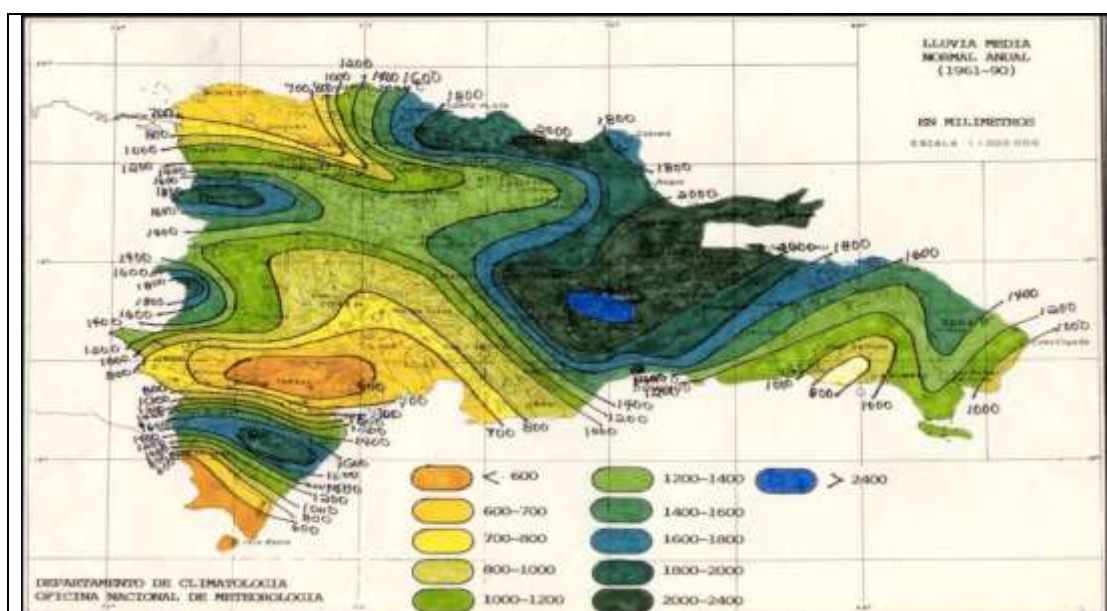
3.2.2. Climactic conditions and catastrophic events

Climactic conditions

The climate in the Dominican Republic is varied, with a strong influence from the Atlantic Ocean, the Caribbean Sea and the country's own topography. The topography is characterised by its diversity, with several mountain chains that primarily span in an east-west direction. Its peaks reach up to 3,175 metres above sea level on Pico Duarte, the highest in the insular Caribbean, and there is a depression of around 40 metres below sea level, in the basin of Lake Enriquillo.

Average *annual temperatures* range between 17.7°C (in Constanza, located 1,234 masl) and 27.7°C (in Neyba, located 10 masl) (Marcano, 2016), while the maximum average temperature in the past 10 years is 30.6°C and the minimum average is 20.9°C (Ministry of Environment and Natural Resources, 2017, data taken from the Climatology Department at the National Meteorology Office).

According to the Atlas of Natural Resources from the Ministry of Environment and Natural Resources (2012), precipitation follows a steady gradient with a top annual rainfall of nearly 3,000 mm in the north east of the country and a rainfall as low as 800 mm a year in arid areas in the south-east region (Figure 3.2-2).



Source: Climatology Department at the National Meteorology Office

Figure 3.2-2 Isohyet map of the Dominican Republic

In 1967, a bioclimatic classification system was created which established the Holdridge *life zone* systems. This bioclimatic system takes precipitation, altitude and biotemperature into account and calculates the potential natural vegetation that should appear under the prevailing conditions in each site. According to

this classification, the Dominican Republic exhibits 9 *life zones* and 7 *transition zones*. The life zones are: Subtropical montane shrub, subtropical dry forest, subtropical moist forest, low montane moist forest, montane wet forest, low montane wet forest, low montane rain forest and subtropical rain forest. In all, the life zones make up 97.29% of the national territory, with subtropical moist forests (45.58%) and subtropical dry forests (20.52%) spanning the largest areas.

Catastrophic events

The most intense catastrophic events are related to hydrometeorological phenomena such as thalwegs, tropical storms and hurricanes, which are common during the hurricane season that occurs every year in the North Atlantic between 1 June and 30 November. These phenomena are characterised by strong winds and floods caused by heavy rainfall, and often results in a loss of human life and materials. In the past 176 years, 82 atmospheric phenomena have directly impacted the country within a radius of 100 nautical miles, including: 32 hurricanes and 55 tropical storms.²⁰ The map in Figure 3.2-3 shows the incidence of hurricanes in the country.

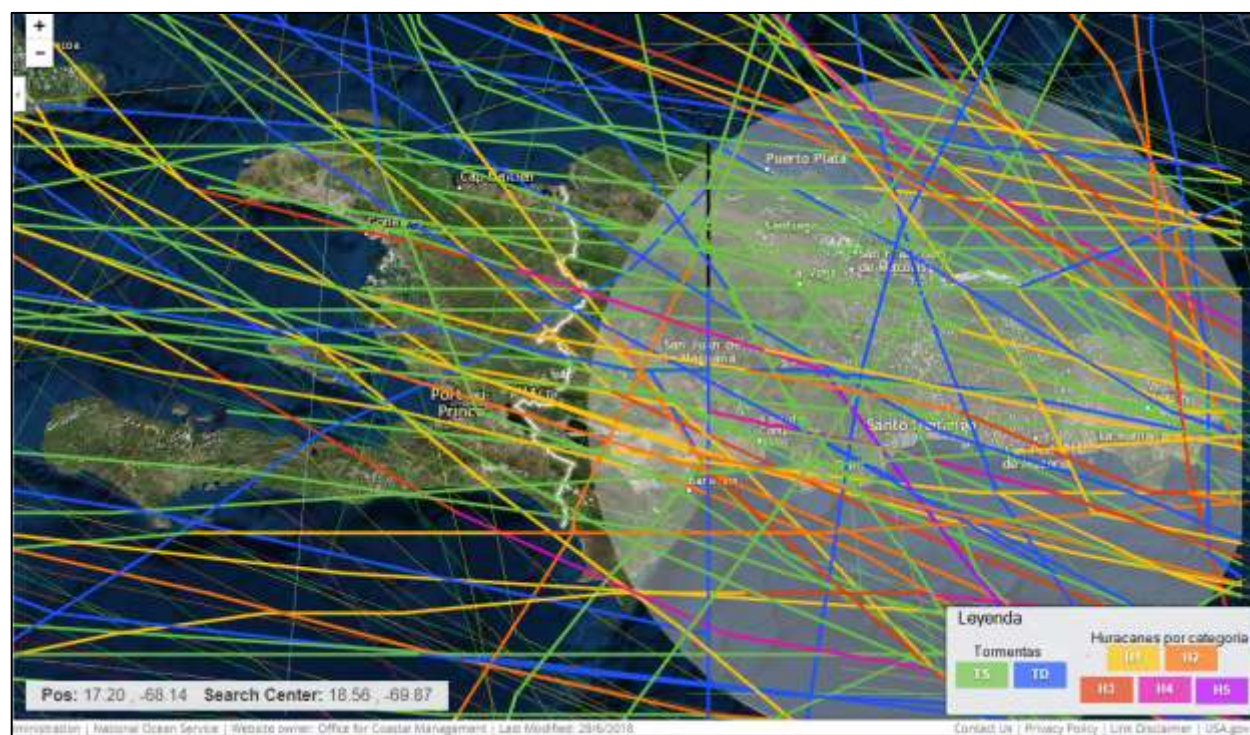


Figure 3.2-3 Incidence of hurricanes and storms in the Dominican Republic in the last 176 years

Source: National Oceanic and Atmospheric Administration (NOAA). 2018.

The country is also exposed to frequent droughts thanks to the El Niño phenomenon, affecting health, the quality of life, and productive activities, particularly agriculture and livestock. The country has regions that

²⁰ National Oceanic and Atmospheric Administration (NOAA). 2018. Compiled from: <https://coast.noaa.gov/hurricanes/>

are dry or arid for most of the year, such as the south east and north east. It is estimated that 24% of the Dominican territory (11,630.28 km²) is arid and based on the water potential for agriculture, 16.7% (8,055 km²) is classified as arid and semi-arid, with this land mostly being located in the Enriquillo and Cibao Noroeste regions.²¹ Cocco Quezada (1992) reported incidences of extreme drought for the years 1941, 1944, 1957 and 1972, while that Ministry of Agriculture reported an extreme drought in 2015.

Another threat that significantly affects forests is forest fires, both human-caused and naturally-caused. The majority of these occur during periods of annual seasonal drought (often between November and March). Forest fires also occur during periods of atemporal drought. Forest fires are considered to be one of the causes of deforestation and forest degradation and have been addressed as such in Chapters 4.1 and 4.3. 1,186 forest fires were recorded between 2012 and 2016, with an average of 237 forest fires per year. In 2014 and 2015, the country was affected by severe drought. This situation caused a higher number of forest fires to be recorded in those years (435 in 2015 and 231 in 2014).²²

On the other hand, the country is considered to have a high seismic risk, with a potential for tsunamis to occur. Several active fault lines pass through the country and are a source for seismic activity. The most active are those along the north coast, caused by the subduction of the North American plate under the Caribbean plate and which causes a large amount of activity on the north coast, and another fault crosses the southern coast of the island, which was the origin of the earthquake that devastated Haiti on 12 January 2010 (MEPyD/BID, 2012).

3.2.3. Soils and their production capacity

The following soil types exist in the Dominican Republic: savannah soils, non-calcareous clay soils, calcareous soils, soils derived from igneous rocks, volcanic soils, metamorphic soils, recent alluvial soils, organic soils, wetlands, coastal beaches and dunes, karst, and rough mountain terrain.²³

Taking into account various characteristics that define their capability for agricultural activity, according to the classification made by Klingebiel and Montgomery's Land-Capability Classification for the US Department of Agriculture (USDA) in 1961, the soils have been grouped into eight (8) classes of productive capabilities, according to their slope, stoniness, depth, drainage and erosion hazard. Classes I to IV are considered to be suitable for cultivation, with various limitations that increase in line with its designated number. The soils in Class V, although level, have practically no soil content but are stony or rocky, or remain wet for the majority of the year. Due to its limitations in sustaining agricultural activity, Class VI is recommended for forest plantations and similar permanent crops, such as shade-grown coffee, cocoa and fruit. Classes VII and VIII are not suitable for agricultural activities and are recommended for forest conservation, wildlife areas and protected areas of nature.²⁴

²¹ National Action Plan Against Desertification and the Effects of Drought (PAN-LCD), aligned with the Decennial Strategy and the Integrated Financial Strategy. 2012. Ministry of the Environment and Natural Resources. Dominican Republic.

²² The Environment in Figures, 2012-2016. Ministry of the Environment and Natural Resources. National Programme for the Prevention and Control of Forest Fires.

²³ Ministry of the Environment. 2012 Atlas of the Biodiversity and Natural Resources of the Dominican Republic. Study of the country's soil carried out by the OAS in 1967, as part of the "Survey of Natural Resources of the Dominican Republic."

²⁴ Klingebiel y Montgomery, 1961. Land-Capability Classification for the US Department of Agriculture (USDA).

However, the degree of soil management technology available nowadays could affect this classification, at least in some categories. This classification highlights that the majority of the national territory is forest vocation land and falls under Classes VI, VII and VIII, covering an area of 29,155.48 km², or 60.51% of the country. The soils with agricultural purposes cover 11,154.9 km², or 23.15%. Furthermore, the *administrative regions* that have a higher coverage of forest land are: Cibao Norte, Cibao Sur, Cibao Noroeste, El Valle, Valdesia and Yuna (see Table 3.2.3).

Table 3.2.3 Production capacity of soils by administrative region, in km²

Production Capacity	Cibao Nordeste Region	Cibao Noroeste Region	Cibao Norte Region	Cibao Sur Region	El Valle Region	Enriquillo Region	Higuamo Region	Ozama Region	Valdesia Region	Yuma Region
Class I	223.33		211.29	87.36	4.21					
Class II	453.12	273.56	379.67	349.85	351.95	156.44	284.09	118.20	283.23	194.30
Class III	172.59	276.08	135.66	113.42	481.22	590.83	666.84	59.52	637.69	464.16
Class IV	273.18	800.17	273.07	319.33	373.88	334.05	562.43	390.09	393.47	458.20
Class V	780.82	1,213.93	328.51	541.41	318.22	444.12	1,477.17	623.50	297.58	1,481.90
Class VI	477.45	510.11	558.06	258.30	362.51	932.08	292.38	44.26	228.90	541.70
Class VII	1,475.73	1,405.70	3,385.33	2,798.96	2,859.67	3,888.70	1,852.49	156.20	3,675.17	2,074.08
Class VIII	275.29	375.49	178.53	1.86		252.53	34.78		37.20	198.44
Lakes and lagoons		2.16				343.36				16.79
Overall total	4,131.51	4,857.20	5,450.13	4,470.49	4,751.66	6,942.11	5,170.18	1,391.77	5,553.24	5,429.57

Source: Segura 2018. Preliminary REDD+ Project Report, Dominican Republic

3.2.4 Rare and endangered species and their habitats

Myers et al. (2000) state that the insular Caribbean is one of the five most significant areas *in the world* for biodiversity, and that the island of Hispaniola (Dominican Republic and Haiti) is characterised by a high level of endemism. For the Dominican Republic, 15 zones of high endemism have been reported.²⁵

The biological diversity and species richness in Hispaniola is partly explained by its geotectonic complexity (Brace, 2012). This distinctive feature has contributed to the emergence of several species with a restricted geographical distribution, which increases the risk of extinction (Ministry of Environment and Natural Resources, 2014). The loss and fragmentation of habitats are considered to be one of the fundamental causes of threats to biodiversity (Ministry of Environment and Natural Resources, 2019; IUCN Red List).

²⁵ Ministry of the Environment and Natural Resources. 2012. Atlas of the Biodiversity and Natural Resources of the Dominican Republic.

The Biological Diversity Crisis is magnified in the islands, particularly in the Dominican Republic, which is reflected by the large number of flora and fauna species that are in danger of extinction. Between 2016 and 2018, the country conducted its Red List of Vascular Plants (National Botanical Garden, 2016), and reviewed its National Red List of Threatened Species (Ministry of Environment and Natural Resources, 2019).

Of a total of 5,500 vascular plant species in the Dominican Republic, 1,388 species were evaluated. Of these, 1,330 species (representing 96% of the evaluated species and 25% of the total vascular plants in the Dominican Republic) fell into either the Critically Endangered (CR), Endangered (EN) or Vulnerable (VU) categories.

Meanwhile, for the National Red List review, 538 species were evaluated (which included vertebrates and invertebrates, land-based, freshwater and marine animals), of which 78% of the evaluated species (423 species) fell into one of the Threatened categories mentioned above (CR, EN, VU).

This means that, of the 1,926 plant and animal species evaluated in accordance with the Red List methodology, 91% (1,753 species) fell into one of the three threatened species categories.

Table 3.2.4 Species of Flora and Fauna on the 2019 National Red List

Species of Flora and Fauna on the 2019 National Red List								
	Total species	Total evaluated	Total threatened	% under threat of the total number of species in DR	% under threat of the total number of species evaluated	Threatened categories		
						CR	EN	VU
Vascular plants ¹	5,500	1,388	1,330	24%	96%	813	249	268
Animals (including vertebrates and invertebrates, land-based, freshwater and marine) ²		538	423		78%	68	94	268
Totals		1,926	1,753		91%	881	343	536

¹National Botanical Garden. 2016. Red List of Vascular Flora in the Dominican Republic.

²Ministry of the Environment and Natural Resources. 2019. List of Species in Danger of Extinction, Threatened or Protected in the Dominican Republic. 2019.

If we only analyse only the data from the three main taxa of vertebrates, amphibians, reptiles and birds, even higher percentages of threatened species can be seen; 78% of amphibian species, 63% of reptiles and 14% of birds, according to the National Red List evaluation. The percentage is somewhat lower if only the data from the IUCN Global Red List is taken as a reference (70% of amphibians, 38% of reptiles and 6% birds). These differences are partly due to the fact that the number of species evaluated at a national level is higher than the number of species evaluated by the IUCN.

Table 3.2.5 Percentages of amphibians, reptiles and birds under threat in the Dominican Republic. 2018.

Percentages of amphibians, reptiles and birds under threat in the Dominican Republic. 2018.					
	Total species	National Red List of Threatened Species (NRL)	%	IUCN Red List of Threatened Species (NRL) (GRL)	%
Amphibians¹	46	36	78	32	70
Reptiles¹	124	78	63	47	38
Birds²	306	42	14	18	6

¹Caribherp. <http://www.caribherp.org>

²Latta, S. et al. 2006. Birds of the Dominican Republic and Haiti. Princeton University Press. Princeton and Oxford. 381 pp.

Despite the majority of the endemic flora and fauna and threatened species residing in the National System of Protected Areas, they remain in a critical situation.

The protected areas of Sierra de Bahoruco and Jaragua National Park (Jaragua-Bahoruco-Enriquillo Biosphere Reserve) are notable for their high level of endemism, along with the protected areas in the Central Cordillera.

In terms of administrative regions, the Enriquillo and Valdesia regions have the highest concentration of protected areas, with 27.92% and 10.83% respectively. Table 3.2.3.

Table 3.2.6 Protected areas by administrative region

Administrative Region	Area of PA	
	km²	%
Cibao Nordeste Region	581.03	4.47
Cibao Noroeste Region	1,146.84	8.83
Cibao Norte Region	1,405.87	10.83
Cibao Sur Region	1,134.38	8.74
El Valle Region	1,138.84	8.77
Enriquillo Region	3,625.59	27.92
Higuamo Region	721.33	5.55
Ozama/Metropolitan Region	52.74	0.41
Valdesia Region	2,513.40	19.36
Yuma Region	665.64	5.13
Totals	12,985.66	100

3.2.5. Description of stakeholders and their role in the ERP

Below is a brief description of the stakeholders and their role in the ERP.

Table 3.2.7 Stakeholders and their role in the ERP

NAME	DESCRIPTION	DIRECT OR INDIRECT ROLE IN THE ERP
Group 1. Public sector		
Ministry of the Environment and Natural Resources	Institution responsible for drafting and implementing national environmental and natural resource policies.	Through its various Vice Ministries and Departments, it prepares and coordinates the development and implementation of the NS-REDD+ and the ERP. It is a member of the REDD+ Directive Committee (DC).
Ministry of Agriculture	Responsible for developing and directing the country's agricultural policy in line with development plans. It is also responsible for overseeing the land-use techniques applied. It is a national institution: it has a central office and offices in different regions around the country.	Member of the DC. Actively participates in defining and implementing agroforestry and technical support programmes for farmers.
Ministry of Economy, Planning and Development (MEPYD)	Responsible for coordinating the formulation, management, monitoring and assessment of the macroeconomic and sustainable development policies. It is also responsible for creating the Development Strategy and the National Multi-annual Public Sector Plan, including the necessary coordination at a municipal, provincial, regional, national and sectoral level, in order to ensure global consistency between policies, plans, programmes and actions.	Member of the DC. Responsible for territorial ordering and for ensuring consistency between the plans and programmes of the public bodies included in the National Planning and Public Investment System, and for incorporating REDD+ into these plans.
Technical Implementing Unit for Agroforestry Development Projects	Unit created to execute and supervise the implementation of agroforestry development projects approved at an interministerial level.	Direct participation in agroforestry and reforestation activities under REDD+.
The Dominican Institute of Coffee (INDOCAFE)	Independent and decentralised public institution, responsible for the design, planning and execution of the country's coffee development policy.	Member of the CTA. It will also actively participate in the development of agroforestry programmes for coffee under REDD+ and provide technical support to farmers.

NAME	DESCRIPTION	DIRECT OR INDIRECT ROLE IN THE ERP
General Directorate for Livestock (DIGEGA) and National Council for the Regulation and Promotion of the Dairy Industry (CONALECHE)	DIGEGA is a public institution that is responsible for development, promotion, technical assistance and funding policies and programmes for the country's livestock sector. CONALECHE is a protection institution for the development of the dairy industry.	DIGEGA is a member of the CTA. Both institutions will be implementing silvopastoral actions under REDD+.
Banco Agrícola de la República Dominicana	The Banco Agrícola will provide funding from the Government to producers in the sector through commercial loans.	To participate in agroforestry and silvopastoral programmes through financing at favourable rates.
National Water Resources Institute (INDRHI)	The governing body for water management, primarily for irrigation. It coordinates with the Irrigation Boards to maintain irrigation channels and related infrastructures.	Collaboration is planned for measuring REDD+ joint benefits, such as water flow volume.
Santiago Aqueduct and Sewerage Corporation (<i>Corporación de Acueducto y Alcantarillado de Santiago - CORAASAN</i>)	Government body whose mission is to ensure the adequate supply of drinking water and sanitation in the city of Santiago.	Member of the PES Programme Directive Committee in the Yaque del Norte Watershed, included in REDD+.
Ministry of Women	Defines and leads the implementation of public policies, plans and programmes that support gender equality and equity on a national level.	Participates in the CTA. It will also collaborate and advise on the integration of a gender approach into the NS-REDD+ and the ERP.
Group 2. Private sector		
Agricultural, Forestry, Coffee, Cocoa and Livestock Organisations	Representatives from companies, producers and forest, farm and/or livestock owners.	Beneficiaries of the REDD+ actions. They participate in the CTA and the Safeguards Working Group. They will implement activities directly on their premises.
Santo Domingo Water Fund and Yaque del Norte Water Fund	Financial mechanisms created to ensure investment resources for the restoration and conservation of ecosystems in catchment areas that supply water to the cities of Santo Domingo and Santiago.	Potential partners for implementing REDD+ (Reducing Emissions from Deforestation and Degradation) actions. Public-private partnership schemes.
Group 3. Academia and Research Teams		
UASD, INTEC, ESNAFOR, CEUR- PUCMM, IEESL, UNPHU, Red RAUDO, UAFAM, ISA, UTESA, UTECO, UCE, UTESUR, ITESA, UNEV IDIAF, CONIAF, among others	Stakeholders representing the Academy. These are relevant stakeholders in terms of training and research on the subject of environmental management and natural resources.	They are members of the CTA (REDD+ Technical Advisory Committee) and the Legal, Safeguards and Land and Forest Use Working Groups. They will be involved in defining the NS REDD+ (National REDD+ Strategy), the ERP (Emission Reduction Program), applying actions, safeguards and forestry monitoring.

NAME	DESCRIPTION	DIRECT OR INDIRECT ROLE IN THE ERP
Group 4. Civil Society		
Organizations of Ecologists and Ecological Societies, NGO (Non-Governmental Organizations)	They promote action targeting sustainability in relations between human beings and nature, by strengthening management to attain knowledge and respect for the natural environment and biodiversity. In addition, they roll out programmes and projects for forest conservation and management, sustainable agriculture, etc.	They take an active part in the CTA, in the Safeguards and Land and Forest Use Working Groups. They support the compilation and implementation of the NS REDD+ and help to supervise the application of safeguards and monitoring.
CBOs (Community-Based Organizations)	These are basic organizations bringing together housewives, young people, neighbours' associations, women's groups or associations and other social mobilization organizations in communities.	Members of the CTA and the Safeguards Working Group. These organizations play an important role as mobilizers in the community with the ability to call meetings and take social action, as well as participate as possible beneficiaries in REDD+.
INTERNATIONAL COOPERATION		
FAO, IICA, UNDP, GIZ, World Bank, IDB	Lateral and multilateral international bodies providing technical and financial cooperation with a presence in the country.	They support the implementation of development initiatives in the country and can supplement or support REDD+ initiatives.

3.2.6. Population

According to the 2010 population census (ONE [National Statistics Office - NSO], 2012), the total population of the country was 9,445,281 inhabitants, divided into 4,739,038 men (50.17 %) and 4,706,243 women (49.83 %). By that time most of the population was urban, reaching a figure of 7,023,949 people (74.36 %), while a total of 2,421,332 people (25.64 %) were living in rural areas. For 2018, the estimated total population for the country is 10,266,149 inhabitants (NSO, 2016).

Table 3.2.8 Estimation of total urban and rural population in the Dominican Republic in 2018

Category	Total	%
National population	10,266,149	100.00
Men	5,129,824	49.96
Women	5,136,325	50.03
Urban total	8,314,335	80.99
Urban men	4,085,307	49.13
Urban women	4,229,034	50.87
Rural total	1,951,814	19.01
Rural men	1,044,523	53.51
Rural women	907,291	46.49
Source: National Statistics Office, 2016		

For 2017 the country registered 424,964 immigrants, which represented 3.95 % of the total population, and by that time total emigrants were estimated to be 1,443,030, equivalent to 13.40 %²⁶.

Estimates of the population for 2018 indicate that the most densely populated administrative regions are Ozama, Cibao Norte, Valdesia and Cibao Sur, with a population density of 2,737, 289, 201 and 163 inhabitants/km² respectively. The region with the lowest population density is the Enriquillo Region in the south east of the country, with an estimated 53.66 inhab/km² (see Table 3.2.9).

Table 3.2.9 Population estimation in 2018 by administrative region (ONE, 2016)

Region	Provinces	Surface area (km ²)	Population	Density (inhab/km ²)
Total for country	31 provinces and one National District	48,670.83	10,266,149	210.93
Ozama o Metropolitana Region	National District Santo Domingo	1,400.79	3,834,835	2,737.62
Cibao Norte Region	Española Puerto Plata Santiago	5,532.03	1,600,820	289.37
Cibao Sur Region	La Vega Monseñor Nouel Sánchez Ramírez	4,475.76	733,379	163.85
Cibao Nordeste Region	Duarte Hermanas Mirabal María Trinidad Sánchez Samaná	4,171.23	641,259	153.73
Cibao Noroeste Region	Dajabón Monte Cristi Santiago Rodríguez Valverde	4,879.60	413,673	84.78
Valdesia Region	Azua Peravia San Cristóbal San José de Ocoa	5,445.27	1,096,613	201.39
Enriquillo Region	Bahoruco Barahona Independencia Pedernales	7,102.58	381,158	53.66
Del Valle Region	Elías Piña San Juan	4,995.59	287,657	57.58
Yuma Region	El Seibo La Altagracia La Romana	5,451.09	698,277	128.09
Higuamo Region	Monte Plata Hato Mayor San Pedro de Macorís	5,216.89	578,478	110.89

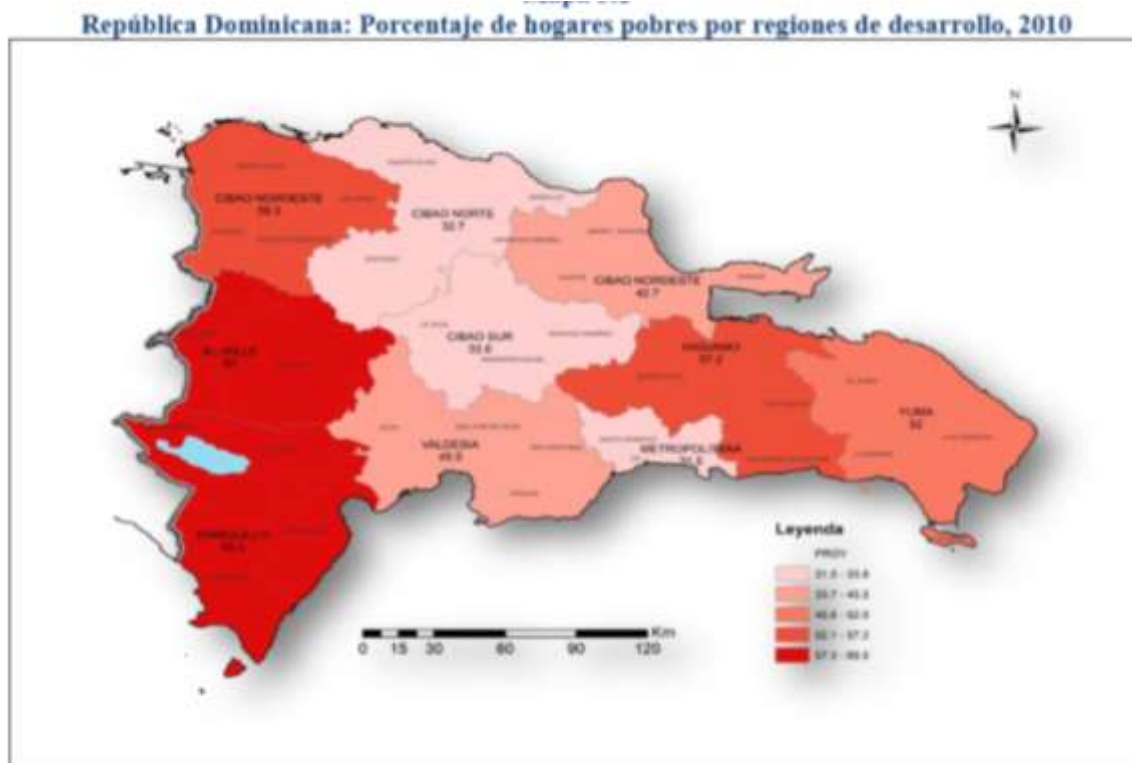
Source: National Statistics Office, 2016

²⁶ Expansión datosmacro.com. Internet page

In 2010 the population density for the country was 203 inhabitants/km², according to estimates it will be 213 inhab/km² in 2018 and for 2020 it is projected to be 217 inhab/km².

3.2.7. Social and economic conditions

Data from 2009 indicate that 34 % of the Dominican population lived in conditions of poverty, which is equivalent to 3 million 298 thousand people. The population living in extreme poverty was estimated at 10.4 % of the population, equivalent to 1 million 8,800 people.²⁷ According to official data, the proportion of people living in conditions of poverty had fallen to 30.5 % in 2016.²⁸ As far as the administrative regions are concerned, the poverty map for the Dominican Republic (Morillo Pérez, 2014) has some social and economic indicators giving us an idea of the prevailing conditions in these areas. Based on the number of poor households, the region with the highest level of poverty is the region of Enriquillo, followed by the region of Valle, both in the south east of the country, with Cibao Noroeste in third place. The regions with the lowest rate of poor households are the region of Ozama o Metropolitana, Cibao Norte and Cibao Sur. In the rural area, the highest rates of poor households also correspond to the regions of Enriquillo and El Valle. The regions with the lowest rate of poor households in the rural area are the regions of Ozama o Metropolitana, followed by Cibao Norte and Cibao Sur.



Fuente: Elaborado a partir del Apéndice estadístico del Mapa de la pobreza 2014.

²⁷ Dominican Republic United Nations. 2010. Monitoring Report of the Development Goals of the Millennium.

²⁸ Official Statistics of Monetary Poverty in the Dominican Republic. Bulletin 3. 2016. Ministry of Economy, Planning and Development (MEPyD)

The biggest differences in the state of poverty between the rural and urban areas can be seen in the region of Yuma with 71.5 % of poor households in the rural area and 47.0 % in its urban area. In terms of extreme poverty, the trend is repeated in the region of Enriquillo with the highest rate of households in extreme poverty at 49.6 %, and in Valle with 40.1 % (see Table 3.2.10).

Table 3.2.10 Poverty by administrative region (2014)

Region	General poverty (including extreme poverty)				Extreme Poverty	
	Urban		Rural		Urban	Rural
	Poor households	%	Poor households	%	Poor households	%
Cibao Norte Region	98,209	32.8	45,552	32.4	6.2	6.9
Cibao Sur Region	34,792	32.9	30,897	34.4	6.0	5.4
Cibao Nordeste Region	38,443	39.2	38,273	46.8	9.6	7.5
Cibao Noroeste Region	40,697	55.3	24,684	58	16.8	21.9
Valdesia Region	78,793	47.4	45,600	42.6	12.4	11.2
Enriquillo Region	48,614	66.5	16,373	80.2	25.8	49.6
Del Valle Region	26,428	58.2	26,577	78.8	21.6	40.1
Yuma Region	68,652	47.0	26,738	71.5	21.6	34.6
Higuamo Region	55,244	49.3	35,858	75.7	12.1	27.1
Ozama o Metropolitana Region	275,800	31.7	23,865	29.4	6.3	5.6

Source: Compiled from the statistical appendix of the poverty map 2014.

Based on social indicators, Table 3.2.11 summarizes the percentage of households per region lacking various basic facilities.

Table 3.2.11 Percentage of homes without basic facilities by administrative region

Regions	Drinking Water	Health care	Electric Power	Refuse collection	Adult education*	Need for housing assistance**	Access to ICT***
Cibao Nordeste	47.1	20.7	7.4	9.9	29	2.8	20.85
Cibao Noroeste	18.4	40.1	13.2	6.6	34	5	22.9
Cibao Norte	23.3	10.2	2.5	8.7	24.9	6.7	15.6
Cibao Sur	46.4	15.2	3	8.4	28.3	3.3	18.6
El Valle	30.6	39.4	14.2	8.5	44.3	4.4	33.5
Enriquillo	28.3	51.6	11.9	15.1	39.5	6.5	37.5
Higuamo	49.2	33.2	6.4	10	27	10.9	24.2
Ozama o Metropolitana	27.2	7.7	0.6	10.3	18.1	8.7	11.4
Valdesia	30.5	25.2	4.2	9.8	31.5	6.1	23.1

Yuma	57.2	2.4	9.7	8.8	26.4	19.4	19.5
*Households with semi-illiterate members aged 18 to 64 (2 or fewer years of education)							
**Lives in a shack, row of houses, rooming house or rear part							
***Percentage of households without access to communication technology (neither landline nor mobile telephone)							
Source: MEPyD. 2010. National Atlas of poverty in the Dominican Republic							

In terms of the need for drinking water, the regions of Yuma, Higuamo, Cibao Nordeste and Cibao Sur have the highest percentages of households lacking water. With regard to health care, the regions most lacking in these services are Enriquillo, Cibao Noroeste and El Valle. The regions least affected by this deficiency are Yuma and the Region Ozama o Metropolitana. In relation to the number of households needing electric power, the greatest demand comes from the El Valle region, followed by Cibao Noroeste. Deficiencies with refuse collection are more marked in the regions of Enriquillo and Ozama o Metropolitana. The need for adult schooling is most apparent in the regions of El Valle, Enriquillo and Valdesia. The need for housing is greatest in the region of Yuma and Higuamo. Finally, access to information and communication technologies (ICTs) is mainly limited to El Valle, Higuamo and Valdesia.

As far as economic aspects are concerned, it is estimated that for 2017 the national working population was 4,338,992 people, which represented 41.27 % of the total population²⁹. The distribution of the working population per type of activity is shown in Table 3.2.12, and indicates that the business, other services, industry and agriculture sectors absorb almost 58% of the working population (CREES, 2017).

Table 3.2.12 Distribution of the working population per economic activity

Activity	Proportion
Total working population	4,338,992
% employed	41.27
% in business	19.6
% in other services	19.5
% in industry	10.1
% in livestock and agriculture	9.2
% in transport and communications	7.8
% in construction	7.6
% in hotels, bars and restaurants	7.5
% in education	6.3
% in public administration and defence	5
% in health and social care	3.7
% in brokering and finance	2.3
% in electricity and water	1.5
Source: Centro Regional de Estrategias Económicas Sostenibles [Regional Centre of Sustainable Economic Strategies] (CREES). 2017	

From the total of employed people, the business activities in which women are most involved are hotels, bars and restaurants, with 54.3 % of the total working population being employed in this activity. 72.9 % of those working in education are women, while 81.6 % of those employed in health and social care are women (CREES, 2017).

²⁹ Centro Regional de Estrategias Económicas Sostenibles [Regional Centre of Sustainable Economic Strategies] (CREES). 2017

With regard to the development of economic sectors in relation to the GDP, the Banco Central de la República Dominicana (BCRD - *Central Bank of the Dominican Republic*) has a historical data series showing the behaviour of the various sectors of the economy in relation to their percentage contribution to the GDP. In this respect, the sector making the biggest contribution to the GDP is the services sector, whose contribution has grown from 59.2% in 2008 to 62.0 % in 2017 (see Table 3.2.13).

Table 3.2.13 Contribution of the economic sectors to the GDP (%)

Participación porcentual de los sectores económicos al PIB										
Sector	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Agropecuario	6.3%	6.1%	6.1%	5.6%	5.4%	5.3%	5.2%	5.6%	5.8%	5.7%
Subsector Agrícola	3.6%	3.6%	3.8%	3.6%	3.5%	3.4%	3.4%	3.8%	4.0%	3.9%
Ganadería, Silvicultura y Pesca	2.7%	2.6%	2.3%	2.0%	1.9%	1.9%	1.8%	1.8%	1.8%	1.8%
Industrias	27.7%	25.9%	25.8%	26.1%	25.8%	26.6%	27.1%	25.7%	24.4%	24.8%
Explotación de Minas y Canteras	0.8%	0.5%	0.4%	0.8%	0.9%	1.9%	2.0%	1.6%	2.0%	1.9%
Manufactura Local	12.7%	12.0%	12.0%	11.8%	11.6%	11.2%	10.9%	10.6%	10.1%	9.9%
Manufactura Zonas Francas	3.5%	3.4%	3.3%	3.3%	3.4%	3.4%	3.4%	3.3%	3.3%	3.2%
Construcción	10.7%	10.1%	10.1%	10.2%	9.9%	10.1%	10.7%	10.2%	9.1%	9.8%
Servicios	59.2%	61.0%	61.4%	61.9%	62.6%	61.6%	61.1%	61.4%	62.3%	62.0%
Valor Agregado	93.2%	93.1%	93.3%	93.7%	93.7%	93.5%	93.4%	92.7%	92.5%	92.5%
Impuestos a la producción netos de subsidios	6.8%	6.9%	6.7%	6.3%	6.3%	6.5%	6.6%	7.3%	7.5%	7.5%
Producto Interno Bruto	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: National accounts, reference year 2007; Gross Domestic Profit (GDP) per source sector. Current values and chain-linked volume indices in relation to the year 2007, quarterly; BCRD. Taken from: <https://www.bancentral.gov.do/a/d/2533-sector-real>.

Finally, it can be noted that the agricultural sector, which occupies third place in terms of its percentage share in the GDP, has dropped from 6.3 % in 2008 to 5.7% in 2017.

4. DESCRIPTION OF ACTIONS AND INTERVENTIONS TO BE IMPLEMENTED UNDER THE PROPOSED ER PROGRAM.

Context and general information

Between 2010 and 2015, a global net annual loss of 3.3 million hectares of forest was reported, with the biggest losses occurring in the tropics (FAO, 2016). This worldwide reduction in forested area means a global reduction of carbon stock of almost 11 giga tonnes (Gt), mainly due to deforestation and, to a lesser extent, forest degradation (FAO, 2016). In addition to the carbon stock reduction in the forests, tropical soils can lose 50% of their carbon pool in 5 years following deforestation and land conversion for agricultural use (FAO, 2014). These forest losses produce GHG (Greenhouse Gas) emissions and reduce the removal of CO₂ from the atmosphere, thereby exacerbating climate change.

It is estimated that the AFOLU (Agriculture, Forestry and Other Land Uses) sector is responsible for approximately 25% of the total GHG emissions of anthropogenic origin. The annual GHG Emissions from Agriculture correspond to approximately 10-12% of global anthropogenic emissions, while FOLU (Forestry and Other Land Uses) is responsible for approximately 9-11% of global emissions (IPCC [Intergovernmental Panel of Experts on Climate Change], 2015). Pearson et al (2017) estimated that out of the total emissions caused by forest degradation in Latin America between 2005 and 2010, 69% was due to timber extraction, 10% to firewood extraction and 21% to forest fires. It should be pointed out that in lots of countries it is usual for higher emissions to be caused by forest degradation than by deforestation. Emissions of GHG from the AFOLU sector in developed countries mainly come from agricultural activities, while in developing countries they come from both deforestation and forest degradation (IPCC, 2015).

According to the IPCC (2015) REDD (Reducing Emissions from Deforestation and Degradation) may be a cost-effective option for mitigating climate change, provided this is implemented in a sustainable way. It is felt that forests present the best potential for GHG mitigation (Böttcher et al. 2009). REDD+ includes: i) reduction of emissions from deforestation and forest degradation, ii) conservation of forest carbon stock, iii) sustainable forest management, iv) increase in forest carbon stock. This may be a considerable help with reducing emissions from the AFOLU sector, especially by reducing deforestation in tropical regions, with the consequent economic, social and environmental benefits (IPCC, 2015).

Against this background, numerous countries make efforts to mitigate climate change and many of these efforts are concentrated on identifying and putting into practice the main strategic options which counteract the chief causes of deforestation and forest degradation. There are multiple causes of deforestation and forest degradation unique to each country, according to its circumstances and national capacities. Accordingly, the Conference of the Parties (hereafter CoP) 13 in Bali encouraged the Parties "...to explore a series of actions, to identify options and tackle endeavours, including demonstration activities, to deal with the causes of deforestation...". More specifically it was in decision 15, of the 19th Conference of the Parties (15/CP.19) of the UNFCCC (United Nations Framework Convention on Climate Change) that the importance of identifying and analysing the direct and indirect causes of deforestation and forest degradation was acknowledged and reaffirmed with all the Parties being encouraged to tackle the causes within the context of compiling and applying national strategies and action plans. On the basis of this mandate, the Dominican Republic proceeded to identify and analyse its main direct and indirect causes of deforestation and forest degradation.

Deforestation is defined as the direct and/or induced conversion of forest cover into another type of land cover within a given period of time (DeFries et al., 2006; GOF-C-GOLD, 2008). The *direct causes of deforestation* are associated with human activities which directly affect the forests (GHGst and Lambin, 2001). The *direct causes* group together the factors applying locally and they affect forest cover by using forest resources, or removing them to give way to other uses (Ojima, Galvin and Turner, 1994; GHGst and Lambin, 2001; Kanninen et al., 2008). The direct causes explain how the forest is changed.

However, the *indirect (underlying) causes of deforestation* are factors reinforcing the direct causes (Kaimowitz and Angelsen, 1998; GHGst and Lambin, 2001; GHGst and Lambin, 2002a) and they group together complex social, political, economic, technological and cultural policies, which constitute the initial conditions in the structural relationships existing between human and natural systems (GHGst and Lambin, 2001). These factors influence the decisions taken by the agents involved and help to explain why the phenomenon of deforestation or degradation occurs.

The concept of *agents of deforestation or degradation* refers to people, social groups or institutions (public or private) which, influenced or driven by a series of underlying factors or causes, take the decision to convert the natural forests into other types of cover and use, with the consequence of their actions being manifested on the land in one or more direct causes (modified by González et al. IDEAM [Institute of Hydrology, Meteorology and Environmental Studies], 2011). These agents are the most important stakeholders with regard to identifying the causes and the action to take and put into practice.

With regard to quantifying land use change for the Dominican Republic, a multitemporal analysis was conducted using remote detection tools and Geographic Information Systems which were able to estimate *gains and losses* of plant cover for the 2005-2015 period. Accordingly, it is estimated that in 2005 the Dominican Republic had a forested area of 2,153,519 ha (including coffee and cocoa agroforestry systems). In 2015, the forested area was 2,435,932 ha, which was a net positive change, or forest gain, of 282,412

ha. The Second Report on the study of Causes of Deforestation and Degradation³⁰ presented a comprehensive analysis of the economic and social importance of the forests for the country's development. This analysis provided a general characterization of forest resources in the Dominican Republic, their impact on the national, provincial and regional economy; and in addition, a case of application was carried out on the economic valuation of the hydrologic environmental services from the water resources in the upper part of the Yaque del Norte river.

As regards the quantitative aspect of the forest land area, it is important to highlight the fact that the Dominican Republic can report a net gain of forest area. On analysing the dynamics of the change using the method of non-biased sampling (see Chapter 8), estimates refer to a gross gain in forest cover (woody vegetation which becomes forested lands and non-woody vegetation which becomes forested land) of 467,263.75 ha of forest over 10 years, while losses (forested land which becomes woody and non-woody vegetation) amounted to 184,851.39 ha for the 10 years analysed. On the basis of these figures, the Dominican Republic showed an annual net positive change of 28,241 ha of forest for the 2005-2015 period (Table 3.2).

The principal *cause of deforestation* in quantitative terms is the *conversion of forests into non-woody vegetation* (pasture land and annual farming). This type of dynamic entailed the loss of approximately 116,806 ha of forest in 10 years. This is followed by the conversion of the forests into woody vegetation in the order of 68,015 ha. In terms of loss, the most significant conversion involves the broadleaf forests, with losses of 129,312 ha between 2005 and 2015, followed by dry forest, with losses of 42,051 ha and pine forest with losses of 13,489 ha in the same period (Table 3.2.1).

To counteract the process of deforestation and forest degradation, it is extremely important to identify, quantify and determine the spatial location of past and future deforestation, as this allows decisions to be taken at local, regional and national level. Understanding the anthropogenic causes of deforestation is the best way of designing and implementing policies, methods and actions to effectively mitigate their negative consequences on the ecosystems and the human population.

4.1. Analysis of drivers and underlying causes of deforestation and forest degradation, and existing activities that can lead to conservation or enhancement of forest carbon stocks

The *causal factors* relate to the various factors which generate deforestation and forest degradation, as well as the reasons preventing or having a negative impact on implementing restoration and conservation activities, sustainable management, enrichment and forest regeneration in the country. The UNFCCC urges developing countries to identify and define the causal factors, so that these can be tackled in their REDD+ National Strategies and/or in their Action Plans, ensuring that the response to those causal factors is appropriate for the circumstances and national realities.

Consequently, the definition and monitoring of the *causes and agents* of forest conversion throughout national territory, particularly those involved in the loss of forest cover, are relevant and adopt a strategic nature, not simply as means for ensuring the conservation and flow of ecosystem services necessary for sustaining production systems at regional and local level, but also as mechanisms for monitoring

³⁰ Second Report: Economic and social Importance of the forests for the development of the Dominican Republic. 2018. <https://app.box.com/s/f3po0mcn6g4f86iqzialoekvw7p68xkg>

compliance with national targets for reducing greenhouse gas emissions (GHG), associated with the loss of forest cover. Accordingly, a series of activities aimed at determining the main *direct and indirect causes* of deforestation and forest degradation will be implemented in the Dominican Republic, as will the relevant actions for counteracting them.

A methodology based on international guidelines was applied to identify and prioritize the principal causes of deforestation and forest degradation in a reliable and transparent way and to determine the respective strategic options for counteracting the direct and indirect causes of deforestation, forest degradation and the lack of increase of forest carbon stocks. This methodology contains three fundamental pillars or cornerstones, corresponding to an analytic axis, and another participatory one involving the key stakeholders, and a validation procedure which includes the participation of national experts (Figure 4.1-1).

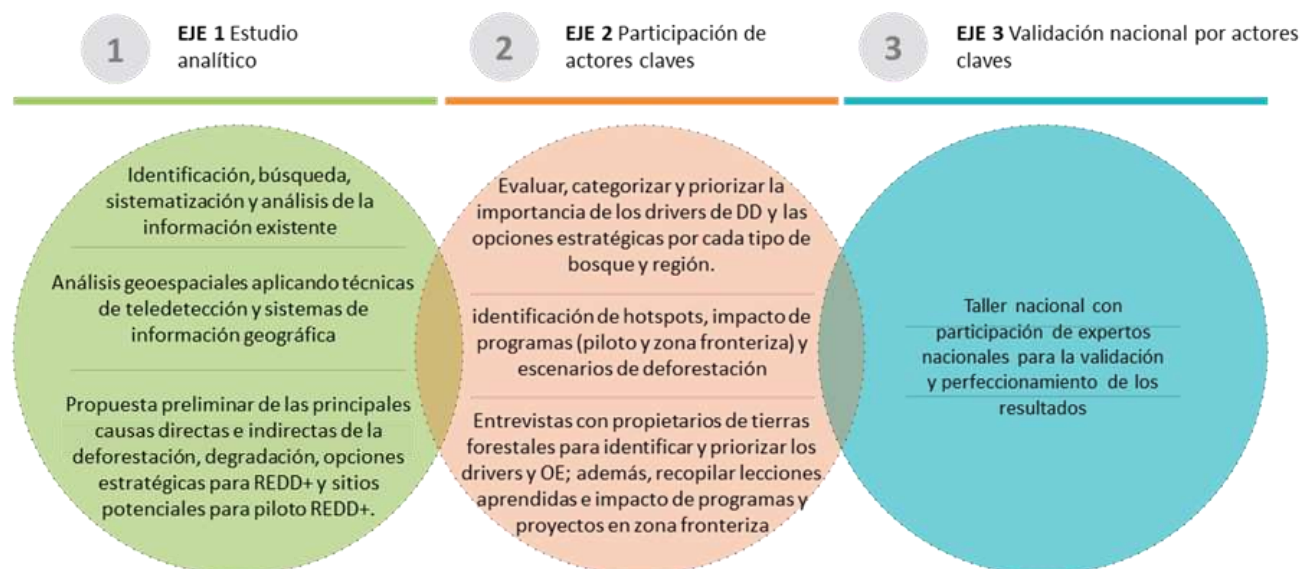


Figure 4.1-1 **Methodology implemented for defining the causal factors of deforestation and forest degradation in the Dominican Republic.**

A series of participatory workshops were conducted to identify and prioritize the causal factors of deforestation and forest degradation. They will identify, evaluate, prioritize and validate the principal direct and indirect causes (drivers) of deforestation and forest degradation and the reduction of forest carbon reserves in the country, and to define and prioritize the main strategic options to counteract the drivers identified.

The objective was to comprehensively identify and prioritize the causal factors, in a participatory and representative way in terms of including various key stakeholders targeted at different regions or geographical areas of the country. Accordingly, a series of participatory workshops were conducted, consisting of various Focus Groups (FG) headed by national experts representing civil society directly or indirectly involved with using the country's natural resources. The main aims associated with the participatory axis related to:

- identifying, evaluating and prioritizing the principal direct and indirect causes (drivers) of deforestation and forest degradation and the reduction or stagnation of forest carbon reserves in the Dominican Republic.
- identifying, evaluating and prioritizing the various economic policies, regulations, public programmes, governance arrangements, incentives and other governmental actions (strategic options) which encourage sustainable land use practices.
- identifying and documenting potential sites (priority geographical areas for REDD+ actions, based on the future risk of deforestation and forest degradation).
- validating the principal causes of deforestation and forest degradation and strategic options for counteracting these causal factors.
- identifying the main barriers making it difficult to apply measures for mitigating the causal factors.

The workshops took place in four macro regions, which in turn tackled all the provinces in the country as can be seen in the following list and in Figure 4.1-2. The selection of macro regions was mainly based on: i) cultural similarities, ii) access roads and proximity, iii) ease for stakeholders to attend and take part. The workshops conducted in San Francisco de Macorís and Santiago cover the administrative regions consisting of the Norte macro-region (Administrative regions 1 to 4), while the workshops in Santo Domingo and Barahona encompass the macro-regions in the south west and south east of the country (regions 5 to 10; Figure 3.1-1 and Table 3.1.1):

- San Francisco de Macorís: Provinces: San Francisco de M, Santa Bárbara de Samaná, María Trinidad Sánchez, Hermanas Mirabal, Espaillat, Sánchez Ramírez and Monseñor Noel.
- Santiago: Provinces: Santiago de los Caballeros, Puerto Plata, La Vega, Valverde Mao, Dajabón, Santiago Rodríguez, and Monte Cristi.
- Santo Domingo-DN: Provinces: Santo Domingo, DN, San Pedro de Macorís, Monte Plata, Hato Mayor del Rey, La Romana, El Seibo, La Altagracia, San Cristóbal, Peravia and San José de Ocoa.
- Barahona: Provinces: Barahona, Bahoruco, Independencia, San Juan de la Maguana, Elías Piña, Azua and Pedernales.



Figure 4.1-2 Location of participatory workshops per macro region.

A total of 4 participatory workshops were held (the fifth workshop took place at national level), and entailed setting up 23 work tables, used by 192 people at regional and national level. For more details, see chapter 5 about participation and queries.

The participatory process and the analytical study were able to identify a total of 29 *direct and indirect causal factors of deforestation and forest degradation*, which were analysed at provincial and macro regional level. Next, through a national standardisation exercise, the 29 causes were reduced down to 10 direct causes of deforestation (see Figure 4.1-1) and 12 direct causes of degradation (see Table 4.1.2). (see Table 4.1.1). This means that 7 causes were not categorised as of national importance.

Table 4.1.1 Direct and indirect causes of deforestation and forest degradation, analysed at a provincial and macro regional level

Direct and indirect causes of deforestation and degradation
Grazing of livestock in forests
Extraction of timber firewood/charcoal
Commercial livestock farming
Deficiency of public policies
Commercial agriculture
Deficiency of the forest institutional framework
Illegal logging of natural forest
Badly organized/badly implemented management plans
Lack of environmental education
Informality of the firewood/charcoal market
Shifting/subsistence agriculture
Migration dynamics
Low economic valuation of forests
Absence of forestry incentives
Poverty-unemployment
Open-cast mining
Medium and low-intensity fires
Introduction of exotic/invasive species
Non-compliance with current legislation
Extraction of wood forest products
Land tenure
Population growth
Natural disasters
Tourism: Expansion of the tourist area
High-intensity fires
Other miscellaneous causes
Energy inputs (biomass)
Infrastructure
Forest pests and diseases

In turn, the analysis was able to identify and prioritize the causal factors on three levels or scales: national, macroregional and provincial³¹. Prioritized at national level, the *principal direct causal factors of deforestation* are: commercial livestock farming and the illegal logging of the natural forest, both identified

³¹ Annex 7: Analysis of the Direct and Indirect Causes of Deforestation and Forest Degradation in the Dominican Republic. 2018. <https://app.box.com/s/tth84k9izqxd0yOtgagqasb6hvfqf8dkb>

as extremely high priority, followed by commercial and shifting/subsistence agriculture, catalogued as high priority causal factors.

Prioritized at national level, the very high priority *principal direct causal factors of forest degradation* are: i) grazing of livestock in the forest, ii) the extraction of timber/firewood/charcoal, iii) badly organised/badly implemented management plans, and iv) medium and low-intensity forest fires, v) the introduction of exotic/invasive species, both catalogued as being high priority.

Table 4.1.2 **Direct causes of deforestation according to national priority**

Priority	Direct Causal Agent of Deforestation	Average Relative Percentile
Very high	Commercial livestock farming	1
	Illegal logging of natural forest	0,88
High	Commercial agriculture	0,77
	Shifting/subsistence agriculture	0,66
Medium	Open-cast mining	0,55
	Extraction of timber, firewood/charcoal	0,44
Low	High-intensity fires	0,33
	Energy inputs (biomass)	0,22
Very low	Infrastructure	0,11
	Natural disasters	0,01

Table 4.1.3 **Direct causes of forest degradation according to national priority**

Priority	Direct Causal Agent of Degradation	Average Relative Percentile
Very high	Grazing of livestock in forests	1
	Extraction of timber, firewood/charcoal	0,91
	Badly organized/badly implemented management plans	0,82
High	Medium and low -Intensity fires	0,73
	Introduction of alien/invasive species	0,64
Medium	Extraction of wood forest products	0,55
	Illegal logging of natural forest	0,45
Low	Natural disasters	0,36
	Infrastructure	0,27
Very low	Open-cast mining	0,18
	Plagues and tree diseases	0,09
	Other miscellaneous causes	0,01

The very high priority *main indirect causes of deforestation and forest degradation* at a national level are: i) deficiency of public policies, ii) deficiency in relation to the institutional status of the forestry sector, iii) lack of relevant education, and iv) informality in the firewood/charcoal market, v) migration dynamics, vi) low economic valuation of forests, identified as being of high priority (see Figure 4.1.3). In total, 15 indirect causes of deforestation and forest degradation have been selected and prioritised.

Table 4.1.4 Indirect causes of deforestation and forest degradation according to national priority.

Priority	Indirect causal factors of Deforestation and Forest Degradation	Average Relative Percentile
Very high	Deficiency of public policies	1
	Deficiency of the forest institutional framework	0,93
	Low level of environmental education	0,86
High	Informality of the firewood/charcoal market	0,79
	Migration dynamics	0,71
	Low financial valuation of forests	0,64
Medium	Absence of forestry incentives	0,57
	Poverty-unemployment	0,50
	Non-compliance with current legislation	0,43
Low	Land tenure	0,36
	Natural disasters	0,29
	Population growth	0,21
Very low	Other miscellaneous causes	0,14
	Tourism: Expansion of the tourist area	0,07
	Energy inputs (biomass)	0,01

Using the results obtained from the standardized and prioritized causal factors, the essential inputs needed to propose strategic ERP options and actions and to formulate the REDD+ National Strategy for the Dominican Republic were generated.

In a subsequent analysis and exercise, the direct prioritised causes of deforestation and forest degradation were reformulated and grouped in the following way:

- Unsustainable management and use of land for livestock production.
- Unsustainable management and use of land for agricultural production.
- Unsustainable management and use of forest land.
- Forest fires.
- Mining.
- Pests, diseases and introduction of invasive alien species.
- Expansion of urban, street and industrial infrastructures.
- Natural Disasters: Hurricanes, drought and landslides.

See below for a description of the *priority direct causal factors of deforestation and forest degradation* in the Dominican Republic.

Management and sustainable use of land for cattle production

Impact: Deforestation, forest degradation

Although in the first instance agricultural activity leads to deforestation, it is the development of livestock farming that constitutes the main factor leading to the destruction of forests in the country. Thus, small

farmers make clearings and deforest the area to produce staple grains and other subsistence crops. Then they usually convert the agricultural parcels into pasture land and sell it to the cattle farmers.

Although slash-and-burn agriculture has been a deforestation tool, extensive livestock farming is the land use system which has permanently replaced forest cover in the majority of the country. Traditionally, livestock farmers have taken advantage of small “conqueros” farmers to fell forest areas and transform them into pasture after years of cultivation. At the moment the rural exodus, the slowing down of agricultural development and significant growth of remittances in the rural economy, have transformed livestock farming into the dominant type of land use in all the forested mountainous areas (Geilfus, 2002).

Extensive livestock farming occupies large grazing areas and the livestock is regularly moved from one place to another in search of new forage. Moving and transporting the animals also involves a cost for the livestock farmer. When this practice is repeated, the herd crosses the same routes several times and each time it passes by the soil becomes harder and the shoots of the trees are browsed and trampled by the animals, thus halting the process of tree growth. In addition, livestock farmers usually cut down the trees that hinder or prevent the growth of forage crops (SEMARENA [Secretary of Environment and Natural Resources]-JICA [Japanese International Cooperation Agency], 2002). On the hillsides, the repeated passing of the cattle results in the formation of horizontal tracks of barren ground, which encourage soil erosion. Likewise, when the dry season arrives, land converted to pasture land often catches fire repeatedly, which also hampers the tree growth involved in natural regeneration (SEMARENA-JICA, 2002).

Livestock production is one of the most relevant uses, in terms of competition and replacement of the country's forests. Historically, extensive livestock farming has been promoted and encouraged by laws and public policies. Consequently, extensive livestock farming occupies most of the surface area of land on hillsides in high and middle river basins. Its impact on deforestation and forest degradation is considerable. At the moment incentives are inadequate for reconvert current use to more sustainable practices, such as silvopastoral systems with controlled regular rotation and pastures offering better nutritional quality. Therefore, extensive livestock farming is the most attractive type of land use on poor value land where opportunity costs are very low.

The incompatibility existing between livestock practices and forest management in the rural sector is deemed to be one of the main threats to the conservation of forest ecosystems in the country. Approximately 180,000 ha of pasture land is located in protected areas, mainly in the provinces of Santiago, Santiago Rodríguez, Monte Plata, La Alta Gracia, Azua and Bahoruco. The intensive breeding of livestock and agriculture for self-consumption and sale at local markets represent the main livelihood for rural families and are practices strongly rooted in their traditions, whilst the forest and its products are not a relevant productive component on the plot. Therefore, its contribution in terms of generating income from the forest and its products has historically not been very significant or long-term, and it falls short of rural families' immediate financial requirements.

The main cause of the expansion in livestock farming was its high profitability and a high opportunity cost for owners if they retained the original forests, putting pressure on forest replacement, even though this has not generated any improvement in the quality of life of this population, since there is a close relationship between rural poverty and the deterioration of forest resources. The poorest farming units are characterized by the fact that they have low productivity lands presenting considerable environmental fragility. This can be explained by the size of the farms and the difficulty in accessing capital to improve their land yield.

Low foraging capacity as well as a lack of suitable fences for the livestock means that the forest is used as a source of food and shelter for livestock. Animals are frequently released on forest plots for food and shelter requirements, or for water supplies when there are no available sources any closer to the land they come from. Sometimes livestock has to travel considerable distances, usually leading to a significant waste of energy for the animal. The opportunity cost of not occupying the forest to feed the livestock is very high and action aimed at reducing pressure on the forest is very costly. These amounts cannot be defrayed by rural families. This means that using the forest to feed livestock is a practice entrenched in the rural lifestyle as it is not costly for the families.

Livestock farming is institutionally regulated by the DIGEGA (Dirección General de Ganadería - *General Directorate for Livestock*), but this legislation does not directly take into account its relationship with deforestation and forest degradation or its impact on this. Traditional governmental programmes for promoting agriculture, livestock farming and forestry still do not have a policy framework for forest conservation which is sufficiently well aligned and implemented, which can be seen in the lack of coordination at both local and national level. The resulting consequence is a lack of effectiveness and complementarity in public policies within the agro-silvo-pastoral sector as a whole.

According to the land use and land cover maps for 2015, the national surface area of land dedicated to livestock was 1,400,000 ha, which represents 29% of national territory. The impact of livestock farming expansion plays a major part in deforestation and forest degradation. Finally, the recovery of forest ecosystems that are degraded by extensive livestock farming must address the issue of rural poverty with a focus on territorial and community management. The programmes to be implemented and the instruments to foster development need to bear in mind the spatial aspect of the territory and the relationship between current and future use. Current legislation is enabling the involvement of the municipal administration as the manager and coordinator of the multiple sectoral instruments associated with use of the land and natural resources as this is an alternative to be considered to ensure better rural management. The collaboration between MEDIO AMBIENTE and the General Directorate for Livestock (DIGEGA) is essential and initial efforts are now in full swing to promote silvopastoral projects (see chapter 4.3).

Management and sustainable use of land for farming production

Impact: Deforestation

Historically the expansion of agriculture and livestock farming has been the main cause of deforestation of forests in the Dominican Republic, as well as in the rest of the world. In general, the clearly dominant effect of deforestation is to expand the agricultural frontier. The process of replacing forest with agriculture formed part of State policies in order to provide food for the population and, very often, a source of income through exports. This situation continued until the middle of the 20th century, when the negative impact this policy had on reducing the forested area and the associated damage to the land became clear.

Already in 1981, 30% of Dominican Republic territory was cultivated land and 43% was already being used as pasture land (Hartshorn et al, 1981). Over 70% of the steep slopes, not suitable for cultivation, were being cultivated. It is stated that in the years 1987-1988, 40% of national maize production, 50% of the production of beans and 75% of the production of peanuts came from producers involved in shifting agriculture in marginal areas (Morell, 1988). Adverse conditions on international markets for traditional agroforestry crops (coffee and cocoa) usually lead to deforestation, because of changes to pasture lands and other crops and the consequent loss of shade cover (Geilfus, 2002).

The area of land used for agriculture in the country is equivalent to 13% of its total area, while 65% is considered suitable for forestry (chap 3; ABT, 2002). The soil loss in agricultural parcels in mountainous areas is evident in the loss of organic nutrients and minerals washed away in the course of erosion processes. Soil loss studies estimate a loss of between 20 and 500 TM/ha/year (SEESCYT (*Secretary of Higher Education, Science and Technology*), 2008). According to estimates for the Nizao river basin, when natural phenomena occur, such as storms and cyclones, they have a considerable impact on erosion and landslides, which may lead to 14 times the normal rates of erosion. It is estimated that for 2009, 16% of national land (755,100 has) were under-used, that is, their use was below their natural production capacity and they were therefore subjected to processes involving degradation or loss of physical, chemical and biological characteristics (Sánchez, 2009). Most of the under-used land was concentrated in mountainous areas with steep slopes, under intensive use without any conservation practices.

For 2018 it was determined that approximately 84,000 ha of land with agricultural crops were located in protected areas, with a predominance of crops of coffee (27,000 ha), cocoa (6,300 ha), coconut (2,300 ha) and approximately 47,000 ha with vegetables and other types of subsistence agriculture. The increase in shifting agriculture pressurizes land use, and causes soil degradation and habitat destruction. This results in increased degradation and deforestation of the river basins, which in turn leads to a reduction in water recharge.

According to the land use and land cover maps for 2015,³² the national area of land used for agriculture was 1,190,000 ha, which represents 23% of national territory.

Management and sustainable use of forest-based lands

Impact: Deforestation and Forest Degradation

The dynamics by means of which this causal factor leads to degradation and deforestation can be largely explained by the fact that, in the first instance, the forests are used for extracting raw materials without any consideration from the point of view of ecosystems and the ecological requirements necessary for their conservation. This action, sustained over time, results in forest degradation or even loss such that its recovery would need a high level of effort in terms of time and financial cost. Consequently, the process of degradation and deforestation may result in a low-yield productive unit, where trees are removed and sold as low value raw material. The soil is used for non-forest purposes temporarily producing a better financial return. According to the participation workshops “Low profitability and opportunity costs of the forest” was mentioned in all the macro regions as an indirect causal factor, and was a reason for the unsustainable use of the native forest.

It is felt that the huge reduction in forest cover was caused by the removal of hardwoods from the broadleaf and pine forests, between 1930 and 1967, when the number of timber mills rose from 20 to 178. Timber extraction continues today on a more reduced scale in some areas, which is felt to be a factor generating economic impoverishment and environmental degradation (Geilfus, 2002 and SEMARENA-JICA, 2002).

The policy aimed at restricting the utilization and felling of forests lasted for several years, until finally, in 1985, the policies promoting proper use of forests came into existence with the promulgation of law 290 and 291. This amended Law 705 of 1982 which permitted conditional felling of trees and timber mill operations. Within this new framework, use could be made of trees affected by natural disasters, felled for agricultural, industrial and tourist projects, as well as trees from artificial forests (planted). For forestry

³² Map of Land Use and Land Cover 2015. Source: <https://app.box.com/s/dm83olw5e5eq09cvy1uec8st9elg79lk>

plantations, felling requires the management plan to be approved by the CONATEF (Comisión Nacional Técnica Forestal [*National Technical Forestry Commission*]). However, simply promulgating this law has not been sufficient to bring about the sustainable management of forest lands.

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. Bakeries, confectioners, casabe (bread made from casaba) factories, laundries, restaurants, dairies, amongst others, use firewood and charcoal (ENIGH (National Survey of Household Income and Expenditure), 2007, cited by Medio Ambiente-UASD-PNUMA, 2010).

According to Checo (2010), the volume of coal produced in the five provinces of the border region stands at 97,425 sacks annually, of which 46% is sold locally and 54% in Haiti. This represents an illegal market of RD\$17.5 million (US\$473,958) per annum and requires 2,011 ha of forests in addition to employing labour equivalent to 21,204 days' wages. Given that the degradation process described is largely an illegal activity, it is extremely difficult to define how it works within the forest. The assumption is that illegal extractions mainly relate to the production of charcoal, poles and firewood, so it can be assumed that its effects on the forest are the same, but this is not the case for emissions accounting, because the biomass has different destinations of use. This is a relevant aspect when proposing action measures, given that the market is complex, basically because of its informality. There are no accurate figures about what is used for products of value, such as logs, and less processed products such as firewood.

In the opinion of the key stakeholders taking part in the study of the causal factors of deforestation and forest degradation, there are shortcomings associated with the effectiveness of the forest management plan as an instrument for monitoring and auditing the sustainable use of the managed forest. They feel that the interventions carried out within the framework of a Forest Management Plan approved by the Vice-ministerio de Recursos Forestales (*Vice Ministry of Forest Resources*) might also be generating some kind of degradation in the forests.

To sum up, 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.

Forest fires

Impact: deforestation and forest degradation, depending on the intensity of the fire and the permanent or non-permanent nature of the damage caused to the vegetation.

Forest fires are fires which spread out of control in rural land through woody, bushy or herbaceous vegetation, whether dead or alive. Unlike other areas of the world where fire is a natural part of the development dynamics of certain forest ecosystems, natural fires are very rare in the Dominican Republic and they are mainly caused by lightning strikes. Therefore, this cause of degradation and deforestation is closely related to human activity, either due to carelessness, indifference and/or lack of skill in using fire. In many cases they are intentional, which reveals that there is a cultural issue associated with a lack of understanding with regard to the impact that fires have on the environment.

According to official statistics from the Ministry of Environment and Natural Resources, during the period 1995 to 2018, 3,987 forest fires occurred in the country, affecting 147,469 ha (see Table 4.1.5). Most of these fires occurred between 2007 and 2018 (August), but a smaller area was affected.

Table 4.1.5 Number of forest fires and affected areas between 1995 and 2018 (August)

Year	No. of fires	Area affected in Ha.	Year	No. of fires	Area affected in Ha.
1995	20	859.75	2007	170	2,031.95
1996	55	674.28	2008	296	6,539.43
1997	238	13,101.57	2009	195	3,239.75
1998	55	1,061.13	2010	229	3,902.77
1999	61	1,143.84	2011	168	3,647.63
2000	114	3,303.84	2012	160	2,083.38
2001	151	8,123.52	2013	193	11,399.94
2002	118	1,185.72	2014	231	11,619.75
2003	242	6,026.29	2015	435	11,601.50
2004	116	17,918.93	2016	167	1,157.06
2005	117	30,422.64	2017	99	820.00
2006	175	3,253.08	* 2018	182	2,352.00
Total	1462	87,074.59	Total	2525	60,395.15
Total area affected		147,469.74			

Source: Ministerio de Medio Ambiente y Recursos Naturales 2018.

Among the main causes of forest fires occurring in the country are the following: i) propagating fire in the course of work involving *conuquismo*, or the practice of burning forests in order to make charcoal (slash-and-burn agriculture), ii) propagating fire during work for adapting and expanding pastures (extensive livestock farming), iii) intentional fires, iv) carelessness by forest users, v) propagation of campfires in camping areas, vi) electric al discharges. Accordingly, most forest fires are anthropogenic in nature (SEMARENA, 2007).

Most damage is caused by two types of fire: i) one which sweeps along the surface of the ground, ii) another one which burns right to the treetops. The type of fire depends on weather conditions and the location. Most forest fires in the country occur in pine and mixed forest environments (pine and broadleaved vegetation). The fire that sweeps along the surface of the ground only affects pine roots (*Pinus occidentalis*) and grasses, and does not reach the actual trees, but rather affects the undergrowth. On the other hand, a fire that burns up to the treetops threatens the very existence of the forest, and also results in soil loss as a result of the disappearance of plant cover and rain water runoff (SEMARENA-JICA, 2002).

Through education and a change in people's behaviour together with preventive silvicultural management of forests, the frequency, intensity and impact of forest fires could be significantly reduced.

Mining

Impact: Deforestation

The mining sites on Dominican land represent an economic potential which should be exploited to generate jobs and wealth, provided that this is done in a judicious way, recovering the areas exploited while respecting the environment. It is critical to recognize the importance of looking after the environment and recovering areas which might be exploited to obtain natural resources, given that they represent the heritage of future generations.

In the Dominican Republic there are deposits of various resources that nature offers and which are valued for their different uses: gold, silver, ferronickel, bauxite, marble, larimar, amber, salt and gypsum, amongst others.

The construction industry depends on the extraction of aggregates, demand for which doubled between 1995 and 2000 (16 million m³ per annum). Poor planning and chaotic extraction is often involved in operations conducted by gravel extraction companies (10,000 m³ per day in the lower basin of the river Nizao and 14,000 m³ per day in the Cibao valley in 2000), without any subsequent claims except in the case of a few companies. Dominican mining directly employs more than 10,000 people. The unregulated extraction of materials on river banks is causing the destruction of the forested buffer strips (Díaz and Hernández, 2006; and Geilfus, 2002).

Mining operations and gravel extraction companies have been the subject of numerous conflicts with the surrounding communities they affect, as they influence rates of erosion and sedimentation as well as contributing to vulnerability to drought and floods, thus constituting a significant threat to forest conservation. Mining operations also change the landscape as they remove materials, creating gullies and holes (Díaz and Hernández, 2006).

Various documents, as well as the key stakeholders during the participatory process relating to the causal factors of deforestation and forest degradation, argue that there are no incentives to encourage sustainable forest management and that on the other hand there are lots of stimuli for boosting other productive activities which have a negative effect on forest conservation, such as mining, livestock farming and agriculture, among others.

Economic activities, such as mining, power generation and others, have special incentives given their considerable importance due to their capacity to generate employment, impact GDP and contribute to eradicating rural poverty. Mining has received incentives through public policies, legal and/or administrative provisions which stimulate its expansion and improve certain indicators for national economic development, but they do not take into account the impact on forested areas. The incentive becomes “perverse”, since it helps to discourage the conservation of natural resources.

Nevertheless, productive activities which are incentivised, such as mining, would be suitable if applied within the framework of sustainable development. If mining is incentivised but the only thought is to make it more lucrative, then this is negative as environmental costs and damages are neglected.

All mining activities in the Dominican Republic are opencast (REDD-CCAD/GIZ, 2011) and the damage caused by this type of mining may not be restricted to the areas where extraction takes place but may also affect its surroundings, either through degradation of the flora and fauna and/or through contamination downstream. According to the Dominican Mining Registry, four operations mining metals are currently registered, located in Monte Plata, Monseñor Nouel, La Vega, Pedernales and Sánchez Ramírez. These operations occupy an area of 34,502 ha. There are another 122 non-metal mining operations spread throughout the country, covering 153,532 ha.

Pests, diseases and introduction of invasive alien species

Impact: Forest degradation

In the Dominican Republic, pests, diseases and the introduction of invasive alien species as a whole constitute a cause of forest degradation. This type of cause can definitely be prevented and controlled by applying technical-scientific measures. Loss of cover is mainly due to deficiencies in effective management, which should include activities to clean up and prevent pests and diseases. According to the thoughts of the key stakeholders taking part in the study on the causes of deforestation and forest degradation, historically very little attention has been paid to prevention and, in some cases, the presence of pests has been utilized by lots of people to plunder the forest even more, over areas which are even bigger than those really affected.

The presence of 190 species of invasive alien plants have been recorded in the country, including 6 of the species found on the list of the 100 worst invasive plant species in the world. Attention should also be drawn to an inordinately high presence of the species *Leucaena leucocephala* (flax, leucaena) in the country's forests. Fast-growing varieties were introduced in the 80s to utilize and produce charcoal on the so-called energy farms. This is a tree species from the Leguminosae or Fabaceae families. Even though this species has a high forage value and represents a good alternative to meet shortfalls with forage in dry months, little current use is made of this species as forage or for energy and its propagation is extremely aggressive. Consequently, the above species rapidly invades land which is in a process of natural restoration and prevents native species from reproducing.

In addition, *Azadirachta indica* (neem) has been reported as another extremely invasive alien species present throughout the country. This species was introduced in the 80s for the purposes of reforestation and as a natural insecticide, but currently it is used on a small-scale as timber. Another plant species with high invasive potential is *Calliandra calyothyrsus* (calliandra), which has invaded a considerable part of national territory. This also belongs to the family of Leguminosae or Fabaceae and was introduced in the 80s to produce forage and living barriers.

The uncontrolled growth of these three species constitutes a significant threat to many of the native species in the country's forest ecosystems. However, the Ministerio de Medio Ambiente y Recursos Naturales (*Ministry of the Environment and Natural Resources*), via its *Estrategia Nacional de Especies Exóticas Invasoras* (National Strategy for Invasive Alien Species), is developing initiatives to tackle the inordinate growth of these species.

With regard to pests that attack conifer forests, the presence of *Ips calligraphus*, also known as the coarsewriting engraver or bark beetle, has been established. This boring insect primarily attacks *Pinus occidentalis* (creole pine) or natural conifer forest. This pest has been recorded over recent years especially in the conifer forests in the provinces of Santiago and Dajabón, which are considered to be strategic at water-forest level, since they represent an important resource for the local timber industry as an input for the production of furniture and other household goods.

In addition to the plant health problem generated by the bark beetle, the involvement of pathogenic fungi has also been observed, not just in the pine forests, but in other ecosystems as well. This is the case of damage caused by *Apate monachus* in young plantations of creole mahogany and *Xylosandrus spp.* in young plantations of African mahogany and an attack of *Diplodia pinea* is suspected in the pine forests. In 2017 measures for forest clean-up involved using 11,730 m³ of wood in affected forests (Ministerio Medio Ambiente y Recursos Naturales, 2018).

Expansion of urban, street and industrial infrastructures

Impact: Deforestation

Recently horizontal expansion has been observed in the main cities in the country, and this is reducing both the agricultural area available and natural plant cover in the areas adjacent to cities, in particular the cities of Santo Domingo, La Romana, Santiago, La Vega, Moca, San Francisco de Macorís, Punta Cana. Furthermore, the economic growth of the country is involving accelerated industrial development, which in turn is expanding the country's infrastructure, at the expense of the natural vegetation. The preponderance of the development of mining, energy and road industries is worth mentioning here. Urban, street and industrial expansion is responsible for some deforestation, with around 19,000 ha being permanently lost over the last 10 years.

An additional phenomenon is constituted by rural residential areas. This phenomenon has greatly affected agricultural land, but also, to a lesser extent, forest lands. Forest legislation indicates the obligation to carry out reforestation after any action involving felling trees in association with this type of activity, so that the balance sheet does not show any forest loss. However, reforestation is not always successful and this leads to a net reduction in forest areas as a consequence, as well as forests in a poor state of development.

With regard to industrial expansion, reforestation of the forest areas felled due to its activity, involving, for example, hydroelectric dams, power transmission lines, the building of new roads or industrial sites must also undergo reforestation. In view of the above, any area which has involved felling should be reforested in a place where there is no cover and the net forest loss should be zero. However, although the law makes reforestation obligatory, the same is not true for long-term follow-up of the area planted out, so, in practice, many areas which are planted out do not generate any long-term plant cover resulting in a net loss of forested area.

This cause also encompasses the increasing area dedicated to the tourist infrastructure, which also results in significant forest losses. The impact of tourism on biodiversity is considered to be high in the coastal forests, mangroves and seagrass beds, and these ecosystems are under serious threat. There are numerous reasons for environmental degradation in tourist destinations and this cannot be attributed exclusively to tourism. The deterioration of natural resources directly attributed to the tourist development model in the country concerns the fragmentation of the mangrove forests in Macao-Cabeza de Toro (La Altagracia), the river Soco (San Pedro de Macorís) and Portillo (Samaná). In general, the contamination and sedimentation found in tourist destinations such as the port of Samaná or the estuary of San Marcos in Puerto Plata are caused by urban development as a whole. The destruction of mangrove forests in Río Dulce (La Romana) is the result of action taken by private owners.

Tourist development does not only affect the country's forest cover, since an additional environmental effect attributed to tourism is considered to be contamination from multiple sources: organic materials in the water (detergents, waste and sewage), chemical products from herbicides and pesticides used on gardens and golf courses, dangerous chemical products discarded in drains, chlorine in swimming pools, solid waste and refuse, and contamination on account of the excessive use of non-renewable products.

Strict application of the existing legislation on the change of land use and valuable zoning of land use may make a positive contribution to reducing the loss of forest cover caused by the expansion of infrastructures of an urban, road and industrial type.

Natural Disasters: Hurricanes, drought and landslides

Impact: Degradation

Due to its geographical location, the country is permanently exposed to hurricanes and torrential rains which cause immense damage to plant life and other associated resources. Between 1930 and 2007, the Dominican Republic was affected by eight high-impact hurricanes (see Table 4.1.6).

Table 4.1.6 High-impact hurricanes that struck the country between 1930 and 2007

Name of hurricane	Year	Category (Saffir-Simpson scale)
San Zenón	1930	4
Hilda	1955	3
Flora	1963	4
Inés	1966	4
David	1979	5
Hortense	1966	4
Georges	1998	3
Noel	2007	1

The mechanical damage caused by the strong winds from hurricanes cause widespread destruction to the vegetation, resulting in forest degradation. Likewise, tropical storms frequently affect the country, leaving major floods behind them. Linked to this are also the effects of runoff and landslides caused by the action of the water.

In addition, there have been long periods of drought over recent decades, which are progressively changing the ecosystem and natural habitat of endemic species, giving way to highly invasive alien species which degrade the forest.

Natural disasters lead to forest degradation, as the structure and flora composition is directly affected. Likewise, droughts bring about forest fires of varying intensity, which also degrade the forests.

Indirect causes

Certain social, economic and environmental constraints increase DDB (*Deforestation and Forest Degradation*) in the Dominican Republic, and these constitute the so-called *indirect or underlying causes*.



Figure 4.1-3 Indirect or underlying causes of DFD in the Dominican Republic.

Demographic growth

One of the fundamental enabling conditions leading to the problem of deforestation and forest degradation is demographic growth. The total population of the Dominican Republic rose from 3 million in 1960 to over 9 million in 2011. The rate of growth was 1.4% per annum over this period, meaning that a population of around 11 million is projected for the year 2020.

Rural illiteracy limits the options of many citizens even more, as they lack the basic education required to implement other economic alternatives to subsistence agriculture. With few available alternatives, poor people in rural areas feel that removing the forests is a short-term solution to their economic problems.

Poverty and social inequality

Another condition promoting deforestation is poverty, especially in rural areas. Poverty limits economic options, reduces income-generating opportunities and is an underlying cause of deforestation. Limited employment and low incomes together with demographic pressure contribute to deforestation, due to the fact that people looking for work have to choose between emigrating or committing to agricultural activities or utilising forest resources. People living in a situation of poverty not only suffer from income-based problems, but also suffer from a series of shortcomings, such as inadequate conditions of health and education, unemployment and social exclusion.

Land tenure

Land tenure has an important influence on people's attitude towards using this land. In the Dominican Republic most hillside farmers do not have any legal title to the land. Without a guarantee that the land will continue to belong to them, farmers have little incentive or motivation to invest in making it more productive and this discourages any long-term investment which might lead to improved productivity, prosperity and social welfare.

Data from 2002 show that land in the country is very highly concentrated in the hands of very few people: 50% of the rural population has access to the land, 40% of those with access to the land possess less than

1.2 has, 74% have less than 3.1 has, while 700 farmers control over 15% of the land; of these, 50 producers control over a thousand has each; 200 families control approximately 600,000 has, equivalent to 50% of the arable lands in the country, and only 40% of the land belonging to private owners is registered (ABT, 2002).

Topographic conditions

The Dominican Republic is characterized by rugged topography, with physiographic conditions involving steep slopes, covering 67% of the country, and not being considered suitable for intensive agriculture. This includes the high and middle part of the main river basins in the country. In spite of over half the country consisting of mountainous areas, with steep slopes, land in the country is subjected to intense agricultural development in vast hillside areas, facilitating erosion and land displacement (Geilfus, 2002 y SEMARENA, 2003).

Taxation and development policies

Deforestation usually occurs when there is a series of state policies - social and economic, which indirectly promote this. Frequently, political decision-makers attempt to resort to forest resources to resolve a whole raft of taxation, economic, social and political conflicts, rather than changing development strategies, thus resolving the problems of unemployment and rural poverty. Often infrastructure and development projects do not take into account the value of forest capital lost. Although generally well intentioned, many government policies are counterproductive, as they have undesirable and unforeseen impacts which are damaging for sustainable forest development.

Government policies adopted to facilitate economic development in other sectors but resulted in deforestation include the following:

- Preferential credits for agricultural and livestock farming expansion.
- Reduced tax rates for land uses in competition with forestry.
- Duty-free imports of equipment intended for new industries with a negative impact on forests.
- Government-sponsored colonisation programmes, whereby forests are felled and replaced by marginally productive subsistence farming.
- “Perverse” grants, such as subsidies on the cost of equipment, investment and infrastructures for users of fresh water and irrigators, and subsidies for using agro-chemicals.

Deforestation and forest degradation forecasts

To offset the direct and indirect drivers of deforestation and forest degradation, it is important to know where DFD is most likely to have an impact in the future. A geospatial analysis, applying spatial models with available maps and databases was carried out in order to ascertain and estimate trends in deforestation and forest degradation in the Dominican Republic. This section contains a summary description of the process used for the analysis³³. The geospatial analysis consisted of the following:

- Determine and identify future deforestation and forest degradation trends.

³³ Chapter 7 - Report 4 version 2. Analysis of the Direct and Indirect Drivers of Deforestation and Forest Degradation (DD) in the Dominican Republic. 2018.
<https://app.box.com/s/oogh4tow9syo0g7nxfn68gby2ouk59g>

- Determine spatial variation of the change of land use to define the relative importance of the drivers of deforestation and forest degradation.
- Prioritise actions to offset the drivers of deforestation toward areas with greater potential for deforestation and forest degradation.

The purpose was to generate maps of future deforestation and forest degradation risk based on time series of ground coverage and geographic variables. The purpose of this is to create potential scenarios to identify future vulnerable areas. The outcomes of these processes are represented on maps and in data tables and their results are used to define priority areas to implement REDD+ strategies and their potential impact on mitigation.

The changes in land use considered in the model follow IPCC guidelines and are presented in the following table:

Table 4.1.7 **Land use conversions in accordance with IPCC guidelines.**

TYPE OF CONVERSION	DEFINITION OF CHANGE
FL-FL = Forest Land Remaining Forest Land	No change = Stable forest
CL-CL = Cropland Remaining Cropland	No change = No stable forest
OL-OL = Other land Remaining Other Land	No change = No stable forest
FL-CL = Forest Land Converted to Cropland	Change = Deforestation
FL-OL = Forest Land Converted to Other Land	Change = Deforestation
CL-FL = Cropland Converted to Forest Land	Change = Additional forest
OF-FL = Other Land Converted to Forest Land	Change = Additional forest

Source: IPCC 2006.

Future deforestation and forest degradation scenarios

The result of the model are area maps that show the likelihood of deforestation and forest degradation separately for the years 2020, 2025 and 2030. This enabled us to guide operations and strategic actions towards areas at higher risk of deforestation and forest degradation (priority areas). The statistical-spatial modelling of the change of land use aided better understanding and helped to forecast its future DDB evolution. By definition, there are no models able to take all aspects of the reality into consider, however, they do provide us with valuable information about the behaviour of the system under a range of conditions (Veldkamp and Lambin, 2001), that help when taking public policy decisions.

Preparing predictive models for deforestation and forest degradation can reveal medium and long-term risks in different regions of the country. Based on this information, different types of actions can be taken to offset current and future trends in deforestation and forest degradation.

Among the most important aspects that should be taken into consideration in the change of use/cover model are: i) the manner in which certain drivers (causes) are specified and their interactions in different scales, ii) how the location of the changes are predicted (Veldkamp y Lambin 2001). The growing demand

for spatially explicit models has driven the development of numerous methodological approaches (Veldkamp and Lambin 2001; Verburg et al. 2002).

The SIG modelling exercise was carried out with the IDRISI Selva and Change Modeler (LCM). The LCM module integrates data on change of land use, modelling and the implications of territorial planning and management. Prospective space-time modelling is divided into two phases: a) preparing potential transition models, b) implementing the prediction and/or obtaining scenarios.

The time series of ground cover maps for the years 2005 and 2015 was used for the deforestation and forest degradation scenario. Geospatial variables were selected to model and forecast forest transformation processes at a national and sub-national scale. The explanatory variables and drivers used in predictive models were:

- Digital elevation model
- Slope and orientation
- Distance from road, population centres, provincial capital, river system
- Dams and mines
- Protected areas
- Charcoal and wood consumption by province
- Number of fires and area burned by province
- Population by province

All the data entered in the LCM model is drawn from raster data with a common topology and the same spatial resolution (30 metres).

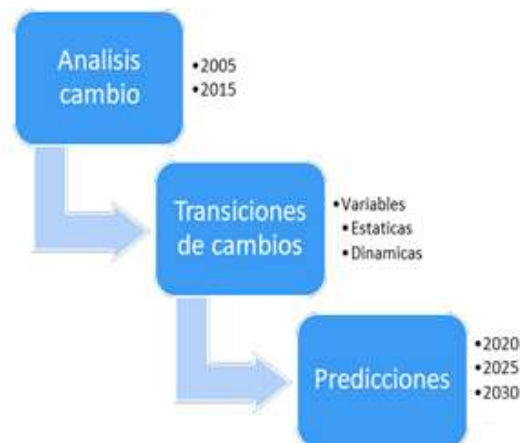


Figure 4.1-4 **Methodological sequence applied to generate predictive land-use-change models.**

The following details the model-generation process:

Analysis of changes

The change analysis model evaluates the change between time 1 (2005) and time 2 (2015) on the ground coverage maps. The changes identified are transitions of land from one state to another (see Figure 4.1-5).

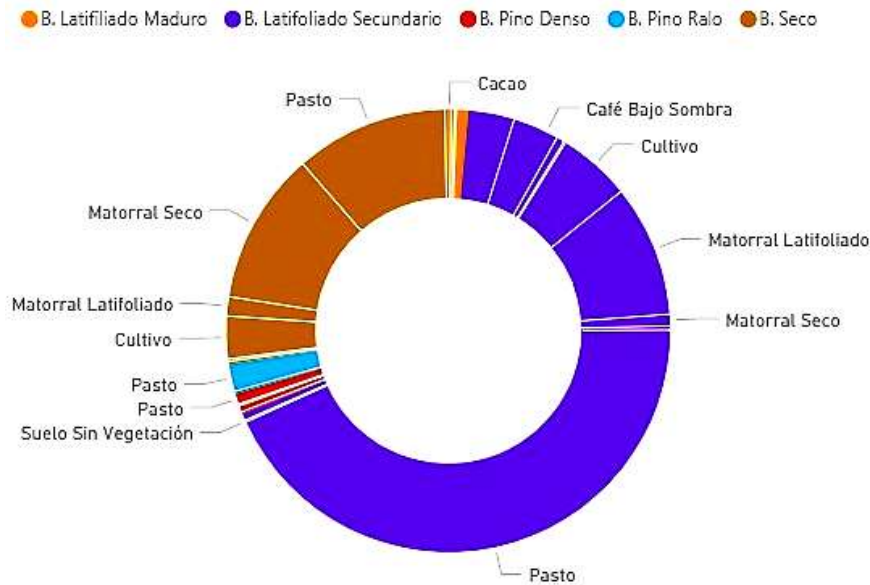


Figure 4.1-5 **Conversions from forest to other land uses (deforestation)**

Transition of changes

The second step consisted of identifying the potential of the land for transition and potential maps were created for each transition. The transition submodels consist of a single transition or group of transitions sharing the same underlying determinant variables. These determinant variables were used to model historic change processes. Variables may be static or dynamic. Static variables express aspects of basic adaptation to the transition considered and do not change in time. Dynamic variables are time-dependent determinants such as proximity to urban areas or infrastructures and are recalculated in time during the course of a forecast. Having entered the variables in each transition submodel, the models were calculated using the Multi Layer Perceptron (MLP) option. Known areas of change are used by the MLP as training zones to analyse the relationship between a set of explanatory variables and transitions. After completing the training, new data were added and the activation levels were mapped for each class. The number and combination of explanatory variables used in the models varied depending on the transition submodels.

Prediction

The model generates two types of results: the “soft” prediction model, which is equivalent to a map of vulnerability to change, and the “hard” prediction model based on the multiobjective evaluation and which is the proposed status of the same categories of occupation / land uses from the calibration phase (t0 and t1) in time T. (IDRISI selva, 2012). The Markov Chain Model of Land Use method was used to quantify the change.

Deforestation Analysis

As already mentioned, different models of transition to classes of land use without vegetation cover were established in the deforestation analysis.

One of the results of the LCM module is the deforestation risk map, which shows the likelihood of change within the selected period on a scale of 0 to 1. The following Figures show the behaviour of land coverage for the years 2035 (soft prediction), 2020, 2025 and 2030 (hard predictions).

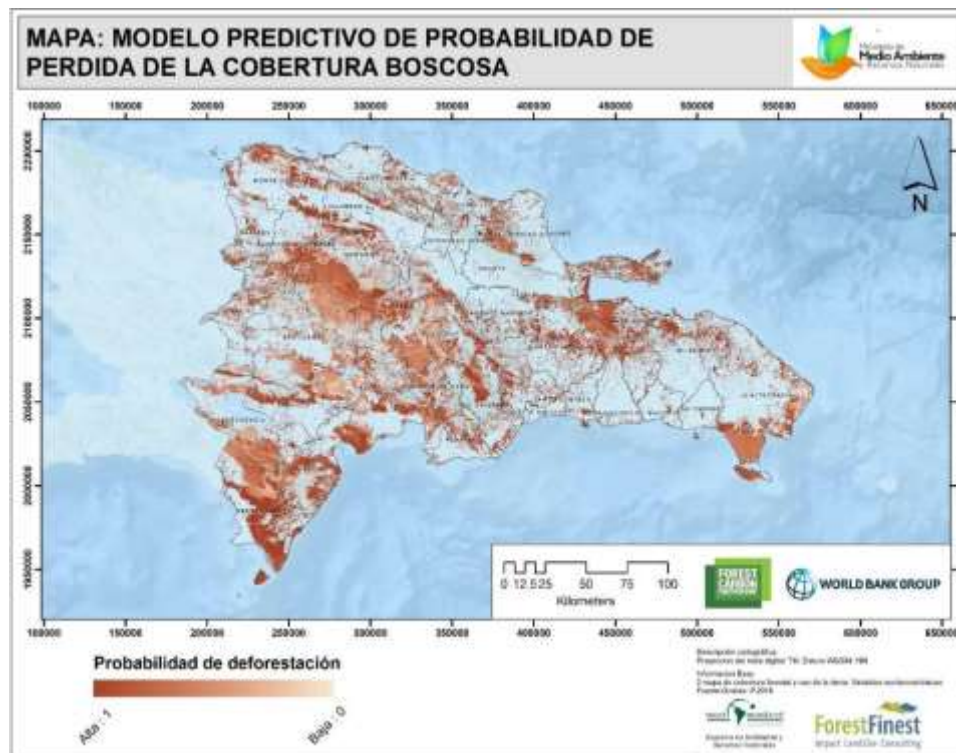


Figure 4.1-6 Predictive model of forest loss risk (2020 – 2035)



Figure 4.1-7 Map of forest cover forecast for 2020



Figure 4.1-8 Map of forest cover forecast for 2025

Degradation Analysis

The analysis of future degradation shows an expected 5% degradation of secondary mature hardwood forest. Likewise, for the dense pine forest, a 4% degradation of pino ralo forest of the total cover is forecast for 2035.

The following is the forest degradation risk map for 2035 (soft prediction), and 2020, 2025 and 2030 (hard prediction):



Figure 4.1-9 Map of degraded forest forecast for 2020



Figure 4.1-10 Map of degraded forest forecast for 2025

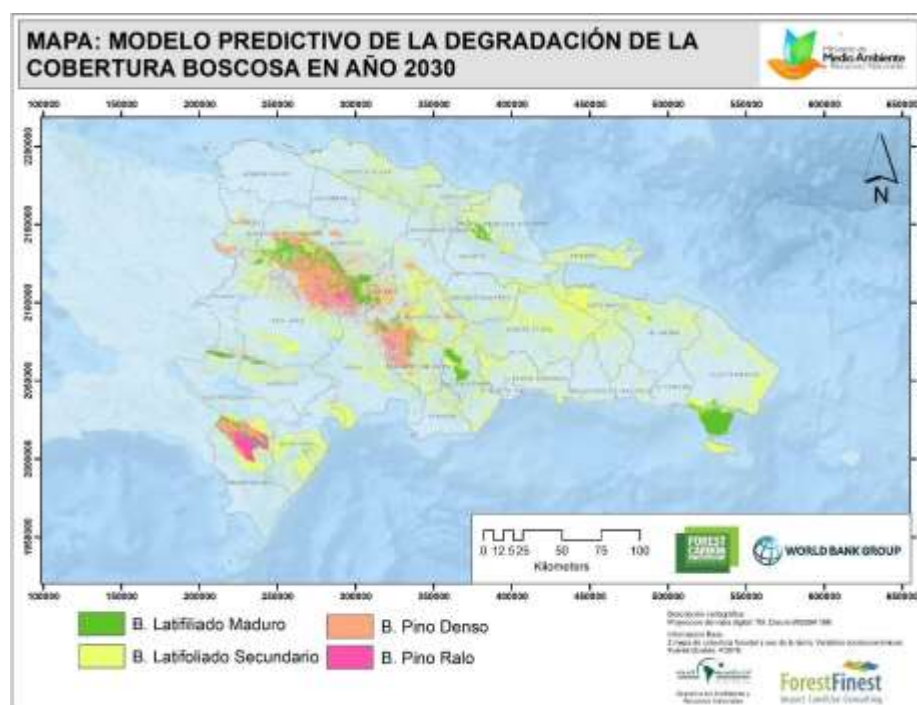


Figure 4.1-11 Map of degraded forest forecast for 2030

Based on these maps, maps of priority areas were generated for implementing lines of action at different levels of aggregation, such as basins, provinces and municipalities, and vulnerability to change. The following is a map of priority sites for implementing activities in REDD.



Figure 4.1-12 Map of priority sites for implementing REDD+ activities.

The municipalities and provinces and protected areas most vulnerable to deforestation and forest degradation were prioritised at a workshop held to validate the map with the potential sites (Figure 4.1-12 y Table 4.1.8).

Table 4.1.8 Priority protected areas for REDD+ activities

No.	Protected Area	Area (km ²)
1	NP Sierra de Bahoruco	1,091.77
2	NP Nalga de Maco	165.82
3	NP José del Carmen Ramírez	749.72
4	NP Armando Bermúdez	802.55
5	NP Valle Nuevo	906.31
6	NP Loma La Humeadora	305.41
7	NP Los Haitises	631.68
8	NP Anacaona	538.93
9	NP Sierra de Neiba	183.00
10	NP Sierra Martín García	245.01
11	NP Francisco Alberto Caamaño Deñó	288.80
12	NP Luis Quin	197.29

13	FR Cerro Chacuey	51.89
14	NM Miguel Domingo Fuerte (Bahoruco Oriental)	33.53
15	NM Las Caobas	105.47

NP = National Park, FR= Forest Reserve, NM=Natural Monument

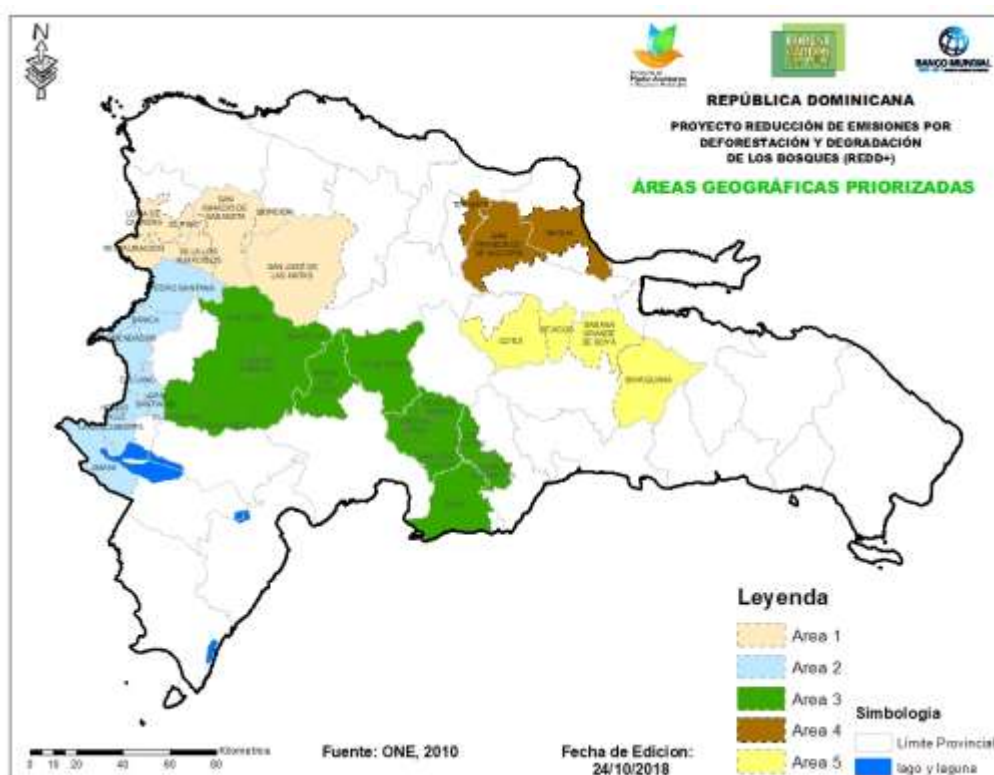


Figure 4.1-13 Priority municipalities for implementing REDD+ strategic actions

Level of priority for deforestation and degradation causes in priority municipalities.

In the regional analysis of the direct and indirect causes of deforestation and forest degradation, the relative significance of each cause is rated for each province. By combining the most important causes of deforestation (commercial and shifting agriculture, livestock and illegal logging) and degradation (pasture, extraction, poor management and medium-sized fires) with indirect causes (political and institutional shortcomings, informal market), the relative importance of each combination can be observed in the 5 priority areas (Figures 4.1.14, 4.1.15, 4.1.16).

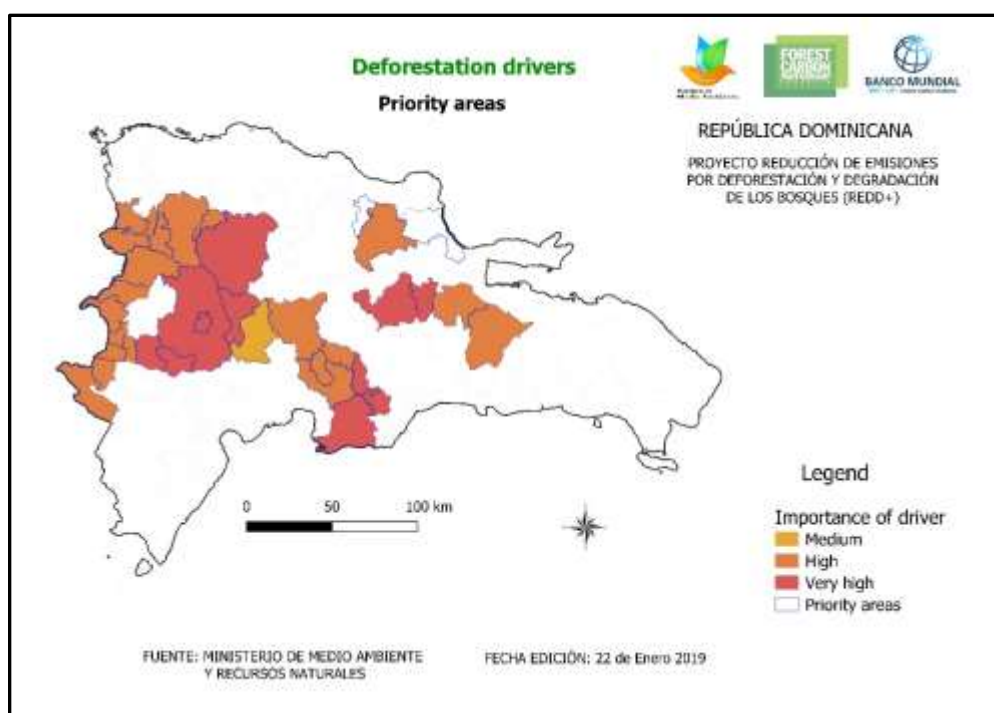


Figure 4.1-14 Importance of the 4 most important drivers of deforestation in priority municipalities

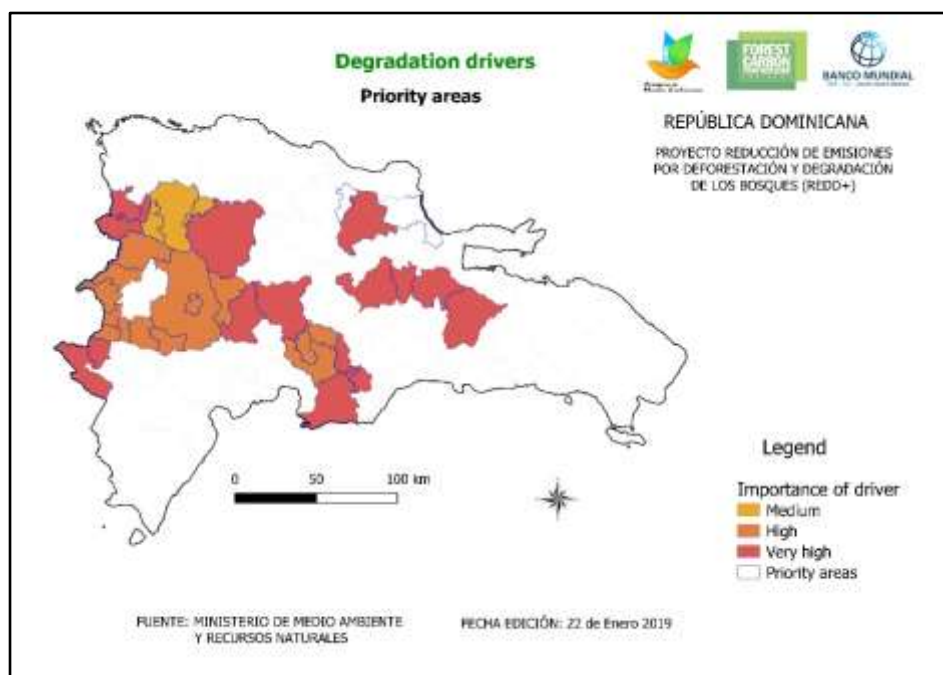


Figure 4.1-15 Importance of the 4 most important drivers of degradation in priority municipalities

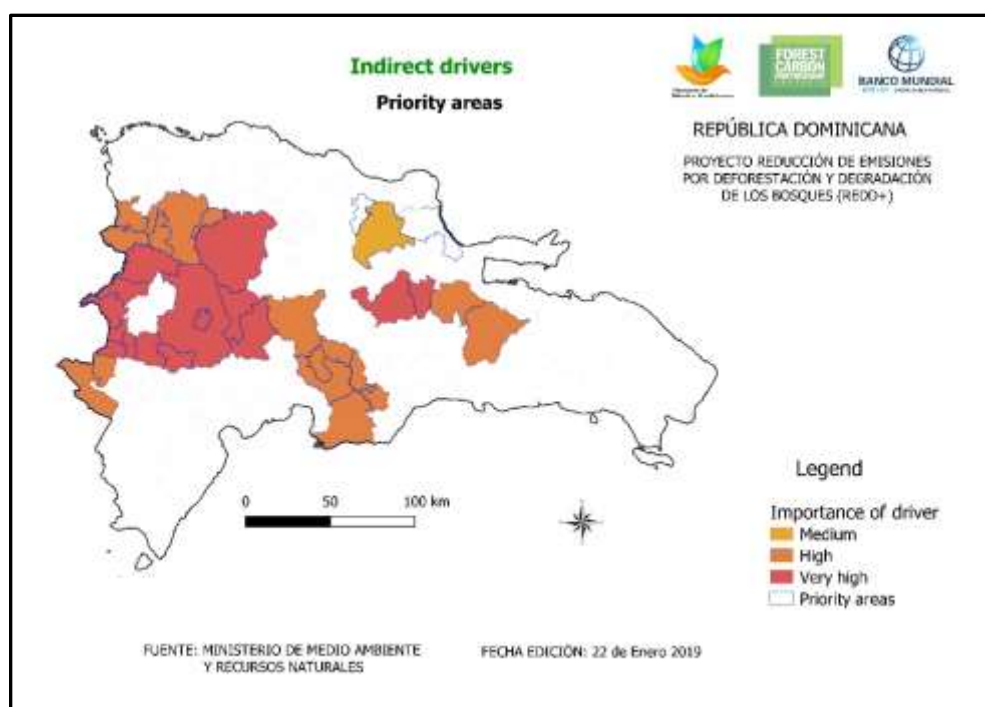


Figure 4.1-16 Importance of the 3 most important indirect drivers in priority municipalities

4.2. Assessment of the major barriers to REDD+

The following are the main obstacles that may interfere with the implementation of the REDD+ lines and strategic actions, their possible impact on implementation and measures that can be implemented to counteract these obstacles. The obstacles were identified in consultation workshops organised with representatives of the different sectors held between July and August 2015³⁴. Most of these obstacles were also identified during the consultation workshops carried out in the study of drivers of deforestation and forest degradation.

A) Socio-economic obstacles:

- Scant investment in reforestation and forest protection.
- Limited encouragement for forestry production for commercial purposes.
- Low profits of wood product and fruit farms.
- Low level of income in rural population segments.

Impacts on the implementation of the programme:

- The lack of incentives in the sector may generate excess demand or excessive expectations.
- Lack of interest in forestation production for commercial purposes may restrict participation by medium-sized and small producers in the programme actions.

³⁴ Emission Reductions Program Idea Note (ER-PIN) Dominican Republic. 2015. Source: <https://app.box.com/s/ijkl3pg7vvua1trdks6tivhuxmcm64>

- The socio-economic obstacles have a negative impact on small and medium producers, driving investment in more profitable options, which are generally farming activities with high environmental impact.
- Socio-economic obstacles hinder participation by small producers and encourage inappropriate use of natural resources, including forests.

Measures for tackling obstacles:

- Implementation of compensation mechanisms for forestry environmental services.
- Restoration of degraded land and protection of critical areas.
- Developing productive activities and lifestyles compatible with conservation of natural resources.
- Encourage establishment of silvopastoral systems that implement livestock production techniques associated with fodder and timber trees.
- Together with the drivers of deforestation and forest degradation, the socio-economic barriers were considered for the determining the strategic components and activities of the ER Program. Given the relevance of these barriers, they have been taken up again in the medium and long-term actions of the National REDD + Strategy. In other words, the National REDD+ Strategy, which is in the process of being finalized, broadens the approach to these barriers.
- Strengthen processes related to granting, monitoring and compliance through cutting permits.

B) Legal Obstacles:

- Inadequate or out-of-context legal framework in terms of mitigating climate change.
- Lack of legal certainty regarding land tenure and property and charcoal rights.
- Profit-sharing mechanisms are unclear.

Impacts on the implementation of the programme:

- These legal obstacles impact the implementation of the programme, hindering the design and management of the profit-sharing mechanism, among other aspects which require a well-defined legal basis.

Measures for tackling obstacles:

- Review and drafting of legal and administrative instruments to strengthen the legal framework vis-a-vis matters related to: ownership of charcoal, land tenure and forest ownership, profit-sharing derived from removal or storage of charcoal in forests.

C) Institutional Obstacles:

- Logistical and budgetary limitations on institutions linked to conservation and sustainable use of forest resources.
- Incorrect application of forestry regulations.
- Lack of institutional platforms to follow up projects or programmes, such as the National Quisqueya Verde Plan, Marena Fund, among others.
- Public budget that does not reflect a constant or long-term policy, to carry out programmes to reduce emissions by protecting and developing forests.
- Lack of knowledge of REDD+ at an institutional level, particularly in regional and local forums.
- Insufficient communication and synergies among public and private institutions regarding forest conservation and sustainable forest use.

- Lack of skills in different climate-change-related matters among government technicians and local producers.

Impacts on the implementation of the programme:

- Limitations caused by lack of budget assigned to address environmental liabilities and to protect natural resources are among the main problems for effective application of the programme.
- Institutional weakness materialising in lack of development of structures to follow up programmes and projects may affect correct implementation of the programme.
- Weak application of laws may lead to an upturn in incorrect use of forests and associated resources.
- Development of forest development, cultivation and protection activities is out of synch. Investments are extremely costly due to instability and losses occurring in the different processes associated with forest stewardship and development.
- Institutional obstacles hinder decision-taking that will enable integration of actions favourable to REDD+.
- This hinders understanding of plans and programmes to minimise actions to reduce emissions, protect forests and increase forest cover.

Measures for tackling obstacles:

- Create financial instrument(s) to implement forest conservation and sustainable use actions.
- Strengthen coordination mechanisms between public and private institutions linked to REDD+.
- Strengthen forest surveillance and protection to reduce felling and illegal trade in forest products.

D) Technological Obstacles:

- Lack of a reliable, low-cost and organised technological monitoring system to follow up key forest conservation and reforestation programmes and actions.

Impacts on the implementation of the programme:

- The information gathered through monitoring is inadequate to implement a payment by results system. The programme cannot be implemented without a reliable MRV system.
- The actions would be highly inefficient, affecting the results expected from the programme.

Measures for tackling obstacles:

- Create and strengthen the MRV System, with coordination and participation by the Forestry Monitoring Unit and the Department of Environmental Information and Natural Resources.
- Strengthen the MRV GHG System of the Climate Change Department.
- Strengthen and drive academic programmes in the environmental and natural resources area.

E) Cultural Obstacles:

- Lack of empowerment of civil society vis-a-vis conservation and sustainable use of forests.
- A farming tradition based on felling and burning forests.
- Wood/charcoal are traditionally used as a source of energy.
- Extensive livestock farming with scant presence of trees.
- Lack of empowerment of communities and in reforestation processes and/ restoration of forest cover.
- Ignorance of the benefits of sustainable forest management.

Impacts on the implementation of the programme:

- Hinders the participative process in REDD+ actions at the national and local level.
- Deforestation and forest degradation continues, with its consequential degradation of areas and land area.
- This hinders the incorporation of new land into reforestation and restoration processes.
- Producers and other parties involved do not prioritise conservation and sustainable use of forests, which hinders allocation of additional resources and the incorporation of new land to conservation and sustainable forest use.

Measures for tackling obstacles:

- Create favourable conditions among the local population to encourage productive activities and lifestyles compatible with conservation of natural resources.
- Create favourable conditions at a local population level to restore degraded land and protect critical areas.
- Develop productive activities and lifestyles compatible with conservation.
- Strengthen sustainable forest management for sustainable supply of forest products, which includes establishing fuel farms to supply the national and international charcoal market.
- Steering farming and livestock systems carried out on slopes and fragile areas toward sustainable systems, first identifying highly fragile areas in forest ecosystems.
- Encourage the establishment of silvopastoral systems that implement livestock production techniques associated with the inclusion of fodder and timber trees.
- Empower society in the care, exploitation and rational use of the forest resource.
- Application of a programme to raise awareness and educate in sustainable production on steep slopes.

F) Environmental Obstacles:

- The effects of drought reduce seedling survival in reforestation areas.
- Scant research into the frequency of pests and diseases in forest areas and their relationship with local environmental conditions.

Impacts on the implementation of the programme:

- The cost of reforestation and the time required to establish plantations increases with the low survival rate of plants.
- Scant availability of scientific data to support forest protection increases the damage caused by pests and diseases in forest areas.

Measures for tackling obstacles:

- Encourage the use of native and endemic species of high ecological value to protect land and food for avifauna in forestry projects.
- Strengthen research into the frequency of pests and diseases in forest areas and their relationship with local environmental conditions.

4.3. Description and justification of the planned actions and interventions under the ER Program that will lead to emission reductions and/or removals

Through a participative programme with key stakeholders, 3 main strategic options and 22 strategic actions were identified and agreed upon to offset or mitigate factors that: i) drive deforestation and forest degradation, ii) restrict conservation and sustainable forest management, iii) hinder growth of the forest

charcoal stock. The participative process entailed several consultation workshops, internal consultations in the Ministry of the Environment and Natural Resources, and an analysis and technical discussion with the organisations that make up the REDD+ Technical Advisory Committee.

Strategic Options are a set of action mechanisms consistent with forest diversity and the different local realities in the country that aim to address the causes of deforestation, forest degradation, and factors that hinder or have a negative impact on the implementation of restoration, conservation, sustainable management, enrichment and regeneration of forest resources. A *strategic action* is the specific definition of a mechanism within a strategic option.

Actions may have a specific impact on one or more causes of deforestation and forest degradation and are classified as *direct actions* and *facilitating actions*. Direct actions are those that lead to direct environmental, social and economic benefits in the territory. Facilitating actions are those that facilitate or strengthen the implementation of direct measures or actions. There are also three types of ERPD actions: i) those that prevent deforestation, ii) those that prevent degradation, iii) those that improve the existence of charcoal in forests.

Table 4.3.1 contains a summary of the main strategic options and their corresponding strategic actions, while Figure 4.3-1 lists the relationship between the strategic actions and one or more drivers of deforestation and forest degradation.

Table 4.3.1 Options and strategic actions, scope and corresponding type of action

STRATEGIC OPTIONS	REDD+ STRATEGY OPTIONS	SCOPE:	SPHERE
1. Strengthening the legal and institutional framework to preserve natural heritage and promote the sustainable use of natural resources. Scope: To promote the application of different laws and standards relating to the management and conservation of natural heritage, and to encourage governance structures at different levels.	1.1 To promote the enactment and application of the Forestry Law and Payment for Environmental Services (PES) regulations.	Facilitation Activity: To support the formulation, approval, and enactment of forestry law and PSA operational instruments.	National
	1.2 Review, create and apply rules concerning sustainable forest management.	Facilitation Activity: Review forest management laws and codes, adapting them and drafting new ones as required.	National
	1.3 To drive effective governance structures for the preservation of natural heritage in the context of REDD+.	Facilitation Activity: Establishment of the Management Committee, REDD+ Technical Advisory Committee, Central Work Groups and Local Coordination Groups. Review and strengthen their operating rules.	National
	1.4 To define and apply legal mechanisms relating to the tenure of land and payments for environmental services in the context of REDD+.	Facilitation Activity: Application of mechanisms for recognition of land tenure rights. Approval and dissemination of profit-sharing mechanisms for emissions reduction.	National

STRATEGIC OPTIONS	REDD+ STRATEGY OPTIONS	SCOPE:	SPHERE
	1.5 To strengthen mechanisms of forest control and supervision including the determination of the legal origin, exploitation and sale of forest products and sub-products.	Facilitation Activity: Revise, update and implement existing mechanisms for traceability of forest products.	National
	1.6 To strengthen the institutional capacities of the organizations responsible for implementing REDD+ actions.	Facilitation Activity: Review, establish and assign human and logistical resources for implementation of REDD+ at an institutional level. Establish a training programme at central and local level in all REDD+ governance structures.	National
2. Establish, strengthen and apply public policies to limit and/or contain the expansion of agricultural, livestock and infrastructure borders in forested areas Scope: To strengthen inter-institutional coordination and collaboration mechanisms to reach a harmony between productive activities and forest conversation.	2.1 To strengthen effective mechanisms of inter-institutional coordination for consistency of public conservation policies, sustainable use and restoration of forests.	Facilitation Activity: Establish inter-institutional agreements; joint implementation agreements; definition of joint standards and protocols.	National
	2.2 Establish new areas for forest management, reforestation, clean-up, protection of water basins, conservation of biodiversity and for other environmental services derived from forest ecosystems.	Facilitation Activity: Integrate and expand on existing national programmes with REDD+ focus (actions considered in strategic option 3).	National
	2.3 To develop programmes for the zonation of crops, livestock and infrastructure compatible with forest conservation.	Facilitation Activity: Update productive zoning and conservation of the landscape and propose this to the Management Committee, to reinstate this among the REDD+ agreements.	National
	2.4 To strengthen the focus on drainage basins in ecological management and restoration programmes.	Facilitation Activity To promote a basin management approach among the REDD+ Programme implementing bodies.	National
3. To promote management models for natural resources that	3.1 To strengthen plans and programmes for reforestation and agroforestry such as the Green Quisqueya National	Direct activity Improve charcoal stocks: Identify areas of intervention: involve the community and organisations in reforestation and agro-forestry actions (Social Forestry,	National

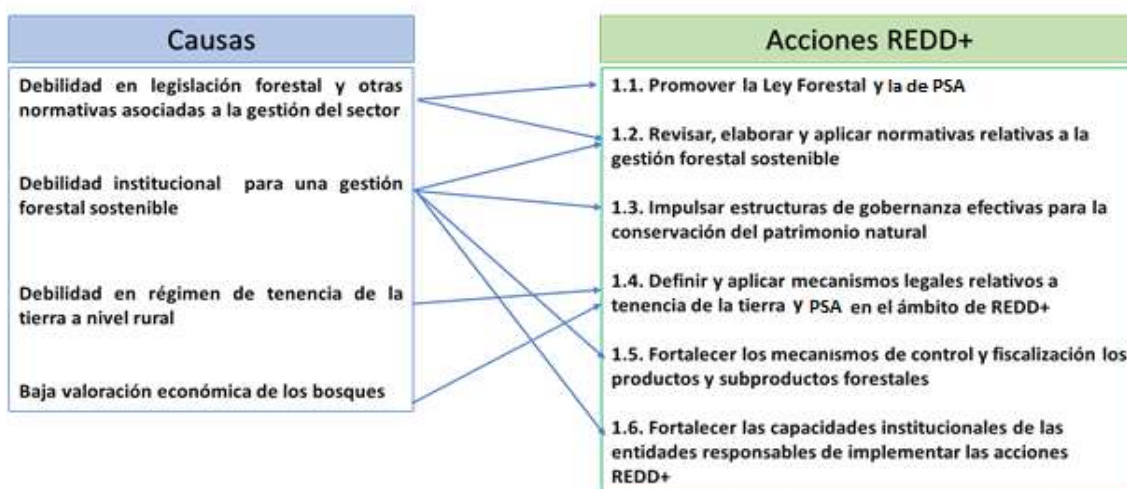
STRATEGIC OPTIONS	REDD+ STRATEGY OPTIONS	SCOPE:	SPHERE
contribute to the conservation and sustainable use of forests and an increase in forest coverage. Scope: To promote activity in sustainable productive systems based on agroforestry and natural resource management and conservation.	Plan and the Agroforestry Programme.	SAF cocoa and coffee), sustainable Forestry Management.	
	3.2 Promoting the incorporation of agroforestry systems for managing agricultural and cattle farms.	Direct activity Improve charcoal stocks and deforestation. Intensification of livestock by means of silvopastoral systems.	National
		Direct activity Deforestation-degradation: Intensification of agriculture through agro-forestry systems (SAF cocoa, coffee). Incorporation of trees in livestock estates (Silvopastoral systems).	National
	3.3 To develop programmes to raise awareness among key players regarding the subjects of environmental management and sustainable forest management.	Facilitation Activity Deforestation-degradation Establish a programme to train and raise awareness of environmental management and sustainable forest management. Training courses, workshops, sharing experiences, field days, dissemination campaigns.	Priority areas I, II and III.
	3.4 To reduce and/or slow down deforestation and degradation in major protected areas for the conservation of forest resources.	Direct activity Deforestation-degradation: Formulate and implement sustainable production actions in PA buffer zones (Dendroenergy plantations, agro-forest systems). Apply resolution N 0010/2018 Management of buffer areas of SINAP conservation units. Reduce dependency on use of resources within PAS (creation of green jobs).	SINAP:
	3.5 Enhancing the programme for protection and surveillance in protected areas relevant to the conservation of forest resources.	Direct activity Deforestation-degradation: Strengthen definition of the PAs. Draft and implement management plans in priority protected areas with social stakeholders. Restrict use and access to PA resources in accordance with management plans Strengthening and application of the Sanctions Regulation in the NPAs, in accordance with the management plans. Strengthen the protection and surveillance programme in the core area of the NPAs through the National	SINAP:

STRATEGIC OPTIONS	REDD+ STRATEGY OPTIONS	SCOPE:	SPHERE
		Park Guards Corps, administrators and local participating communities.	
	3.6 Rehabilitating forest ecosystems in fragile areas relevant for facilitating connectivity between forest fragments.	Direct activity Improve existing charcoal stocks Include repopulation of tree species, conservation of natural regeneration, forest cover protection (Reforestation, Regeneration of degraded natural areas, Agro-forestry systems, Sustainable forest management).	National
	3.7 To establish a system for evaluating and monitoring forest management.	Facilitation Activity: Generation of technical skills and technological infrastructure for integral forest management monitoring (GHG, Fires, Traceability, products, species, etc.).	National
	3.8 To promote forest management and the natural regeneration of tree species between owners of private farms and community organizations.	Direct activity Deforestation and degradation: Recovery of degraded land through natural regeneration Increased the area under sustainable forest management.	Priority areas V
	3.9 To define and put into practice financial instruments and mechanisms to develop productive conservation and restoration activities for forest and agroforest ecosystem.	Direct activity Deforestation and degradation: Review, assessment and broadening the scope of existing incentives.	Priority area III
	3.10 Updating and applying the National Strategy for Fire Management in the Dominican Republic.	Direct activity Degradation: Strengthen institutional capacity for coordination, collaboration for application of the National Fire Management Strategy. Detect needs for Strengthening (RH, Surveillance Equipment, Protocols, early alerts). Update and apply the fire reporting system.	National
	3.11 Developing the programme for restoring post-fire affected ecosystems.	Direct activity Improve charcoal stocks: Cover the SINAP, basins, and all national programmes that incorporate the REDD+ Strategy.	National
	3.12 To develop a phytosanitary plan in priority forest areas.	Facilitation activity: Develop a plant health protection plan that includes using and managing pesticides, integrated pest management,	National

STRATEGIC OPTIONS	REDD+ STRATEGY OPTIONS	SCOPE:	SPHERE
		preventive, control and permanent plant health monitoring of native forest resources. Train professionals and technical personnel in surveying, detection, registration, prevention and pest control at a central and local level, including customs. Strengthen the capacities of National Plant Pathology laboratories.	

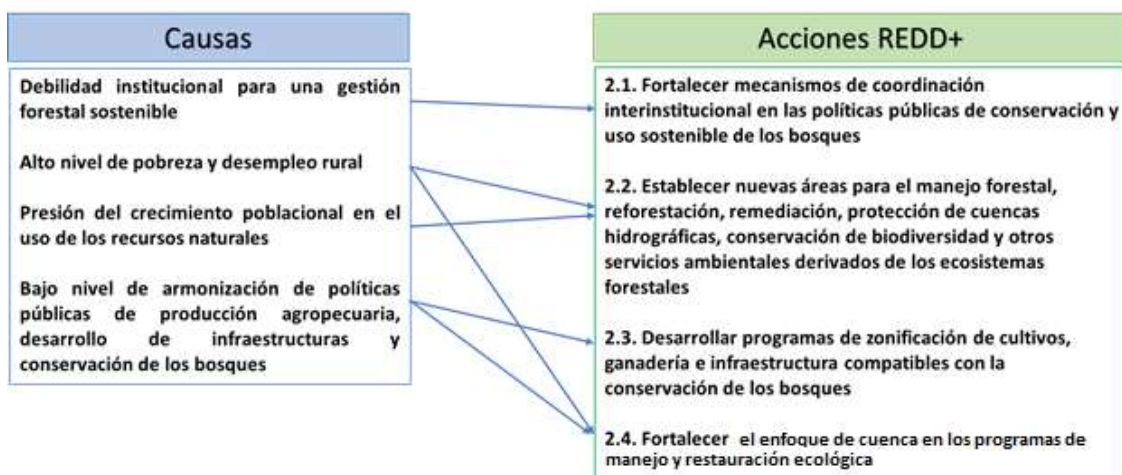
Línea estratégica 1

Fortalecer el marco legal e institucional para la conservación del patrimonio natural y el uso sostenible de los recursos naturales



Línea estratégica 2

Establecer, fortalecer y aplicar políticas públicas para limitar y/o contener la expansión de la frontera agrícola, ganadera y de infraestructura en áreas boscosas



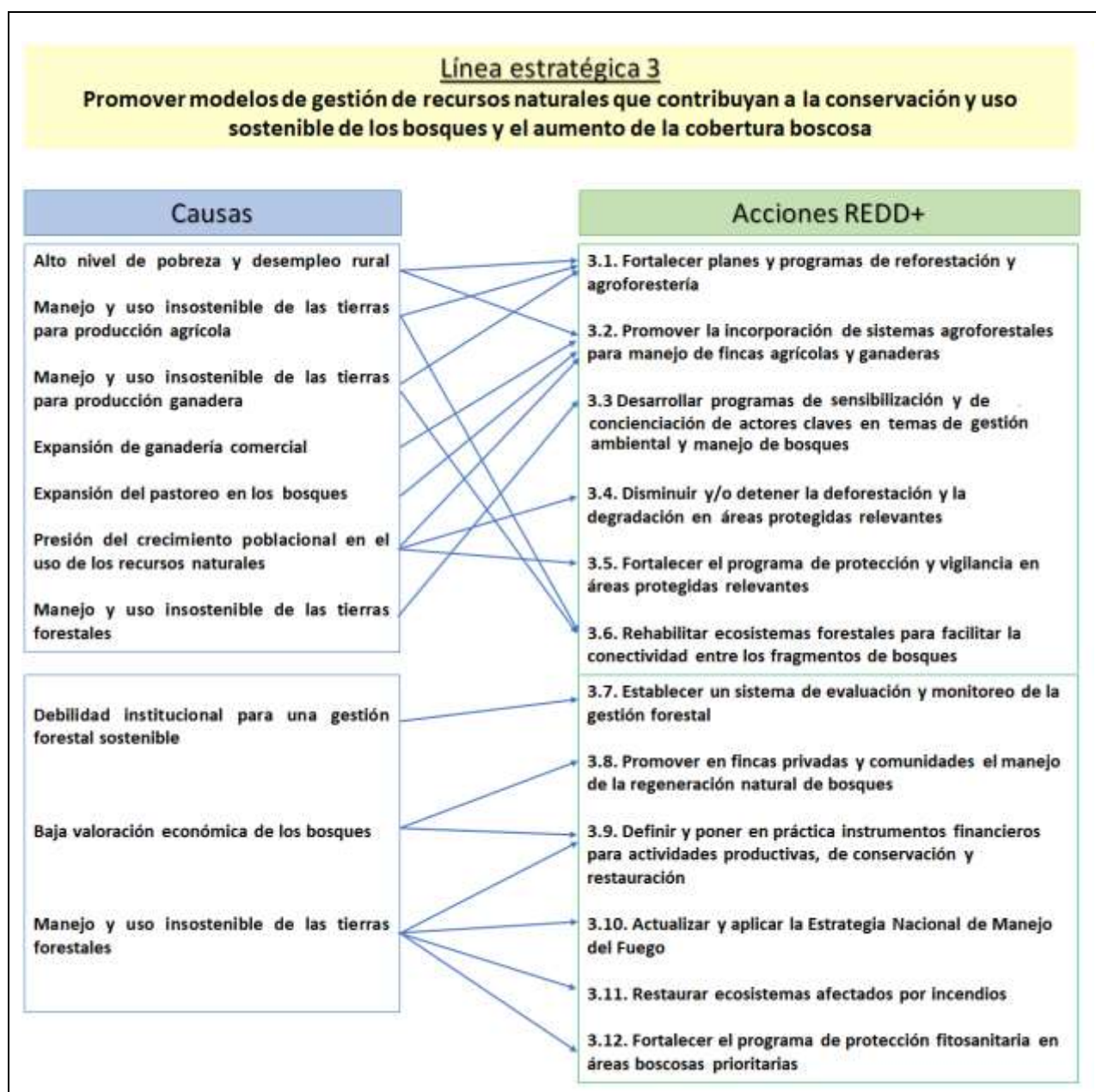


Figure 4.3-1 Causal relationship between deforestation/forest degradation and REDD+ actions

The following is a brief description of REDD+ strategic actions. It contains information about the scope of action, causes, the support institutions involved, the type of action and a brief description of each action.

Strategic option 1. Strengthen the legal and institutional framework for the conservation of natural patrimony and the sustainable use of natural resources

1.1 To promote the enactment and application of the Forestry Law and Payment for Environmental Services regulations

Scope of the action/ land	Legislative and development/National
Causes:	Weakness in forest legislation and other regulations associated with the management of the forest sector
Support institutions involved	Ministry of the Environment and Natural Resources, Viceministry for Forest Resources, National Council on Climate Change and Clean Development Mechanism (CNCCMDL), Ministry of Agriculture, Ministry of Economy, Planning and Development (MEPyD), National Congress
Type of action	Facilitator
SCOPE:	
This measure is based on driving the national application of the forestry law and the Payment for Environmental Services law. It aims to strengthen the related national payment by results regulation according to the metrics associated with mitigation and adaptation to climate change, as well as the fight against DFD. Specifically, it proposes to develop instruments to foster actions that conserve the remaining forests and restore degraded areas. The forestry law aims to <i>regulate and foster sustainable forest management, to ensure its conservation, use, production, industrialisation and trade, as well as the protection of other natural resources that form part of its ecosystems, while maintaining its biodiversity and regeneration capacity.</i> Likewise, the payment for environmental services law aims to <i>conserve, preserve and restore the sustainable use of the ecosystems, in order to ensure the environmental or ecosystem services that they provide, through a general framework for the compensation and remuneration of environmental services.</i> Both laws are of a general nature and require specific instruments for application. In the short term, it aims to support the formulation, enactment and application of the operational instruments for these two laws.	

1.2 Revise, draft and apply regulatory provisions on sustainable forestry management

Area of action / territory	Regulation, development, operation, institutional management / National
Causes	Weakness in forest legislation and other regulations associated with the management of the forest sector Institutional weakness in terms of sustainable forest management
Support institutions involved	Ministry of the Environment and Natural Resources
Type of action	Facilitator
SCOPE:	
There is a forestry regulation whose purpose is to establish the necessary schemes for correct implementation and compliance with Law 64-00, the General Law on the Environment and Natural Resources, with regard to forest resources. There are also rules in existence for i) procedures to obtain	

forestry permits ii) the functioning of the wood processing industry, iii) establishment and certification of forest plantations, v) format for forest inventory.

The objectives of the forestation regulation are: a) Establish action schemes within the framework of Law 64-00 to fulfil the need to conserve, foster and develop forests; b) Foster protection and sustainable use of forests, establishing rules to facilitate the necessary incorporation of civil society in management for the development and conservation of these resources; c) Safeguard land planning, conservation and sustainable development of existing forests both in terms of quality and geographic distribution, and forest restoration in areas currently without vegetation to ensure their ecological, social and economic functions.

In the short term, there will be a review, and formulation and effective application of regulatory provisions on sustainable forest management. This will entail discussions with key stakeholders and dissemination among interested parties.

1.3 Foster effective governance structures for conservation of natural heritage in the REDD+ area

Area of action / territory	Regulation, development, operation, institutional management / National
Causes	Institutional weakness in terms of sustainable forest management
Support institutions involved	Ministry of the Environment and Natural Resources, Ministry of Agriculture, General Directorate for Livestock (DIGEGA), National Council on Climate Change and Clean Development Mechanism (CNCCMDL), CTA members
Type of action	Facilitator

SCOPE:

Governance means the democratic exercise of power. Governance for conservation of natural heritage means, in this case, the legal-institutional frameworks, knowledge systems and cultural values that determine how decisions are taken. It also encompasses the participative mechanisms of the different stakeholders and how responsibility and decision-making powers vis-a-vis land, water and biodiversity conservation are exercised.

There are several ministries and numerous laws and regulations in the country with an impact on land, water, forest and biodiversity conservation governance. This action seeks to improve and/or strengthen structures and mechanisms for taking decisions about the land, thus conserving the nation's natural heritage. **This involves inter and ministerial coordination and standardisation work, including the establishment of the Management Committee, REDD+ Technical Advisory Committee, Central Work Groups and Local Coordination Groups. Review and strengthening of operating rules.**

1.4 Define and apply legal mechanisms regarding land tenure and Payment for Ecosystem Services in the REDD+ area

Area of action / territory	Development and regulatory, territorial planning / National
Causes	Weakness in terms of land tenure at rural level Low economic valuation of forests
Support institutions involved	Property Law / Supreme Court of Justice, National Cadaster, Dominican Agrarian Institute, Ministry of Economy, Planning and Development, DGODT, Ministry of the Environment and Natural Resources, Ministry of Agriculture
Type of action	Facilitator

SCOPE:

There is a high percentage of rural owners in an illegal situation regarding the ownership title of property. This situation has negative implications for sustainable land use, including deforestation and forest degradation and on possible arrangements for Payment for Ecosystem Services in the REDD+ sphere. This notwithstanding, in recent years, the Governmental Programme for Land Title is being implemented, enabling permanent registration of around 14,000 deeds of ownership to beneficiaries of the Agrarian Reform. **In the short term, it is proposed to support persons without title to their property and their inclusion in one of the REDD+ programmes or actions: agro-forestry, silvopastoral, sustainable forest management, reforestation and/or forest restoration, protection and management of protected areas.** This support consists of facilitating the incorporation of said persons to the Programme for Land Title and/or Payment for Ecosystem Services in the REDD+ area. **At the same time, it is proposed to approve and disseminate profit distribution mechanisms for emissions reduction.**

1.5 Strengthen mechanisms for forest control and oversight including determining legal origin, use and marketing of forest products and subprojects.

Area of action / territory	Institutional management, control, regulation
Causes	Institutional weakness in terms of sustainable forest management
Support institutions involved	Ministry of the Environment and Natural Resources, Vice Ministry for Forest Resources, forest producer organisers
Type of action	Facilitator

SCOPE:

This measure seeks to strengthen control by the Ministry of the Environment and Natural Resources, Vice Ministry of Forest Resources, to ensure protection of forest resources, strengthen the potential role of municipalities in terms of training and human resources, and foster the involvement of the population and civil society to support control and monitoring of the use and commercialisation of forest products and subproducts. The purpose of the Department of Forests and Forest Management is to ensure due compliance with the regulatory provisions that govern the different forestry activities carried out in forest areas under the Management Plan scheme. **In the short term, it is intended to revise, update and implement existing mechanisms for traceability of forest products. With this action it is expected that the forest management plans take care of the degradation caused by the illegal extraction for charcoal, firewood and poles.**

1.6 Strengthen the institutional capacity of bodies responsible for implementing REDD+ actions

Area of action / territory	Institutional management, operation and regulation / National
Causes	Institutional weakness in terms of sustainable forest management
Support institutions involved	Ministry of the Environment and Natural Resources, Vice-Ministry of Forest Resources, Viceministry of Protected Areas and Biodiversity, Department of Cocoa-Ministry of Agriculture, National Council on Climate Change and Clean Development Mechanism (CNCCMDL), Dominican Coffee Institute (INDOCAFE), General Directorate for Livestock (DIGEGA),

	Private organisations with direct actions in sustainable forest management
Type of action	Facilitator
SCOPE:	
There are several bodies that are in charge of implementing the REDD+ actions. They differ in terms of institutional capacity. Institutional strengthening means improving their efficiency and efficacy. One of the main aspects of institutional strengthening consists of identifying the <i>mission and objectives</i> that form the ideological and conceptual basis of the organisation. Another important aspect of institutional strengthening is <i>organisation</i>, which involves internal group relations, structure, hierarchies, decision-making chains and their internal and external operation and surroundings. Lastly, institutional strengthening also includes the <i>organisation's resources</i>, in other words, human resources, materials and financial resources. Therefore, institutional strengthening consists of a set of actions to foster the greatest possible coherence among each of the three aspects mentioned. In the short and mid term, it is proposed reviewing, establishing and assigning human and logistical resources for implementation of REDD+ at an institutional level and establishing a central and local training programme for all REDD+ governance structures.	

Strategic Option 2. Establish, strengthen and apply public policies to limit and/or contain the expansion of agricultural, livestock and infrastructure borders in forested areas

2.1 Strengthen effective inter-institutional coordination mechanisms for coherence of public conservation policies, sustainable use and forest restoration

Scope of the action/land	Regulation, development, operation, institutional management/ National
Causes	Institutional weakness in terms of sustainable forest management
Support institutions involved	Ministry of the Environment and Natural Resources, Viceministry for Forest Resources, National Council on Climate Change and Clean Development Mechanism (CNCCMDL), Ministry of Agriculture, General Directorate for Livestock (DIGEGA), Dominican Coffee Institute (INDOCAFE)
Type of action	Facilitator
SCOPE:	
This measure is based on driving a national strategy for harmonising regulations from different ministries on DDB and climate change. Harmonisation of the different regulations (including regulatory provisions and driving interministerial management) with the objective of carrying out projects that contribute to lowering DDB, increasing charcoal sinks and sustainable production (agriculture, forestry and livestock). The ministries and public bodies that should draft regulatory provisions and drive inter-ministerial management are: i) Ministry of the Environment and Natural Resources, by regulating applicable conservation areas and forestry activities to increase charcoal stocks; ii) Ministry of Agriculture, through farming activities with forestry components (agroforestry systems), which can become part of the applicable forestry activities and by means of zoning farm production (including buffer zones of Protected	

Areas); iii) MEPyD, coordinate and harmonize sustainable development and territorial planning public policies; iv) General Directorate for Livestock (DIGEGA), restricting the spread of pasture land, incentives for implementing silvopastoral systems, incentives for conservation of the remains of forests or woody vegetation (in collaboration with the Ministry of the Environment and Natural Resources); v) National Council on Climate Change and Clean Development Mechanism (CNCCMDL) through regulation for adaptation of applicable forestry activities to contribute to the mitigation and adaptation to climate change. There are decrees and laws at Ministerial level that help to reduce DDB and the increase of charcoal sinks that contribute to climate change, however, there is no inter-ministerial regulation to harmonises this aspect.

In the short term, the intention is to design and implement inter-ministerial regulation and harmonisation by implementing applicable forestry projects and programmes through inter-institutional agreements and project performance agreements, defining standards and protocols in groups.

2.2. Establish new areas for forest management, reforestation, clean-up, protection of water basins, conservation of biodiversity and for other environmental services derived from forest ecosystems

Scope of the action/ land	Institutional and operational management, training and transfer of skills / National
Causes	High levels of rural poverty and unemployment Population growth pressure in terms of the use of natural resources
Support institutions involved	Ministry of the Environment and Natural Resources, National System of Protected Areas (SINAP), Ministry of Agriculture and General Directorate for Livestock (DIGEGA)
Type of action	Facilitator
SCOPE:	
This action will be carried out on priority public and private land on climate change and desertification, soil degradation and droughts. Initially, reforestation and forest clean-up may include areas under high pressure from deforestation and forest degradation. The activity will be part of an adaptive management of natural resources to climate change, desertification, soil degradation and drought. The Ministry of the Environment and Natural Resources has identified priority water basins for protection and sustainable management of water resources, among which are the Yaque del Norte, Yuna-Camú, Yaque del Sur, Higüamo, Ozama-Isabela, Macasías, Haina, Nizao, Ocoa and Pedernales river basins. As a facilitating measure to counteract deforestation and forest degradation, in the short and medium term, work will be done to integrate and expand new areas for forest management, reforestation, clean-up, protection of water basins, conservation of biodiversity and for other environmental services derived from forest ecosystems, all with a REDD+ focus.	

2.3 Develop crop, livestock and infrastructure zoning programmes compatible with forest conservation

Scope of the action/ land	Legislative and development/National
Causes	Low level of harmonisation of farming production public policies, the development of infrastructures and forest conservation
Support institutions involved	Ministry of the Environment and Natural Resources, National Council

	on Climate Change and Clean Development Mechanism (CNCCMDL), Ministry of Agriculture
Type of action	Facilitator
SCOPE:	
This measure is intended to drive a national strategy to regulate livestock production in the Dominican Republic. Achieving more efficient farming is a priority to safeguard the population's food supply and to conserve soil and water resources. Crop zoning consists of organising the distribution of crops in geographic spaces according to climate, soil and available water in those spaces to optimise their use. This type of zoning reduces pressure on forest land which is being used for crop and livestock production. In this regard, it is proposed to approve and adapt a territorial planning regulation, which defines and specifies permitted land uses. The Dominican Republic has been working on the territorial planning and land use process through the Territorial Planning Office of the Ministry of Agriculture, Ministry of Economy, Planning and Development. In the Territorial Planning bill, land is allocated to livestock when the predominant activity carried out on a portion of territory is livestock or forestry farming. In the short term, the intention is to define, approve and/or apply regulatory provisions to achieve better zoning for crops, livestock and development infrastructures in a manner that does not impact or minimises the negative impact on the country's natural forest cover. This means updating production zoning and conserving the landscape and proposing this to the Management Committee, to adopt this as part of the REDD+ agreements.	

2.4 Strengthen the basin-based focus on programmes for ecological management and restoration

Area of action / territory	Regulation, development, operation, institutional management / National
Causes	High levels of rural poverty and unemployment Management and sustainable use of land for farming production Management and sustainable use of land for cattle production
Support institutions involved	Ministry of the Environment and Natural Resources
Type of action	Facilitator
SCOPE:	
The country has prioritised several water basins for integral management and sustainable use. The purpose is to safeguard water as a strategic resource for generations to come. Among the priorities Identified are the Yuna- Camú, Yaque del Norte, Haina, Nizao, Ozama e Isabela, Macasias, Ocoa, Yaque del Sur, Higuamo and Pedernales rivers basins. The strategies to develop aim to reduce deforestation and forest degradation, surveillance and in-situ protection of land with high biological diversity and conservation value, and a social component that aims to seek alternative sources of income for communities. As a facilitating measure to offset deforestation and forest degradation, this action seeks to foster a basin-focused approach to management by the bodies that execute the REDD+ Programme.	

Strategic Option 3. Promote natural resource management models that contribute to conservation and sustainable use of forests and increased forest cover

3.1 Strengthen reforestation and agro-forestry plans and programmes such as the National Quisqueya Verde Plan and the Agro-Forestry Programme

Scope of the action/ land	Institutional management, operations, training and research / National
Causes	High levels of rural poverty and unemployment Management and sustainable use of land for farming production Management and sustainable use of land for cattle production
Support institutions involved	Ministry of the Environment and Natural Resources, National System of Protected Areas (SINAP), Vice-Ministry of Forest Resources, National Council on Climate Change and Clean Development Mechanism (CNCCMDL)
Type of action	• Reforestation • Agroforestry Systems (SAF cocoa and coffee) • Sustainable forest management

SCOPE:

The National Quisqueya Verde Plan was established in 1997 by Decree 138-97 and operations commenced on 1 June 1997. Its purpose is to improve the living conditions of people in rural areas, by fostering natural resources, job creation, protection of the environment and strengthening coordination among State institutions and civil society organisations that work towards sustainable development. It involves non-governmental organisations, federations, grass roots community organisations, the private sector, universities, colleges, schools, public institutions, local governments, churches. The aforementioned plan consists of: i) identifying the area to intervene, ii) involving communities and organisations, iii) opening and operating reforestation brigades, iv) opening and operating reforestation brigades, v) plant production, vi) repair and construction of basic infrastructures, vii) co-management in reforestation, viii) environmental education, ix) follow up and monitoring reforestation.

The following components of the PNQV may be channelled as strategies for improvement and incorporation of a REDD+ mechanism:

- **Social Forestry** (Reforestation with community participation): Community territories of regional relevance are integrated. In exchange for incentives for participation, local stakeholders take responsibility for caring for and protecting plantations. The land users give their consent for the Vice Ministry of Forest Resources to add trees to their land, subject to the fulfilment of the minimum requirements that ensure the continued existence of the plantations. The Vice Ministry provides the plants and conducts the planting in the field through reforestation brigades. The Vice-Ministerial staff also offers technical assistance to care for the plantations. From the second year, the beneficiaries are responsible for the care and maintenance of the plantations. The plantations often become community plots. **Creation of forests with multiple uses:** Native forest species are included, as well as endemic crops, fostering and encouraging agroforestry systems.
- **Recovery of national and municipal natural areas:** Vulnerable areas and areas of national, regional and local importance are prioritised, such as sources of water.

In the case of social forestry and creation of forests with multiple uses, the most representative geographic areas, in terms of units or reforestation zones, are the provinces of Monte Plata, María Trinidad Sánchez, Santiago, Dajabón, Santo Domingo, Barahona, San Cristóbal, and the Artibonito, Bao, Camú, Macasía, Mao, Yuna, Yaque del Norte, Ozama, Yaque del Sur water basins. Ministry of the Environment and Natural

Resources records indicate the planting of 182,000 ha between 1982 and 2017.

On the other hand, the Agroforestry Development Programme is a government initiative with the following objectives:

- Establish forestry plantations and infrastructures for conservation and exploitation purposes.
- Develop sustainable farm production, adopting suitable technologies for the area.
- Strengthen local capacities to promote socioeconomic and environmental development in communities.
- Contribute to environmental sanitation and reduce contamination of water resources.

The area of action is focused in the provinces of San Juan de la Maguana, Independencia, Bahoruco and Barahona. During 2018, the Agroforestry Development Programme has established 24,794,507 for a total of 17.278 ha. In the forestry component, around 11,034 ha have been established through 157 forestry brigades, incorporating more than twenty (20) species of tree, among which are: Hispaniolan pine, muskwood, cedar, creole mahogany, oak, Honduran mahogany and pigeon heart. In the agroforestry component, a total of 6,275 ha have been planted with coffee, avocado, cocoa, mango with ice cream bean trees as permanent shade and guineo banana palms as provisional shade.

In the short term, the intention is to identify areas of intervention; involve communications and organisations in reforestation and agroforestry actions (Social Forestry).

3.2 Promote incorporation of agro-forestry systems for farm and livestock estate management

Scope of the action/ land	Institutional management, operations, training and research / National
Causes	High levels of rural poverty and unemployment Population growth pressure in terms of the use of natural resources Expansion of commercial cattle farming Expansion of grazing in forest regions
Support institutions involved	Ministry of the Environment and Natural Resources, National System of Protected Areas (SINAP), Vice-Ministry of Forest Resources, National Council on Climate Change and Clean Development Mechanism (CNCCMDL)
Type of action	Silvopastoral systems and agroforestry systems (SAF Cocoa, Coffee)
SCOPE:	

Although cut and burn agriculture have been the tool of deforestation, extensive livestock farming is the land use system that has permanently replaced forest cover in the majority of the country. Traditionally, livestock farmers have taken advantage of small “conqueros” farmers to fell forest areas and transform them into pasture after years of cultivation. Extensive livestock farming occupies large areas of pasture and livestock is periodically transferred from one site to another in search of new fodder. Therefore, livestock farming is considered one of the main causes of deforestation and forest degradation in the country. This has been happening for many years, with this business activity located primarily in the north-west, north-east, north and east of the region.

Livestock farming in the country is characterised by pastures with little or no tree cover, and it is therefore considered responsible for the negative impact on forests, soil and water. This notwithstanding, a change in cultural practices in the livestock sector has started including some tree cover on pastures. At an institutional level, the General Livestock Department is encouraging the incorporation of trees in livestock farms. 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 the short and mid term, the aim is to develop intense livestock farming by means of silvopastoral systems. (Including trees on livestock farms) and intensive agriculture by means of agroforestry systems (SAF cocoa-coffee).**

3.3 Develop programmes to raise the awareness and consciousness of key stakeholders in environmental management and sustainable forest management.

Scope of the action/ land	Standardisation, control, institutional management: / National / Priority areas I, II and III
Causes	Management and sustainable use of forest-based lands
Support institutions involved	Ministry of the Environment and Natural Resources, Vice-Ministry of Forest Resources, ASODEFOREST, San Ramón Association
Type of action	Facilitator
SCOPE:	
Activities to raise awareness, disseminate and environmental education to stimulate forest management and conservation, aimed at the pertinent stakeholders in society, including public services, private agents, and particularly rural communities. This programme must inform and educate about the existence and value of the forest and the services that these provide. Similarly, it must inform and train citizens in the advantages and benefits of good natural resource management practices. The programme would encompass educational, dissemination and awareness-raising activities such as workshops and talks for landowners, communities and social groups, educational tours for landowners, community and social groups and generation of materials for dissemination and communication aimed at different sectors of society. In the short term, the aim will be to establish a programme to train and raise awareness of environmental management and sustainable forest management. Training courses, workshops, sharing experiences, field days, dissemination campaigns.	

3.4 Reduce and/or stop deforestation and forest degradation in relevant protected areas for conservation of forest resources

Scope of the action/ land	Legislation and development/Sustainable use of Natural Resources/SINAP
Causes	Population growth pressure in terms of the use of natural resources
Support institutions involved	Ministry of the Environment and Natural Resources, Vice Ministry of Protected Areas and Biodiversity, Vice Ministry of Forest Resources, Ministry of Agriculture, Local private organisations related to protected areas
Type of action	• Agroforestry Systems (SAF coffee, cocoa) • Dendro-Energy plantations • Diversification of income generation for local users • Creation of green examples
SCOPE:	
A large portion of the country's protected areas are subjected to heavy social pressure due to use of their natural resources, particularly land for farming and livestock, and extraction of wood, posts, timber and charcoal. Actions to offset this situation are considered necessary. To achieve this, it is intended to formulate and implement sustainable production actions in the buffer zones of protected areas, among which are production of coffee and cocoa under shade. The actions to implement should diversify the income generated by local users, while reducing dependency on use of resources in protected areas. Thus, in the short term, the intention is to formulate and implement sustainable production activities in PA buffer zones to reduce dependency on resources inside PAs.	

3.5 Strengthen the protection and surveillance programme in relevant protected areas for conservation of forest resources

Scope of the action/ land	Legislation and development/Sustainable management of use of Natural Resources/SINAP
Causes	Population growth pressure in terms of the use of natural resources
Support institutions involved	Ministry of the Environment and Natural Resources, Vice Ministry of Protected Areas and Biodiversity, Local private organisations related to protected areas
Type of action	• Establish and mark out the polygon of the PA priorities. • Do a census of the population within the core area of PA priorities. • Strengthen the Institutional skills of technical and administrative staff of PAs in matters of protection, surveillance, community participation in the development of PA management plans, conflict management and the application of penalties. • Draft and implement management plans in priority protected areas with social stakeholders. • Restrict use and access to PA resources in accordance with management plans.

	• Training courses for the National Park Guards Corps, administrators and participating local communities. • Strengthen the structure and equipment of the park guard corps. • Strengthen the legal criteria regarding property rights within Pas.
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SCOPE:

As part of the Ministry of the Environment and Natural Resources, the Vice Ministry of Protected Areas and Biodiversity is responsible for contributing to the conservation of biodiversity throughout the national territory as the basis of sustainable development and to improve quality of life *by administering a national system of protected areas and application of the valid laws and regulations*. Among the specific functions of the Protected Areas Department, the following should be mentioned: i) administer the National System of Protected Areas (SINAP), in order to guarantee their integrity, provision of environmental services and environmentally healthy interaction with users, ii) define and apply policies on rational and sustainable management and exploitation of those areas through management plans formulated with participation of the stakeholders involved (iii) share legal assistance and the National Environmental Protection Service, for the application of existing regulations, defining specific policies and activities for protection and preventive surveillance, to safeguard the integrity of the National System of Protected Areas (SINAP). The National System of Protected Areas (SINAP) is made up of 128 conservation units, divided into six categories and 13 management subcategories. The set of 128 units covers an area of 12,442.08 km² equivalent to *25.81% of the national territory*. As already mentioned, a large portion of the country's protected areas is subject to heavy social pressure for use of natural resources, particularly land for farming and livestock, and extraction of wood, posts, timber and charcoal. **In the short term, it is proposed to strengthen the protection and surveillance programme in relevant protected areas for conservation of forest resources, for which work will be done with stakeholders to develop and implement management plans and strengthen the *National Park Guard Corps* in order to prevent deforestation and forest degradation in protected areas of the country. To achieve this, actions will be defined with users to harmonise alternative modalities and uses that prevent deforestation and forest degradation in the interior of said areas.**

3.6 Rehabilitate forest ecosystems in relevant fragile areas to facilitate connectivity among forest fragments

Scope of the action/ land	Institutional management, operations, training and research / National
Causes	Management and sustainable use of land for farming production Management and sustainable use of land for cattle production
Support institutions involved	Ministry of the Environment and Natural Resources, National System of Protected Areas (SINAP), Vice-Ministry of Forest Resources, National Council on Climate Change and Clean Development Mechanism (CNCCMDL)
Type of action	• Reforestation • Regeneration in degraded natural areas

	• Agroforestry Systems • Sustainable forest management
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SCOPE:

The following components of the PNQV may be channelled as strategies for improvement and incorporation of a REDD+ mechanism:

- Social Forestry (Reforestation with community participation): community territories of regional relevance are integrated. By means of participative incentives, regional stakeholders are responsible for the MRV.
- Creation of forests with multiple uses: native forest species are included as well as endemic crops, fostering and encouraging agroforestry systems.

Recovery of national and municipal natural areas: a strategy for prioritising vulnerable areas and areas of national importance, as is the case of the mangroves within RAMSAR.

In the case of social forestry and creation of forests with multiple uses, the most representative geographic areas, in terms of units or reforestation zones, are the provinces of Monte Plata, María Trinidad Sánchez, Santiago, Dajabón, Santo Domingo, Barahona, San Cristóbal, and the Artibonito, Bao, Camú, Macasía, Mao, Yuna, Yaque del Norte, Ozama, Yaque del Sur water basins.

In the short term, the intention is to replant fragile areas with tree species, stimulate natural regeneration and protect forest cover

3.7 Establish a forest evaluation and monitoring management system

Scope of the action/ land	Research, territorial planning, operative / National
Causes	Institutional weakness in terms of sustainable forest management
Support institutions involved	Ministry of the Environment and Natural Resources, Vice-Ministry of Forest Resources, National Council on Climate Change and Clean Development Mechanism (CNCCMDL)
Type of action	Facilitator

SCOPE:

This measure consists of generating technical skills for integral monitoring of forest and non-forest resources, which including monitoring land use and changes, forest degradation and estimating GHG emissions due to Change of Land Use processes, forest fires and other natural or anthropogenic phenomena. The system must generate estimates that make it possible to determine GHG emissions generated in each event with a greater degree of accuracy. The country has the National Fire Management Strategy 2016-2025, which it must strengthen. In the short term, it is intended to estimate the GHG gas emissions caused by forest fires, analysing between 10%-50% of annual fires. The system must also improve traceability of natural resources through sustainable certification programmes, since the use of certification schemes is a tool for monitoring and controlling the minimum aspects of projects: social, environmental, legal, quality control, management and monitoring aspects. The standards suitable for use as an initial base are the Forest Stewardship Council (FSC), Programme for the Endorsement of Forest Certification (PEFC), Sustainable Agriculture Network (SAN), UTZ, Gold Standard (GS), Verified Carbon Standard (VCS), Plan Vivo. **In the short term, it is intended to estimate**

GHG emissions caused by forest fires that require strengthening of national technical and operational capacities to estimate GHG emissions from forest fires and it is intended to integrate the minimum criteria of sustainable projects for project certification and monitoring.

3.8 Promote forest management and natural regeneration of tree species among private estate managers and community organisations

Scope of the action/ land	Legislative, operational, development, environmental education and awareness raising / National/Priority area V
Causes	Low economic valuation of forests
Support institutions involved	Ministry of the Environment and Natural Resources, Ministry of Agriculture
Type of action	• Regeneration in degraded natural areas • Sustainable forest management
SCOPE:	
There are large degraded natural areas in the country. The forests of the Dominican Republic, like other tropical forests, have great potential for recovery and regrowth. Degraded land can be defined as space that has lost all or part of its capacity to produce goods or generate environmental services. Allowing nature to follow its course in the natural process of succession tends to be less costly than planting in reforestation programmes, and also improves resilience to variability and to climate change. Natural regeneration also gives more encouragement to biological diversity when compared to single species reforestation. In the short term, there is a need to create incentives to recover degraded land through natural regeneration and extending the area under sustainable forest management.	

3.9 Define and implement financial instruments and mechanisms to develop productive forest and agro-forest conservation and restoration activities.

Scope of the action/ land	Legislative, operational, development, environmental education and awareness raising / National/ Priority area III
Causes	Low economic valuation of forests Management and sustainable use of forest-based lands
Support institutions involved	Ministry of the Environment and Natural Resources, Ministry of Agriculture, Treasury Ministry, Ministry of the Economy, Planning and Development, Banco Agrícola, MARENA Fund
Type of action	Direct
SCOPE:	

The reduction of emissions resulting from deforestation and forest degradation requires financial instruments and mechanisms to be implemented in order to carry out productive activities, conservation activities and the restoration of forest ecosystems.

The Dominican Republic has experience with financial instruments and mechanisms. These include: i) the Payment for Environmental Services (PSA) system in the North Yaque basin, ii) several Water Funds, iii) the MARENA Fund, iv) the CONALECHE Program which provides low interest rate loans, v) the compensation scheme for reforestation in the area of influence El Zorzal Private Reserve. These experiences must be analysed **in the short term to define, strengthen and/or put financial instruments and mechanisms in practice to encourage sustainable production, conservation and restoration of forest ecosystems.**

The analysis of each of these experiences determine where they can be applied in the REDD+ programmes and projects. This could involve increasing the types of incentives and/or the numbers of eligible beneficiaries. If applicable, this could link to the benefits distribution agreements in the REDD+ programmes and projects.

3.10 Update and apply the National Fire Management Strategy in the Dominican Republic

Scope of the action/ land	Legislative, operational, development, environmental education and awareness raising / National
Causes	Management and sustainable use of forest-based lands
Support institutions involved	Ministerio de Medio Ambiente y Recursos Naturales (Ministry of the Environment and Natural Resources), Ministerio de Agricultura (Ministry of Agriculture), Ministerio de Defensa (Ministry of Defence), Ministerio de Obras Públicas (Ministry of Public Works), Centro de Operaciones de Emergencia (Emergency Operations Centre), Liga Municipal Dominicana (Dominican Municipal League), private sector and civil society
Type of action	Direct

SCOPE:

The Dominican Republic has an Estrategia Nacional de Manejo del Fuego (National Strategy for Fire Management) 2016-2025. Its aim is to *establish the guidelines for responsible fire management allowing all the country's sectors and players to participate fully, integrating their efforts to guarantee the protection and conservation of biodiversity, managing fire regimes in ecosystems requiring this for their ecological functions and consequently enhancing social resilience to climate change.* There are four strategic options: i) national management, ii) social management, iii) knowledge management, iv) risk management. A pivotal aspect for implementing this strategy involves strengthening the Dirección de Manejo de Fuego (Directorate for Fire Management), under the Viceministerio de Recursos Forestales (Vice Ministry of Forest Resources). In the short term the intention is to strengthen institutional capacities for coordination and cooperation with the aim of applying the National Strategy for Fire Management. Requirements in terms of HR and equipment must therefore be analysed. Protocols for surveillance, early alerts, updating and applying the fire reporting system are also required.

3.11 Developing a programme for the restoration of post fire affected ecosystems

Scope of the action/ land	Institutional, operational, regulatory management, territorial/national planning
Causes	Management and sustainable use of forest-based lands
Support institutions involved	Ministry of the Environment and Natural Resources, Vice Ministry of Forest Resources, CNCCMDL (National Council on Climate Change and Clean Development Mechanism), Ministerio de Interior y Policía (Ministry of the Interior and the Police)
Type of action	Direct
SCOPE:	
Programme aimed at implementing ecological restoration projects in public and private areas affected by forest fires at the national level. It is envisaged that it will also encompass the Sistema Nacional de Áreas Protegidas (National System of Protected Areas - SINAP), due to the importance of the ecosystems, as well as the country's most representative river basins, in relation to conservation. One mechanism already in operation with the aim of facilitating the roll out of this measure is the Programa Nacional de Restauración de Cuencas (National Programme for River Basin Restoration) which has been implemented since 2017 by MEDIO AMBIENTE. Its guidelines cover the recovery of fire-affected areas which impact forest resources and other forest resources. It encompasses the SINAP, river basin management, and all the national programmes incorporated in the Strategy for REDD+ (Reducing Emissions from Deforestation and Degradation). In the short term the intention is to implement post fire restoration projects.	

3.12 Enhancing the programme for plant protection in priority wooded areas

Scope of the action/ land	Institutional, operational / National management
Causes	Management and sustainable use of forest-based lands
Support institutions involved	Ministry of the Environment and Natural Resources, Vice Ministry of Forest Resources, Ministry of Agriculture, CNMSF (National Committee for the Application of Sanitary and Phytosanitary Measures [Comité Nacional para la Aplicación de Medidas Sanitarias y Fitosanitarias])
Type of action	Facilitator
SCOPE:	

The effect of pests on emissions and lower carbon uptake rates is commonly understood, however, there is no methodology for taking quantitative measurements of quantities, least of all a methodological tool for determining the acceptable damage threshold for taking decisions about action to control this problem. Consequently, plant health monitoring of native forestry resources will be set up, together with the training of professionals and technical surveyors, pest detection, control and prevention. An additional aim is to strengthen the capacities of national laboratories for plant health which will benefit from implementing the protection programme for controlling infectious agents. The country benefits from the National Committee for the Application of Sanitary and Phytosanitary Measures [Comité Nacional para la aplicación de Medidas Sanitarias y Fitosanitarias] (CNMSF), firmly rooted on the use of biological control methods, with the added availability of a laboratory for the reproduction of beneficial agents.

In the short term the aim is to develop a plant health protection plan which will include the use and management of pesticides, integrated pest management, preventive methods, permanent plant health control and monitoring of native forest resources. This means training professionals and technical personnel in surveying, detecting, recording, preventing and controlling pests at central and local level including customs and enhancing the capacities of national plant health laboratories.

In summary, for a period of 5 years, 22 strategic actions will be carried out, including enabling actions and direct actions. Actions will be implemented simultaneously. At the beginning of the implementation of the ER Program, an action plan will prioritize the actions for the first 2-3 years.

Plans/programmes/projects and actions for REDD+

The REDD+ actions will be carried out through Programmes and Projects which have been rolled out in the country and whose record and results are evidence of their success. These Programmes and Projects allow both the impacts and potential risks of implementing them to be evaluated using the Environmental and Social Management Framework (ESMF-MGAS), and they can meet targets of more than one line of action. Several of the selected programmes and projects have more than 20 years' experience in reforestation, conservation and/or sustainable forest management. Others also establish and manage agroforestry systems on a national level. It should be pointed out that it is essential for the Programmes and Projects to show evidence of achieving the following milestones:

- Improving the livelihoods of the local population.
- Enhancing the participation of local communities in the overall management of the natural landscape.
- Directing them towards a low carbon emissions system with products and value chains based on sustainable landscape management.
- Having the capacity to offer additional environmental benefits to ER, such as biodiversity and hydrological services.

The Programme and Projects in question are as follows:

- National Quisqueya Verde Plan (Vice Ministry of Forest Resources). Quisqueya Verde is the first large-scale Governmental Reforestation Plan of national scope which began in 1997, and was implemented through the Presidency of the Republic with the aim of improving the living

conditions of rural populations, through the use of natural resources, employment generation, environmental protection and strengthening coordination between State institutions and civil society organisations working for sustainable development. The components of the Plan are: Forestería Social [Social Forestry] (Reforestation with community participation), Creation of multiple-use forests, Recovery of national and municipal natural areas, Environmental Education (Workshops, Green Family, Field days), Improving dwellings and infrastructures for community services.

- Sistema Nacional de Áreas Protegidas [National System of Protected Areas] – SINAP. This is the harmonised set of protected natural units with their own management categories, with very specific and specialised aims, characteristics and management types, whose purpose is to draw up and implement management plans for protected areas, and to define and implement regulations and policies on public use, sustainable management, protection, surveillance and use of resources. The SINAP operates within the Ministerio de Medio Ambiente y Recursos Naturales (Ministry of the Environment and Natural Resources) and is responsible for 128 conservation units, occupying 12,436 km² in total, equivalent to 25.8% of national territory.
- Programa Agroforestal (Agroforestry Programme) is an inter-ministerial structure established by decree in 2017 and coordinated by an Implementing Technical Unit, responsible for supervising the implementation of agroforestry and forestry development projects. Its action area is concentrated in the southern region of the country.
- Agroforestry System with shade-grown cocoa. The Ministry of Agriculture Cocoa Department runs programmes dedicated to driving the development of cocoa plantations with the aim of stimulating and supporting the production of high-quality cocoa at national level by selecting and distributing high-performance material and providing technical assistance. It is the governing body for the national cocoa production policy.
- Agroforestry System with shade-grown coffee (Dominican Coffee Institute - INDOCAFE). INDOCAFE is an autonomous, decentralised public institution within the Dominican State, responsible for designing, planning and implementing the coffee development policy in the Dominican Republic. Its aim is to promote the sowing of high-quality coffee in accordance with contemporary standards of sowing, care and harvesting and to advise the coffee producer about crop cultivation.
- Forest grazing and forest conservation system on cattle farms (Dirección General de Ganadería [Directorate General for Livestock Farming] and National Council for the Regulation and Promotion of the Dairy Industry (Consejo Nacional para la Reglamentación y Fomento de la Industria Lechera - CONALECHE). The Directorate for Livestock Farming is a branch of the Ministry of Agriculture with the mission of driving the development of national livestock by means of policies, plans, programmes and projects which boost the productivity and competitiveness of livestock producers and protect animal health, thereby attaining a higher position on the local and international market. CONALECHE is a National Council governed by Law 180-01 which was set up in order to establish a national dairy policy with the representation of the main stakeholders in the dairy chain. Its targets are to raise the productivity, competitiveness as well as environmental and financial sustainability of the dairy chain, in order to contribute to food security, exploit export potential and generate employment and income for the rural population. It also aims to develop a manufacturing sector structured around the national production apparatus, operating under an environmentally sustainable production system.
- Resilient agriculture and integrated management of water resources (RAIWRM; IBRD). The aim of the project, financed by the International Bank for Reconstruction and Development (IBRD), is to

improve the management of protected areas, develop sustainable agriculture and conserve soil and water, focusing on sustainable options for the communities dependent on natural resources within the sphere of influence consisting of the basins of the Yaque del Norte and Ozama-Isabela rivers. Its objective is to contribute to the integrated management of sustainable landscapes and access to water and health services in the selected river basins.

- Sustainable forest management (Vice Ministry of Forest Resources, Association for the Sustainable Development of Forest Restoration (Asociación de Desarrollo Forestal de Restauración - ASODEFOREST), the La Celestina Forestry Management Project). The Sabana Clara project is a sustainable forestry management initiative implemented by the Vice Ministry of Forest Resources, located between municipalities of Restauración in the Province of Dajabón and Pedro Santana in the Province of Elías Piña, with its main aim being to guarantee the perpetuity of the forest, soil conservation and biodiversity; at the same time as focusing on improving the quality of life of rural communities living in the border region in the north of the country. The Association for the Sustainable Development of Forest Restoration-ASODEFOREST is a non-profit organisation promoting sustainable forest development, founded on 20 April 2007 and impacting the Municipality of Restauración in the province of Dajabón. Its objective is to develop awareness of the forest by using appropriate technologies to promote sustainable forest management within the communities. The La Celestina Forestry Management Project is an initiative for managing the endemic natural pine forest on the Island of Hispaniola (*Pinus occidentalis*). Its purpose is to protect, improve, conserve and restore the natural forest by establishing plantations and thinning out trees to ensure a consistent yield. It is the responsibility of the San Ramón Asociación de Silvicultores (San Ramón Forest Owner Association), by formal agreement with the Sierra Plan.
- Payment for Environmental Services in the Yaque del Norte river basin. The Pilot Project for Payments for Water-Related Ecosystem Services came into being following an inter-institutional agreement between the Ministry of the Environment and Natural Resources, the Empresa de Generación Hidroeléctrica Dominicana [Dominican Hydroelectric Generation Company] (EGEHID) and the Corporación de Acueducto y Alcantarillado de Santiago [Water and Sewerage Corporation of Santiago] (CORAASAN), with the technical support of the German Agency (GIZ). Its aim is to use Payment for Environmental Services to help to conserve the bodies of water in the Yaque del Norte river basin, thus contributing to the sustainability of water resources in terms of quality and quantity.

A table that details the current activities of the programs also will serve as a baseline for REDD+ programs will be prepared no later than June 15, 2019. The amount of details will depend on the availability of information for each program/project.

In the same way, a list of the number and type of beneficiaries will be made for each program. This information will be generated and will be available no later than May 30, 2019.

5 geographical areas will be prioritised for the REDD+ actions (see map in Figure 4.1-13), based on the following criteria:

- Areas where high rates of deforestation, forest degradation and/or loss of soils are expected.
- River basins of strategic importance in terms of: i) protected areas/biodiversity, ii) provision of water and/or with infrastructures such as hydroelectric dams, aqueducts and irrigation canals.
- Human population benefiting from ecosystem services from the aforesaid river basins.

- Areas with high potential for success with actions for REDD+: i) presence of key players among the institutions, ii) places with a history of successful experiences with programmes and projects relating to human/rural and environmental development and natural resources).

Table 4.3.2 Priority geographical areas and their municipalities

Prioritised geographical area	Municipalities
1	Loma de Cabrera, El Pino, San Ignacio de Sabaneta, Monción, San José de Las Matas, Restauración, Villa Los Almácigos
2	Pedro Santana, Bánica, El Llano, Juan Santiago, Hondo Valle, La Descubierta, Jimaní, Comendador
5	San Cristóbal, Baní, Cambita Garabito, San José de Ocoa, Los Cacaos, Sabana Larga, Rancho Arriba, Constanza, Padre Las Casas, Bohechío, San Juan, Juan de Herrera, El Cercado, Vallejuelo
4	Nagua, San Francisco de Macorís, Tenares
5	Cotuí, Cevicos, Sabana Grande de Boyá, Bayaguana

Table 4.3.3 shows the Programmes and Projects and their relationship with the direct actions helping to prevent deforestation (D), forest degradation (FD) or increasing carbon reserves (ICR). Some of the direct actions for REDD+ will be implemented in one or several of the priority geographical areas, some will have an impact on both one or several of the priority geographical areas as well as in another part or parts of the country; while others will have an effect at national level. Table 4.3.3 also includes the geographical scope of the actions.

Table 4.3.3 Plans/projects and their relationship with direct REDD+ actions

STRATEGIC ACTIONS	ACTIVITIES ER-PD	PLANS /PROGRAMMES/PROJECTS									SCOPE GEOGRAPHIC AL
		PNQV:	SINAP :	PAP	COCOA	COFF EE	SSP	RAIWRM	SFM:	PSA:	
2.4 Enhancing programmes for ecological management and restoration in river basins	<i>Increase of Carbon Stock</i>	x	x	x	x	x	x	x	x	x	National
3.1. Enhancing reforestation and agroforestry plans and programmes such as the National Quisqueya Verde Plan and the Agroforestry Programme <i>Includes Reforestation, Agroforestry Systems (cocoa and coffee AFS), Sustainable Forestry Management</i>	<i>Increase of Carbon Stock</i>	x		x	x	x			x	x	National
3.2. Promoting the incorporation of agroforestry systems for managing agricultural and cattle farms. <i>Consists of forest pasture</i>	<i>Deforestation Increase of Carbon Stock</i>	x		x	x	x	x	x	x		National

systems and <i>agroforestry systems (Cocoa, Coffee AFS)</i>											
3.3. Developing programmes for awareness-raising and sensitisation of key stakeholders on subjects such as environmental education and sustainable forest management. <i>Involves training in the form of courses, workshops, field days, interchange of experiences and publicity campaigns</i>	<i>Deforestation Degradation</i>	x	x				X		x		National. Priority areas 1, 2, 3, 4, 5
3.4. Reducing and/or halting deforestation and degradation in protected areas relevant to the conservation of forest resources. <i>Includes Agroforestry systems (coffee, cocoa AFS), Plantations for wood energy, Diversification of income-generating methods for local users, Creation of green jobs</i>	<i>Deforestation Degradation</i>		x					x			+National/SI NAP
3.5. Enhancing the programme for protection and surveillance in protected areas relevant to the conservation of forest resources. <i>Includes staffing at an adequate level, monitoring tasks, restocking with tree species and conservation of natural regeneration</i>	<i>Increase of Carbon Stock</i>		x								
3.6. Rehabilitating forest ecosystems in fragile areas relevant for facilitating connectivity between forest fragments. <i>Includes the restocking of tree species, conservation of natural regeneration, protection of forest cover</i>	<i>Increase of Carbon Stock</i>	x	x	x			x	XX	x	x	National. Priority areas 1, 2, 3, 4, 5

3.8. Encouraging owners of private farms and community organisations to manage the natural regeneration of tree species. <i>Tackles Regeneration of degraded natural areas, Sustainable forest management</i>	Deforestation Degradation						x		x	x	National. Priority areas 1, 2, 3, 4, 5
3.9. Defining and putting into practice financial instruments and mechanisms for developing activities associated with production, conservation and restoration of forestry ecosystems. <i>Involves economic analyses, definition and adoption of financial alternatives</i>	Deforestation Degradation		x				x		x	x	Priority areas 1, 2, 3
3.10. Updating and applying the National Strategy for Fire Management in the Dominican Republic. <i>Involves revising and adapting the strategy, as well as the required equipment</i>	Degradation								x		National
3.11. Developing the programme for restoring post-fire affected ecosystems. <i>Involves restructuring, restocking with tree species, conservation of natural regeneration and protection of plant cover</i>	Increase of Carbon Stock		x						x		National

NQVP = National Quisqueya Verde Plan (Vice Ministry for Forest Resources); SINAP = National System of Protected Areas – SINAP (Vice Ministry for Protected Areas and Biodiversity); PAP = Agroforestry Programme (Inter-ministerial structure). CACAO = Agroforestry System with shade-grown cocoa (Department for Cocoa, Ministry of Agriculture); CAFÉ = Agroforestry System with shade-grown coffee (Dominican Coffee Institute- INDOCAFE); SSP = Silvopastoral system and conservation of forest in livestock farms (Directorate for Livestock Farming and National Council for the Regulation and Promotion of the Dairy Industry –CONALECHE, RAIWRM = RD Resilient Agriculture and Integrated Water Resources Management Management (IBRD), SFfoM = Sustainable Forest Management (Vice Ministry for Forest Resources, Association for the Sustainable Development of Forest Restoration-ASODEFOREST, San Ramón Forest Owner Association), PES = Payment for Environmental Services in the Yaque del Norte River Basin (Vice Ministry for Forest Resources).

In terms of the direct activities that are promoted on different scales, the productive areas in the country are taken into account, with special emphasis on the towns located in priority areas. Figure 4.3-2 shows the geolocation of the productive areas along with the priority areas (municipalities and protected natural areas).

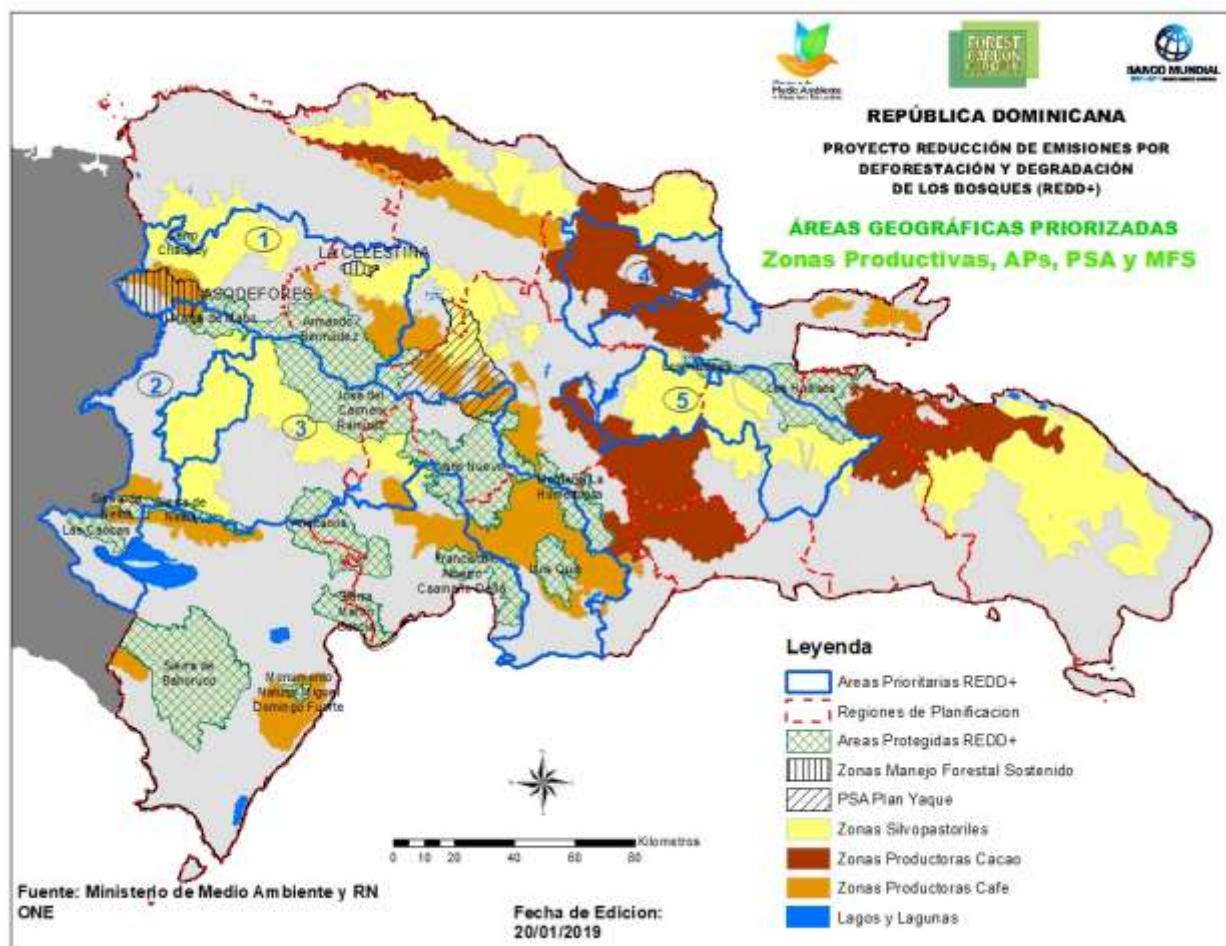


Figure 4.3-2 Map showing the areas producing cocoa and coffee, with silvopastoral systems, Payment for Environmental Services and sustainable forest management, and their spatial relationship with priority areas.

4.4. Assessment of land and resource tenure in the Accounting Area

Forms of Land Tenure

In the Dominican Republic, the lands are **owned by individuals** (natural persons or private corporate entities) or **owned by the State**. They are owned by individuals when they have been legally recognised an ownership right and have registered such right in the corresponding Registry of Titles, which in turn issues a certificate that attests to said registration, after having fulfilled the procedures established by Law No. 108-05 on Property Registration³⁵. In the second case, the lands are owned by the State, since this is the original owner of all the lands, as established in Principle III of the aforementioned Property Registration

³⁵ Law No. 108-05 on Property Registration, of 23 March 2005, O.G. No. 10316 of 2 April 2005

Law, or because it has obtained them through the expropriation procedure on the grounds of public interest, provided for in Law No. 344 of 1943 on Expropriations and its amendments³⁶.

Legal aspects of the different forms of land tenure

Our legal system recognises the private property right and proposes access to land tenure under different forms. In this regard, the Dominican Civil Code defines ownership in Article 544, as the *“right to enjoy and dispose of properties in the most absolute way, provided that they are not given a use prohibited by the laws and regulations”*³⁷.

In the same way, the right to property ownership represents a constitutional guarantee, protected in the text of our substantive law as a fundamental right in Article No. 51, stipulating that: *“The State recognises and guarantees the right of ownership. Ownership has a social function that entails obligations. Everyone has the right to the enjoyment and disposition of their property. 1) No person may be deprived of their ownership, except by way of justified cause of public or social interest, following payment of its fair value, determined by agreement between the parties or a judgment of a competent court, in accordance with the provisions of the law. In the event of declaration of a State of Emergency or Defence, the compensation cannot be beforehand; 2) In accordance with the law, the State shall promote access to ownership, especially certificated property ownership; 3) The dedication of land to useful purposes and the gradual elimination of large estates is declared to be of social interest. A main objective of the State’s social policy is to promote agrarian reform and the effective integration of the farming population into the national development process, through incentives and cooperation for the renewal of their agricultural production methods and their technological training; 4) There shall be no confiscation of the property of individuals or legal entities for political reasons; 5) Only the property of individuals or legal entities, national or foreign, that derives from unlawful acts committed against public property, as well as that used or deriving from illegal drug and psychotropic substance trafficking activities or activities relating to transnational organised crime and any offence provided for in the criminal laws, may be subject to confiscation or seizure, through a final judgement; 6) The law shall establish the regime for the administration and disposition of seized and abandoned property in criminal proceedings and in lawsuits for the annulment of ownership, provided for in the legal system”*³⁸.

According to the classification of property rights established by our legislation, the ownership right and its divisions constitute a principal right in rem, with the divisions of this right in rem being the following: Usufruct, use, occupancy, easements on property, and emphyteusis, whose characteristics are stated below:

a) Usufruct: Article 578 of the Dominican Civil Code establishes that *“usufruct is the right to enjoy properties whose ownership belongs to someone else, like them, but whilst retaining their substance”*³⁹. That is, usufruct is a temporary right in rem that grants the usufructuary the enjoyment of the property, whilst the bare owner retains ownership of the property or object of this convention.

³⁶ Law No. 344 which establishes a special procedure for expropriations sought by the State, O.G. No. 5951 of 31 July 1943

³⁷ Civil Code of the Dominican Republic

³⁸ Constitution of the Dominican Republic, enacted on 13 June 2005, O.G. No. 10561.1 of 10 July 2015

³⁹ Civil Code of the Dominican Republic

b) Use and occupancy: The rights of use and occupancy provided for in Articles 625 to 636 of the Dominican Civil Code grant their holder the prerogative to use the property as if they were the owner, with a right to receive the rents and yields produced by the real property in a limited manner, only for the use of the beneficiary's and family's basic needs, including accommodation⁴⁰.

c) Easements on property: Article 637 of the Dominican Civil Code establishes that “*easement is a burden imposed on an inheritance, for the use and utility of a property belonging to another owner*”⁴¹. It originates from a factual situation arising between two or more properties, whose solution is mandated by law or by virtue of a convention between parties.

d) Emphyteusis: Emphyteusis is a form of leasing that grants the beneficiary a right of use and enjoyment - in rem - of the non-owned property given in lease for a period of no less than 18 years nor more than 99 years.

Furthermore, the Dominican legal framework establishes the methods of acquiring ownership, which allows the definition of formal land tenure in our legal system. The methods of acquiring ownership in the Dominican Republic are divided into **original** and **derived** methods.

1) **Original methods**: Original methods of acquiring ownership are those that give rise to the first-time right over the owner, i.e., the first-time recognition and registration of a property right in rem, which is reflected in our legal system as a final product of the reorganisation procedure, thus fulfilling the main purpose of Law 108-05, contained in Article One, which is “*to regulate the reorganisation and registration of all property rights in rem, as well as burdens and encumbrances subject to registration (...)*”⁴², with this method of acquisition being materially reflected in the possession and subsequent acquisition by usucaption.

2) **Derived methods**: Derived methods of acquiring ownership are those contained in Articles 711 and 712 of the Dominican Civil Code, which establish: “*The ownership of property is acquired and transferred by **succession**, by inter vivos or testamentary **donation**, and by effect of the **obligations** (...) the ownership is also acquired by **accession** or incorporation, and by **prescription***”⁴³.

a) Transfer by succession. The combined reading of Articles 712 and 718 of the Dominican Civil Code establishes that succession is a method of post-mortem transfer of the deceased's rights in favour and to the benefit of the successors or legatees with legal capacity to receive them.

b) Transfer by Donation or Testamentary Transfer. Article 893 of the Dominican Civil Code establishes that “*no person may dispose of their property gratuitously, but they may by inter vivos donation or by will....*”⁴⁴, and Articles 894 and 895 also stipulate that a transfer by inter vivos

⁴⁰ Civil Code of the Dominican Republic

⁴¹ Civil Code of the Dominican Republic

⁴² Law No. 108-05 on Property Registration, of 23 March 2005, O.G. No. 10316 of 2 April 2005

⁴³ Civil Code of the Dominican Republic

⁴⁴ Civil Code of the Dominican Republic

donation is an act through which the donor is definitively and irrevocably detached from the donated property, *whilst alive*; whereas a *testamentary* transfer is an act through which *the testator disposes for the future*, i.e., for the time when they are no longer alive. These are both derived methods of transfer of ownership, but the testamentary or transfer by succession or donation method shall depend on whether the act of disposition shall take effect *inter vivos* or after the person has deceased, and in the latter case, whether they left a will or not.

c) Transfer due to obligations. Article 1101 of the Dominican Civil Code establishes that “*the contract is an agreement by virtue of which one or several persons are bound by one or several others, to give, to do or to not do something*”⁴⁵, whose conditions of validity contained in Article 1104 of the same Code are the consent, the capacity to contract, a certain purpose and a lawful cause. In this regard, we must say that one of the main conventional or contractual methods of acquiring the principal rights in rem is through the purchase and sale agreement, which is defined by Article 1582 of the Dominican Civil Code as an agreement through which one party undertakes to hand over something and another party undertakes to pay for it, whilst it may be executed via a public document or under private signature, and a multitude of contractual conventions whose purpose is the transfer of ownership may be carried out, but none has the immediate effects of transfer that the act of purchase and sale has.

d) Transfer by accession. Article 546 of the Civil Code establishes that “*the ownership of personal or real property gives right over everything that is added secondarily, either naturally or artificially. This right is called accession*”⁴⁶. Accession is a method of acquiring ownership regardless of the fact of possession, by which the landowner becomes the owner of all the works that are implemented or emerge on the land, whether they are the possessor of the land in question or not. Whilst Article 551 of the same code states that “*everything that is added to or incorporated into the property belongs to its owner...*”, in this regard, we can see that the civil law establishes a presumption of ownership for the benefit of the owner, especially of what is built on the land, which is a presumption that is destroyed by proof to the contrary.

e) Transfer by prescription. Acquisitive prescription or usucaption is the means by which the possessor of real property acquires its right of ownership, by effect of prolonged possession during a legally established term. Article 21 of Law 108-05 establishes that “*for the purposes of reorganisation, possession exists when a person has a property under their control as an owner or through another person who exercises the right in their name*”⁴⁷.

For possession to be the cause of an ownership right, it must be public, peaceful, unequivocal and uninterrupted, and held by the owner for the time set by the Civil Code, according to the possession in question. The possession requirements in Articles 2228 et seq. of the Dominican Civil Code, to which the Property Registration Law adheres, are also held in this same regard. Law No. 108-05 on Property Registration accepts the methods of transfer of the ownership right contained in the common law, but establishes in turn, as an essential requirement for the occurrence of the law's legal effects, the registration

⁴⁵ Civil Code of the Dominican Republic

⁴⁶ Civil Code of the Dominican Republic

⁴⁷ Law No. 108-05 on Property Registration, of 23 March 2005, O.G. No. 10316 of 2 April 2005

as the only form of making it enforceable against all, whilst simultaneously establishing a legal presumption of accuracy *erga omnes*, and not admitting proof to the contrary, as established in Article 90 of the Property Registration Law when it stipulates that “the registration is constitutive and binding of the registered right, burden or encumbrance. The content of the registrations is presumed accurate and this presumption does not admit proof to the contrary (...)”⁴⁸.

In the Dominican Republic, the main form of transferring the certificated ownership right is logically from the first property transaction that the original owner performs: the assignment or transfer of the ownership. As of this event, the Dominican property ownership right is undoubtedly based on private documentation, i.e., that which transfers the right between individuals, which transfers the title acquired from the original owner and which accredits them as legitimate owners. On the contrary, the uncertificated right is characterised, in principle, by the possession or material taking of the property. It is currently an initial fact that serves as a basis for acquiring by prescription, provided that the other characteristics required by law are met; but that is distinguished from the ownership right and that can be had independently of it, although generally one of the forms, the most characteristic of making this right ostensible, is materially possessing the property.

In order for the uncertificated right to be legally binding, or failing this, to be admitted as a *de facto* possession or informal tenure, enforceable against all, including the State, which the law presumes in principle as the original owner, it must comply with the conditions and requirements set out in the Civil Code and the Property Registration Law for the recognition of acquisitive prescription or usucaption.

Meanwhile, the characteristics of the private property regime in light of the public domain limits are set out below. Private property is limited by the prevailing right of others, and the power to use it in an orderly, peaceful, profitable, and free manner is a strict necessity. Apart from the exceptions set out by the Constitution and the Laws.

As a result, in the domestic Dominican legal system, these limitations are especially found in the in fine part of Article 544 of the Civil Code, where it states that there is an absolute right over the property, but “*provided that it is not given a use prohibited by the laws and regulations*”⁴⁹. Therefore, we see that the limits imposed by law on the ways to exercise the ownership right are derived from the following criteria:

1. Limits linked to the ownership right based on the theory of abuse of rights, which seeks that the owner exercises their rights in a serious, fair and legitimate manner, provided that their actions do not harm others.
2. Limitations established in the public or general interest, within which the right of expropriation held by the Dominican State is included.
3. The limits imposed by neighbourhood relations, such as the legal easements of Article 640 of the Civil Code, regarding waters of the above property.

⁴⁸ Law No. 108-05 on Property Registration, of 23 March 2005, O.G. No. 10316 of 2 April 2005

⁴⁹ Civil Code of the Dominican Republic

4. The limits introduced based on the property's social function, in the normal content of the right, on certain legal or conventional actions, such as impact on the environment and natural resources, prohibitions of disposition and of establishment of rights in rem or security interests.

Another method of accessing the land consists of the delivery made by the Dominican Agrarian Institute (IAD) to plot holders of a Provisional Allocation Certificate, (Provisional Title), which grants a right of use and usufruct to make use of them in a limited manner. Consequently, this document does not constitute a definitive ownership title, enforceable against third parties, but a certificate of dependence on the IAD, who is the real owner of the lands. The delivery of this Provisional Allocation Certificate constitutes an administrative act in which the beneficiary enjoys the land, but cannot enforce their rights against third parties judicially, but instead through the IAD, who is the holder of the ownership right in their name.

Law No. 5879, of 27 April 1962, on Agrarian Reform in its Article 38 stipulates that the distribution of plots shall be carried out through conditional sale contracts, where the price and payment terms shall be determined by the IAD and its regulations⁵⁰. In practice, the distribution of plots is carried out through settlements free of charge.

For the allocation of lands to beneficiaries, the Agrarian Reform Law is based on the individual exploitation of the land. Subsequently, the collective (1972) and associative (1985) systems were introduced. In all three cases, the unit of allocation is the plot, hence the beneficiaries are called plot owners. At present, there are only two types of settlements: the individual and the associative. In the first type, the State gives a plot to an individual based on the Agrarian Reform Law; the second type consists of a mixed model of individual and collective settlements.

From 1981 the first associative titles began to be granted, and they were favourable for the development of self-managed companies in some IAD projects, such as the Ysura project which is being implemented in the city of Azua located in the south of the country, and the Rational dry forest management project, amongst others.

In terms of the lands that are part of the Dominican State's set of property assets, we have Sectoral Law No. 202-4 on Protected Areas, which stipulates in its Article 9 that: *"Lands belonging to the State that make up the National System of Protected Areas are imprescriptible and inalienable and no private right can be constituted over them"*. These characteristics are confirmed by the Dominican Constitution in its Article 16 when it establishes that: *"The wildlife and the conservation units that make up the National System of Protected Areas and the ecosystems and species that it contains, constitute property assets of the Nation and are inalienable, non-seizable and imprescriptible. The limits of the protected areas can only be reduced by law with the approval of two thirds of the votes of the members of the chambers of the National Congress"*⁵¹. Therefore, according to the Constitution and the Sectoral Law on Protected Areas, these spaces that are inalienable, non-seizable and imprescriptible, are outside of all trade and outside the scope of the private domain of individuals and in no case, is the registration of the ownership right resulting from the reorganisation process admissible.

⁵⁰ Law No. 5879, on Agrarian Reform, of 27 April 1962

⁵¹ Sectoral Law No. 202-04 on Protected Areas, of 30 July 2004, O.G. 10582 of 3 August 2004

On this issue it is important to distinguish what happens if the protected area status of a space or ecosystem has been vested after the existence of plots duly registered in such area. For this case, we should highlight the provisions of the paragraph of Article 9 of Law 202-04 which states that: *“The lands of private domain with an ownership title legally registered in the corresponding Register of the Higher Land Court prior to the enactment of the General Law on the Environment and Natural Resources, which are within the protected areas, shall be recognised as such”*⁵². However, the same paragraph of these provisions, in its *in fine* part, establishes an eminent control over properties thus recognised in favour of the State, which means that it has in its favour a pre-emptive right to purchase, which is imposed before any another acquirer. In any case, acquisition by the State must be preceded by payment or compensation for the land.

In this regard, private lands are recognised as such (i.e., as plots duly registered in favour of individuals), with an ownership title registered in the corresponding Registry of Titles prior to the enactment of the Law, and that are within protected areas. Furthermore, it is important to clarify that the Declaration of a Protected Area does not in any way imply the expropriation by the Dominican State of privately-owned properties located within its boundaries.

Regarding the intervention of the Emissions Reduction Program in protected areas, this will allow the application of the policies and criteria of conservation and management established by the Ministry of the Environment for each of these areas, identified within the program. In this sense, in the case of informal land holders, the Emissions Reduction Program will serve as an incentive mechanism to maintain forest areas, providing them with a benefit, integrating them in the conservation and management of these areas. In relation to the formal owners, the implementation of the Emissions Reduction Program will allow them to access alternative retribution and compensate for the limitations of use established by the respective management categories.

La aplicación de las políticas y criterios de gestión de las áreas protegidas, conjuntamente con la implementación del Programa de Reducción de Emisiones, se realizará respetando las normas y planes de manejo de estas áreas, así como la protección de los derechos legitimados de los tenedores formales e informales. El Programa de Reducción de Emisiones no contempla enfoques diferentes para cada uno de los tipos de tenencia (formal e informal). Las prácticas consuetudinarias y requisitos establecidos para la legitimación de los tenedores informales de la tierra, permitirán un reconocimiento de derechos sobre el uso de la tierra, lo que les concede una participación igualitaria dentro de la distribución de beneficios.

As we have seen, the ownership right is of a private economic nature, and this is why the Dominican laws have a series of actions whose purpose is its protection and the repression of the negative impacts, restrictions or disturbances that it may have been subject to. Law 108-05 contains a series of procedures aimed at safeguarding the ownership right and other property rights in rem, whilst ensuring the legality of their impact, in a concrete manner. The law stipulates a whole system of property advertising in all aspects and in any type of legal or conventional relationship that may be carried out with regard to registered properties, whilst establishing the relevant institutions for safeguarding the effectiveness, legality and transparency of the processes and procedures contained therein.

Customary Rights

⁵² Sectoral Law No. 202-04 on Protected Areas, of 30 July 2004, O.G. 10582 of 3 August 2004

Apart from the legal provisions set forth above, there are recognised and adopted customary practices that establish a formal ownership rights registration system, that mainly involve the informal occupation of land, whether rural or urban, by individuals who do not have access to the land, through conventional legal procedures or that are in a discontinued or expired phase of the reorganisation process.

When land occupied by social groups is the property of the Dominican State, the occupants can demonstrate that they possess this land because they cultivate it or use it for some other profit-making purpose (material possession); because they surround the land or because it serves to determine their territory and boundaries, or because their names appear as claimants in a cadastral map created by the surveyor who made the measurement, which must appear in a duly registered measurement document (theoretical possession), also indicating the number of years' occupation (five, ten or twenty years), in a public, continuous, uninterrupted, peaceful manner and as the owner. In this case, the occupant has the right to claim before the Land Court the award of these rights by usucapio or acquisitive prescription, thus initiating the Cadastral Rectification process. It should be noted that prolonged de facto possession can be admitted by demonstrating its occupation by generations of occupying families, provided that it can be documented through any means of evidence admitted by our legal system.

Gaps, holes and ambiguities of the land tenure system

The legal certainty of land tenure rights is one of the country's main challenges. The majority of land in the Dominican Republic is not subject to any registered ownership rights and is characterised by being highly concentrated.

Generally, the poorest sector of the rural population has no land, or it has very small agricultural plots, and most people, both in urban and rural areas, lack formal rights to their lands. By 2012, it was estimated that only 25% of the country's agricultural land was registered (mainly large estates and high-value land), and between 25% and 50% of residents in urban areas had formal property ownership titles. Likewise, in cases where the land is not registered or it has been checked that it does not meet the characteristics for choosing the recognition of informal tenure through acquisitive prescription, it is presumed that it is the property of the State, in accordance with the provisions of Law No. 108-05 on Property Registration.

As highlighted in a study carried out by the REDD/CCAD-GIZ Programme in 2013, one of the issues relating to land ownership stems from the fact that the majority of small producers lack an ownership title for the land on which their families have worked for generations. However, we should note the efforts made by the State, through the Dominican Agrarian Institute, to issue provisional titles in favour of these producers holding Agrarian Reform land through a quick and simple process, as an alternative to the formal titling process set out in our Property Registration Law. The tenure resulting from this provisional titling process possesses the legal presumption and sufficient legitimacy to be recognised as a form of accessing ownership without having to proceed with formal titling.

It is important to highlight that land tenure conditions described above do not have repercussions nor incentivize displacement of small and medium-sized agricultural producers to mountain hillsides, nor is it a determining factor in the expansion of the agricultural frontier, given that this displacement also occurs in

titled lands. . Notwithstanding this situation, the Dominican Government has enacted a law (Law 44-180)⁵³ for the implementation of a payment for environmental services (PES) scheme, in order to incentivise producers so that they can ensure a use of the land that is compatible with the forests' protection.

To this end, we can establish that although the formal land tenure system remains an important aspect in determining the land's use, informal tenure in the Dominican Republic is not an obstacle for recognising the emissions reduction benefits that de facto possessors could receive.

Un ejemplo de esto, es la implementación del esquema de pagos por servicios ambientales ejecutado por el Proyecto Piloto PSA-CYN en la Cuenca del Río Yaque del Norte. Specifically, the project seeks to contribute to the conservation of the Yaque del Norte basin bodies of water through a Payment for Environmental Services, to contribute to water sustainability, maintaining the resource in quality and quantity. In this first pilot stage, the direct actions seek to recover the tree coverage in agreement with the owners and producers of the mountain areas' lands that feed the Tavera Dam (about 80,000 Ha) in the Municipality of Jarabacoa and part of the Region Constance. The expected results are: a) Regulation of flows, in order to ensure the amount of water in the dams; b) Reduction of sedimentation in reservoirs, to extend useful life; c) Improvement of water quality through organic and chemical decontamination and sediment reduction.

The project defined three components or lines of intervention to be considered within the PSA mechanism, to ensure environmental services: a) application of compensation or payment rates to conserve forest areas or agroforestry systems that protect the soil; b) shares shared with other government or non-government entities aimed at provoking and maintaining the change in land use, toward conditions that ensure the generation of services, and c) management before instances to overcome the additional factors that affect the expected environmental services.

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The process of evaluation of the applications is carried out by the management of the PSA-CYN and approved by the Inter-Institutional Steering Committee. Payments will be made with checks through formal and written contracts, signed individually by each beneficiary or beneficiary and the Ministry of Environment and Natural Resources. The contracts are renewed annually automatically for up to five years and annual payments are made in two semi-annual installments of 50% each. Although at the beginning it took hard work to achieve understanding, once understood, more requests are being received than can be met.

⁵³ Law No. 44-18 on Payments for Environmental Services, of 31 August 2018.

This process of the PSA-CYN Project is formalized in its "Operating Regulations for Payment for Hydrological Environmental Services".⁵⁴ Specifically in Article 8, section C, where the general eligibility requirements are established. Within these requirements is accepted as good and valid deposit of any document that endorses the property, including Certificate of Title, Lease, and for the case of possessions, notarial act signed and sealed by the Pedáneo Mayor of the political demarcation administrative where the land is located. This process is illustrated in **Annex 2** of this ERPD.

Quantitative Analysis of Land Tenure in the Dominican Republic

Below is a consolidated matrix of the sampling carried out in 2018 on land titling at the national level. This diagnosis was obtained from a sample of 10 plots from each municipality, totalling 1,500 samples, which makes up the universe of the study. The data of the 10 samples per municipality that a total of 188,420 ha titled at a national level, of which 27,853 have been titled under Law 1542-47 and 155,529 have been titled under Law 108-05. The five provinces that show the highest amount of titled land are: Independencia, San Juan de la Maguana, Monte Cristi, Azua and Bahoruco. Likewise, the five provinces with the lowest amount of titled land include: Hermanas Mirabal, San José de Ocoa, Peravia, Hato Mayor and Samaná.

Table 4.4.1 Results of the preliminary diagnostic on land ownership in the Dominican Republic, with 1,500 samples as the study universe.

PROVINCE	TITLED AREA			
	M ² TITLED UNDER LAW NO. 1542-47 (Former Land Registration Law)	M ² TITLED UNDER LAW NO. 108-05 on Property Registration	TOTAL IN M ²	TOTAL EN HECT AREAS (Ha)
AZUA	105,336,136	30,662,063	135,998,199	13,599.82
BAHORUCO	98,811,232	31,362,501	130,173,733	13,017.37
BARAHONA	3,076,576	48,477,484	51,554,060	5,155.41
DAJABÓN	2,024,519	38,127,535	40,152,054	4,015.21
DUARTE	2,839,732	35,840,265	38,679,997	3,868.00
EL SEIBO	643,824	18,940,281	19,584,105	1,958.41
ELÍAS PIÑA	2,955,101	36,211,591	39,166,692	3,916.67
ESPAILLAT	2,610,931	20,127,928	22,738,859	2,273.89
HATO MAYOR	1,321,494	14,269,443	15,590,937	1,559.09
HERMANAS MIRABAL	1,237,190	7,776,592	9,013,782	901.38
INDEPENDENCIA	9,277,904	270,281,751	279,559,655	27,955.97
LA ALTAGRACIA	818,318	29,772,303	30,590,621	3,059.06
LA ROMANA	2,010,547	29,659,697	31,670,244	3,167.02
LA VEGA	1,661,989	21,947,949	23,609,939	2,360.99
MARÍA TRINIDAD SÁNCHEZ	3,304,811	21,625,551	24,930,362	2,493.04
MONSEÑOR NOUEL	2,205,040	21,738,759	23,943,799	2,394.38
MONTE CRISTI	3,470,113	135,052,103	138,522,216	13,852.22

⁵⁴ Operating Regulations for Payment for Hydraulic Environmental Services, Yaque del Norte River Basin Pilot Project - PSA-CYN, approved by the Inter-institutional Steering Committee of the PSA-CYN Project, on October 27, 2010.

MONTE PLATA	2,259,134	34,804,418	37,063,552	3,706.36
PEDERNALES	806,927	49,750,355	50,556,565	5,055.66
PERAVIA	958,563	13,575,698	14,534,261	1,453.43
PUERTO PLATA	4,952,621	69,299,244	74,251,865	7,425.19
SAMANÁ	1,628,877	17,040	18,668,997	1,866.90
SAN CRISTOBAL	4,259,452	61,274,159	65,868,108	6,586.81
SAN JOSÉ DE OCOA	1,571,217	11,913,061	13,484,278	1,348.43
SAN JUAN DE LA MAGUANA	2,360	200,052,857	202,413,265	20,241.33
SAN PEDRO DE MACORÍS	3,060,530	73,410,085	76,470,615	7,647.06
SÁNCHEZ RAMÍREZ	1,995,333	55,407,194	57,402,527	5,740.25
SANTIAGO	3,748,102	29,001,305	32,749,407	3,274.94
SANTIAGO RODRÍGUEZ	1,638,471	76,514,326	78,152,797	7,815.28
SANTO DOMINGO	5,427,436	45,864,952	51,292,388	5,129.24
VALVERDE	2,175,909	36,467,744	38,643,653	3,864.37
DISTRITO NACIONAL	449,052	16,727,698	17,176,749	1,717.67
TOTAL	278,539,441	1,555,291,869	1,884,208,281	188,420.83
	27,853.95 (ha)	155,529.19 (ha)		

Source: First Consultancy progress report on Changes in Land tenure in the Dominican Republic.

It should be noted that the national information available to date does not allow the creation of a map that could characterise the distribution, management and legal situation of the land or properties for each use of land identified by the Emissions Reduction Programme (proportion of titled and non-titled land, type of tenure per area category, types of conflicts). However, this does not represent a technical or legal obstacle for recognising types of tenure, or for determining the main causes of deforestation and degradation in the priority areas identified for the Emissions Reduction Programme.

Impact of Land Tenure on the implementation of the Emissions Reduction Programme.

At first impression, the land tenure system in the Dominican Republic presents great difficulties in accessing formal ownership rights. However, from the point of view of the institutional arrangements to be formalised as a consequence of the execution of the lines of action proposed by the Emissions Reduction Programme, the effective implementation of an Emissions Reduction Programme will cause positive consequences with respect to the gaps and holes identified above. To this end, during the consultations held for the Strategic Environmental and Social Assessment (SESA) with the actors and programs involved, it was determined that the alternatives proposed for the recognition and legitimization of informal tenure will not represent restrictions on access to benefits. This is reflected in the Table of Comments received in the regional SES workshops and the meetings of the Technical Advisory Committee included in Chapter 5.2 of the ER-PD ("Summary of the comments received and how these views have been taken into account in the design and implementation of the ER Program").

In this regard, the Emissions Reduction Programme aims to support and facilitate the enforcements of the existing legal frameworks. To this end, it includes gathering information and generating data on informal usufructuaries who meet the requirements necessary for acquisitive prescription, and who may qualify to begin the formal ownership process under the Property Law. To that extent, the current occupiers can be granted the capacity of owners, thus giving them greater legal certainty and, consequently, better

possibilities of accessing the compensation mechanisms and sources of financing that allow them to make appropriate use of the land.

Below are two (2) positive aspects that arise from this implementation:

- The simplification and streamlining of the procedure for the recognition, registration and titling of lands that are yet to be formalised.
 - Managing effective solutions for resolving disputes with formal owners and de facto possessors. In this case, conflicts and disputes that arise between informal occupants will be addressed within the framework of the Mechanism of Complaints, Claims and Conflict Management described in Chapter 15.2 of the National Emissions Reduction Program (ER-PD). The MQRC will address a solution to these controversies through the verification of required documentation that guarantee the de facto possession. The requirements to determine the legitimacy of informal possession, under the scheme of acquisitive prescription, will reduce conflict-related risks. If necessary, case resolution will be channeled to the corresponding entities. In the case of disputes related to registered property rights, the real estate judicial instances must take care of these, complying with procedures established through Law No.108-05 of the Real Estate Registry.

With regard to the recognition of de facto possessions, there are currently legally recognised customary mechanisms that allow warranting peaceful interventions under the scheme of acquisitive prescription or presumption of legality of informal tenure. To recognise this presumption of legality in informal land tenure in the implementation of the Emissions Reduction Programme, the following documents or acts can be considered valid:

- Registered and transcribed, notarised deed of purchase of communal lands without a survey of the occupier.
- Registered and transcribed, notarised deed of purchase of communal lands without a survey of the occupier.
- Non-notarised deed of purchase and sale with the mayor as a witness.
- Deed of purchase and sale of surveyed lands.
- Sworn statement of possession, notarised with the presence of witnesses.
- Determination of heirs, for cases of succession.

4.5. Analysis of laws, statutes and other regulatory frameworks

The Dominican Republic is committed to the protection of the environment and natural resources, which is supported by the 2015 National Constitution and specific national laws, such as the General Law on the Environment and Natural Resources (Law 64-00), the Sectoral Law on Protected Areas (Law 202-04), the Sectoral Law on Biodiversity (Law 313-15), and the Law on Biotechnology Safety (Law 219-15), amongst other legal instruments.

The Dominican Constitution grants a high level of commitment to the sustainable management of natural resources⁵⁵. Articles 14; 15; 16; 17 and 67 of the Dominican Constitution provide for the protection of the environment and natural resources, by declaring them national heritage for public use, establishing their

⁵⁵ <https://www.ifrc.org/docs/idrl/751ES.pdf>

conditions of use and declaring the duties and obligations of the State for their conservation. Furthermore, Article 194 of the Dominican Constitution grants an important level of commitment to the sustainable management of natural resources, by establishing that *“It is the State's priority to formulate and execute, by law, land-use planning that ensures the efficient and sustainable use of the Nation's natural resources, according to the need to adapt to climate change”*. Furthermore, Article 19 (2) declares *“the reforestation of the country, the conservation of forests and the renewal of forest resources as a national priority and social interest”*.

Organic Law 1-12 of the National Development Strategy (NDS) 2010-2030 articulates four cross-cutting axes that define “the sustainable development model that the Dominican Republic aspires to”, in the different areas: institutional, economic, social and environmental. In addition, Article 6 of Law 1-12 establishes that *“Public policies shall be articulated around four Strategic Axes, with their corresponding Objectives and Lines of Action, which define the sustainable development model that the DR aspires to”*. Axis 4 of the NDS proposes *“A society with a culture of sustainable production and consumption, which manages the risks and protection of the environment and natural resources fairly and effectively and promotes an adequate adaptation to climate change.”*

The Dominican Republic has a large number of national and international laws, decrees, resolutions and agreements, and the most pertinent ones for the ER Programme are presented below (Table 4.5.1 and Table 4.5.2).

Table 4.5.1 Description of the Laws, Decrees and Resolutions relevant to the ER Programme

National Laws, Decrees, and Resolutions relevant to the ER programme	
Law 8-1965	Organic Law of the Ministry of Agriculture, which gives it the function of formulating and directing the country's agricultural policy, in accordance with the national development plans, and approving the budgets of other entities in the sector, including the Dominican Agrarian Institute.
Law 290-85	Forest Development Incentive Law
Decree 138-97	Which creates the National Quisqueya Verde Plan (NQVP)
Law 64-00	Which creates the Secretariat of State for the Environment and Natural Resources, in its Chapter IV, Section I and Article 17, as governing body for the management of the environment and natural resources (today it is the Ministry of Environment and Natural Resources). In the same way, it establishes the criteria for the exploitation, management and use of forests and forest soils through the enactment of legal instruments that regulate the exploitation of these resources. Furthermore, it proposes the establishment of incentives for commercial forest plantations, for the purpose of timber, energy, industrial, food and ornamental use (Arts. 154, 155, 156, 157, 158 and 159). In Articles 120 et seq., conditions are established regarding the use of soils, according to their capacity, potential and specific environmental conditions. Preference is proposed for the maintenance of native forest cover and that which ensures the rehabilitation of soils and water resources.
Law 44-18	Establishes the Payment for Environmental Services. Aims to conserve, preserve and restore the sustainable use of the ecosystems, in order to ensure the environmental or ecosystem services that they provide, through a general framework for the compensation and remuneration of environmental services.

Law 57-18	Forestry Sector of the Dominican Republic. The aim of this law is to regulate and foster sustainable forest management by ensuring its conservation, use, production, industrialisation and trade, as well as the protection of other natural resources that form part of its ecosystems, while maintaining its biodiversity and regeneration capacity. These objectives include: 1) Ensuring the planning, conservation and sustainable management of forests to obtain the many goods and services that these ecosystems provide, including regulating the water system, biodiversity protection, land conservation, carbon adaptation and sequestration, energy production, and so on. 2) Assessing and remunerating environmental services that the forests and forest plantations provide, as an incentive for their conservation and improvement.
Resolution No. 02/2002	Creation of the National Climate Committee as an inter-institutional structure
Law 202-04	Sectoral Law on Protected Areas, where protected areas in the Dominican Republic are defined and delimited
Decree 786-04	Which creates the National Office for Climate Change and the Clean Development Mechanism
Resolution No. 08-07	Technical Forest Management Standards
Resolution No. 09-07	Procedure for Forest Permits
Resolution No. 10-07	Standard for the operation of the Forest Industry
Resolution No. 11-7	Forest Regulation
Law 57-07	Enactment by the Executive Branch of an Incentive for Renewable Energies and Special Systems
Decree 601-08	Which creates the National Council for Climate Change and the Clean Development Mechanism (CNCCMDL) as an inter-institutional consultative body for the formulation of policies for the prevention/mitigation of greenhouse gas emissions and adaptation to climate change.
Decree 601-08	Which creates the National Carbon Account
Resolution No. 10-8	Which creates the Payments for Environmental Services (PES) Programme
Law 174-09	Which declares new conservation units within the National System of Protected Areas (SINAP)
Decree 571-09	Which increases the protected areas in the Dominican Republic. Currently, the SINAP has a total of 128 conservation units in 12 management categories, which occupy a total of 12,436 km ² , located both on land and in sea and correspond to 25.8% of the national territory.
Decree No. 783-09	Which regulates the operation of the National Fund for the Environment and Natural Resources (MARENA FUND), created by virtue of Art. 71 of Law No. 64-00, of 18 August 2000.

2015 Constitution	Political Constitution of the Republic. Article 17, which deals with the use of natural resources, where reforestation, the conservation of forests and the renewal of forest resources are declared a national priority and of social interest. Article 194 defines as a priority of the State the formulation and execution, by law, of land-use planning that ensures the efficient and sustainable use of the Nation's natural resources, in accordance with the need to adapt to climate change.
Law 01-12	The National Development Strategy
Law 247-12	Which creates the Organic Law of the Public Administration, as a regulatory framework instrument that provides the powers and hierarchy of the bodies and entities that make up the State Public Administration.
Resolution No. 20-12	Creation of the National Forest Monitoring System and the Forest Monitoring Unit and which orders the formation of the Forest Monitoring Commission of the Ministry of Environment and Natural Resources.
Decree 269-15	Which establishes the National Climate Change Policy, which aims to manage climate variability that is attributed, directly or indirectly, to human activity and the effects it generates on the population and the national territory, through an appropriate strategy, programming, plans and projects at the national level, in accordance with the provisions of the Convention.
Decree No. 23-16, amended by Decree No. 26-17, which extends its validity	High-level Inter-institutional Commission for Sustainable Development, which is the institution in charge of outlining the path for the implementation of the 2030 Agenda for Sustainable Development and integrating the Sustainable Development Goals (SDGs) into the governmental planning instruments, and especially the 2030 National Development Strategy.
Resolution No. 0002/2018	Which approves the Policy On Access to Genetic Resources and Benefit Sharing (ABS), the Regulation on Access to Genetic Resources, Associated Traditional Knowledge and Fair and Equitable Benefit Sharing (ABS) and the Procedure for Requesting Access to Genetic Resources and Associated Traditional Knowledge in the Dominican Republic.

Table 4.5.2 **Description of International Conventions and Agreements relevant to the ER Programme**

International Conventions and Agreements relevant to the ER Programme	
Resolution No. 25-96	United Nations Convention on Environment and Development. "Earth Summit" on Biological Diversity.
Resolution No. 99-97	Accession of the Dominican Republic to the United Nations Convention to Combat Desertification in Those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa.
Resolution No. 182-98	Ratification of the United Nations Framework Convention on Climate Change (UNFCCC) by the Dominican Republic
Resolution No. 141-01	Ratification of the Kyoto Protocol of the UNFCCC by the Dominican Republic
Resolution No. 177-01	The Ramsar Convention on Wetlands of International Importance especially as Waterfowl Habitat

Resolution 286-16	DOHA Amendment to the Kyoto Protocol to the United Nations Framework Convention on Climate Change
Resolution No. 122-17	Ratification of the Paris Agreement

Expected lifetime of the proposed ER Program

The ER Programme is expected to reduce emissions by around 5,057,154 tCO₂e, which will be offered to the FCPF. The programme is scheduled to be valid for a period of 5 years, that is, between 2020 and 2024. This shall be officially confirmed in the ERPA document. Furthermore, it is foreseen that the actions of the ER Programme shall be extended until at least the year 2030, as this is consistent with the Fourth Strategic Axis of the National Development Strategy Law, which proposes *“a society with a culture of sustainable production and consumption that manages the risks and the protection of the environment and natural resources fairly and effectively and promotes an adequate adaptation to climate change”*. Consequently, efforts shall be made for the actions to be implemented to be sustainable in the long term, whilst in any case promoting the increase of carbon stocks and the maintenance of forests' ecosystem services.

The ER is of a national scale, and so is the reference level of the emissions and their monitoring. However, for the programme's actions, regions of interest or priority regions have been identified due to the deforestation and degradation conditions, as well as areas where the processes of forest restoration, incentivised by the government, are perceived as successful.

5. STAKEHOLDER CONSULTATION, AND PARTICIPATION

5.1. Description of stakeholder consultation process

5.1.1 Context and general framework of the participatory process for the formulation of the National Strategy for REDD+ (NS REDD+) and the National Emissions Reduction Plan (ERP)

Public participation supposes a joint effort of the social fabric and the institutions, in pursuit of improving the citizens' living conditions. This exercise goes beyond the access to information or mere consultation, since it requires active, conscious and responsible intervention on the part of all the stakeholders involved. After the entry into force of Law No. 64-00, important legal instruments were enacted that strengthened environmental governance. Amongst these were: i) the Law of Free Access to Public Information No. 200-04 and its Implementing Regulations which guarantee the right of every person to request and receive effective, accurate and timely information on all acts and activities of the centralised, decentralised and autonomous State bodies and entities; ii) the Constitutional reform of 2010 which gives constitutional status to the protection and conservation of the environment and recognises the right of every person to have access to information; and iii) the 2030 National Development Strategy which, amongst other provisions, establishes the promotion of social participation in the formulation, execution, auditing and evaluation of public policies, through the creation of institutional spaces and mechanisms that facilitate citizen co-responsibility, gender equality, access to information, transparency, accountability, social oversight and fluid relations.

The participation of the different relevant stakeholders is essential for the country in all the design phases of the National Strategy for REDD+ (NS REDD+) and the National Plan for the Reduction of Carbon Emissions



from Deforestation and Forest Degradation (ERPD), as well as of the subsequent development of the objectives established in the Environmental and Social Management Framework (MGAS-ESMF) and of the Mechanism for Receiving Complaints and Grievances and Conflict Management (MCGC) in the country.

Although the REDD+ Strategies have the potential to offer significant benefits to local communities whose livelihoods are dependent on forests, if these REDD+ Strategies and their actions are not implemented in the right way, they have a high potential to generate risks to the means of subsistence, assurance of land tenure, forest governance, and biodiversity, amongst others.

It is for this reason that the Cooperative Fund for Forest Carbon (CFFC) has developed guidelines to promote the full and effective participation of the relevant stakeholders, so as to ensure their involvement in the formulation and implementation phases of the NS REDD+ and the National Plan for the Reduction of Carbon Emissions from Deforestation and Forest Degradation (ERPD), to be submitted to the Carbon Fund of the CFFC.

With regard to the dissemination of information, the CFFC seeks to promote efforts that ensure the provision of adequate, timely and quality information in a culturally appropriate format, which is why the CFFC Guidelines on dissemination of information have been developed. In the same way, the Guidelines on the Commitment of Stakeholders Involved in the FCPF Preparation Fund require the establishment of a Feedback and Grievance Redress Mechanism (FGRM), which is accessible during the REDD+ actions consultation and implementation process, which must also use, complement or institutionalise the mechanisms of accountability and dispute and grievance resolution existing in the country.

The National Strategy for REDD+ and the National Emissions Reduction Plan have been based on a participatory process, which included holding workshops in all regions of the country, with a variety of stakeholders and representative groups of the different communities that have a direct or indirect connection with forest resources, either because they depend on them, or they are connected or linked to them. In the workshops, it was sought to prioritise, in a consensual manner, the main guidelines that this national initiative must contain in order to ensure that the strategic activities implemented in the future do not affect, amongst other aspects, the rights of local communities. These points are in line with the national provisions, the requirements of the United Nations Framework Convention on Climate Change (UNFCCC) and other international agreements, which the Dominican Republic is a delegate of.

Therefore, it was considered a priority from the outset to ensure effective and inclusive participation of all key groups and stakeholders associated with forest resources, putting special emphasis on local communities, specifically small and medium-sized producers, grassroots community organizations (Neighbourhood Councils, Housewives Clubs, Producer Associations, Farmer Associations, etc.); non-government organizations, Private Producer Associations; Universities; Local government institution representatives; Local Governments, including those relevant for drafting and implementing the NS REDD+ and ERPD.

Since 2009 the Dominican Republic has been preparing for REDD+ at the national level, and it has been part of FCPF countries since 2013. The country submitted its R-PP to the FCPF in 2014 and received USD 3.8 million as support for the REDD+ National Strategy readiness process.

At the end of 2012, the First Draft of the Dominican Republic R-PP was prepared and promoted, through national and regional workshops with community representatives, state institutions, producer organizations, entrepreneurs, technicians and professionals; during this process it was improved, as shown in the table below.

Table 5.1.1 **Workshops held ahead of the Readiness phase**⁵⁶

	Workshop title	Site	Dates	Numbers of participants
1	<i>Training on REDD+ as an alternative for the Dominican Republic Sustainable Forest Development</i>	<i>Santo Domingo</i>	<i>Nov 9-10, 2011</i>	<i>23</i>
2	<i>DR R-PP formulation</i>	<i>Santo Domingo</i>	<i>Nov 22, 2011</i>	<i>19</i>
3	<i>Capacity enhancement for the Northern-Northwest region Forest Dialog Roundtable and other relevant stakeholders</i>	<i>Santiago de los Caballeros</i>	<i>Feb 16, 2012</i>	<i>19</i>
4	<i>Training on REDD+ as an alternative for the Dominican Republic Sustainable Forest Development</i>	<i>Azua</i>	<i>Mar 1, 2012</i>	<i>22</i>
5	<i>Participatory drafting of the DR National Strategy (the R-PP). Assessment of Land Use, Forest Policy and Governance</i>	<i>Santo Domingo</i>	<i>Apr 12, 2012</i>	<i>23</i>
6	<i>REDD+ Strategy Preparation: Strategic Options, Implementation Framework and Social and Environment Impacts</i>	<i>Santo Domingo</i>	<i>May 2, 2012</i>	<i>20</i>
7	<i>Options for the establishment of Emissions Reference Levels (ER) and for MRV</i>	<i>Santo Domingo</i>	<i>May 29, 2012</i>	<i>18</i>
8	<i>REDD+ as an opportunity to align public policies</i>	<i>Santo Domingo</i>	<i>Jun 14, 2012</i>	<i>16</i>
9	<i>Socialization of the Dominican Republic R-PP Document</i>	<i>Santiago de los Caballeros</i>	<i>Jun 21, 2012</i>	<i>15</i>
10	<i>Socialization of the Dominican Republic R-PP Document</i>	<i>Santo Domingo</i>	<i>Jul 10, 2012</i>	<i>20</i>
11	<i>Early Dialog in the Northern region</i>	<i>Santiago de los Caballeros</i>	<i>Nov 26, 2013</i>	
12	<i>Early Dialog in the Northern region</i>	<i>Nagua</i>	<i>Dec 6, 2013</i>	<i>132</i>
13	<i>Early Dialog in the Eastern region</i>	<i>Monte Plata</i>	<i>Dec 12, 2013</i>	
14	<i>Early Dialog in the Southern region</i>	<i>Barahona</i>	<i>Jan 23, 2014</i>	
15	<i>SESA National Workshop</i>	<i>Santo Domingo</i>	<i>Mar 12-13, 2015</i>	<i>62</i>

⁵⁶ Ibid.

Total Numbers of participants

389

During 2018 and 2019, the country has been making progress in defining the framework for the implementation of REDD+, complying with the FCPF and UNFCCC requirements. Some of the main developments were:

- Definition of Forests within the REDD+ framework
- Definition and prioritization of the main causes of deforestation and forest degradation in the Dominican Republic
- Definition of Strategic Options and REDD actions
- Definition of Programmes and Projects participating in REDD+
- Analysis of the legal, institutional and compliance framework relevant to REDD+ safeguards of the UNFCCC
- SESA participation and consultation plan
- SESA Report
- Environmental and Social Management Framework (ESMF)
- Involuntary Resettlement Policy Framework and Procedural Standards (RPF)
- Feedback Grievance Redress Mechanisms (FGRM)
- National Forestry Inventory
- National Non-Forest Inventory
- Initial document on Carbon Rights and Ownership.
- Discussion of the proposal to establish a presidential decree that clarifies and defines the legislative options for implementing activities within the framework of REDD+.
- Map of Land-Use Changes 2005, 2010, 2015
- Establishment of Reference Levels
- Document on the Feedback and Grievance Redress Mechanism (FGRM)
- Document on the Safeguards Information System
- Profit Distribution Plan
- Self-Assessment Process (R-PACKAGE)
- National Strategy REDD+ Draft
- Environmental and Social Management Plan (ESMP) for the 5 prioritized REDD + areas

These several products have been the result of the combined work of international and national experts, institutional technical teams (made up of representatives from the different institutional topic areas involved in the work), Technical Management Unit (TMU), Documents have been submitted to consultation and/or validation through regional and national workshops and working sessions with working groups formed within the TAC, such as the legal, land-use and forest working group and the safeguarding group. In general, more than five hundred meetings and/or workshops on consulting, validation, technical work and negotiation have been held, for a **total of 3,325 participants**, as shown in the following table.

Table 5.1.2 **Total participants according to activity type**

ACTIVITIES CARRIED OUT	NUMBER OF PARTICIPANTS
------------------------	------------------------

Workshops held ahead of the Readiness phase	389
Meetings	253
Safeguarding Working Group Meetings	63
Land and Forest Use Working Group Meetings	52
Legal Working Group Meetings	44
Awareness Process	225
Capacity Building	100
Regional and National Workshops on Drivers of Deforestation and Forest Degradation	192
SESA Workshops Awareness and Preparation Visits	86
Regional and National SESA workshops	365
Technical Meetings with Stakeholders	972
National Workshops ESMF, SIS, FGRM	239
NS REDD+ local and national Consultation	111
ESMP regional Workshops	155
Benefits Distribution Arrangements	79
TOTAL	3,325

5.1.2. Participatory platforms and stakeholders

The organization of the consultation and participation processes for development was structured through two fundamental mechanisms: Multi-sector, inter-institutional and multi-stakeholder Regional and National Workshops for the various relevant issues and working sessions with thematic committees (governance) as applicable. In April 2015, with an update in 2017, the country defined the institutional arrangements and governance mechanisms that would allow for participatory and transparent REDD+ management with regard to the various national authorities.

Organizational structure for REDD+⁵⁷:

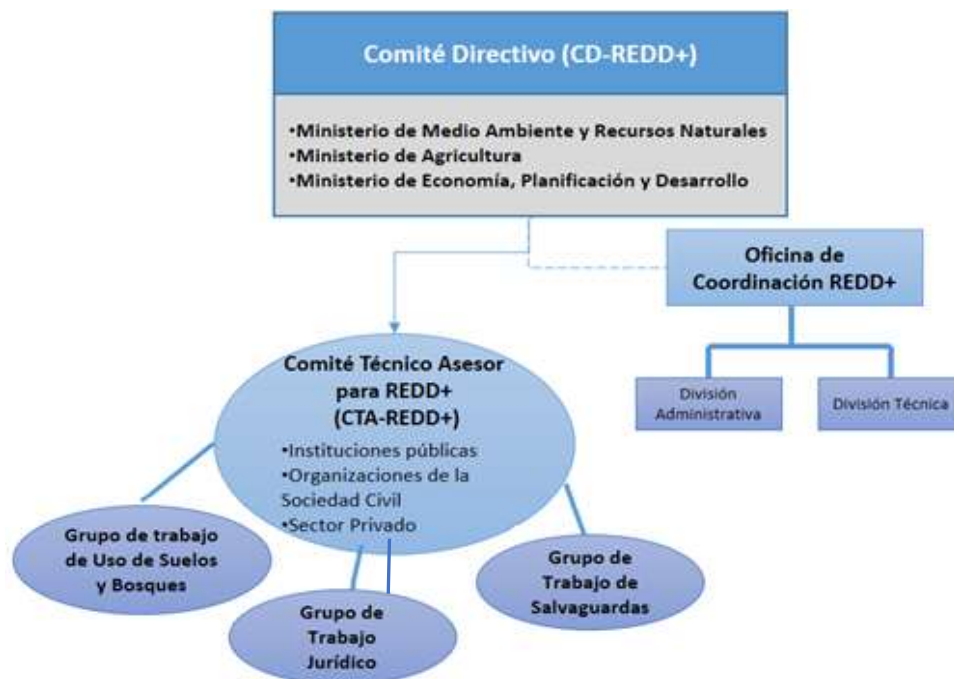


Figure 5.1-1 **Organizational structure for REDD+**

Steering Committee (REDD+ SC)

El Comité Directivo es un órgano de nivel ministerial que tiene como funciones la toma de decisiones a nivel político. El ente rector del CD-REDD+ es el Ministerio de Medio Ambiente y Recursos Naturales, a través del viceministerio de Gestión Ambiental y la Dirección de Cambio Climático, responsables del diseño de la EN REDD+ y del ERP propuesto. Igualmente pertenecen al CD los Ministerios de Economía, Planificación y Desarrollo y de Agricultura. El CD-REDD+ garantiza la incorporación progresiva y continua de REDD+ a la formulación de políticas públicas vinculadas con el desarrollo del país. En ese sentido, el CD-REDD+ proporciona apoyo político y estratégico para la preparación y apropiación de la estrategia REDD+ entre diversos sectores. Una función clave del CD es garantizar la coherencia y las sinergias de la estrategia REDD+ con programas sectoriales de las instituciones involucradas, con los planes y políticas de desarrollo, y con las políticas y planes nacionales de reducción de la pobreza.

Composición del CTA para REDD+ y su articulación con la sociedad civil y el sector privado:

The Technical Advisory Committee (TAC) has consultancy and support roles. It is an inter-institutional body made up of a total of 25 institutions from public sectors and organizations from the private sector, including from civil society and academia. Its main objective is to provide technical advice, facilitate inter-institutional

⁵⁷ SESA work plan, page 6; ER-PIN, page 36

coordination and monitor the REDD+ readiness process. In addition, the TAC facilitates and guarantees the flow of information between the national institutions involved in the REDD+ readiness process.

Figure 5.1-3 shows the multi-sector and multi-actor composition of the Technical Advisory Committee.



Figure 5.1-2 Composition of the Technical Advisory Committee for REDD+ (TAC-REDD+)

The Technical Advisory Committee has held 7 ordinary meetings where it recorded a total of 253 participants, as shown in Table 5.1.3.

Table 5.1.3 Total participants in the Technical Advisory Committee meetings

TECHNICAL ADVISORY COMMITTEE MEETINGS					
Date	Activity	Participants	Committee	Comments	
18/04/2017	Meeting between Ministry of the Environment - RCPP/CARE as part of the NS REDD+ and the safeguards of Cancun from the UNFCC	47	CTA	Second meeting	CTA
01/10/2017	World Bank Mission Meeting	22	CTA	First meeting	CTA
08/11/2017	Technical Advisory Committee Ordinary Meeting	30	CTA		
08/02/2018	Ordinary CTA Meeting	40	CTA		
17/05/2018	Technical Advisory Committee Ordinary Meeting	40	CTA		
14/08/2018	REDD+ Strategic Options and Actions	30	CTA		
02/09/2018	Technical Advisory Committee Ordinary Meeting	44	CTA		
TOTAL		253			

The **Safeguarding Working Group** has a crucial role in the implementation of SESA, the design of ESMF, MQRC FGRMand SIS and ESMP. This Committee is made up of representatives from the public sector (central government and municipal offices), private sector (agricultural and forestry producers) and civil society (NGOs and academia) and will be actively involved and consulted in the implementation and design of these mechanisms. The Committee is working on terms of reference for its operation.

The REDD+ governance structure is likewise strengthened with the formation of two working groups, called the **Land-use and Forest Working Group and the Legal Working Group**, which provide consultancy and support to the Technical Advisory Committee (TAC), in the drafting and/or revision, amendments and validation of key documents for the implementation of the REDD+ Programme.

The Safeguarding Working Group reviewed and approved intermediate products generated from the Analysis of Direct and Indirect Causes of Deforestation and Forest Degradation, and the Analysis of the Legal, Institutional and Compliance Framework of Safeguards. As observed in Table 5.1.4, a total of **63 participants** were recorded in its ordinary meetings.

Table 5.1.4 Total participants in the Safeguarding Working Group Meetings

SAFEGUARDING WORKING GROUP MEETINGS			
Date	Activity	Participants	Comments
06/07/2017	Safeguarding Working Group Meeting	16	
22/08/2017	Meeting between Ministry of the Environment - RCPP/CARE as part of the NS REDD+ and the safeguards of Cancun from the UNFCC	28	Creation of the Safeguarding Working Group
03/02/2018	Fourth Safeguarding Working Group Meeting	19	

TOTAL	63
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In addition, a review of the Analysis of the Dominican legal framework was carried out, in order to determine how it addressed the safeguards of Cancun and the operational policies of the World Bank. Similarly, the institutions responsible for putting into practice the policies and measures related to safeguards were analysed, as well as how these are being fulfilled in practice. To do this, the framework of legal interpretation from the Guide was used to understand and implement the REDD+ safeguards from the UNFCCC, based on reviewing the analysis of existing reports.

The Land and Forest Use Working Group, made up of technicians from relevant institutions and of specialists and members from the academy met on several occasions to produce the definition of Forests that the country will be using under the REDD+ Strategy and the Emissions Reduction Programme. A total of **52 participants** took part in these workshops, as can be observed in Table 5.1.5.

Table 5.1.5 **Total participants in the Land and Forest Use Working Group Meetings**

LAND AND FOREST USE WORKING GROUP MEETINGS		
Date	Activity	Participants
22/05/2017	Workshop on Defining Forests and Forest Degradation in a REDD+ context	17
21/06/2017	2nd Workshop on Defining Forests and Forest Degradation in a REDD+ context	13
24/01/2018	3rd Workshop on Defining Forests and Forest Degradation in a REDD+ context for the DR	22
TOTAL		52

The **Legal Working Group** was established through a workshop held on 4 May 2018, with participation from the following institutions: Ministry of Agriculture, Ministry of Finance, Dominican Agro-Business Board, Dominican Federation of Municipalities, Ministry of Employment, Ministry of Economy, Planning and Development and the Ministry of the Environment and Natural Resources. As can be observed in Table 5.1.6, three meetings were held with the participation of **44 people in total**.

Table 5.1.6 **Total participants in the Legal Working Group Meetings**

LEGAL WORKING GROUP MEETINGS			
Date	Activity	Participants	Comments
03/02/2018	Legal Working Group Composition Meeting	11	
05/04/2018	Legal Working Group Training Meeting	15	Santo Domingo
07/06/2018	Legal Working Group Meeting	18	WB Carbon Rights Consultation
TOTAL		44	

Technical Management Unit (TMU)

The Technical Management Unit (TMU) works under the SC and is responsible for the implementation of the actions required for NS REDD+ readiness and the ERP. The TMU has an administrative division and a technical division, operational directors for the national preparation of REDD+, in accordance with the working plan agreed with the FCPC donor. Among the functions of the TMU are promoting and coordinating public policies, plans, programmes and sectoral projects, as well as actions required for REDD+ readiness and future implementation, including safeguarding aspects. As shown in Table 5.1.7, the TMU technical team held 89 working meetings with different groups, with a total of **972 participants**.

Table 5.1.7 Total participants in the UTG meetings

TECHNICAL MEETINGS WITH STAKEHOLDERS		
Date	Activity	Participants
06/12/2016	Due Diligence from 12-16 June 2016	5
12/01/2017	Field trip to visit priority areas	11
13/01/2017	World Bank Mission Meeting	6
18/04/2017	World Bank Mission Meeting	9
19/04/2017	Meeting between Ministry of the Environment - RCPP/CARE as part of the NS REDD+ and the safeguards of Cancun from the UNFCC	47
20/04/2017	World Bank Mission Meeting	12
06/05/2017	Meeting between Ministry of the Environment - RCPP/CARE as part of the NS REDD+ and the safeguards of Cancun from the UNFCC	26
06/05/2017	Internal working meeting with the REDD+ team	13
06/06/2017	Meeting between Ministry of the Environment - RCPP/CARE as part of the NS REDD+ and the safeguards of Cancun from the UNFCC	26
06/07/2017	Meeting between Ministry of the Environment - RCPP/CARE as part of the NS REDD+ and the safeguards of Cancun from the UNFCC	26
17/08/2017	Meeting between Ministry of the Environment - RCPP/CARE as part of the NS REDD+ and the safeguards of Cancun from the UNFCC	14
18/08/2017	Meeting between Ministry of the Environment - RCPP/CARE as part of the NS REDD+ and the safeguards of Cancun from the UNFCC	15
19/09/2017	Socialisation activity for the progress of the REDD+ Preparation Project	15
19/09/2017	Socialisation activity for the progress of the REDD+ Preparation Project	16
01/10/2017	World Bank Mission	10
11/10/2017	Evaluating the Biomass and Carbon Content in Non-Forest Cover	10
20/10/2017	APROGLOBO activity coordination meeting	3
20/10/2017	Meeting with APROLOGO	3
01/11/2017	World Bank Mission	9
01/11/2017	Administrative coordination meeting	8

TECHNICAL MEETINGS WITH STAKEHOLDERS		
Date	Activity	Participants
27/11/2017	Directorate of Social Participation of the Ministry of the Environment meeting	7
27/11/2017	Directorate of Planning and Development of the Ministry of the Environment meeting	5
28/11/2017	Meeting with representatives of the Legal Directorate of the Ministry of the Environment	8
28/11/2017	Meeting with legal and social representatives of the MEPyD	9
29/11/2017	Ministry of Finance Meeting	6
29/11/2017	DRIVERS consultation conference call	6
29/11/2017	Meeting with legal representatives of the Ministry of Labour	7
29/11/2017	Progress meeting on creation of land-use maps	4
29/11/2017	Financing gaps meeting	3
29/11/2017	Meeting with representatives of producer and community organisations	12
29/11/2017	National Forestry Inventory	5
30/11/2017	Non-Forestry Inventory Meeting	5
30/11/2017	ERPD social meeting	8
30/11/2017	Session to agree 2018 working plan	7
30/11/2017	Mission progress meeting	6
01/12/2017	World Bank Mission Meeting	12
03/01/2018	Working meeting with the CLP-Pronatura-WINROCK consortium	8
03/01/2018	Ministry of Women Mission Meeting	6
03/01/2018	Ministry of Finance Meeting	4
03/01/2018	Specialist Carbon Rights Meeting	4
03/01/2018	Ministry of Mining and Energy Meeting	4
03/01/2018	Ministry of Presidency Meeting	4
03/01/2018	MEPyD Meeting	4
03/01/2018	Ministry of Labour Meeting	6
10/01/2018	Ministry of Finance Meeting	7
10/01/2018	World Bank Mission Meeting Benefits Distribution System	13
11/01/2018	World Bank Mission Meeting	5
10/02/2018	Agroforestry Programme meeting with the UTEPDA Chairman	5
10/02/2018	General Directorate of Livestock and CONALECHE meeting on Benefits Distribution Plan	9
11/02/2018	World Bank Mission Meeting	10
03/03/2018	Meeting with Pronatura	6
03/03/2018	Proposed Carbon Rights discussion meeting	6
10/03/2018	MARENA Fund meeting	9

TECHNICAL MEETINGS WITH STAKEHOLDERS		
Date	Activity	Participants
10/03/2018	Meeting with INDOCAFE	5
10/03/2018	Meeting with Vice Ministry for Planning and Department for Cocoa, Ministry of Agriculture	7
14/03/2018	Dissemination of the project in the Ministry of Agriculture	23
04/04/2018	Financing gaps initial working meeting	5
19/04/2018	Causes of Deforestation and Forest Degradation Methodology meeting	10
24/04/2018	Review meeting for the Second NFI Report	6
02/05/2018	World Bank Mission	10
03/05/2018	Meeting for the Coordination of Driver analysis workshops	10
14/05/2018	MGAS methodology meeting	9
02/06/2018	Technical Advisory Committee members discussions	11
02/06/2018	World Bank Mission	8
03/06/2018	Meeting for National Communication Strategy	8
11/06/2018	M&MRV meeting for the cocoa sector in the Dominican Republic	17
02/07/2018	World Bank Mission	10
02/07/2018	World Bank Mission	9
08/07/2018	REDD+ Strategic Options and Actions	24
21/08/2018	Non-forestry inventory progress presentation - CATIE	16
21/08/2018	Emission Factors and Estimation Review	7
22/08/2018	Emission Factors and Estimation Review	8
23/08/2018	Emission Factors and Estimation Review	8
24/08/2018	Emission Factors and Estimation Review	12
27/08/2018	Emission Factors and Estimation Review	14
04/09/2018	Meeting with Econometría	9
08/09/2018	General Directorate of Livestock Meeting	8
08/10/2018	Ministry of Agriculture Meeting	8
10/10/2018	Ministry of Finance Meeting	7
18/10/2018	Meeting on Planning, Awareness and Training of Livestock Sector in REDD+	4
30/10/2018	World Bank Mission Meeting	8
31/10/2018	World Bank Mission Meeting	7
17/12/2018	Meeting with CONALECHE, ERPD Review	5
18/12/2018	Meeting with INDOCAFE, ERPD Review	5
18/12/2018	MEPyD Meeting, ERPD Review	5
18/12/2018	Ministry of Agriculture Meeting, ERPD Review	6
19/12/2018	DIGEGA Meeting, ERPD Review	5
20/12/2018	Meeting with ASODEFOREST-Restoration, ERPD Review	8

TECHNICAL MEETINGS WITH STAKEHOLDERS		
Date	Activity	Participants
20/12/2018	Meeting with La Celestina Project staff, ERPD review	15
TOTAL		972

5.1.3 Description of the participatory process for developing the NS REDD+ and the National ER Programme (ERP)

The participatory and consultation process to formulate the NS REDD+ and the ERP involves an early dialogue phase in which 389 stakeholders participated through 15 workshops held between 2011 and 2015. The readiness phase involved a series of awareness-raising and capacity-building activities of around 200 stakeholders, from both civil society and the public sector, including the working group from the Technical Advisory Committee. Furthermore, and simultaneously in some cases, **over 500 stakeholders** participated in two extensive consultation processes: i) one linked to the identification of deforestation and forest degradation causes, with participation from 192 stakeholders in 5 national and regional workshops, and ii) the SESA consultation process, with participation from at least 365 stakeholders in 8 regional workshops and one national workshop. These activities are described in the sub-sections below.

In August 2018, through an inter-ministerial workshop with participation from the thematic areas of the Ministry of the Environment and Natural Resources, and a Workshop from the Extended Technical Advisory Committee, the five Strategic Options were reviewed and repetitions were identified among some of them; as a result, the decision was made to amend them, resulting in three Strategic Options with 22 REDD+ actions⁵⁸ (see Chap 4.3). The main focus was consolidating the Strategic Options that addressed the same topics.

In 2019, new participatory processes were carried out focused on preparation and validation of proposals consulting, with a grand total of 584 participants.

As a result of the consultation processes the first draft of the National REDD+ Strategy was prepared through three regional workshops, a national workshop and an expert meeting with 111 participants; another product was The Benefits Distribution Plan, which involved an initial consultation with each of the nine implementing agencies and a feedback workshop with 79 participants.

Two National Validation Workshops were held for the Environmental and Social Management Framework (ESMF), Feedback Grievance Redress Mechanisms (FGRM) and the Safeguards Information System (SIS). The first one was attended by institutions, academy, NGOs, Forestry producers Associations, private agroforestry and livestock representatives, all of them participants of the workshops carried out in 2017-2018, and another workshop with members of the Technical Advisory Committee (TAC) REDD + that were carry out in April 2019 with a total of 239 participants.

⁵⁸ Internal Ministerial Workshop 'Validation of Strategic Options, Actions and Programmes for REDD+', 8 August 2018. Extended Technical Advisory Committee Group Workshop, 14 August 2018. Meeting Aide-Memoire.

At the local level, 5 workshops were held to validate the Environmental and Social Management Plans (ESMP) in each of the prioritized REDD+ areas with 155 participants representatives of associations of forestry, livestock, agroforestry, women's groups, executing entities operating at the local level, NGOs, environmental groups and academies with presence in each of the areas. These workshops were organized in two moments. The first was to present NS REDD+ advances in the country, the UNFCCC and WB-OP's Safeguards and the constitutive elements of the Environmental and Social Management Plans. The second workshop was devoted to review the institutional arrangements, governance framework, good social and environmental practices to address the identified negative risks and the mitigation measures proposed in each ESMP.

5.1.3.1. Awareness-raising and capacity-building activities

The following stakeholders took part in the awareness-raising and capacity-building activities: i) technical staff from the Sub-Ministry of Agricultural Outreach and Training, of the Ministry of Agriculture, ii) Ministry of Labour, iii) Ministry of Finance, iv) Directors and technical staff from the Provincial Directorates of the Ministry of the Environment and Natural Resources, members of the TAC Safeguarding Working Group and Legal Issues Working Group, and vi) local organizations that participated in the regional SESA workshops.

For the **awareness process, 225 people** took part in the following activities:

- 4 workshops on REDD+, SESA, Environmental Management Framework (MGAS) and the Grievance Redress and Conflict Resolution Mechanism, with technical staff from the provincial and municipal Directorates of the Ministry of the Environment and Natural Resources, between October 2017 and January 2018, with 95 participants (61 men and 34 women) from 32 provinces and 12 municipalities.
- 1 workshop on the REDD+ Preparation Project for staff from different departments of the Ministry of the Environment and Natural Resources in October 2017, with 31 participants (17 men and 14 women).
- 1 workshop on the REDD+ Readiness Project for producers and communities, in December 2017, with 11 participants (9 men and 2 women).
- 1 workshop on the REDD+ Readiness Project for technicians from the Ministry of Agriculture, in March 2018, with 23 participants (18 men and 5 women).
- Participatory assessment workshop on the REDD+ Readiness Process, with 41 participants, held in October 2018 (R PACKAGE).
- Participatory workshop for the Private Sector on Forest/Agroforestry Development, with the participation of World Bank specialists and representatives from different organisations in the Private Sector, with 24 participants, held on October 2018.

For **capacity building**, activities were led with the participation of **73 people**, are detailed below:

- Methodology workshop for establishing the REFERENCE Level, with 9 participants, held in March 2018.
- Workshop for assessing causes of deforestation and forest degradation and identifying Reversal Risks, with 21 participants, held in March 2018.

- Capacity-building for members of the Safeguarding Working Group with the framework of the NS REDD+ and Safeguards of Cancun, delivered by RCPP/CARE in April 2018. There were 16 participants (10 men and 6 women).
- Training for members of the Legal Issues Working Group (May 2018) with 16 participants (7 men and 9 women), representing government bodies, academia and civil society. The workshop covered issues relating to carbon rights, Carbon Fund, global view focus, legal and regulatory concepts, as well as establishing the next steps.
- Training on the “Processing, analysis and interpretation of data from the National Forestry Inventory” (June 2018) with participation from 11 technicians from the Ministry of the Environment and Natural Resources (6 men and 5 women).
- Training on Costs Tool for REDD+ for Implementing Entities representatives (January 2019) 9 participants'
- Training on Geographic Information Systems to the National Meteorology Office (ONAMET) (February 2019) with 18 participants

5.1.3.2. Regional Workshops Causes of Deforestation and Forest Degradation

Four regional workshops and one national workshop were organized⁵⁹, with **192 participants**, as shown in Table 5.1.8, organized over 23 months of work, with the sectors linked to land-use and land-use change (private sector/producers, government, academia and civil society) in order to define and prioritize the main causes of deforestation and forest degradation in the Dominican Republic. Two strategic actions were established for each cause in each of the round tables/focus groups that were set up.

Table 5.1.8 **Total participants in the Regional and National Workshops on Causes of Deforestation and Forest Degradation**

REGIONAL AND NATIONAL WORKSHOPS ON CAUSES OF DEFORESTATION AND FOREST DEGRADATION		
Date	Activity	Location
03/06/2018	Causes of deforestation and forest degradation - Participatory Workshop	San Francisco de Macorís
03/07/2018	Causes of deforestation and forest degradation - Participatory Workshop	Santiago
03/08/2018	Causes of deforestation and forest degradation - Participatory Workshop	Santo Domingo
03/09/2018	Causes of deforestation and forest degradation - Participatory Workshop	Barahona-UCATEBA
05/09/2018	National Workshop on Causes of deforestation and forest degradation - Participatory Workshop	Santo Domingo
Total		192

⁵⁹ See workshop reports ‘Participatory process for the identification and analysis of the direct and indirect causes of deforestation and forest degradation, the non-enhancement of forest carbon stocks and the respective strategic options to counteract the regional causes of these in San Francisco de Macorís, Santiago de los Caballeros, Santo Domingo, Barahona, and national workshop.



Based on these causes that were identified and documented, the consultancy identified and fed back, through a consultation process, a list of potential options and actions that the country could adopt or promote to reduce deforestation and forest degradation.

The consultancy delivered its report to the Ministry of the Environment and Natural Resources, which selected 5 strategic options. These 5 strategic options were used for the regional and social workshops of the SESA process, in order to identify potential adverse and positive effects of implementing these options and to define mitigation measures and an environmental and social management framework.

5.1.3.3. SESA Workshops

For this process, firstly the political administrative division of the Ministry of Economy, Planning and Development (MEPyD) was considered, this being the body within the Dominican State that establishes the regionalization of the country into five regions and sub-regions. Secondly, the Ministry of the Environment and Natural Resources drafted a list of key stakeholders for each province, which was subsequently added to with more relevant organizations and institutions from different territories at the request of the workshop coordinator (PRONATURA). Thirdly, this list of stakeholders was submitted to the Technical Management Unit of the project, sorted by territorial level; regions and provinces, and by type of organizational and institutional stakeholders: public, private, academia and research groups, and civil society.

A Table was drafted including the region, sub-region, provinces, municipalities and groups of key stakeholders for each. With this input, the Ministry of the Environment and Natural Resources carried out visits to the various provinces and municipalities, establishing contact with other stakeholders which were included as a result of their role and impact, and sensitized to the work carried out by the Ministry within the framework of REDD+.

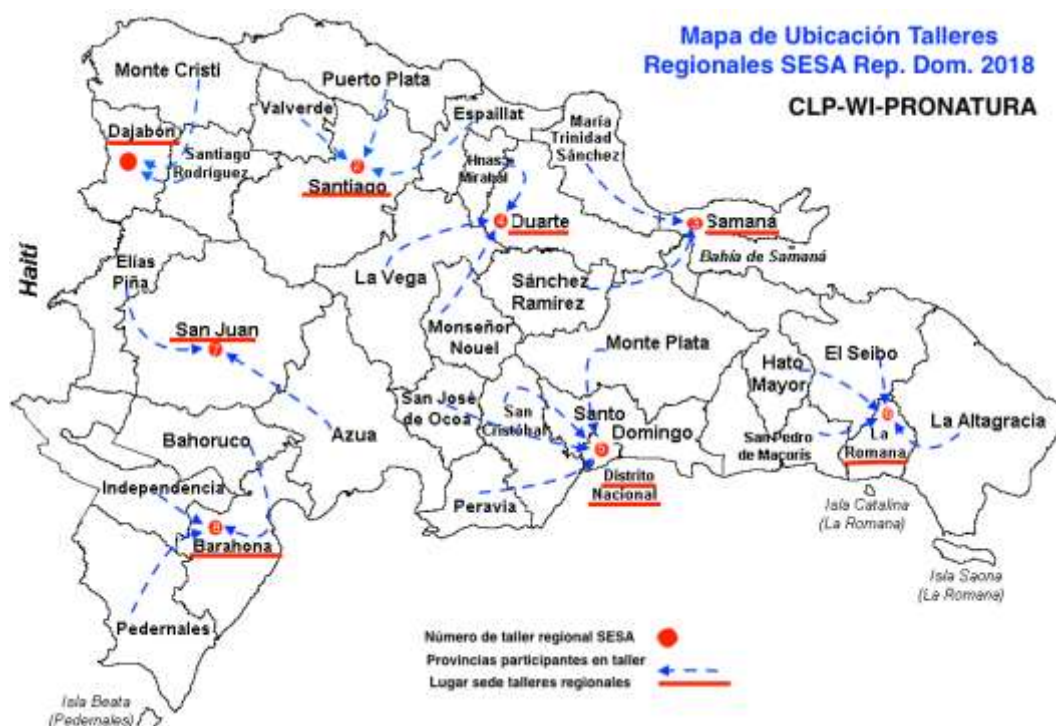


Figure 5.1-3 Map of the Location of Regional SESA workshops in the Dominican Republic

Furthermore, a series of awareness and contact meetings were held prior to the regional workshops, in order to present the Social and Environmental Strategic Assessment (SESA) process, discuss the importance of the participation of the different social groups and the verification and expansion of local groups and associations that could take part, as well as delivering basic information relating to the REDD+. As shown on Table 5.1.9, 86 people took part in these meetings (51 men and 35 women).

These preparation meetings were held with stakeholders from the private sector/producers, government and civil society, from 18 locations (provinces/municipalities) across the country. The sectors were represented in these meetings by 15 organizations from the Private Sector/Producers, 10 Civil Society organizations and 24 Government agencies (Provincial Directorates of the Environment and Agriculture).

Table 5.1.9 Total Participants in SESA Workshops Awareness and Preparation Visits

SESA WORKSHOPS AWARENESS AND PREPARATION VISITS			
Date	Activity	Participants	Location
05/03/2018	Organisations visit SESA Workshops Preparation	4	Bahoruco
17/04/2018	Organisations visit SESA Workshops Preparation	7	San José de las Matas
17/04/2018	Organisations visit SESA Workshops Preparation	4	Piedra Blanca, Bonao
17/04/2018	Organisations visit SESA Workshops Preparation	5	Bonao
17/04/2018	Organisations visit SESA Workshops Preparation	9	La Vega

SESA WORKSHOPS AWARENESS AND PREPARATION VISITS			
Date	Activity	Participants	Location
18/04/2018	Organisations visit SESA Workshops Preparation	7	Dajabón
18/04/2018	Organisations visit SESA Workshops Preparation	7	Santiago Rodriguez
18/04/2018	Organisations visit SESA Workshops Preparation	6	Montecristi
19/04/2018	Organisations visit SESA Workshops Preparation	4	Espailat
19/04/2018	Organisations visit SESA Workshops Preparation	5	Salcedo
20/04/2018	Organisations visit SESA Workshops Preparation	5	Nagua
24/04/2018	Organisations visit SESA Workshops Preparation	3	San Pedro de Macorís
24/04/2018	Organisations visit SESA Workshops Preparation	3	Hato Mayor
24/04/2018	Organisations visit SESA Workshops Preparation	4	La Altagracia
25/04/2018	Organisations visit SESA Workshops Preparation	6	El Seibo
25/04/2018	Organisations visit SESA Workshops Preparation	7	SMEs Centre
TOTAL		86	

5.1.3.4. Participation of stakeholders at the two regional and national levels

For the regional and national workshops, the participants were selected according the criteria of multiple stakeholders that were multi-sector, multi-level and with diverse interests, particularly encouraging participation from local communities and women at all levels. As observed in Table 5.1.10, a total of **365 people** took part throughout the regional and national SESA workshops process.

Table 5.1.10 Total participants Regional and National SESA workshops

Date	Activity	Participants	Location
16/05/2018	Strategic Environmental and Social Assessment Regional Workshop	48	Dajabón
17/05/2018	Strategic Environmental and Social Assessment Regional Workshop	45	Santiago
20/05/2018	Strategic Environmental and Social Assessment Regional Workshop	35	La Romana
23/05/2018	Strategic Environmental and Social Assessment Regional Workshop	38	Maria Trinidad Sánchez-Nagua
24/05/2018	Strategic Environmental and Social Assessment Regional Workshop	31	Duarte-San Francisco de Macorís
29/05/2018	SESA Strategic and Social Assessment Regional Workshop	35	Santo Domingo
06/06/2018	Strategic Environmental and Social Assessment Regional Workshop	43	San Juan de la Maguana
06/07/2018	Strategic Environmental and Social Assessment Regional Workshop	34	Barahona
25/07/2018	SESA Strategic and Social Assessment National Workshop	56	Santo Domingo-UNPHU
Total		365	

5.1.3.5. Participation by sector and gender in regional and National SESA workshops

The participation by gender and sector can be seen in Table 5.1.11. In terms of gender distribution, there were 237 men and 128 women. Meanwhile, the type of representation by sector shows that 108 people from the Civil Society/NGO Sector took part, where, representing 30%.

There were 16 participants from Academia and Research groups, representing 4%. There were 107 participants from the Private sector/Producers, representing 29%, and 134 participants from the Public sector, representing 37%.

Grupo de Actores/Sede del talleres Regionales y Nacional	Sector Público	Sector Privado/Productores	Academia y Grupos de Investigación	Sociedad Civil/ONGs	SubTotal	Hombres	Mujeres	Total
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Santiago de los Caballeros	15	22	3	13	53	39	14	53
Dajabón	16	17	2	13	48	33	15	48
Nagua	18	4	0	7	29	19	10	29
San Francisco de Macorís	20	2	0	9	31	20	11	31
Santo Domingo	15	6	2	10	33	19	14	33
La Romana	13	8	0	14	35	20	15	35
San Juan de la Maguana	12	23	0	11	46	33	13	46
Barahona	10	7	1	16	34	25	9	34
Santo Domingo (Nacional)	15	18	8	15	56	29	27	56
Totales	134	107	16	108	365	237	128	365

Table 5.1.11 Perfil total de participantes en el proceso de consulta SESA por sectores y sexo

5.1.3.6. Methodology and focus of the participatory process

The SESA Workshops were methodologically designed in two phases or parts:

- The first part focused on providing training and context to participants, in order to provide them with the necessary elements for them to participate more effectively.
- The second part consisted mainly of group work, using the “World Café” method. This made it possible to generate collaborative dialogue on important issues, generating exchanges of ideas, learning experiences, an understanding of the work produced by different groups, connecting ideas and experiences from each participant.
 - A key element and challenge in the methodology and focus applied was to guarantee participation with a gender focus. To do this in the workshops, from the convening stage, it was envisioned that the attendance of women would be in equal conditions to men, from the organizational stakeholders that are part of life in the provinces and regions of the country (Map of stakeholders).
 - The methodology used ensured that the position of women was explicitly demonstrated in relation to the different analyses and proposals that were made by participants of both genders.
 - To do this, the team of facilitators explained to participants that communications must be written on cards of different colours according to gender, so that points from men and women could be differentiated through the colours. In the workshops, emphasis was placed on integrating the positions of organized groups of women so that they, as organization representatives, had the space for dialogue and to analyse the social and environmental impacts in equal conditions with regard to the traditional organizations made up mostly of men.

5.1.3.7. Objective and characteristics of the regional and national SESA workshops

The **regional workshops** responded to two types of objectives. *The first objective* was focused on training interested parties on what REDD+ is, what the Social and Environmental Strategic Assessment (SESA) is, as well as the Environmental and Social Management Framework (MGAS) and Feedback Grievance Redress Mechanisms (FGRM), for them to be able to participate more effectively. A *second objective* was the identification of potential impacts arising as a result of the implementation of the REDD+ National Strategy through i) the presentation of key stakeholders of the REDD+ Strategy options approved by the Ministry of the Environment and Natural Resources; ii) the gathering of inputs and perspectives from key stakeholders at the local level on the potential impacts (negative and positive) of the proposed REDD+ option; iii) the gathering of viewpoints from local stakeholders on potential mitigation measures of the negative impacts identified and iv) the gathering of inputs and perspectives from the key stakeholders at the local level on the potential conflicts and disputes associated with the negative impacts identified.

The objective of the **national workshop** was to review and validate the possible positive and negative social and environmental impacts of the NS REDD+ Strategic Options identified by the relevant parties that participated in the regional workshops. The workshop:

- Provided basic information and training to national stakeholders on the REDD+ Strategy options approved by the Ministry of the Environment and Natural Resources, the Social and Environmental Strategic Assessment (SESA), as well as the Environmental and Social Management Framework (ESMF) and Feedback Grievance Redress Mechanisms (FGRM), for them to be able to participate and offer their own input during the workshop.
- Presented the progress on the analysis of social and environmental impacts of the NS REDD+ Strategic Options in the readiness process.
- Validated, together with participants, the preliminary results obtained in the regional workshops and supplemented by desk studies.
- Received input from national participants on the social and environmental impacts identified, by strategic option, prioritized so that they could be addressed.

5.1.3.8. National Validation Workshops: Environmental and Social Management Framework (ESMF), Feedback Grievance Redress Mechanisms (FGRM) and Safeguard Information System (SIS)

For the validation process of safeguards instruments (ESMF, FGRM, SIS), were considered of relevance the presence of actors that had previously participated during the SESA process, and in the analytic process of the MGAS design and definition of causes of forest degradation and deforestation, to guarantee continuity and coherence in the consultation process, while at the same time provide a sense of ownership of the REDD + EN development process and the Emissions Reduction Program, into the participants.

General and particular workshops reports were prepared to incorporate the common elements and the suggestions and recommendations obtained in them. These recommendations were already incorporated into each of the safeguard instruments. A matrix with the most relevant comments and the way in which they were incorporated into the different instruments of NS REDD+ and the ERPD are presented below:

Date	ACTIVITY	Participants
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April 11, 2019	National Validation Workshop for Environmental and Social Management Framework, (ESMF), Feedback Grievance Redress Mechanisms (FGRM) and Safeguard Information System (SIS)	50
April 12, 2019	Technical Advisory Committee (TAC) Validation Workshop for Environmental and Social Management Framework, (ESMF), Feedback Grievance Redress Mechanisms (FGRM) and Safeguards Information System (SIS)	34
TOTAL		84

5.1.3.9. Validation Workshops of the Environmental and Social Management Plans of the Prioritized Areas (ESMP)

Once the MGAS, FGRM and SIS were adjusted, a local consultation process was carried out in each of the 5 REDD+ prioritized areas to present and validate the different components of the ESMP.

A relevant key actors map was drawn up including public, private and social actors of the different institutions and organizations of those areas linked to REDD+ issues, achieving in this way inter-institutional, multi-actor and intersectoral participation, with a total of 155 participants.

DATE	ACTIVITY	PARTICIPANTS
April 22, 2019	Validation workshop of Environmental and Social Management Plan for prioritized area, Cotuí	38
April 23, 2019	Validation workshop of Environmental and Social Management Plan for prioritized area, San Francisco Macorís	30
April 24, 2019	Validation workshop of Environmental and Social Management Plan for prioritized area, Santiago Rodríguez	32
April 25, 2019	Validation workshop of Environmental and Social Management Plan for prioritized area, Las Matas de Farfán	10
April 25, 2019	Validation workshop of Environmental and Social Management Plan for prioritized area, Azua	28
April 26, 2019	Validation workshop of Environmental and Social Management Plan (ESMP) for Implementing Entities	17
TOTAL		155

5.2. Summary of the comments received and how these views have been taken into account in the design and implementation of the ER Program

Comments received and how they were taken into account when designing and implementing the Emissions Reduction Programme. Technical Advisory Committee

The working method used in the regional, national and Technical Advisory Committee workshops includes several stakeholders and sectors. As a way to promote integration and exchange of approaches, work was carried out in inter-stakeholder and inter-sectoral groups. Below is a list with the stakeholder concerns that

came up in the SESA, ESMF, SIS, FGRM and ESMP participation process and the way that they were taken into account for the design of the NS REDD+ and the ERP.

SESA COMMENT/CONCERN	FEEDBACK TO THE NS REDD+ ERP
Reduction of livelihoods and loss of income: Participants expressed concern that if prohibition, restriction and control measures are applied on the use of natural resources and/or slash-and-burn techniques, they could lose income, which would affect their quality of life and/or increase poverty.	The NS REDD+ integrated actions and programmes that include activities for improving productivity and profitability of agricultural and livestock products with the sustainable use of resources. In the measures established in the MGAS, specific measures are proposed that offer alternatives to potential restrictions in accessing resources in protected areas.
Involuntary displacements and removal: Involuntary displacement of communities through the establishment of protected areas and land-use change.	The NS REDD+ emphasised that REDD+ actions and programmes do not carry out activities that involve the involuntary displacement of people. For cases that involve involuntary restrictions in access to natural resources in protected areas, the Procedural Framework was developed that includes the measures, actions and procedures involved to avoid negative impacts on the affected population. (OP 4.12)
Social and economic exclusion of vulnerable groups They expressed that the REDD+ programme must not generate greater socioeconomic exclusion and must seek ways to guarantee a fair distribution of benefits.	Within the actions and progress proposed in the NS REDD+ is its implementation in communities with extreme poverty, including economically-vulnerable groups and small producers, livestock farmers and women.
Distribution of the benefits and payments to small producers and local communities. They expressed concern about how and which benefits and payments would be made through carbon capture to producers and owners of plantations and forests.	Within the NS REDD+ and the ERP, the Benefits Distribution System is being designed, and one of the principles of this system is fair distribution. Once drafted, it will be submitted and validated with the various public, private and community stakeholders through workshops and sessions with the various working groups: Land-use and Forest, Legal and Safeguarding, which operate under the Technical Advisory Committee.
Restriction of access to the benefits and non-recognition of rights for those who do not have land property titles. They expressed concern about the possibility of people who do not have property titles for the land being excluded from the REDD+ benefits.	The REDD+ actions and programmes provide for the application of alternative solutions such as the recognition of land ownership, where necessary.
Non-compliance on the part of the authorities and political cronyism: They expressed concern about whether what is being proposed will really be fulfilled, given the tradition of many politicians to promise and offer and then not deliver. In addition, they expressed fear that the programmes and benefits would be used to benefit only cronies and members of the political party groups.	REDD+ is a commitment that is undertaken and presented by Dominican authorities at the highest level. Both in the development and implementation of the Actions and Programmes, a series of principles, procedures, action frameworks and information systems have been defined to monitor fulfilment of social and environmental safeguards, as well as the operational policies of the World Bank. Additionally, the role of the Technical Advisory Committee to advise on and support implementation will serve as a compliance monitoring mechanism for the Feedback and Grievance Redress Mechanism (FGRM).
Non-application of laws and regulations by the authorities,	REDD+ is a commitment that is undertaken and presented by Dominican authorities at the highest level. Both in the

SESA COMMENT/CONCERN	FEEDBACK TO THE NS REDD+ ERP
Concern about whether authorities will be capable of applying laws and the consequences of violation, given the existence of previous cases where it is noticed that they do not act and violations of laws are permitted, or that they act with complicity, corruption and impunity in the face of violations of these laws.	development and implementation of the Actions and Programmes, a series of principles, procedures, action frameworks and information systems have been defined to monitor fulfilment of social and environmental safeguards, as well as the operational policies of the World Bank. Additionally, the role of the Technical Advisory Committee to advise on and support implementation will serve as a compliance monitoring mechanism. In addition, a Grievance Redress and Conflict Resolution Mechanism has been designed and implemented, which will be able to identify and offer solutions for any non-compliance issues that may arise.
Substitution and loss of native and endemic species: They expressed concern that a displacement of native species may occur as a result of species introduced for forest exploitation purposes (monoculture), or through the introduction of exotic species in reforestation projects, in order to make these more cost-effective.	The REDD+ actions and programmes will comply with the UNFCCC safeguards and the operational policies of the WB, in this case the policy relating to Natural Habitats and Forests. In REDD+ programmes, native species will be used with a preference for endemic species.
Discontent, resistance and disputes as a result of unilateral decisions: Ignorance on the part of decision-makers of the traditional production activities of the families affected generates discontent, resistance and disputes. In addition, they mentioned that disputes may arise as a result of resistance to the application of the new measures to restrict agriculture and livestock farming expansion, and/or resistance from stakeholders to the application of control measures for phytosanitary protection, if they are not properly consulted during the design of such measures.	Since the beginning of the NS REDD+ and ERP design and readiness work, consultation and participation mechanisms have been established for each of the stages and topics concerned. During the implementation phase, these consultation and governance mechanisms will continue to operate. In addition, the programmes are developed in coordination with existing federations and associations in the communities and/or representatives from them, and they are focused on improving the productivity and profitability of agricultural and livestock producers, with sustainable use of resources. The FGRM includes provisions for conflict resolution.
Phytosanitary measures and control: They established that phytosanitary programmes may negatively affect biodiversity and water resources, if implemented without carrying out an environmental impact assessment. They also expressed that phytosanitary control measures applied without the approval of rectification permits may cause irreparable damage to production.	The national institutions involved in the NS REDD+ have protocols established for applying phytosanitary measures. In addition, the REDD+ actions and programmes will comply with the UNFCCC safeguards and the operational policies of the WB, in this case the policy relating to Pest Management and Pest Integrated management Plan developed for the project.

ESMF COMMENT/CONCERN	FEEDBACK TO THE NS REDD+ ERP
In general, the participants agreed with the institutional arrangements and procedures set forth in the ESMF.	N/A
More information is required about the application of safeguards to better understand the procedures and reporting mechanisms. It is	Both in the Readiness and implementation phases, will be developed several training and communication actions regarding safeguards and compliance mechanisms. They are

key to prepare people for implementation process.	operationalized based on the steps established on the ESMF and ESMP.
It is necessary to strengthen training at all levels, both administrative and community level, on the application of procedures. It was suggested to carry out a pilot plan.	During the ESMF operationalization, training to EE's and different social and community actors have been considered. A facilitation team and a cascade training process will be created.
Emphasis was placed on the importance of providing constant support and close supervision by the REDD + Coordination Office (ORC) to the Executing Agencies to achieve a good implementation of the ESMF.	This is foreseen in the section of institutional arrangements of the ESMF and ESMP and will be one of the basic responsibilities of the OCR
It was suggested to include the TAC in the selection and evaluation phase of the REDD + subprojects. Also, that the TAC take a more active role in all processes to comply with safeguards.	The REDD + projects and program have already been selected, At consultation and validation processes carried out by the UTG in 2018, TAC participated. During REDD + implementation process, Ministry of Environment through the OCR must guarantee the continuity in the information / link and understanding of the governance structures and level of progress of the processes as planned for all REDD + phases.
It was suggested to consider the pertinence of forming a committee of Executing Entities, where they can share experiences, progress and receive guidance and support.	The suggestion is accepted and will be included as part of the inter-institutional agreements as an operational mechanism and coordination of actions for the implementation of NS-REDD + and ERP.
It is necessary to strengthen the linkage between institutions to guarantee collaboration and follow-up national and international commitments	This is one of ERP and NS REDD + strategic options. The development of strategic actions and activities to strengthen capacities of the EE, as well as the inter-institutional coordination mechanisms and governance, address this aspect and one of its objectives is to strengthen inter-institutional collaboration.
Emphasis was placed on strengthen technical and operational issues, provision of equipment and their maintenance at implementation phase in order to empower the implementers.	During the Readiness phase, it is planned to strengthen capacities of the EEs to incorporate the ESMF into their institutional systems. The commitments established by the highest level of the authorities and recorded in the inter-institutional agreements will establish the basis of legitimacy for efficiency and effectiveness of the

	ESMF. In addition, through the follow-up given by the OCR and TAC, opportunities for improvement and / or adjustments may be identified if necessary.
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FGRM COMMENT/CONCERN	FEEDBACK TO THE NS REDD+ ERP
Participants affirmed that the contents and steps of the FGRM are clear and appropriate. The concerns oscillated about population and institutions lack of knowledge on this mechanism. It will be needed to inform the population about their rights and training to use FGRM.	These concerns are in line with the diagnosis made for the mechanism design. In the dissemination, communication and training plans, preparation of informative, graphic, radio and training material are planned, according to the roles and responsibilities of the actors, both for Readiness and implementation phases.
Participants suggested that Training will be needed for technical, administrative personnel, local social actors and communities' groups.	Both in the Readiness and implementation phases, will be developed several training and communication actions regarding safeguards and compliance mechanisms. They are operationalized based on the steps established on the ESMF, ESM P and FGRM plans.
Participants understand that government institutions should be strengthened since currently the response to complaints or claims are slow and sometimes no response is given.	During the Readiness phase, will be strengthen the EEs capacities to incorporate the FGRM into their institutional systems. The commitments established by the highest level of the authorities and recorded in the inter-institutional agreements will establish the basis of legitimacy for efficiency and effectiveness of the FGRM. In addition, through the follow-up given by the OCR and TAC, opportunities for improvement and / or adjustments may be identified if necessary.
It was suggested to disclosed FGRM uses and access to the people.	It's already covered. Local actors, and the TAC are involved in the FRGM. Also regular reports will be placed online and are part of the Safeguards reports.
It was suggested to create another instance than the Ministry of Environment to receive the complaints	The complaints and claims may be received through local, regional or central offices of each Executing Entities, (digitally, by telephone and in person). In order to provide credibility and participation of key stakeholders, two representatives of community organizations, NGOs, academy or others, will be included in the correspondent step of the site analysis. On a regular basis, the OCR must submit the reports to the TAC regarding the amount and type of complaints and claims received and responses. The SIS also records this information.

	Finally, when there is an unsatisfactory response, the person or group may request the TAC its intervention as a channel to evaluate and make recommendations about the particular case.
Some participants proposed the creation of a social oversight Committee (which includes NGOs, universities, neighborhood committees or local groups) to ensure that problems generated by REDD + projects are analyzed and give timely response to the citizens. It was proposed that this alternative oversight mechanism be included in the structure according to type and scale of the reclaims at entrance point at the Ministry, so that this can serve as confirmation and verification of compliance with the MQRC procedures. It was also argued that this social oversight mechanism should be activated as an alternative space before the possibility of an unaccepted response.	Part of these suggestion is covered with the integration of communities' representatives in local complaints and sites analysis and evaluation and when there is an unsatisfactory response, the person or group may request the TAC its intervention as a channel to evaluate and make recommendations about the particular case. Nevertheless, this proposal will be studied and analyze with Implementing institutions and TAC.
Some participants suggested it would be clearer if term Non Accepted Response is changed for Non Satisfactory Response in information flow process.	It was explained that Non Accepted Response is used when there is a Non Satisfactory Response for the FGRM user.
Consider a mechanism that reduces the congestion of phone lines, so that they are always available in case of denunciations of REDD + projects.	It's already covered. There are several channels for reporting and accessing the FRGM.
Strengthen decentralization in the Ministry of Environment, so that the Provincial Offices can take decisions on certain complaints.	Since these proposal involves technical a, economical, institutional and political issues is related to objectives stablish in NS REDD+. Local offices will participate in levels established by law and procedures.
Participants mentioned the importance of creating trust and that users feel heard, so they can use this mechanism in an appropriate way	This is foreseen in the FGRM route implementation. To the extent that the established procedures are respected and complied with in a transparent and effective manner, it will contribute to the creation of user confidence.

SIS COMMENT/CONCERN	FEEDBACK TO THE NS REDD+ ERP
In general, participants agreed with the SIS institutional arrangements and safeguards. Process of reporting	N/A
Participants indicated the importance of training process on the virtual plataforma for users and that it must be simple structured.	SIS training is foreseen, both for Implementing Entities Technical personnel, and for different actors and relevant parties, it will be schedule when web infrastructure has been developed and the implementing entities start REDD + activities. In addition, the OCR will develop information and graphic training materials in an appropriate language to different audiences.
Participants highlight the importance to establish measurable indicators to verify safeguards compliance. They suggest that training should be offered on the indicators design and the collection of information.	UNFCCC and WB-OP Safeguard indicators are established in the national safeguard approach (SNS) and in SIS. In addition, they are included into ESMF and ESMP. SIS and indicators training to stakeholders and public, private and social key actors, have been considered.
It was suggested that the monitoring and reporting process on safeguards be continuous, through the reporting instruments and the SIS.	Collect information, reporting instruments and procedures are part of the ESMP and inter-institutional agreements that will be signed with the Implementing Entities, where the roles, times and reporting responsibilities are clearly defined
It was indicated that the technicians of the executing entities and beneficiaries associations must receive support during the process of preparing the information reports	ORC and EE responsibilities are clearly established in the institutional arrangements of the SIS.

6. OPERATIONAL AND FINANCIAL PLANNING

6.1. Institutional and implementation arrangements

Institutional competence for the implementation of the Programme

The institutional and operational arrangements of the Emissions Reduction Programme are based on the legal competencies and the judicial capacities of the institutions involved. Institutions from the public sector have the competences and the technical, political and supervision capacities which are underpinned

in a legal framework comprised of organic and special laws relating to the exercise of their state administrative function. Institutions from the private sector and civil society organizations are strengthened by their demonstrated capabilities, and through legal representatives duly registered and recognized in accordance with the procedures and criteria established by our legislation. The policies, actions and activities of the Emissions Reduction Programme are focused on supporting the implementation of this legal framework, meaning that these arrangements are closely linked with the current legislation and the competencies assigned to the various public and private entities in this regard.

In this sense, the institutional arrangements are established in the provisions of General Act No. 64-00 on Environment and Natural Resources, and supplementary legislation, and Act No. 496-06, which establishes the Ministry of Economy, Planning and Development (MEPyD), and Act No. 8 of 1965 which establishes the Ministry of Agriculture.

Governance structure for the implementation of the Emissions Reduction Programme

The Emissions Reduction Programme includes four (4) key elements proposed in the structure of governance:

- Institutional arrangements to strengthen coordination between sectors.
- National governance model that promotes the participation of various stakeholders at different levels in a country, under the principle of collaborative actions to obtain emission reduction results.
- Actions specifically designed to address the needs in terms of forests and climate change.
- Policies and programmes drawn up between the agricultural and forestry sectors that help to combine efforts and coordinate resources with other bodies.

The institutional arrangements planned for the implementation of the REDD+ Strategy and REDD+ actions are based on the consultation and participation processes, developed during the readiness phase, through which the foundations were established so that the REDD+ Programme in the Dominican Republic is sustained or supported by the implementation of projects and programmes from national governmental and non-governmental institutions.

To this effect, efforts to carry out the implementation and supervision of the Emissions Reduction Programme in the Dominican Republic have the support of a functional governance structure, where the parties involved in the implementation of the REDD+ Programme participate in the decision-making processes, through the bodies of which they are members. These bodies are: 1) a Steering Committee (SC); 2) a Technical Advisory Committee; 3) a REDD+ Coordination Office.

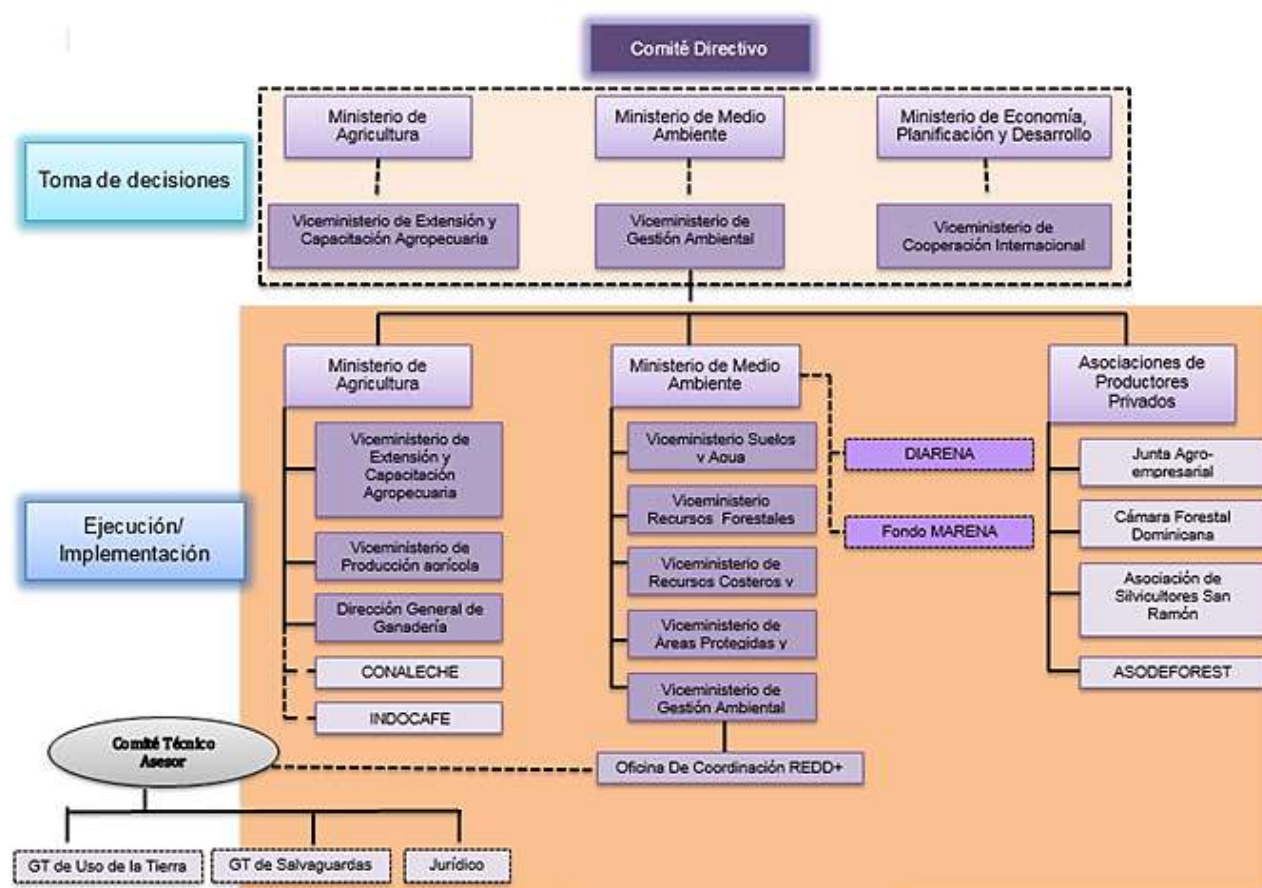


Figure 6.1-1 Outline of the Governance Structure for the implementation of the Emissions Reduction Programme.

1) Steering Committee

The Steering Committee has ministerial-level decision-making functions and is comprised of the Ministry of the Environment and Natural Resources, the Ministry of Agriculture and the Ministry of Economy, Planning and Development. One of the main functions of the Steering Committee is to guarantee the incorporation of the REDD+ focus in decision-making levels for the formulation of public policies linked to forest management and to land-use and land-use change.

Each of the ministries involved, within the framework of their prerogatives and remits as stipulated by law, has the following functions and attributions:

The Ministry of the Environment and Natural Resources “is the governing body for the management of the environment, ecosystems and natural resources, to fulfil the attributions that lie with the state in accordance with environmental legislation in general, in order to achieve sustainable development”⁶⁰. Article 18 stipulates that the key function of the Ministry of the

⁶⁰ Law No. 64.00+ On Environment and Natural Resources, Art. 17

Environment and Natural Resources is to formulate, plan, direct, coordinate, implement, supervise and assess the national environment policy applicable at all levels of government. Specifically, it is the national body that works at the political and technical level that is responsible for formulating national policies that will be implemented for the planning, management and supervision of forest resources, and the environment in general, and it coordinates with the regional forest authorities on the effective implementation, from a system perspective, of these policies, including forest investments. In addition, the Ministry of the Environment and Natural Resources has the power to propose national positions to the Executive Branch in relation to international negotiations on environmental issues and on the national participation in conferences of the parties to the international environmental conventions; propose signature and ratification; be the focal point for these; and represent the country in international environmental fora and bodies in coordination with the Secretariat of State for Foreign Affairs. In this sense, the Ministry of the Environment and Natural Resources is the national entity for REDD+ and the focal point for the UNFCCC and it also serves as the REDD+ focal point for the FCPF and UN-REDD.

The Ministry of Agriculture was established through Law No. 8 of 1965 (initially established as a Secretariat of State and subsequently designated Ministry through Executive Decree No. 56-10 of 6 February 2010) with the functions of formulating and leading agricultural policies in accordance with the country's development plans; as well as promoting the harnessing of the comparative and competitive advantages of the producers in the market; and contributing to ensuring food security, generating productive employment and foreign exchange, in order to improve living conditions among the population.

The Ministry of Economy, Planning and Development (MEPyD) Law 496-06 establishes and defines the MEPyD as the head of the National Planning System and assigns it the function of *“Driving and coordinating the formulation process, management, monitoring and evaluation of macroeconomic and sustainable development policies”*.

The MEPyD is the governing body for the formulation of macroeconomic and sustainable development policies in the country. In this sense, Article 4 of Law No. 496-06 grants the following attributions and functions, among others:

- a) To be the Governing Body of the National System for Planning and Public Investment and for the Land-Use.
- b) Formulate the Development Strategy and the National Pluriannual Public Sector Plan, including the necessary coordination at the municipal, provincial, regional, national and sectoral levels, to guarantee the due global coherence between policies, plans, programs and actions.
- c) Coordinate the formulation and execution of plans, projects and development programs of public agencies, included in the scope of the National Planning and Public Investment System.
- d) Establish policies on international non-reimbursable cooperation, in coordination with the State Secretariat for Foreign Affairs.

- e) Negotiate and agree with multilateral and bilateral funding agencies the definition of the country strategy regarding the identification of priority areas, programs and projects to be included in the programming of the aforementioned organizations.
- f) Define, in consultation with the agencies involved, the non-financial commitments agreed upon with the multilateral and bilateral organizations, following up on their compliance.
- g) Grant non-objection to public investment projects, regardless of their source of financing, which will be included in the National Multi-Year Plan and the Multi-Annual Budget of the Public Sector.

The strategy defines four objectives to reach this goal: a) To protect and make use of natural resources in a sustainable manner and to improve environmental quality; b) To manage water resources in a rational and sustainable manner, c) To develop an efficient and comprehensive national risk management system, with active participation from communities, and d) To make progress in adapting to climate change and in mitigating its causes.

In this sense, the Steering Committee provides political and strategic support for the implementation of the Emissions Reduction Programme. In addition, the function of the Steering Committee is to guarantee coherence and synergies between the REDD+ strategy and sectoral programmes from the institutions involved with development plans and policies, and with national poverty-reduction and sustainable development policies and plans.

The Ministry of the Environment and Natural Resources will carry out the functions of coordination, through the Sub-Ministry of Environmental Management and the Climate Change Division, responsible for the design of the REDD+ National Strategy and the proposed Emissions Reduction Programme. The objective is for the REDD+ Steering Committee is to ensure the progressive and continuous incorporation of REDD+ in public policies linked to the development of the country. In this sense, the REDD+ Steering Committee provides political and strategic support for the REDD+ strategy readiness and adoption among several sectors.

The Steering Committee is composed of representatives from each of the ministries listed below. International cooperation Representatives and agencies that support the REDD + initiatives, carried out by the country, may participate as guests. The Steering Committee is constituted as described below:

- **Ministry of the Environment and Natural Resources.**
- **Ministry of Agriculture.**
- **The Ministry of Economy, Planning and Development.**

In terms of the execution and implementation of the structure presented, Implementing Bodies were identified that correspond to the governmental and non-governmental institutions that bring together or comprise private producer associations, and which are currently applying short- and mid-term initiatives in various areas of the country, in order to establish and provide continuity for processes within the framework of the Emissions Reduction Programme, connected to specific existing projects. These Implementing Bodies are:

- **Ministry of the Environment and Natural Resources.**
 - Vice Ministry of Environmental Management
 - Sub-Ministry of Forest Resources
 - Sub-Ministry of Protected Areas
 - Sub-Ministry of Land and Water
- **Ministry of Agriculture.**
 - Vice Ministry of Agricultural Extension and Training
 - Sub-Ministry of Agricultural Production
 - General Directorate of Livestock
 - National Council for the Regulation and Promotion of the Milk Industry (CONALECHE)
 - The Dominican Institute of Coffee (INDOCAFE)
- **Ministry of Economy, Planning and Development**
 - Water Board (Resilient Agriculture Project and Integrated Water Resources Management)
- **Private Producer Associations.**
 - The Dominican Agro-Business Board (JAD)
 - Dominican Forest Committee
 - San Ramón Association of Foresters (La Celestina project)
 - Association for the Sustainable Development of Forest Restoration (*Asociación para el Desarrollo Forestal Sostenible en Restauración*) (ASODEFOREST)

2) Technical Advisory Committee

The role of the Technical Advisory Committee (TAC) is to provide consultancy and support. It is an inter-institutional body comprising institutions from the public and private sectors and from civil society. Its main objective is to provide technical advice, facilitate inter-institutional coordination and monitor the REDD+ implementation process. The Technical Advisory Committee will also facilitate and ensure the flow of information between the national institutions involved in the Emissions Reduction Programme implementation process.

This Technical Advisory Committee is made up of civil servants from various thematic and operational bodies in the public sector, such as the Ministry of the Environment and Natural Resources, Ministry of Economy, Planning and Development and the Ministry of Women. It also includes civil society organizations, such as non-governmental organizations (NGOs), producer organizations, grassroots groups, professional associations, academia and research centres.

The Technical Advisory Committee is made up of four specialized working groups, as follows:

The Safeguarding Working Group, made up of members of the Technical Advisory Committee and with representation from the different sectors involved. The mission of this Group is to support the construction of a national safeguarding focus for the REDD+ National Strategy, with participation in the analysis of risks and threats associated with REDD+ initiatives, through the

Strategic Environmental and Social Assessment (SESA), and to support the establishment of the Environmental and Social Management Framework (MGAS).

The functions of this group are:

1. To carry out working sessions necessary to develop the National Safeguarding Focus of the Dominican Republic.
2. Coordinate the issue of safeguarding with the other components of the NS REDD+.
3. Propose, through the Technical Advisory Committee and subject to its approval, management of the attaining safeguarding functions and goals.

The Land and Forest Use Working Group, made up of a specialised group within the Technical Advisory Committee, whose objective is to serve as a forum for consultation for this committee, and to provide support in the drafting and/or revision of key documents related to land-use and land-use change decision-making.

The Legal Issues Working Group, also composed of a specialised group from the Technical Advisory Committee, whose objective is to support the review that starts with amendments to the Dominican legal and institutional framework related to the implementation of REDD+. The main functions of this group are:

1. To review the results of the studies relating to the legal field in the framework of the project, proposing any pertinent improvements.
2. To strengthen the capacities of the participating institutions for the implementation of policies and measures for REDD+.
3. To suggest the necessary amendments in the legal and institutional framework of the Dominican Republic for the implementation of REDD+.

3) REDD+ Coordinating Office

To monitor the implementation of the REDD+ National Strategy, the Dominican Republic, intends to create a REDD+ Coordination Office. This office will develop and manage inter-institutional agreements, provide technical advice on REDD+ to Implementing Bodies, and it will be responsible for developing data collection processes for the projects and programmes, in order to meet the targets of the Emissions Reduction Programme. The REDD+ Coordination Office is made up of a multidisciplinary team with coordination and technical and financial advisory capacities, and it will be responsible for designing instruments and procedures that enable the project and programme Implementing Bodies to mitigate any possible environmental and social risks, and to comply with the safeguards identified.

The REDD+ Coordination Office will report to the Steering Committee and will be responsible for implementing the measures required for fulfilling the lines of action that make up the REDD+ National Strategy and the Emissions Reduction Programme. It will be made up of an administrative division and a technical division; both divisions will have operational responsibilities in the implementation of REDD+, in accordance with the working plans agreed by the Steering Committee. The functions of this office include the promotion and coordination of sectoral policies, planes, programmes and projects for implementing

the Emissions Reduction Programme, as well as the inter-institutional arrangements required to achieve the strategic goals of the programme.

Table 6.1.1 Institutions and roles for the implementation of the Emissions Reduction Programme

Entity	Role
REDD+ Steering Committee	• Senior political leadership. • Ensure consistency with the strategic objectives and actions of the NS REDD+. • Ensure the national political and institutional processes for the application and fulfilment of the Emissions Reduction Programme. • Ensure that political processes are exercised in strict compliance with the guidelines and rules of the institutional arrangements.
Technical Advisory Committee (TAC)	• Validate the project fact sheets as well as project document. • Where necessary, validate instruments drafted by the REDD+ Coordination Office associated with the fulfilment of the Operational Policies of the World Bank and other safeguards. • Provide technical support to the Implementing Bodies that will implement the projects at the local level, in the drafting of environmental material. • Validate the results of the systematization that the REDD+ Coordination Office will carry out on the periodic assessments of the projects implemented by the Implementing Bodies, with an emphasis on the recommendations for all the necessary cases that enable fulfilment of the Operational Policies of the World Bank and other safeguards. • Validate the systematization of monitoring and safeguarding reports to be carried out by the REDD+ Coordination Office. • Monitor fulfilment of inter-institutional agreements established with the Implementing Bodies. • The functions above will be closely connected to the work carried out by the REDD+ Coordination Office with the project Implementing Bodies. In this sense, the REDD+ Coordination Office shall establish coordination and long-term links with the Technical Advisory Committee, in order to verify the correct implementation of the Operational Policies of the World Bank and compliance with the safeguards.
REDD+ Coordinating Office	• Carry out the technical, economical, environmental and social feasibility analysis of the projects. • Draft the project fact sheets as well as project documents. • Carry out an assessment of the institutional capacity of the Implementing Bodies in order to address the approach to and respect of the environmental safeguards of the REDD+ National Strategy. • Provide technical support to the Implementing Bodies that will

	implement the projects at the local level. • Monitoring and systematization of monitoring and safeguarding reports. It will include periodic assessments of the fulfilment of the Operational Policies of the World Bank and other safeguards for the projects implemented, with feedback and recommendations delivered wherever necessary. This will include identification, based on information generated on the ground during implementation, of any regulatory gaps that may arise, as well as the proposed method for the amendment or correction thereof. • Draft inter-institutional agreements with the Implementing Bodies of REDD+ projects. • Develop support material for the application of safeguards such as guides and the minimum content requirements for each environmental and social management instrument. • Carry out periodic assessments of the fulfilment of the Operational Policies of the World Bank and other safeguards for the projects implemented with the Implementing Bodies, with feedback and recommendations delivered wherever necessary. This will include identification, based on information generated on the ground during implementation, of any regulatory gaps that may arise, as well as the proposed method for the amendment or correction thereof. • The functions above will be closely connected to the work carried out by the Implementing Bodies. In this sense, the REDD+ Coordination Office must establish continuous coordination with management and technical implementation representatives from REDD+ projects, in order to verify the correct implementation and time frames of activities and proposals to be implemented.
Implementing Bodies	• Provide input for external consultancy bodies, in coordination with the REDD+ Coordination Office, to draft the project fact sheets as well as project documents. • Apply project reporting instruments, in accordance with the procedures outlined by the REDD+ Coordination Office, for monitoring and systematization of data. • Participate in the periodic assessments of the projects implemented, that the REDD+ Coordination Office will carry out in compliance with the Operational Policies of the World Bank and other safeguards. • Submit project reports in accordance with the guidelines established by the REDD+ Coordination Office. • Apply environmental and social plans and the plans of activities and proposals contained in the documents of each Project. • The functions above will be closely connected to the work to be carried out by the Implementing Body, in line with the inter-institutional agreements signed.

6.2. ER Program Budget

This section presents an estimate of the budget required for the implementation of the Dominican Republic' Emissions Reduction Program. The estimated budget was elaborated based on the predefined components and activities of the National REDD+ Strategy EN-REDD+ predefined by the Government. For this analysis, 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 environment activities include actions such as reviewing and proposing new legislation for the sustainable managements of forests, strengthening institutional capacities for the management of National Protected Areas, etc. It is expected that these activities will contribute to creating the enabling conditions for the implementation of actions that will contribute to the reductions of carbon emissions, and for preparing the country for the receipt of REDD+ payments.

These activities are expected to be carried out by the GoDR and thus, are expected to be financed with resources from the Environment's existing programs, budget and other REDD+ cooperation programs. (ii) 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.

Commercial livestock farming stands out as the main direct cause of deforestation and degradation and it is expected that investments in other activities complement the investments of the sector. In this sense, work with farmers in a REDD + context will cover three important aspects: i) conservation of forests within the farms, ii) promotion of silvopastoral systems, iii) natural generation of tree species. The table below presents the public costs associated with the execution of the implementation activities.

A budget analysis exercise was used for estimating the cost of the ER-Program. This exercise calculated the costs of the program by estimating how much it will cost to implement each activity based on requirements of personnel, equipment, commuting, and other operational costs, and on information of government programs currently under implementation, such as it is the case of Quisqueya Verde. Information on the necessary inputs and the implementation costs of government Programs was provided by the Environment, who actively participated in constructing the Budget of the program. A similar approach was used for identifying sources of funding of the program. The potential payment for emissions reductions is considered for this analysis as a source of funding.

Public sector economic analysis

Tables 6.2.2 and 6.2.3. below presents a breakdown on a yearly basis of the costs and sources of funding for the five years' duration of the implementation of the 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.

Table 6.2.1 ER Program costs per activity (thousands of USD)

Expected use of public funds to develop REDD+ strategic actions		Year 1	Year 2	Year 3	Year 4	Year 5
Institutional costs	1.1. Promoting the approval, enactment and application of the Forestry Law and the Payment for Environmental Services Law	36	40	40	40	40
	1.2. Review, prepare and apply relative standards for the management of sustainable forestry	10	17	10	10	6
	1.3. Promote effective governance structures for the conservation of natural patrimony	32	3	3	3	3
	1.4. Define and apply legal mechanisms relating to land tenure and payment for environmental services in the REDD+ area	502	179	101	61	41
	1.6. Strengthen the institutional capacities of the entities responsible for implementing REDD+ activities	14	14	14	14	14
	2.1. Strengthen effective inter-institutional coordination mechanisms for coherence between public policies on the conservation, sustainable use and restoration of forests	12	12	12	12	12
Transaction costs	1.5. Strengthen forest monitoring and supervision mechanisms, including the determination of the legal origin, exploitation and trade of forestry products and by-products	33	19	19	19	19
	3.3. Develop programmes to raise the awareness and consciousness of key stakeholders in environmental education and sustainable forest management	64	29	29	-	-
	3.7. Establish an assessment and monitoring system for forest management	40	70	96	126	152
	3.8. Promote the management of natural regeneration of tree species among private farms and community organizations	81	400	1,036	1,679	2,324
	4. Costs of REDD+ Programme administration and supervision	2,591	3,191	3,506	2,646	2,111
Implementation costs	2.2. Establish new areas for forest management, reforestation, repair, protection of water basins, biodiversity conservation, and for other environmental services deriving from forest ecosystems	200	-	-	-	-
	2.3. Develop zoning programmes for crops, livestock and infrastructure, compatible with forest conservation	145	-	-	-	-
	2.4. Strengthen ecological management and restoration programmes in prioritised water basins	63	63	63	63	63

3.1. Strengthen reforestation and agroforestry plans and programmes such as the National Quisqueya Verde Plan and the Agroforestry Program	23,029	29,419	31,919	22,642	16,583
3.2. Encourage the incorporation of agroforestry systems for the management of farming and cattle raising lands and property	77	147	217	286	356
3.5. Strengthen the protection and supervision programme in protected areas relevant for the conservation of forest resources	756	756	756	756	756
3.6. Rehabilitate forest ecosystems in fragile areas relevant for facilitating connectivity between fragments of forest	69	69	69	69	69
3.9. Define and put into practice financial instruments and mechanisms to develop forest ecosystem production, conservation and restoration activities	406	406	406	406	406
3.10. Update and apply the National Fire Management Strategy in the Dominican Republic	79	12	12	12	12
3.11. Develop the programme for the restoration of ecosystems affected by forest fires	48	48	48	48	48
3.12. Strengthen the phytosanitary protection programme in forest areas of priority	100	100	100	100	100
TOTAL GOVERNMENT COSTS	28,385	34,994	38,454	28,992	23,115

Table 6.2.2 Sources of financing ((thousands of USD)

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	TOTAL
Government budget	Directorate of Protected Areas	1,134	1,134	1,134	1,134	1,134	-	5,670
	Directorate of Reforestation	9,637	9,637	9,637	9,637	9,637	-	48,185
	Directorate of Forest Management, which includes the Forest Fires division	997	997	997	997	997	-	4,985
	Protection and supervision agency made up of forest and park rangers and environmental inspectors	723	723	723	723	723	-	3,615
Donations and subsidies (non-refundable contributions)		-	-	-	-	-	-	-
Credit resources – IDB Credit: Agroforestry Program		12,980	19,369	21,869	12,593	6,534	-	73,345
Income from contracted reductions USD 5/tCO₂ (80% effectiveness)⁶¹		-	-	11,319	-	-	19,816	31,135
TOTAL GOVERNMENT RESOURCES		25,471	31,861	45,679	25,084	19,025	19,816	166,939

Table 6.2.3 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						

Private sector economic analysis

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. An opportunity costs analysis was used to estimate the economic potential costs and returns resulting from the adoption of REDD+ actions by the private sector. For this purpose, this analysis employed the FCPF Cost Assessment Tool. Tables below present the potential costs and benefits derived from private sector investments.

Table 6.2.4. Estimated costs of private sector complementary investments

Expected costs									
constant \$ thousands 2018									
	Actions of private sector agents	Year 1	Year 2	Year 3	Year 4	Year 5	Ys 6-10	Ys 11-15	Ys 16-20
Conservation/ Prevention	Prevent deforestation of broadleaved moist forest or rainforest	-89	-412	-706	-1,022	-1,367	-6,325	-6,534	-6,765
	Prevent deforestation of broadleaved dry forest	-20	-95	-162	-235	-314	-1,455	-1,526	-1,598
	Prevent deforestation of conifers	-13	-63	-115	-171	-233	-1,166	-1,231	-1,293

	Subtotal	-122	-571	-983	-1,428	-1,914	-8,946	-9,291	-9,656
Restoration/ Reforestation	Restoration of humid broadleaf forest in non-degraded forest	-	-782	-1,564	-2,346	-3,128	-19,938	-10,712	-2,111
	Restoration of broadleaved dry forest in non-degraded forest	-	-261	-522	-782	-1,043	-6,650	-3,573	-704
	Restoration of coniferous forest in non-degraded forest	-	-154	-307	-461	-615	-3,920	-2,106	-415
	Restoration/Reforestation of pastures in humid broadleaf forest or rainforest	-	-545	-1,091	-1,636	-2,181	-13,314	-12,035	-12,035
	Restoration/Reforestation of pastures in dry broadleaf forest	-	-277	-554	-831	-1,108	-6,762	-6,112	-6,112
	Restoration/Reforestation of pastures in coniferous forest	-	-155	-311	-466	-622	-3,794	-3,430	-3,430
	Subtotal	-	-2,174	-4,348	-6,522	-8,697	-54,378	-37,968	-24,808
Transformation/Agroforestry	Transform grassland into REDD+ agroforestry-coffee	-5,152	-7,028	-7,028	-7,028	-7,028	-1,876	-1,350	-
	Transform grassland into REDD+ agroforestry-cocoa	-6,025	-6,025	-6,025	-6,025	-6,025	-	-29,397	-
	Transform pastures into REDD+ silvopastoral grazing systems	-910	-910	-910	-910	-910	-	-	-
	Subtotal	-12,087	-13,962	-13,962	-13,962	-13,962	-1,876	-30,748	-
	Total per year	-12,209	-16,707	-19,293	-21,913	-24,573	-65,199	-78,007	-34,464
	Total estimated cost first 5 years	-94,695							

Table 6.2.5 Private sector benefits

Expected benefits		constant \$ thousands 2018							
	Actions of private sector agents	Year 1	Year 2	Year 3	Year 4	Year 5	Ys 6-10	Ys 11-15	Ys 16-20
Conservation/ Prevention	Prevent deforestation of broadleaved moist forest or rainforest	-	7	34	67	103	673	353	66
	Prevent deforestation of broadleaved dry forest	-	3	14	27	42	276	145	27
	Prevent deforestation of conifers	-	1	3	6	9	61	32	6
	Subtotal	-	10	51	100	154	1,009	530	99
Restoration/ Reforestation	Restoration of humid broadleaf forest in non-degraded forest	1,675	1,675	1,675	1,675	1,675	1,675	-	-
	Restoration of broadleaved dry forest in non-degraded forest	559	559	559	559	559	559	-	-
	Restoration of coniferous forest in non-degraded forest	329	329	329	329	329	329	-	-

	Restoration/Reforestation of pastures in humid broadleaf forest or rainforest	92	92	92	92	92	-	-	-
	Restoration/Reforestation of pastures in dry broadleaf forest	47	47	47	47	47	-	-	-
	Restoration/Reforestation of pastures in coniferous forest	26	26	26	26	26	-	-	-
	Subtotal	2,728	2,728	2,728	2,728	2,728	2,563	-	-
Transformation/Agroforestry	Transform grassland into REDD+ agroforestry-coffee	-	-	267	4,086	9,145	108,498	99,472	127,227
	Transform grassland into REDD+ agroforestry-cocoa	-	6,182	13,532	21,922	29,524	170,752	86,601	116,004
	Transform pastures into REDD+ silvopastoral grazing systems	-	588	1,177	1,765	2,353	14,709	14,709	14,709
	Subtotal	-	6,770	14,975	27,773	41,023	293,959	200,782	257,940
Total per year		2,728	9,508	17,755	30,601	43,905	297,532	201,312	258,040
Total estimated cost first 5 years		104,497							

Table 6.2.6 Costs and benefits resulting from direct activities (Thousands of US\$)

Program Cashflows (benefits - costs)								
	Year 1	Year 2	Year 3	Year 4	Year 5	Ys 6-10	Ys 11-15	Ys 16-20
Flow of net benefits = benefits - costs	- 9,481	- 7,199	- 1,539	8,688	19,332	232,332	123,305	223,576
Cumulative net benefits	- 9,481	- 16,681	- 18,219	- 9,531	9,801	242,134	365,439	589,015

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. In economic terms, break-even point will start in year 5 and net positives returns will continue during the next 15 years. In this sense, it is expected that benefits will outweigh costs guaranteeing the long-term sustainability REDD+ activities. Even though it is expected that in aggregated terms, private sector investments will generate positive economic returns in the short and the long run, at the individual level, many private actors face barriers to financing that prevent them from engaging in REDD+ activities.

Around 98% of the financial benefits derived from the execution of *transformation activities*, namely: REDD+ Cocoa and, Coffee agroforestry systems, and silvopastoral cattle ranching. It is estimated that interventions will be carried out progressively during the 5 years of the program. Current assumptions assume that 20% of total activities will be implemented every year. For this purpose, implementation is measured in numbers of hectares intervened.

During the 20-year period, *transformation activities* are expected to cost around US \$ 100,6 million or about 37% of the total costs of private sector actions. A 20-year investment horizon was used for estimating the potential costs and returns resulting from the implementation of private sector investments activities. A 20-year investment horizon was used for 2 reasons: 1. Production cycles of long terms crops such as cacao



exceed 5 years. Thus, presenting a 5-year investment horizon will not be adequate as it would not allow to capture and reflect the economic benefits of long-term investments. 2. Implementation of transformation activities is expected to happen gradually, thus a longer investment horizon is required.

This analysis provides a powerful input for policy design in terms of strategy financing and on how to engage the private sector in REDD+ activities. The economic analysis presented in this chapter 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. The financial plan is expected to be concluded by August 30, 2019.

Further details can be found in the [Attachments 1, 2 and 3](#) of the financial study for a better understanding of cost and financing of the program.

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 7.1.1 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 3,203,463 tonnes CO _{2e} *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 forest lands that remain as such, through multi-temporal visual assessment on high-resolution images. The annual emissions average from this source is 567,240 tonnes CO _{2e} *year ⁻¹ .
Enhancement of carbon stocks in forest remaining forest	Yes	Carbon removal as a result of the restoration of tree crown cover in forest lands that remain as such is estimated using the same methodology used to calculate emissions arising as a result of forest degradation. The annual removals average from this source is -968.088 tons CO _{2e} *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 -2,140,071 tons CO _{2e} *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 7.2.1 Carbon pools included in the reference level

Carbon Pools	Selected?	Justification/Explanation
Above-ground biomass (AGB)	Yes	The final results of the National Forestry Inventory of the Dominican Republic ⁶² and the Assessment of the biomass and carbon content in non-forest systems ⁶³ include the estimation of above-ground Biomass for the main types of forest and non-forest uses. According to these results, the above-ground biomass represents 15.3% of total Carbon (AGB + BGB+ dead leaves + dead material + carbon in the soil). It has above-ground biomass accumulation levels in forest ecosystems, which is specific to the country ⁶⁴ .
Below-ground biomass (BGB)	Yes	Underground biomass in forests and non-forest systems is calculated using the Cairns equation ⁶⁵ . The below-ground biomass represents 3.6% of the Total Carbon (AGB + BGB+ dead leaves + dead material + carbon in the soil).
Litter	Yes	The National Forestry Inventory of the Dominican Republic and the Assessment of the biomass and carbon content in non-forest systems include the assessment of the carbon content in dead leaves, dead material and carbon in the soil. According to these estimations, the dead leaves, dead material and carbon in the soil represent 0.4%, 1.0% and 79.6% of total Carbon (AGB + BGB+ dead leaves + dead material + carbon in the soil). This information is available for all land cover classes (forest and non-forest). No data are available on changes of dead leaves, dead material and carbon in the soil over time. Due to the high potential for soil recovery resulting from the restoration of the landscape through natural regeneration and the establishment of agroforestry systems, the Government maintains the SOC in the NREF, but is currently excluded in the estimation of ER- The estimation of soil carbon (SOC) will be improved by increasing the sample and improving the sampling design taking into account the type of soil. See adjustments to Table 9.1.2 and Work plan for the
Deadwood	Yes	
Soil C	Yes	

⁶² The statistical basis and final report of the Dominican Republic National Forestry Inventory can be accessed at the following links:

<https://app.box.com/s/9vui2sfla6hgntpgd0a7fnt6afsgfqf>
<https://app.box.com/s/tb9p4bvk8sl753d56wief9h2uirlysng>

⁶³ The biomass estimations for each plot in the non-forest inventory can be accessed at the following link:

<https://app.box.com/s/1oc06gq3gb777gbj6aloxv30qn4wqd0r>

⁶⁴ Sherman, R. E., Fahey, T. J., Martin, P. H., & Battles, J. J. (2012). Patterns of growth, recruitment, mortality and biomass across an altitudinal gradient in a neotropical montane forest, Dominican Republic. *Journal of Tropical Ecology*, 28(5), 483–495. <http://doi.org/10.1017/S0266467412000478>

⁶⁵ 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>

		reduction of uncertainty in the estimation of emissions during monitoring events, in section 9.
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Table 7.2.2 Greenhouse gases included in the reference level

Greenhouse gases	Selected?	Justification/Explanation
CO ₂	Yes	The ER Program account for CO ₂ emissions and removals
CH ₄	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 (609,051 tCO ₂ e*year ⁻¹), according to the Third Communication (the CH ₄ y N ₂ O emissions are estimated to be 381.61 tCO ₂ e*year ⁻¹).
N ₂ O	No	

8. REFERENCE LEVEL

The Reference Level is established at the national level and includes the emissions and removals produced as a result 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 land that remain as forests (emissions from forest degradation and removals from recovering forests).

Table 7.2.3 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 such. 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**.

This reference period is defined as a result of the Ministry of the Environment of the Dominican Republic who is developing a consistent series of land-use maps for the years 2005, 2010 and 2015. These maps are developed using the same technology and they use the same classification algorithms, in order to produce a land-use map series in accordance with the application of IPCC Focus 3. The country is in the process to validate a new LC-map procedure, with the help of Terrapulse, which, once approved, would enable the country to produce annual LC change maps from 2002 – 2018, with the reference period from 2006-2018. The improvement of the reference scenario will then be presented before the signature of the ERPA.

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 FAO⁶⁶. 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 metres 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 agricultural wooded 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 surface area of agricultural wooded crop areas produced during the implementation of the ERP (see action 3.2 in Table 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% (in the ERPD this area is estimated at 318,288 has between 2005- 2015 with a few changes over time, Table 8.3.6). 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 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 flow estimate as a result of degradation is estimated in gross form, with losses (degradation) and gains (increase in carbon reservoirs) of carbon stocks being considered 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

⁶⁶ FAO. (2015). GLOBAL FOREST RESOURCES ASSESSMENT 2015 National Report. Dominican Republic.

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

The reference level includes the average emissions and removals derived from the reference period, thereby complying with indicator 13.1 of the Methodological Framework. The greenhouse gas emissions due to deforestation and degradation are estimated with the “stock-change approach”, as put forward in Chapter 2, vol. 4 of the 2006 IPCC guidelines⁶⁷ (Equation 1). The changes in carbon stocks in the accounting area are calculated by the gain-loss method, as set out in Chapter 2, vol. 4 of the 2006 IPCC guidelines (Equation 2). Changes in carbon stocks are calculated as the sum of the annual changes in the above ground biomass (AGB) for each of the categories of change. The areas where both approaches are applied are spatially separate, to avoid double counting.

$$\Delta C = \frac{(C_{t_2} - C_{t_1})}{(t_2 - t_1)} \quad \text{Equation 1}$$

ΔC : Annual change in carbon stocks in the reservoir, t C yr⁻¹

C_{t_1} : Carbon stocks in the reservoir at the start of the period C_{t_1} ; t C.

C_{t_2} : Carbon stocks in the reservoir at the end of the period C_{t_2} ; t C.

$$\Delta C_B = \Delta C_G - \Delta C_L \quad \text{Equation 2}$$

ΔC_B : Annual change in carbon reserves in the biomass, in tonnes (t C yr⁻¹)

ΔC_G : Annual increase in the carbon reserves due to biomass growth, in tonnes (t C yr⁻¹)

ΔC_L : Annual decrease in carbon reserves due to the biomass losses, in tonnes (t C yr⁻¹)

Description of method used for calculating the average annual historical emissions over the Reference Period

Table 8.3.1 shows the categories of use considered in the classification of land use and land cover (LULC) for developing the reference level. It was necessary to harmonize the categories of use and cover in the 2005 and 2015 maps with those used in the assessment of the biomass and carbon content in non-forest systems and the Dominican Republic National Forestry Inventory. The categories of the land-use maps and biomass inventory plots were reclassified in accordance with levels 1, 2 and 3 detailed in Table 8.3.1. Once the categories were reclassified, the use change matrix was developed to calculate the Forest Reference Emission Level (FREL) for the Dominican Republic, detailed in Table 8.3.2. Through this transition matrix, 28 categories of land-use change were identified to be considered in the calculation of the FREL (Table 8.3.3).

⁶⁷ IPCC, 2006. IPCC Guidelines for National Greenhouse Gas Inventories. Volume 4 Agriculture, Forestry and Other Land Use.

Table 8.3.1 Categories of use considered in the classification of land use and land coverage (LULC)

Categories of use			Categories of use for GHG inventories (IPCC) ⁶⁸	Humidity province ⁶⁹	Category land-use maps 2005, 2010 y 2015 ⁷⁰	Category Biomass Inventory ^{71 72}	Number of Plots ⁷³ Phase 1 + Phase 2
Level 1	Level 2	Level 3					
Forest Land	1. Broadleaf humid or rain forest and Mangrove	Humid or wet broadleaf forest	Forest Land	humid, very humid and wet	Mature broadleaf forest	Humid broadleaf forest	45+26
						Broadleaf cloud forest	4+7
		Mangrove forest		dry, humid and very humid	Mangrove forest	Semi-humid broadleaf forest	13+133
						Mangrove	10 (6 and 4) + 61
	2. Dry forest	Dry forest		dry	Dry forest	Dry forest	26+42
	3. Conifers	Conifers	dry, humid, very humid and wet	Dense pine forest	Dense coniferous forest	8+8	
				Sparse pine forest	Dispersed coniferous forest	23+18	
	4. Agricultural tree crops	Cocoa	Cropland	dry, humid, very humid and wet	Cocoa	Cocoa	40
					Tree shaded coffee	Tree shaded coffee	Tree shaded coffee
		Fruit		dry, humid, very humid and wet		Coffee	Coffee
					Crop	Mango	7
Avocado	8						
Non-forest land	5. Woody vegetation	Coconut	Cropland	dry, humid and very humid	Coconut	Coconut	15

⁶⁸ IPCC. (2003). Good Practice Guidance for Land Use, Land-Use Change and Forestry. Institute for Global Environmental Strategies (IGES). Retrieved from https://www.ipcc-nggip.iges.or.jp/public/gpplulucf/gpplulucf_files/GPG_LULUCF_FULL.pdf

⁶⁹ Map of Holdridge life zones for Central America and the Dominican Republic (<http://www.arcgis.com/home/item.html?id=a4fa49bf75bc48bd8e73d3f2af3f815a>)

⁷⁰ Ovalles, P. 2018. Consultation Drafting of Land Use and Land Cover 2015 Analysis of Changes and Map of Deforestation in the Dominican Republic. Emissions reduction due to deforestation and forest degradation (REDD+). Final Report. 70 pages

⁷¹ Ministry of the Environment. 2017. Assessment of biomass and carbon content in non-forest systems in the Dominican Republic. Field Manual. Forestry Monitoring Unit REDD+ Preparation Project. 54 pages

⁷² Ministry of the Environment. 2015. National forest inventory of the Dominican Republic: 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

⁷³ Inventory planning and pre-sampling data (Personal communication, Ramón Díaz, Head of Forest Monitoring Unit)

Categories of use			Categories of use for GHG inventories (IPCC) ⁶⁸	Humidity province ⁶⁹	Category land-use maps 2005, 2010 y 2015 ⁷⁰	Category Biomass Inventory ^{71 72}	Number of Plots ⁷³ Phase 1 + Phase 2
Level 1	Level 2	Level 3					
		Broadleaf humid or wet shrubland		humid, very humid and wet	Broadleaf shrubland	Broadleaf shrubland	17
		Dry broadleaf shrubland		dry	Dry shrubland	Dry shrubland	25
		Natural and planted palm		humid and very humid	Natural and planted palm	<i>Not included</i>	0
	6. Non-woody vegetation	Grassland	Grassland	dry, humid, very humid and wet	Grassland	Grassland	25
		Annual crops and cane	Cropland		Rice, vegetables, grains, musaceous plants	<i>Not included</i>	0
		Bare land	Cropland		Bare land	<i>Not included</i>	0
		Urban area	Settlements		Urban area	<i>Not included</i>	0
	Other uses	Water bodies	Wetlands	dry, humid and very humid	Water bodies	<i>Not applicable</i>	<i>Not applicable</i>

Table 8.3.2 **Land use change matrix used to calculate the Forest Emissions Reference Level of the Dominican Republic**

LULC category				2015																
				Forest						Non-Forest										
				1. Broadleaf forest		2. Dry forest		3. Pine		4. Tree shaded crops	5. Woody vegetation			6. Non-Woody vegetation						
				Degraded	Intact	Degraded	Intact	Degraded	Intact											
2005	Forest	1. Broadleaf forest	Degraded	S	E					Transition to Tree Shaded Crops	Forest land converted to Woody vegetation	Forest land converted to Non-Woody vegetation								
			Intact	D	S															
		2. Dry forest	Degraded			S	E													
			Intact			D	S													
		3. Pine	Degraded					S	E											
			Intact					D	S											
	4. Tree shaded crops			Transition to natural forest						E										
	Non-Forest	5. Woody vegetation			Woody vegetation converted to forest land										Land that remains as Non-forest land					
		6. Non-Woody vegetation			Non-Woody vegetation converted to forest land															
	7. Water				Transitions to and from water bodies are not included															
	No information				Transitions to and from without information are not included															

S: Stable, E: Increase of canopy cover, D: Loss of canopy cover

Table 8.3.3 Change categories considered for calculating the Forest Reference Emission Level of the Dominican Republic

IPCC transition category	Transition Code	Transition		Sampling points on Land-Use Change Map 05-15
		Origin	Destination of use	
Forest land that remains as forest land <i>TF-TF</i>	1	Humid or wet broadleaf forest	Stable (S)	418
	2		Enhanced (E)	
	3		Degraded (D)	
	4	Dry forest	Stable (S)	152
	5		Enhanced (E)	
	6		Degraded (D)	
	7	Conifers	Stable (S)	151
	8		Enhanced (E)	
	9		Degraded (D)	
	10	Tree-shaded crops	Stable (S)	130
	26	Tree-shaded crops	Humid or wet broadleaf forest	6
	31		Dry forest	0
	32		Conifers	0
	27	Humid or wet broadleaf forest	Tree-shaded crops	2
	33	Dry forest		0
	34	Conifers		0
Forest land converted to non-forest land (deforestation) <i>FL-AL and FL-OL</i>	11	Humid or wet broadleaf forest	Woody vegetation	28
	12		Non-woody vegetation	40
	13	Dry forest	Woody vegetation	9
	14		Non-woody vegetation	8
	15	Conifers	Woody vegetation	6
	16		Non-woody vegetation	11
	30	Tree-shaded crops	Woody vegetation	0
	28		Non-woody vegetation	10
Land converted to forest land <i>AL-FL and OL-FL</i>	17	Woody vegetation	Secondary humid or wet broadleaf forest	56
	18		Secondary dry forest	41
	19		Regeneration of conifers	16
	29		Planting tree-shaded crops	2
	20	Non-woody vegetation	Secondary humid or wet broadleaf forest	62
	21		Secondary dry forest	14
	22		Regeneration of conifers	9
	23		Planting tree-shaded crops	9
	24	Woody and non-woody vegetation	Woody and non-woody vegetation	853
No information	25			60
Total				2,083

Activity data and emission factors used for calculating the average annual historical emissions over the Reference Period

The work flow for estimating the activity data and the associated uncertainty is shown in Figure 8.3.1. First, the activity data were calculated on the basis of land-use maps for the years 2005 and 2015⁷⁴, developed by Ovalles (2018)⁷⁵. These maps are based on the processing of medium resolution optical satellite images from the sensors of the LandSat ETM and OLI (LandSat 7 and 8) programme, consisting of multispectral bands which allow discrimination between the various types of forest and land use. These were used to prepare cloud-free mosaics through the use of *Google Earth Engine (GEE)* algorithms. Supervised and non-supervised classification methodologies were applied. The preparation of the cover and land-use maps for 2005 consisted in the enhancement and separation of more detailed types of map already in existence, drawn up from the same sources. For the 2015 map, the classification system of the GEE platform was used. This constitutes the first experience of the use of this tool in the country. Finally, the maps were reclassified into land-use categories according to Level 2 of Table 8.3.1. Consistency was thus guaranteed between the land-use categories and the data available from the biomass inventories carried out on forest and non-forest land.

The land-use change map for the reference period 2006-2015⁷⁶ was obtained from the reclassified maps and through cartographic comparison (see Figure 8.3.2), and the land-use change matrix created is shown in Table 8.3.4. It should be noted that the land-use change matrix obtained on the basis of these maps shows inconsistent transitions between the various types of forest; for example: i. 10,494 ha of Pine in 2005 to Broadleaf forest in 2015, ii. 5,294 ha of Water bodies to Non-woody vegetation.

The land-use change map was assessed by applying the good practices and procedures identified by Olofsson *et al.* (2014)⁷⁷. It is important to clarify that even though good practice recommends validation of the mapping output by means of stratified sampling completing the minimum number of plots in categories with low representation, due to the presence of inconsistent transitions the decision was made to use a systematic grid and to generate activity data directly, as the mapping output was not validated.

In relation to the methodology variation of Olofsson *et al.* (2014) using systematic sampling (SS), it should be noted that the Methods and Guidance from the Global Forest Observations Initiative (GFOI, 2016) considers 3 types of probabilistic sample for estimating uncertainty in an area and changes in the area. The sample designs to consider are: a. Simple Random Sampling (SRS), b. Systematic Sampling (SS) and c. Stratified Random Sampling (SRS).⁷⁸

⁷⁴ A copy of the 2005 and 2015 land-use and cover maps can be obtained by following this link:
<https://app.box.com/s/arz3wnpbok8d44oote62yl6yvixb0ii3>

⁷⁵ 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, Dominican Republic

⁷⁶ A copy of the 2005-2015 land-use change map can be obtained by following this link:
<https://app.box.com/s/ius6ih679rxxzjaf9b75w5hv7ip51rsm>

⁷⁷ 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. <http://doi.org/10.1016/j.rse.2014.02.015>

⁷⁸ GFOI 2016, Integration of remote-sensing and ground-based observations for estimation of emissions and removals of greenhouse gases in forests: Methods and Guidance from the Global Forest Observations Initiative, Edition 2.0, Food and Agriculture Organisation of the United Nations, Rome

The reference data were thus assessed by means of a 5 x 5 km (1,942-point) systematic grid in order to guarantee the even distribution of the sample of points between all the change categories. The density of the systematic grid was estimated on the basis of an analysis of the systematic sample of 474 assessment points, developed by Ovalle (2018). In accordance with this analysis, a 1942-sized sample implies a standard error in the overall precision of $S(\hat{\theta}) = 0.01$. It is important to specify that for the categories of conversion of pine to woody vegetation (15) and to non-woody vegetation (16), it was necessary to intensify the sample by 141 additional points, by means of an intensified 1 x 1 km grid nested on the 5 x 5 km grid. The total number of sampling points is 2,083 (Figure 8.3.2).

Together with the MRV team, the various aspects of the Sampling Design for the reference points were established (*Response Design*): i. Visual assessment unit; ii. Sources of reference data; iii. Classification protocol; iv. Land-use categories; v. Visual assessment tools. Quality control and assurance procedures were also established: i. Photo interpretation bias control; ii. Control of variability between photo interpreters; iii. Verification of the photo interpretation and iv. Data consistency control. Annex 1. Multitemporal visual assessment protocol for obtaining reference data for estimating activity data uncertainty.⁷⁹

The estimations of the change areas with their respective uncertainty levels are set out in Table 8.3.6. Based on the reference point, the activity data uncertainty was analysed for each change category at a significance level of 90%. In addition, the areas of each of the change categories were adjusted using its respective standard error. These areas with their respective error are used to calculate the reference level, and uncertainty was analysed using the Monte Carlo method.

The area estimates set out in column F of Table 8.3.6, were made using the reference data obtained through systematic sampling. The area accuracy and estimations and their confidence intervals were estimated using the interactive "Accuracy Assessment" application developed by Open Foris⁸⁰ (FAO, 2016)⁸¹. This uses "R shiny" and implements the formula for random stratified sampling using the land-use change categories of the map as strata, in accordance with Oloffson et al (2014).

The estimates of the areas of crown cover change are calculated on the basis of the 721 plots subjected to visual coverage assessment on land that remains as forest. The estimation of change area " k " and its respective confidence limits are calculated in accordance with k ", where k " is the total area of the country, and k ", where k " is the number of plots in category k " and k " is the total number of plots assessed. The standard error for the estimated area is estimated as $S(\hat{A}_k) = A S(\hat{p}_k)$. The 90% confidence limit is calculated as $\hat{A}_k \pm 2.3 S(\hat{A}_k)$, where $\hat{A}_k \pm 2.3 S(\hat{A}_k)$.

Finally, according to the mapping validation, the area calculated by cartographic comparison of the 2005 and 2015 land-use and coverage maps (column E in Table 8.3.6) falls within the confidence interval of the change categories (column K in Table 8.3.6) in only 10 of the 28 change categories. In anticipation of this situation, the Government of the Dominican Republic (GdRD), with the support of the World Bank, contracted the company TerraPulse Inc (<https://www.terrapulse.com>), to estimate the activity data on

⁷⁹ <https://app.box.com/s/pdkqxqjxab12ygeo02sk5zzpj90cq3aq>

⁸⁰ <https://github.com/openforis/accuracy-assessment>

⁸¹ FAO. (2016). Map Accuracy Assessment and Area Estimation Map Accuracy Assessment and Area Estimation: A Practical Guide, (46), 69. Retrieved from <http://www.fao.org/3/a-i5601e.pdf>.



deforestation, forest degradation and carbon stocks increase using the annual time-series analysis of Landsat data.

TerraPulse is developing and applying data extraction and automatic learning algorithms to large volumes of satellite images in order to monitor deforestation and degradation, based on 4 categories of canopy cover: intact forest (>85% of cover), degraded forest (between 60-85% of cover), severely degraded forest (between 30-60% of cover) and non-forest (<30% of cover), and average cover of each class was estimated for the periods 2001-2005, 2006-2010, 2011-2015, and 2016-2018 using the average values taken from all of the pixels over 5 years. The deforestation, reforestation and degradation (taking into account the two degradation classes) are estimated annually from 2001 to 2018, based on the canopy cover and probability of change in cover from one year to another. The aim is to generate annual change matrices and periodic matrices for the 2006-2010, 2011-2015 and 2016-2018 periods between the 4 categories and subsequently convert these changes into types of forest and other uses, according to the 2015 land use map. These will then be used to develop the improved reference scenario.

The process offers long-term and consistent mapping and monitoring of forest cover and allows the retrieval of historical reference lines from the satellite record, as well as the detection of deforestation, degradation and growth over time. It also facilitates the calibration of easily available sources of reference data (for example, LiDAR, Olofsson type sample) (Sexton et al. 2013)⁸² and adaptation to any national definition of forest (Sexton et al. 2016)⁸³. The methodology and results are in the process of being validated, using the methodology developed by Olofsson (2014), selecting 5000 sampling points based on a stratified map, with three major strata: stable forest, stable non-forest, buffer area around the changes observed over time. The number of points in each stratum will be weighted against the probability of error. The validation process will be carried out during May-June 2019 and the post-processing activities from July-October, in order to present the adjusted reference scenario before December 2019.

If this new mapping output is duly validated and the results accepted, the activity data calculated on the basis of this output will be used in estimating reference levels and applied before the signature of the ERPA (See chapter 9 on improvements of the MRV system).

⁸² Sexton, J. O., Song, X. P., Feng, M., Noojipady, P., Anand, A., Huang, C., ... Townshend, J. R. (2013). Global, 30-m resolution continuous fields of tree cover: Landsat-based rescaling of MODIS vegetation continuous fields with lidar-based estimates of error. *International Journal of Digital Earth*, 6(5), 427–448. <http://doi.org/10.1080/17538947.2013.786146>

⁸³ Montesano, P. M., Neigh, C. S. R., Sexton, J., Feng, M., Channan, S., Ranson, K. J., & Townshend, J. R. (2016). Calibration and Validation of Landsat Tree Cover in the Taiga-Tundra Ecotone. *Remote Sensing*, 8(7), 5–7. <http://doi.org/10.3390/rs8070551>

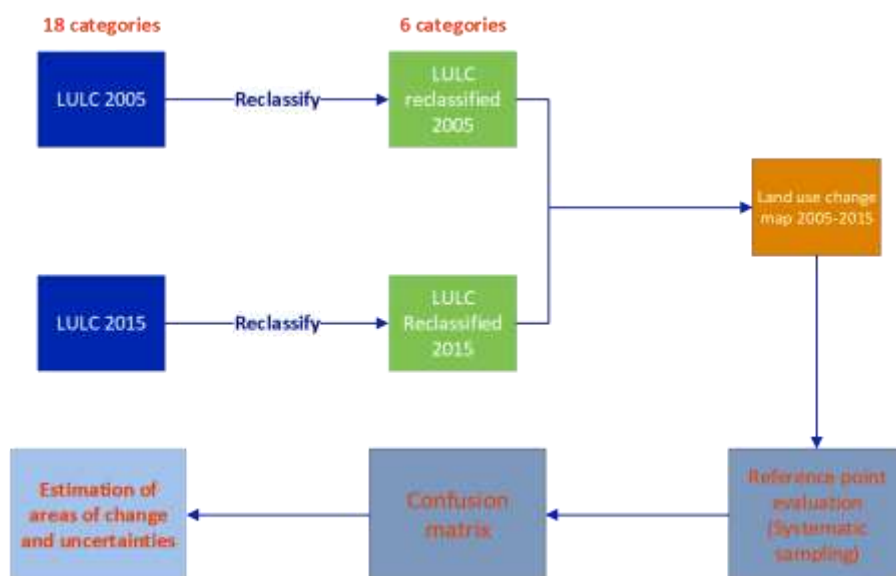


Figure 8.3-1 Work flow for the estimation of activity data and its corresponding uncertainty

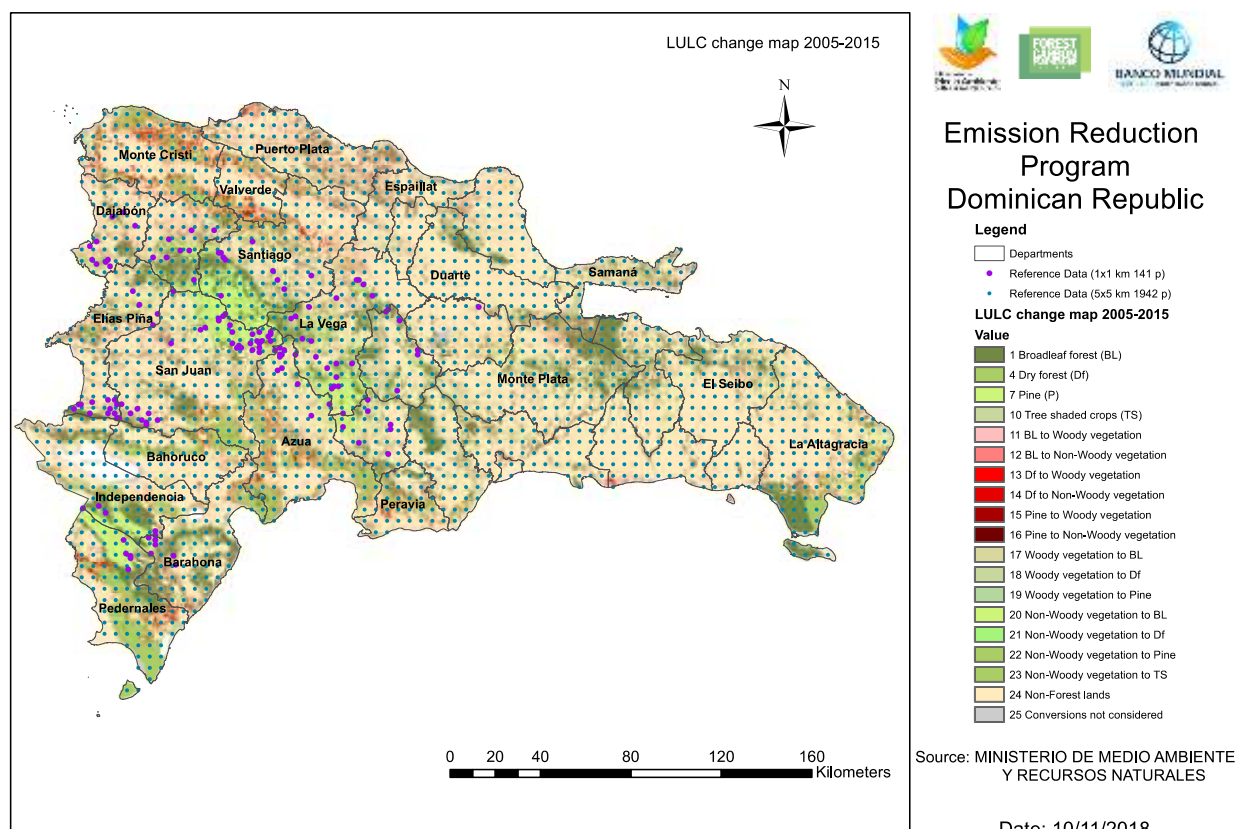


Figure 8.3-2 LULC change map 2005-2015 of Dominican Republic

Table 8.3.4 Use change matrix for the 2006-2015 period, obtained from use and coverage maps (Area in Hectares)

LULC category		2015								
		No Information	Broadleaf forest	Dry forest	Pine	Tree shaded crops	Woody vegetation	Non-Woody Vegetation	Water	Total
2006	No information	3,455.91	96.66	63.81	19.17	12.42	84.15	231.12	70.47	4,033.71
	Broadleaf forest	227.97	679,680.27	-	2,667.87	10,042.29	51,539.49	194,617.35	547.83	939,323.07
	Dry forest	168.39	-	358,667.28	23.58	196.74	37,367.10	69,043.23	1,301.67	466,767.99
	Pine	2.52	10,494.45	35.91	222,507.18	325.62	2,163.87	12,062.79	44.55	247,636.89
	Tree shaded crops	0.99	26,195.94	383.67	1,090.71	237,927.24	6,266.07	36,917.10	173.88	308,955.60
	Woody vegetation	128.25	86,531.31	15,497.19	1,476.45	5,018.76	160,000.83	152,229.06	1,245.51	422,127.36
	Non-Woody vegetation	507.33	140,705.01	19,420.74	16,475.49	18,705.96	128,110.05	2,035,703.43	8,511.39	2,368,139.40
	Water	174.96	696.51	463.50	71.10	163.44	583.47	5,293.98	12,948.66	20,395.62
Total		4,666.32	944,400.15	394,532.10	244,331.55	272,392.47	386,115.03	2,506,098.06	24,843.96	4,777,379.64

Table 8.3.5 Use change matrix for the 2006-2015 period, obtained from reference data.

LULC category		2015							
		Broadleaf forest	Dry forest	Pine	Tree shaded crops	Woody vegetation	Non-Woody Vegetation	Water	Total
2006	Broadleaf forest	418		2	2	18	40		480
	Dry forest		152			9	8	1	170
	Pine	7	1	151		6	11		176
	Tree shaded crops	6			130		10		146
	Woody vegetation	56	41	16	2	102	36	1	254
	Non-Woody vegetation	62	14	9	9	41	674	5	814
	Water	2					1	40	43
	Total	551	208	178	143	176	780	47	2,083

Table 8.3.6 LULC change area of ER-Program of Dominican Republic

IPCC Category		LULC	Num samples (A)	Producers accuracy (B)	Weighted producers' accuracy (C)	Users Accura cy (D)	Map area (ha) (E)	Stratified systematic estimate (ha) -strRS (F)	Error estandar d (strRS) (G)	Error (ha) (relative 90% significan ce level) (H)	Error (%) (relative 90% significan ce level) (I)	Confidence interval (ha) (90% significance level) (J)	Does it contain the calculated area? (K)
Forest land remaining forest land	1	Broadleaf forest - BL	418	0.47	0.48	0.73	679,680	1,040,838	36,820	60,568	6%	980269 - 1101406	NO
	4	Dry Forest - DF	152	0.65	0.67	0.70	358,667	372,137	20,370	33,508	9%	338629 - 405645	YES
	7	Pine - P	151	0.36	0.53	0.63	222,507	263,706	20,430	33,608	13%	230098 - 297314	NO
	10	Tree shaded crops -TS	130	0.46	0.45	0.60	237,927	318,288	22,922	37,706	12%	280583 - 355994	NO
	26	TS to BL	6	0.00	0.00	0.00	26,196	16,776	7,128	11,725	70%	5051 - 28502	YES
	31	TS to DF	0				384			446	116%	-62 - 830	[1]
	32	TS to P	0				1,091			1,268	116%	-177 - 2359	[1]
	27	BL to TS	2	0.00	0.00	0.00	10,042	4,962	3,507	5,769	116%	-807 - 10731	YES
	33	BS to TS	0				197			229	116%	-32 - 425	[1]
	34	P to TS	0				326			379	116%	-53 - 704	[1]
Forest land converted to cropland/grasslan d (deforestation)	11	BL to Woody Veg.	18	0.06	0.04	0.04	51,539	41,634	10,063	16,553	40%	25080 - 58187	YES
	12	BL to Non-woody Veg.	40	0.15	0.19	0.09	194,617	88,892	14,762	24,283	27%	64609 - 113176	NO
	13	DF to Woody Veg.	9	0.11	0.08	0.05	37,367	22,158	7,407	12,184	55%	9974 - 34342	NO
	14	Df to Non-woody Veg.	8	0.00	0.00	0.00	69,043	19,893	7,015	11,539	58%	8353 - 31432	NO
	15	P to Woody Veg.	6	0.00	0.00	0.00	2,164	4,759	3,146	5,175	109%	-416 - 9934	YES
	16	P to Non-woody Veg.	11	0.73	0.09	0.07	12,063	8,730	4,604	7,574	87%	1156 - 16303	YES
	30	TS to Woody Veg.	0				6,266			6,814	109%	-548 - 13080	[1]
	28	TS to Non-woody Veg.	10	0.00	0.00	0.00	36,917	24,115	7,633	12,556	52%	11559 - 36670	NO

⁸⁴ Data estimated using the interactive "Accuracy Assessment" application developed by Open Foris (<https://github.com/openforis/accuracy-assessment>).

IPCC Category		LULC	Num samples (A)	Producers accuracy (B)	Weighted producers' accuracy (C)	Users Accura cy (D)	Map area (ha) (E)	Stratified systematic estimate (ha) -strRS (F)	Error estandar d (strRS) (G)	Error (ha) (relative 90% significan ce level) (H)	Error (%) (relative 90% significan ce level) (I)	Confidence interval (ha) (90% significance level) (J)	Does it contain the calculated area? (K)
Land converted to Forest land	17	Woody Veg. to BL	56	0.09	0.08	0.13	86,531	136,697	18,181	29,909	22%	106789 - 166606	NO
	18	Woody Veg. to DF	41	0.10	0.06	0.36	15,497	98,969	14,927	24,555	25%	74414 - 123524	NO
	19	Woody Veg. to Pine	16	0.00	0.00	0.00	1,476	23,605	7,628	12,548	53%	11057 - 36153	NO
	29	Woody Veg. to TS	2	0.00	0.00	0.00	5,019	5,261	3,726	6,130	117%	-868 - 11391	YES
	20	Non-woody Veg. to BL	62	0.06	0.08	0.08	140,705	139,124	18,260	30,037	22%	109087 - 169161	YES
	21	Non-woody Veg. to DF	14	0.00	0.00	0.00	19,421	34,824	9,258	15,230	44%	19594 - 50054	NO
	22	Non-woody Veg. to P	9	0.00	0.00	0.00	16,475	11,641	5,179	8,520	73%	3122 - 20161	YES
	23	Non-woody Veg. to TS	9	0.00	0.00	0.00	18,706	22,034	7,463	12,277	56%	9757 - 34311	YES
Other lands	24	Others Lands	853	0.82	0.87	0.70	2,476,043	1,982,380	42,174	69,377	3%	1913004 - 2051757	NO
	25	With no information and other transitions	60	0.53	0.34	0.64	50,511	93,960	12,770	21,007	22%	72953 - 114967	NO

[1]: Due to the lack of sampling points, it is assumed that the change category error is the maximum estimated for the IPCC category.

Activity data

The activity data used for the construction of the reference levels (deforestation, carbon stocks increase and degradation) are those estimated on the basis of the reference data, obtained through stratified systematic sampling⁸⁵, given that the area calculated by cartographic comparison of the 2005 and 2015 land-use and cover maps (column E in Table 8.3.6) only falls within the confidence intervals of the change categories (column K in Table 8.3.6) in 10 of the 28 categories. In the absence of an estimation of the change areas from the reference data, the area calculated through the 2005-2015 cartographic comparison is used for the transitions of tree-shaded crops to dry forest and to pine and vice-versa (TS-BS, TS-P, BS-TS and P-TS), as well as for the transition of tree-shaded crops to woody vegetation (TS-Woody Veg.). For these transitions, the error is assumed to be the maximum estimated for the IPCC category (see Table 8.3.6).

Tables 8.3.7, 8.3.8 and 8.3.9 show the activity data used to calculate the reference levels for deforestation, carbon stocks increase and degradation respectively.

Table 8.3.7 Summary of activity data for deforestation.

Description of the parameter including the time period covered (e.g. forest-cover change between 2000 – 2005 or transitions between forest categories X and Y between 2003-2006):	Deforested area of broadleaf forest, dry forest, pine forest and tree-shaded crops forest, during the reference period (2006-2015)		
Explanation for which sources or sinks the parameter is used (e.g. deforestation or forest degradation):	Deforestation reference level (Forest land converted to crops and grazing land)		
Data unit (e.g. ha/10 yr):	Hectares		
Value for the parameter:	LULC change category		Area (ha)
	11 Broadleaf forest to Woody vegetation		41,634
	12 Broadleaf forest to Non-Woody vegetation		88,892
	13 Dry forest to Woody vegetation		22,158
	14 Dry forest to Non-Woody vegetation		19,893
	15 Pine to Woody vegetation		4,759
	16 Pine to Non-Woody vegetation		8,730
	30 Tree shaded crops to Woody vegetation		6,266
	28 Tree shaded crops to Non-woody vegetation		24,115
Source of data (e.g. official statistics) or description of the method for developing the data, including (pre-)processing methods for data	The activity data (deforestation, forest gain, forest degradation) was analysed using the multitemporal visual assessment of sampling plots on a systematic grid of 5 x 5 km (1,942) with an intensification in the pine forest conversion categories on a 1 x 1 km grid (141 p) for a total of 2,083 points. A multitemporal visual assessment		

⁸⁵ The calculation of the change area is used considering the stratified sampling design to estimate the change areas, due to the fact that for the conversion categories Pine to woody vegetation (15) and to non-woody vegetation (16), the sample was increased by 141 additional points through a 1x1 km grid added to the 5x5 km grid, in order to prevent the systematic sampling from causing these change categories with a small area to be subsampled.

derived from remote sensing images (including the type of sensors and the details of the images used):	exercise was carried out for 2005-2015 (in ArcGIS and Collect Earth) using high resolution images from Google Earth and Bing Maps and other available collections: Landsat, Spot and RapidEye, using 90 x 90 m assessment plots (equivalent to 3 x 3 Landsat pixels). An internal grid of 3 x 3 m (within each 90 x 90 m plot) was used to measure the cover of each element. In the absence of an estimation of the change areas from the reference data, the area calculated through the 2005-2015 cartographic comparison is used for the transition of tree-shaded crops to woody vegetation (TS-Woody Veg.). For this transition, the error is assumed to be the maximum estimated for the change categories of forest land converted to non-forest land.																													
Spatial level (local, regional, national or international):	National																													
Discussion of key uncertainties for this parameter:	The activity data uncertainties relate to: i. the quantity of visual assessment plots with information available for LULCC analysis; ii. Interpreter bias; and iii. The quality and resolution of the images available for the years 2005 and 2015, and iv. The uncertainty in calculating areas of cartographic comparison from the 2005 and 2015 use maps and coverage.																													
Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:	<table><tr><th>LULC change category</th><th>Error (ha) (relative 90% significance level)</th><th>Confidence level (90%)</th></tr><tr><td>11 Broadleaf forest to Woody vegetation</td><td>16,553</td><td>25080 - 58187</td></tr><tr><td>12 Broadleaf forest to Non-Woody vegetation</td><td>24,283</td><td>64609 - 113176</td></tr><tr><td>13 Dry forest to Woody vegetation</td><td>12,184</td><td>9974 - 34342</td></tr><tr><td>14 Dry forest to Non-Woody vegetation</td><td>11,539</td><td>8353 - 31432</td></tr><tr><td>15 Pine to Woody vegetation</td><td>5,175</td><td>-416 - 9934</td></tr><tr><td>16 Pine to Non-Woody vegetation</td><td>7,574</td><td>1156 - 16303</td></tr><tr><td>30 Tree shaded crops to Woody vegetation</td><td>6,814</td><td>548 - 13080</td></tr><tr><td>28 Tree shaded crops to Non-woody vegetation</td><td>12,556</td><td>11559 - 36670</td></tr></table>			LULC change category	Error (ha) (relative 90% significance level)	Confidence level (90%)	11 Broadleaf forest to Woody vegetation	16,553	25080 - 58187	12 Broadleaf forest to Non-Woody vegetation	24,283	64609 - 113176	13 Dry forest to Woody vegetation	12,184	9974 - 34342	14 Dry forest to Non-Woody vegetation	11,539	8353 - 31432	15 Pine to Woody vegetation	5,175	-416 - 9934	16 Pine to Non-Woody vegetation	7,574	1156 - 16303	30 Tree shaded crops to Woody vegetation	6,814	548 - 13080	28 Tree shaded crops to Non-woody vegetation	12,556	11559 - 36670
LULC change category	Error (ha) (relative 90% significance level)	Confidence level (90%)																												
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12 Broadleaf forest to Non-Woody vegetation	24,283	64609 - 113176																												
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14 Dry forest to Non-Woody vegetation	11,539	8353 - 31432																												
15 Pine to Woody vegetation	5,175	-416 - 9934																												
16 Pine to Non-Woody vegetation	7,574	1156 - 16303																												
30 Tree shaded crops to Woody vegetation	6,814	548 - 13080																												
28 Tree shaded crops to Non-woody vegetation	12,556	11559 - 36670																												

Table 8.3.8 Summary of Activity data for enhancement of carbon stocks

Description of the parameter including the time period covered (e.g. forest-cover change between 2000 – 2005 or transitions between forest categories X and Y between 2003-2006):	Area of regenerated secondary forest and tree-shaded crops planted during the reference period
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Explanation for which sources or sinks the parameter is used (e.g. deforestation or forest degradation):	Reference level for forest carbon stocks increase on land converted to forest land																													
Data unit (e.g. ha/10 yr):	Hectares																													
Value for the parameter:	<table><tr><th>LULC change category</th><th>Area (ha)</th></tr><tr><td>17 Woody vegetation to Broadleaf forest</td><td>136,697</td></tr><tr><td>18 Woody vegetation to Dry forest</td><td>98,969</td></tr><tr><td>19 Woody vegetation to Pine</td><td>23,605</td></tr><tr><td>29 Woody vegetation to Tree shaded crops</td><td>5,261</td></tr><tr><td>20 Non-Woody veg to Broadleaf forest</td><td>139,124</td></tr><tr><td>21 Non-Woody veg to Dry forest</td><td>34,824</td></tr><tr><td>22 Non-Woody veg to Pine</td><td>11,641</td></tr><tr><td>23 Non-Woody veg to Tree shaded crops</td><td>22,034</td></tr></table>			LULC change category	Area (ha)	17 Woody vegetation to Broadleaf forest	136,697	18 Woody vegetation to Dry forest	98,969	19 Woody vegetation to Pine	23,605	29 Woody vegetation to Tree shaded crops	5,261	20 Non-Woody veg to Broadleaf forest	139,124	21 Non-Woody veg to Dry forest	34,824	22 Non-Woody veg to Pine	11,641	23 Non-Woody veg to Tree shaded crops	22,034									
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22 Non-Woody veg to Pine	11,641																													
23 Non-Woody veg to Tree shaded crops	22,034																													
Source of data (e.g. official statistics) or description of the method for developing the data, including (pre-)processing methods for data derived from remote sensing images (including the type of sensors and the details of the images used):	The activity data (deforestation, forest gain, forest degradation) was analysed using the multitemporal visual assessment of sampling plots on a systematic grid of 5 x 5 km (1,942) with an intensification in the pine forest conversion categories on a 1 x 1 km grid (141 p) for a total of 2,083 points. A multitemporal visual assessment exercise was carried out for 2005-2015 (in ArcGIS and Collect Earth) using high resolution images from Google Earth and Bing Maps and other available collections: Landsat, Spot and RapidEye, using 90 x 90 m assessment plots (equivalent to 3 x 3 Landsat pixels). An internal grid of 3 x 3 m (within each 90 x 90 m plot) was used to measure the cover of each element.																													
Spatial level (local, regional, national or international):	National																													
Discussion of key uncertainties for this parameter:	The activity data uncertainties relate to: i. the quantity of visual assessment plots with information available for LULCC analysis; ii. Interpreter bias; and iii. The quality and resolution of the images available for the years 2005 and 2015																													
Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:	<table><tr><th>LULC change category</th><th>Error (ha) (relative 90% significance level)</th><th>Confidence level (90%)</th></tr><tr><td>17 Woody vegetation to Broadleaf forest</td><td>29,909</td><td>106789 - 166606</td></tr><tr><td>18 Woody vegetation to Dry forest</td><td>24,555</td><td>74414 - 123524</td></tr><tr><td>19 Woody vegetation to Pine</td><td>12,548</td><td>11057 - 36153</td></tr><tr><td>29 Woody vegetation to Tree shaded crops</td><td>6,130</td><td>-868 - 11391</td></tr><tr><td>20 Non-Woody veg to Broadleaf forest</td><td>30,037</td><td>109087 - 169161</td></tr><tr><td>21 Non-Woody veg to Dry forest</td><td>15,230</td><td>19594 - 50054</td></tr><tr><td>22 Non-Woody veg to Pine</td><td>8,520</td><td>3122 - 20161</td></tr><tr><td>23 Non-Woody veg to Tree shaded crops</td><td>12,277</td><td>9757 - 34311</td></tr></table>			LULC change category	Error (ha) (relative 90% significance level)	Confidence level (90%)	17 Woody vegetation to Broadleaf forest	29,909	106789 - 166606	18 Woody vegetation to Dry forest	24,555	74414 - 123524	19 Woody vegetation to Pine	12,548	11057 - 36153	29 Woody vegetation to Tree shaded crops	6,130	-868 - 11391	20 Non-Woody veg to Broadleaf forest	30,037	109087 - 169161	21 Non-Woody veg to Dry forest	15,230	19594 - 50054	22 Non-Woody veg to Pine	8,520	3122 - 20161	23 Non-Woody veg to Tree shaded crops	12,277	9757 - 34311
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22 Non-Woody veg to Pine	8,520	3122 - 20161																												
23 Non-Woody veg to Tree shaded crops	12,277	9757 - 34311																												

Table 8.3.9 **Summary of activity data for degradation**

Description of the parameter including the time period covered (e.g. forest-cover change between 2000 – 2005 or transitions between forest categories X and Y between 2003-2006):	Area of change in crown cover on land that remains as forest. Area of change in the transitions from tree-shaded crops to natural forest (Broadleaf, Dry and Pine) and vice versa.																																									
Explanation for which sources or sinks the parameter is used (e.g. deforestation or forest degradation):	Forest degradation reference level Reference level for forest carbon stocks increase on land that remains as forest.																																									
Data unit (e.g. ha/10 yr):	Hectares																																									
Value for the parameter:	<table><tr><th>Degradation/enhancement in Forest land remaining forest land</th><th>Area (ha)</th><th>Confidence level (ha) (90%)</th></tr><tr><td>2. Area of Broadleaf forest with recovery of canopy cover</td><td>363,546.21</td><td>307,171 – 419,921</td></tr><tr><td>5 Area of Dry forest with recovery of canopy cover</td><td>80,792.91</td><td>51,827 – 109,759</td></tr><tr><td>8 Area of Pine forest with recovery of canopy cover</td><td>73,348.59</td><td>50,965 – 95,732</td></tr><tr><td>3 Area of degraded Broadleaf forest</td><td>209,163.58</td><td>161,779 – 256,548</td></tr><tr><td>6 Area of degraded Dry forest</td><td>53,861.94</td><td>29,142 – 78,582</td></tr><tr><td>9 Area of degraded Pine forest</td><td>48,899.06</td><td>29,485 – 68,313</td></tr><tr><td>26 Tree shaded crops to Broadleaf forest</td><td>16,766.32</td><td>-62 - 830</td></tr><tr><td>31 Tree shaded crops to Dry forest</td><td>383.67</td><td>-177 – 2,359</td></tr><tr><td>32 Tree shaded crops to Pine forest</td><td>1,090.71</td><td>-807 – 10,731</td></tr><tr><td>27 Broadleaf forest to Tree shaded crops</td><td>4,962.01</td><td>-32 - 425</td></tr><tr><td>33 Dry forest to Tree shaded crops</td><td>196.74</td><td>-53 - 704</td></tr><tr><td>34 Pine forest to Tree shaded crops</td><td>325.62</td><td>-62 - 830</td></tr></table>			Degradation/enhancement in Forest land remaining forest land	Area (ha)	Confidence level (ha) (90%)	2. Area of Broadleaf forest with recovery of canopy cover	363,546.21	307,171 – 419,921	5 Area of Dry forest with recovery of canopy cover	80,792.91	51,827 – 109,759	8 Area of Pine forest with recovery of canopy cover	73,348.59	50,965 – 95,732	3 Area of degraded Broadleaf forest	209,163.58	161,779 – 256,548	6 Area of degraded Dry forest	53,861.94	29,142 – 78,582	9 Area of degraded Pine forest	48,899.06	29,485 – 68,313	26 Tree shaded crops to Broadleaf forest	16,766.32	-62 - 830	31 Tree shaded crops to Dry forest	383.67	-177 – 2,359	32 Tree shaded crops to Pine forest	1,090.71	-807 – 10,731	27 Broadleaf forest to Tree shaded crops	4,962.01	-32 - 425	33 Dry forest to Tree shaded crops	196.74	-53 - 704	34 Pine forest to Tree shaded crops	325.62	-62 - 830
Degradation/enhancement in Forest land remaining forest land	Area (ha)	Confidence level (ha) (90%)																																								
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5 Area of Dry forest with recovery of canopy cover	80,792.91	51,827 – 109,759																																								
8 Area of Pine forest with recovery of canopy cover	73,348.59	50,965 – 95,732																																								
3 Area of degraded Broadleaf forest	209,163.58	161,779 – 256,548																																								
6 Area of degraded Dry forest	53,861.94	29,142 – 78,582																																								
9 Area of degraded Pine forest	48,899.06	29,485 – 68,313																																								
26 Tree shaded crops to Broadleaf forest	16,766.32	-62 - 830																																								
31 Tree shaded crops to Dry forest	383.67	-177 – 2,359																																								
32 Tree shaded crops to Pine forest	1,090.71	-807 – 10,731																																								
27 Broadleaf forest to Tree shaded crops	4,962.01	-32 - 425																																								
33 Dry forest to Tree shaded crops	196.74	-53 - 704																																								
34 Pine forest to Tree shaded crops	325.62	-62 - 830																																								
Source of data (e.g. official statistics) or description of the method for developing the data, including (pre-)processing methods for data derived from remote sensing images (including the type of sensors and the details of the images used):	The area and uncertainty of degraded and enhanced forest areas in natural forests were estimated through the multitemporal visual interpretation of medium and high resolution images in order to detect changes in the canopy cover on land that remains as forest land, using medium and high resolution images available for the start and end of the reference period. A total of 721 reference points were interpreted using a 9-pixel grid with a pixel size of 30 x 30 m as the sampling unit. These points were interpreted in each forest category (humid broadleaf, dry and pine). The forest areas showing a reduction in canopy cover during the assessment period (2005 - 2015) were deemed to be degraded and the forest areas showing an increase in canopy cover were identified as recovery areas. In the absence of an estimation of the change areas from the reference data, the area calculated through the 2005-2015 cartographic comparison is used for the transitions of tree-shaded crops to dry forest and to pine and vice versa (TS-BS, TS-																																									

	P, BS-TS and P-TS). For these transitions, the error is assumed to be the maximum estimated for the change categories of forest land remaining as forest land.																																									
Spatial level (local, regional, national or international):	National																																									
Discussion of key uncertainties for this parameter:	The activity data uncertainties relate to: i. the quantity of visual assessment plots with information available for LULCC analysis; ii. Interpreter bias; and iii. The quality and resolution of the images available for the years 2005 and 2015, and iv. The uncertainty in calculating areas of cartographic comparison from the 2005 and 2015 use maps and coverage.																																									
Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:	<table><tr><td>Degradation/enhancement in Forest land remaining forest land</td><td>Error (ha) (relative 90% significance level)</td><td>Confidence level (ha) (90%)</td></tr><tr><td>2. Area of Broadleaf forest with recovery of canopy cover</td><td>56,375</td><td>307171 - 419921</td></tr><tr><td>5 Area of Dry forest with recovery of canopy cover</td><td>28,966</td><td>51827 - 109759</td></tr><tr><td>8 Area of Pine forest with recovery of canopy cover</td><td>22,383</td><td>50965 - 95732</td></tr><tr><td>3 Area of degraded Broadleaf forest</td><td>47,385</td><td>161779 - 256548</td></tr><tr><td>6 Area of degraded Dry forest</td><td>24,720</td><td>29142 - 78582</td></tr><tr><td>9 Area of degraded Pine forest</td><td>19,414</td><td>29485 - 68313</td></tr><tr><td>26 Tree shaded crops to Broadleaf forest</td><td>446</td><td>-62 - 830</td></tr><tr><td>31 Tree shaded crops to Dry forest</td><td>1,268</td><td>-177 - 2359</td></tr><tr><td>32 Tree shaded crops to Pine forest</td><td>5,769</td><td>-807 - 10731</td></tr><tr><td>27 Broadleaf forest to Tree shaded crops</td><td>229</td><td>-32 - 425</td></tr><tr><td>33 Dry forest to Tree shaded crops</td><td>379</td><td>-53 - 704</td></tr><tr><td>34 Pine forest to Tree shaded crops</td><td>446</td><td>-62 - 830</td></tr></table>			Degradation/enhancement in Forest land remaining forest land	Error (ha) (relative 90% significance level)	Confidence level (ha) (90%)	2. Area of Broadleaf forest with recovery of canopy cover	56,375	307171 - 419921	5 Area of Dry forest with recovery of canopy cover	28,966	51827 - 109759	8 Area of Pine forest with recovery of canopy cover	22,383	50965 - 95732	3 Area of degraded Broadleaf forest	47,385	161779 - 256548	6 Area of degraded Dry forest	24,720	29142 - 78582	9 Area of degraded Pine forest	19,414	29485 - 68313	26 Tree shaded crops to Broadleaf forest	446	-62 - 830	31 Tree shaded crops to Dry forest	1,268	-177 - 2359	32 Tree shaded crops to Pine forest	5,769	-807 - 10731	27 Broadleaf forest to Tree shaded crops	229	-32 - 425	33 Dry forest to Tree shaded crops	379	-53 - 704	34 Pine forest to Tree shaded crops	446	-62 - 830
	Degradation/enhancement in Forest land remaining forest land	Error (ha) (relative 90% significance level)	Confidence level (ha) (90%)																																							
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Emission factors

The data from the National Forest Inventory (NFI)⁸⁶ and from "Evaluating the Biomass and Carbon Content in Non-Forest Cover in the Dominican Republic" (ISNB)⁸⁷ were used to estimate the carbon density in each of the land uses and the emission factors in the land-use change categories. Both inventories were compiled using the same main plot and nested plots in order to determine carbon density for each component recognised as a sink (Figure 8.3-4 and Table 8.3.10). The work flow for the estimation of carbon densities for the various land uses is shown in Figure 8.3-5. Both inventories include a total of 487 plots⁸⁸, with estimations of the above-ground biomass (AGB), dead material (DM) and dead leaves (L), and 329 plots with soil organic carbon estimations (SOC). The distribution of the NFI plots is shown in Figure 8.3-3.

The above-ground biomass for each plot is estimated using the database at tree level, taking the area of the sampling units into account. 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) in both inventories (NFI and ISNB).

In the first draft of the ERPD, we used the equation of Chave et al (2005). This equation was replaced by Chave et al 2014, since this equation is probably closer to the real mean value. The difference between the EF of the first draft and this version are due to the fact that in the first draft, the estimation of biomass densities of the inventory plots were based on an equation published by Chave et al in 2005, whereas the EF in this version are estimated with Chave et al 2014. The Chave 2014 equation is based on much more tree data, as such can be considered to be more precise. Additionally, some corrections were made in the spreadsheets between the first draft and advanced draft, that also explain some of the differences.

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 (Table 8.3.11). The Cairns et al. (1997) equation is used to quantify below-ground biomass (roots ; Cairn et al 1997)⁸⁹. In both inventories, the factor that is used to convert biomass to carbon content is the IPCC's default value (0.47).

The emissions and removals resulting from degradation or carbon stocks increase in forests that remain as forests were assessed by relating the change in canopy density to the change in biomass. By means of the visual assessment of high resolution images, the canopy cover was determined in a subset of 270 NFI plots⁹⁰, including broadleaf forest, dry forest and pine forests. The biomass was linked to forest cover using the linear regression shown in Figure 8.3.6. These regressions were applied in order to estimate the loss of biomass at each of the 721 visual assessment points located on land that remained as forest land during the reference period (2006-2015).

⁸⁶ 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

⁸⁷ 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

⁸⁸ A copy of the database used to estimate carbon densities can be obtained by following this link: <https://app.box.com/s/49fqku4tpmjo97bwm6px5zk988rlkutp>

⁸⁹ 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>

⁹⁰ A copy of the database used to adjust the model of biomass change in relation to canopy change can be obtained by following this link: <https://app.box.com/s/9kb6hjlhp1xtvx4kliv0mitlr7woo740>

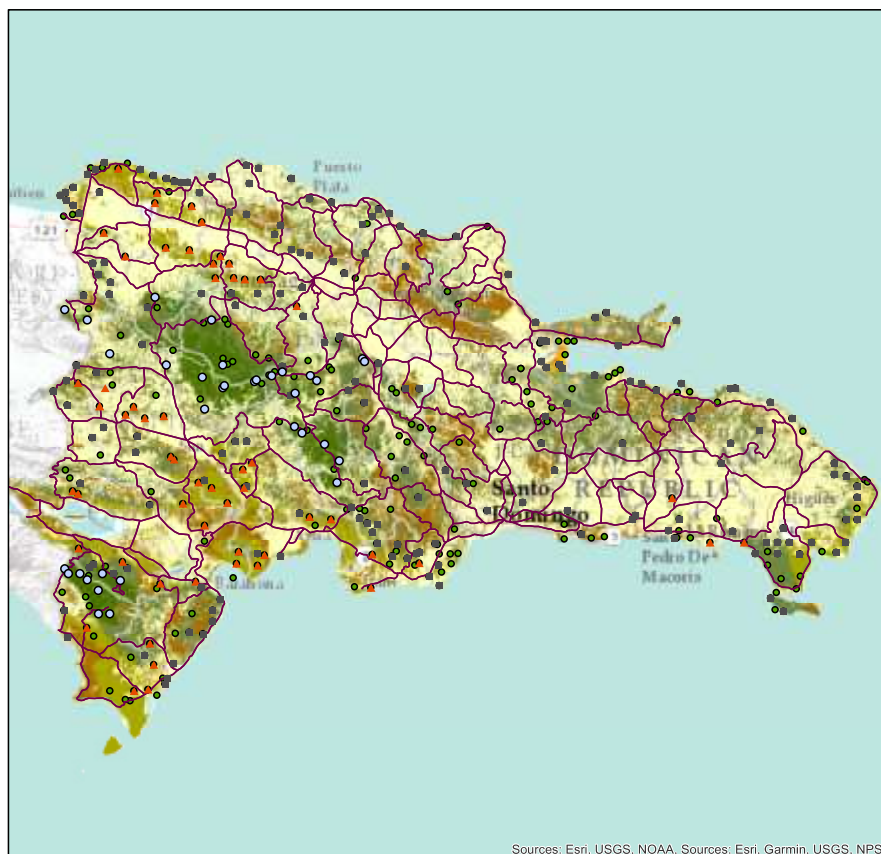


The removal factors are expressed as the annual rate of growth of secondary forests and tree crops, as $t\ CO_2\ ha^{-1}\ year^{-1}$. Neither inventory (NFI and ISNB) offers biomass growth rate estimates for secondary woodland or tree-lined crops. In the absence of studies for the Dominican Republic, the rate of carbon removal resulting from tree crops is obtained from Somarribas et al (2013)⁹¹. The authors provide an estimate for the carbon accumulation rate pertaining to Cocoa agroforestry systems in Central America. Sherman et al (2012) provide the carbon clearance rate for secondary broadleaf woodland, dry woodland and pine woodland⁹². The authors measure the net biomass growth for broadleaf forest, dry forest and pine in the Dominican Republic.

Tables 8.3.12, 8.3.13, 8.3.14, 8.3.15 show the emissions and removal factors used to calculate the reference levels for deforestation, carbon stocks increase and degradation respectively.

⁹¹ Eduardo Somarribaa, *, Rolando Cerdas, Luis Orozco, Miguel Cifuentes, Héctor Dávila, Tania Espina, Henry Mavisoya, Guadalupe Ávila, Estefany Alvarado, V. P., & Carlos Astorga, Eduardo Saya, O. D. (2013). Carbon stocks and cocoa yields in agroforestry systems of Central America. *Agriculture, Ecosystems and Environment*, 173, 46–57.

⁹² Sherman, R. E., Fahey, T. J., Martin, P. H., & Battles, J. J. (2012). Patterns of growth, recruitment, mortality and biomass across an altitudinal gradient in a neotropical montane forest, Dominican Republic. *Journal of Tropical Ecology*, 28(5), 483–495. <http://doi.org/10.1017/S0266467412000478>



Emission Reduction Program Dominican Republic

Legend

NFI Plots: Canopy cover - AGB

- Broadleaf Forest
- ▲ Dry forest
- Pine
- Roads
- NFI plots with no canopy assessment

Land use / land cover 2015

Categories

- Broadleaf Forest
- Dry Forest
- Pine
- Water
- Tree shaded crops
- Woody vegetation
- Non woody vegetation

Source: MINISTERIO DE MEDIO AMBIENTE
Y RECURSOS NATURALES

Date: 10/13/2018

Figure 8.3-3 Location of the plots recorded in the National Inventory of the Dominican Republic. The subset of plots used in the visual assessment of crown cover for the estimation of the biomass-crown density relationship, used to estimate emissions and removals due to forest degradation, is shown separately.

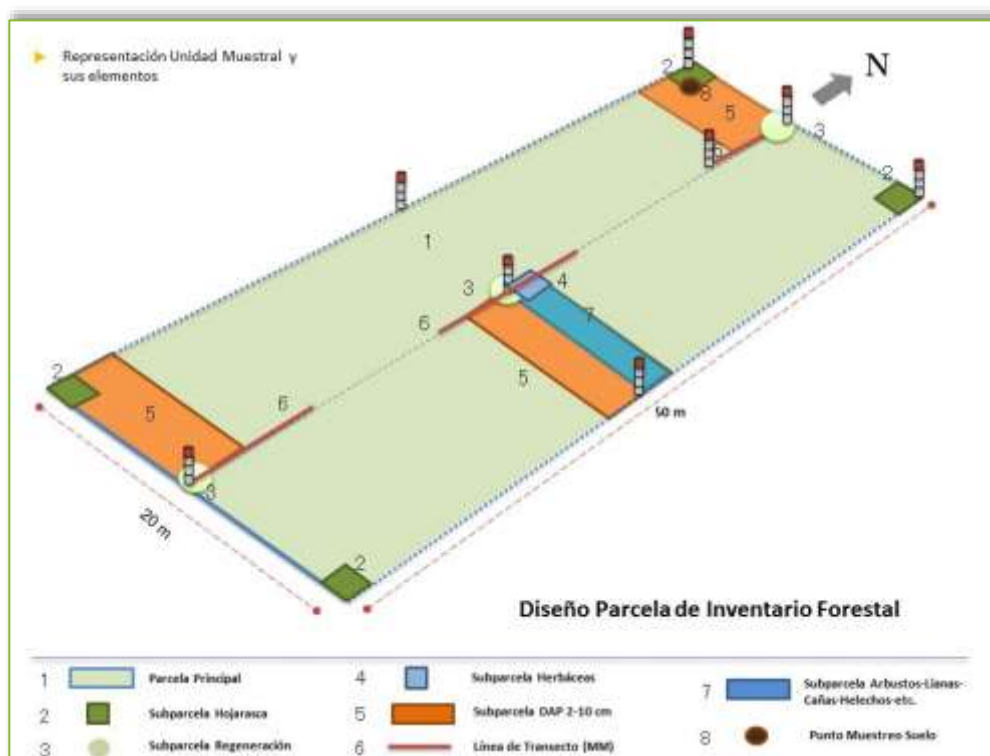


Figure 8.3-4 Primary plot and nested plots used to determine carbon density for each component recognised as a sink in the National Forest Inventory (NFI) and ISNB

Table 8.3.10 Sample unit and variables assessed for each of the carbon reservoirs, used in the national forest inventory and the biomass content assessment in non-forest systems.

Component	National Forestry Inventory (NFI)	Evaluating the Biomass and Carbon Content in Non-Forest Cover (ISNB)
Above-ground biomass associated with trees of DBH greater than 10 cm	Primary plot (PSU): 20 m x 50 m rectangle. All living and standing dead trees with a DBH equal to or greater than 10 cm are measured.	Primary plot (PSU): 20 m by 50 m rectangle Applies for all non-forest woody cover . All living and standing dead trees with a DBH equal to or greater than 10 cm are measured. In the case of mango and avocado, the diameter of individuals are measured 50 cm above the ground, in accordance to the allometric equation used for these species. – see Table 8.3.1 Other crop allometric equation).
Regeneration (trees with a DBH of less than 2 cm)	Regeneration plot (RSU): 3 circular sub-plots with a radius of 1 m. The height of all individuals of tree species (with the potential to reach a height in excess of 5 m at maturity) whose height is less than or equal to 1.5m and with a diameter of less than 2 cm DBH is recorded.	Regeneration plot (RSU): 3 circular sub-plots with a radius of 1 m. Applies for all cases of coconut, dry shrubland and pasture . The height of all individuals of tree species (with the potential to reach a height in excess of 5 m at maturity) whose height was less than or equal to 1.5m and with a diameter of less than 2 cm DBH is recorded
Biomass of trees greater than 2 cm DBH but less than 10 cm DBH	Secondary plot (SSU): 3 rectangular 5 m x 10 m plots. In this unit, the DBH is measured of all individuals of tree species with a diameter equal to or greater than 2 cm but less than 10 cm.	Secondary plot (SSU): 3 rectangular 5 m x 10 m plots Applies to coffee, cocoa and dry shrubland . In these types of cover, diameter was measured as follows: Coffee 15 cm above ground; cocoa 30 cm above ground; and dry shrubland 30 cm above ground. In this unit, the DBH is measured of all individuals of tree species with a diameter equal to or greater than 2 cm but less than 10 cm.

Biomass of dead wood	Transect line (TL): 3 lines of 10 m in length, on which the intersections with fallen dead material are assessed. All pieces of wood with a diameter greater than 2 cm lying on the surface of the ground or intermixed with dead leaves just at the point of intersection with the planar intercept line are recorded.	Transect line (TL): 3 lines of 10 m in length, on which the intersections with fallen dead material are assessed. Applies to coffee, cocoa, coconut and dry shrubland. All pieces of wood with a diameter greater than 2 cm lying on the surface of the ground or intermixed with dead leaves just at the point of intersection with the planar intercept line are recorded.
Dead leaf biomass	Square sampling frame (UMH): 4 plots of 0.5 m x 0.5 m. Non-woody biomass is recorded, which includes dead leaves (dead biomass) as well as herbaceous vegetation (living non-woody biomass on the ground). The maximum diameter for woody material to be considered will be 2 cm.	Square sampling frame (UMH): 4 plots of 0.5 m x 0.5 m Applies to coffee, cocoa, coconut, dry shrubland and pasture. Non-woody biomass is recorded, which includes dead leaves (dead biomass) as well as herbaceous vegetation (living non-woody biomass on the ground). The maximum diameter for woody material to be considered will be 2 cm.
Soil biomass	Soil sampling point (SSP): A soil sampling point is taken on the second sub-plot of non-woody biomass, at one of the vertices of the primary plot. Separate soil samples must be collected at a depth of 15 cm, for organic carbon and apparent density analysis.	Soil sampling point (SSP): A soil sampling point is taken on the fourth sub-plot of non-woody biomass. At the soil sampling point, samples are taken for apparent density and for carbon analysis at a depth of 15 cm. These samples must be collected in accordance with the guidelines issued by the laboratory where the analyses will be carried out
Diversity of herbaceous species	Plot of herbaceous vegetation (UMDH [unidades muestrales de diversidad de herbáceas - herbaceous species diversity sampling unit]): a square 1 m ² plot. The presence and abundance of species in the herbaceous stratum in the sampled area is recorded.	Plot of herbaceous vegetation (UMDH [unidades muestrales de diversidad de herbáceas - herbaceous species diversity sampling unit]): a square 1 m ² plot. Applies for coconut, dry shrubland and pasture. The presence and abundance of species in the herbaceous stratum in the sampled area is recorded.
Diversity of shrubs, lianas, canes, ferns and others	Shrubs plot (UMDA [unidad muestral de diversidad de arbustivas - shrubs diversity sampling unit]): 1 rectangular 2.5 m x 10 m plot. Corresponds to the north half of the sub-plot for the biomass of trees of between 2 and 10 cm DBH located in the same area as the Primary Plot. The presence and abundance of species in the shrub stratum in the sampled area is recorded.	Shrubs plot (UMDA [unidad muestral de diversidad de arbustivas - shrubs diversity sampling unit]): 1 rectangular 2.5 m x 10 m plot. Corresponds to the north half of the sub-plot for the biomass of trees of between 2 and 10 cm DBH located in the same area as the Primary Plot. Applies to coffee and dry shrubland. The presence and abundance of species in the shrub stratum in the sampled area is recorded.

Table 8.3.11 Allometric models used to estimate the above-ground biomass of the components recorded in the National Forest Inventory (NFI) and (ISNB).

Component	National Forestry Inventory (NFI)	Evaluating the Biomass and Carbon Content in Non-Forest Cover (ISNB)
Trees (DBH ≥ 5 cm) all species	$AGB = (0.0673 * (GE * dap^2 * H_t)^{0.976})^{93}$ Pantropical	
Trees of (2 > DBH < 5 cm) all species	$\ln(AGB) = -9.37673 + 2.30119 \ln(dap) + 0.30297 \ln(H_t)^{94}$ Petén, Guatemala	
Trees of <i>P. occidentalis</i> and <i>P. caribaea</i> . (>2 cm DBH)	$\ln(AGB) = 1.17 + 2.119 * \ln(dap)^{95}$ Dominican Republic	Not applicable

⁹³ 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>

⁹⁴ 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.

⁹⁵ Márquez (2000) citado por Brown (1996)

Coffee crop - <i>Coffea arabica</i>	$\ln(AGB) = -2.39287 + 0.95285 * \ln(dap) + 1.2693 * \ln(H_t)^{96}$ (<i>dap</i> 0,3 - 7,5 cm; <i>HT</i> 0.31 - 3.40 m)	$\log(AGB) = -1.181 + 1.991 * \log(d15))^{97}$ 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	$\log(AGB) = -1.11 + 2.64 * \log(dap)^{98}$ Talamanca, Costa Rica
Coconut - <i>Cocos nucifera</i>	Not applicable	$\log(AGB) = 6.8414 * dap^{2.086} + 2.7340 * dap^{2.1837} + 2.7402 * dap^{1.9408}$ ⁹⁹ Costa Rica

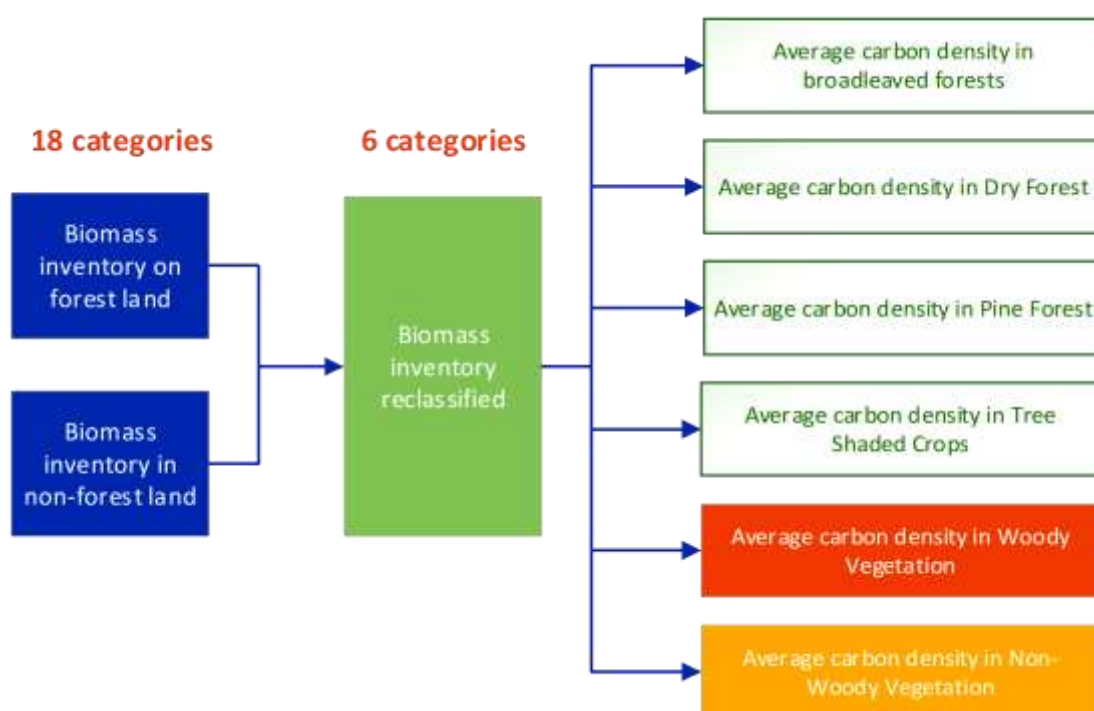


Figure 8.3-5 Work flow for the estimation of carbon density and its corresponding uncertainty for each of the various land-use categories.

⁹⁶ Suarez (2002)

⁹⁷ 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

⁹⁸ 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.

⁹⁹ Ares, A., Boniche, J., Quesada, J., Yost, R., Molina, E. and Smyth, T. 2002. Estimacion De Biomasa Por Metodos Alometricos, Nutrimientos Y Carbono En Plantaciones De Palmito En Costa Rica. *Agronomía Costarricense*, (26): 19-30.

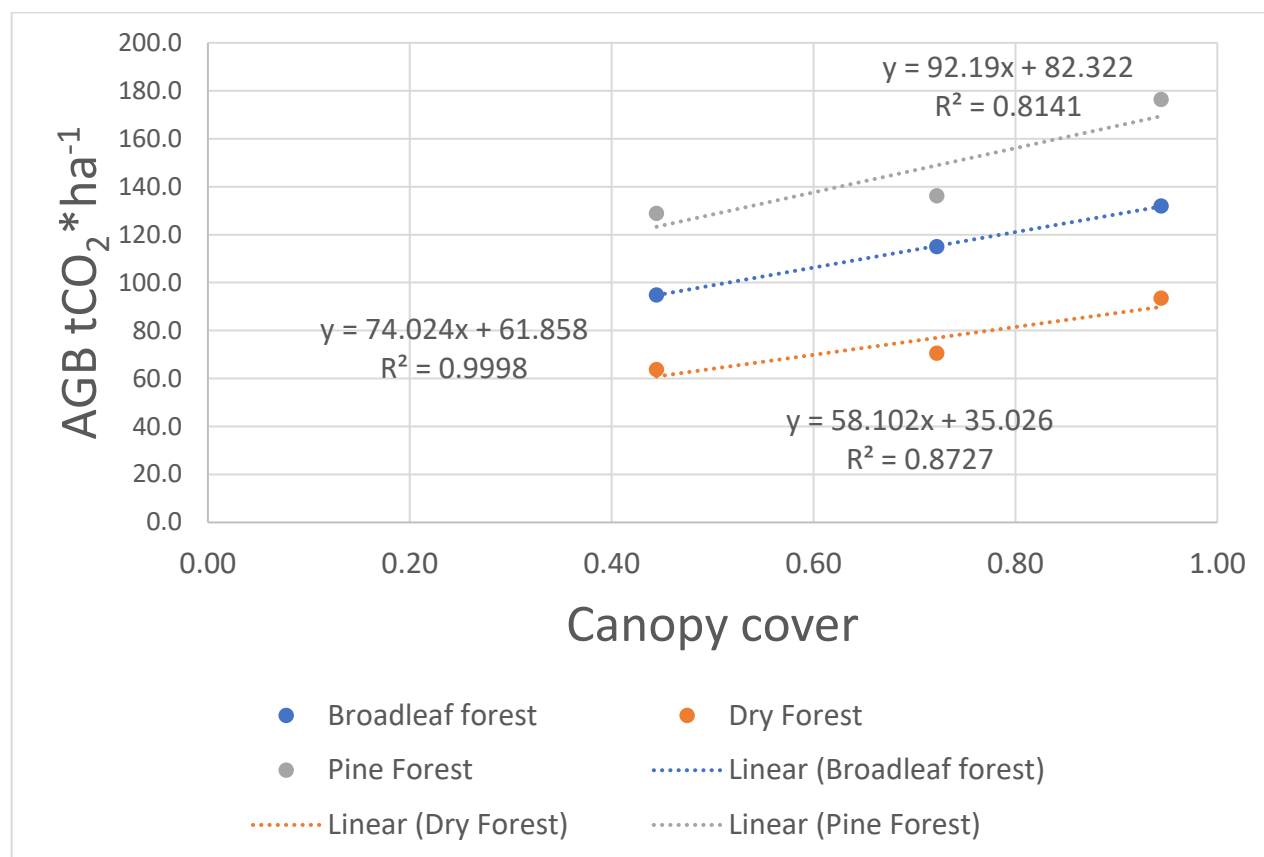


Figure 8.3-6 **Model of AGB regression according to canopy cover, for broadleaf forest, dry forest and pine forests.** The average biomass estimated for 3 categories of canopy cover (low 3-5 points above crowns, medium 6-7 points above crowns and high 8-9 points above crowns) is related to the median of the category as a percentage.

Table 8.3.12 **Carbon densities for forest and non-forest categories**

Description of the parameter including the forest class if applicable:	Carbon density for the following land-use categories, including AGB, BGB, DM, L and SOC						
	- Broadleaf forest - Dry forest - Pine - Tree shaded crops - Woody vegetation - Non-Woody vegetation						
Data unit (e.g. t CO ₂ /ha):	t CO ₂ *ha ⁻¹						
Value for the parameter:	LULC	AGB+BGB+MM+H t CO ₂ *ha ⁻¹			SOC t CO ₂ *ha ⁻¹		
		n	Mean	Median	n	Mean	Median
	Broadleaf forest	223	225.64	175.45	118	890.73	766.99
	Dry forest	57	139.57	119.29	33	947.75	865.94
	Pine	57	220.68	222.32	33	383.69	342.20
	Tree shaded crops	79	232.94	214.19	79	457.62	459.91

	Woody vegetation	45	100.44	92.5	40	681.31	680.19	
	Non-Woody vegetation	26	62.95	28.89	26	440.7	383.79	
Source of data (e.g. official statistics, IPCC, scientific literature) or description of the assumptions, methods and results of any underlying studies that have been used to determine the parameter:	The data from the National Forest Inventory (NFI) and from "Evaluating the Biomass and Carbon Content in Non-Forest Cover in the Dominican Republic" (ISNB) were used to estimate the carbon density in each of the land uses. Both inventories were carried out using the same primary plot and nested plots to determine the carbon density for each component recognised as a sink. Due to there being no specific allometric equations for broadleaf woodlands in the Dominican Republic, aerial biomass calculations are carried out using the allometric equations of Chave et al. (2014). For pine, a local allometric equation is used. (Márquez, 2000). Allometric equations developed in Nicaragua and Costa Rica are used for coffee, cocoa, coconut, mango, avocado, and guava (see Table 8.3.11). The Cairns et al. (1997) equation is used to quantify below-ground biomass (1997). In both inventories, the carbon factor that is used is the IPCC's default value (0.47).							
Spatial level (local, regional, national or international):	National							
Discussion of key uncertainties for this parameter:	The country has allometric equations for the estimation of biomass in pine forests (<i>Pinus occidentalis</i>). The equations used to calculate AGB and BGB for the remaining forest covers and tree crops are not calibrated specifically for the Dominican Republic. Also, the following land-use categories have no AGB estimation plots: i. Natural and planted palm, ii. annual crops and sugar cane, iii. Vegetationless soil and iv. Urban areas (see Table 8.3.1).							
Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:	AGB+BGB+MM+H							
	LULC	n	Mean tCO ₂ ha ⁻¹	Std. Dev.	Std Error	Min tCO ₂ ha ⁻¹	Max tCO ₂ ha ⁻¹	Median tCO ₂ ha ⁻¹
	Broadleaf forest	223	225.64	152.08	10.18	62.96	1118.96	175.45
	Dry forest	57	139.57	73	9.67	69.92	566.06	119.29
	Pine	57	220.68	85.14	11.28	76.13	414.25	222.32
	Tree shaded crops	79	232.94	136.78	15.39	28.15	714.04	214.19
	Woody vegetation	45	100.44	78.14	11.65	1.34	264.22	92.5
	Non-Woody vegetation	26	62.95	114.84	22.52	0	574.32	28.89
	SOC							
	LULC	n	Mean tCO ₂ ha ⁻¹	Std. Dev.	Std Error	Min tCO ₂ ha ⁻¹	Max tCO ₂ ha ⁻¹	Median tCO ₂ ha ⁻¹
	Broadleaf forest	118	890.73	602.74	55.49	116.98	3460.79	766.99
	Dry forest	33	947.75	553.14	96.29	282.28	2634.47	865.94
	Pine	33	383.69	185.85	32.35	145.04	963.2	342.2
	Tree shaded crops	79	457.62	297.65	33.49	0	1282.78	459.91
	Woody vegetation	40	681.31	419.12	66.27	0	1821.56	680.19

	Non-Woody vegetation	26	440.7	259.76	50.94	0	911.9	383.79	180.71

Table 8.3.13 Removal factor for secondary forest (Broadleaf forest, Dry forest and Pine)

<i>Description of the parameter including the forest class if applicable:</i>	Removal factors for secondary forest, including AGB: • Secondary Broadleaf forest • Secondary Dry Forest • Pine regeneration		
Data unit (e.g. t CO₂/ha):	t C*ha ⁻¹ *year ⁻¹		
Value for the parameter:	Secondary forest	AGB mean t C*ha ⁻¹ *year ⁻¹	
	Broadleaf forest	2.64	
	Dry forest	2.64	
	Pine	1.24	
Source of data (e.g. official statistics, IPCC, scientific literature) or description of the assumptions, methods and results of any underlying studies that have been used to determine the parameter:	Rates of biomass growth for secondary forests are not estimated in the National Forest Inventory (NFI). In the absence of studies for the Dominican Republic, the rate of carbon removal resulting from secondary broadleaf forests, dry forests and pine forests is obtained from Sherman et al (2012) ¹⁰⁰ . The authors estimate the net growth in biomass for broadleaf forests, dry forests and pine forests in the Cordillera Central of the Dominican Republic.		
Spatial level (local, regional, national or international):	National		
Discussion of key uncertainties for this parameter:	The study by Sherman et al (2012) may underestimate the rate of carbon accumulation. The study is restricted to the altitudinal gradient that is prone to frequent upheaval (fires, winds, flooding and landslides), located in the Central Cordillera of the Dominican Republic, in a mountainous tropical woodland with a relatively low AGB.		
Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:	Secondary forest	AGB mean t C*ha ⁻¹ *year ⁻¹	Standard Error
	Broadleaf forest	2.64	1.38
	Dry forest	2.64	1.38
	Pine	1.24	0.21

¹⁰⁰ Sherman, R. E., Fahey, T. J., Martin, P. H., & Battles, J. J. (2012). Patterns of growth, recruitment, mortality and biomass across an altitudinal gradient in a neotropical montane forest, Dominican Republic. *Journal of Tropical Ecology*, 28(5), 483–495. <http://doi.org/10.1017/S0266467412000478>

Table 8.3.14 Removal factor for tree shaded crops

Description of the parameter including the forest class if applicable:	Removal factor associated with tree crops, including AGB		
Data unit (e.g. t CO₂/ha):	t C*ha ⁻¹ *year ⁻¹		
Value for the parameter:	LULC	Mean t C*ha ⁻¹ *year ⁻¹	
	Tree shaded crops	2.60	
Source of data (e.g. official statistics, IPCC, scientific literature) or description of the assumptions, methods and results of any underlying studies that have been used to determine the parameter:	It is assumed that, during the implementation of the ER Programme, a large proportion of the expansion of tree crops will be accounted for by SAF-Cacao crops. In neither the National Forest Inventory (NFI) nor "Evaluating the Biomass and Carbon Content in Non-Forest Cover in the Dominican Republic" (ISNB) are the rates of carbon accumulation in tree crops estimated. In the absence of studies for the Dominican Republic, the rate of carbon removal resulting from tree crops is obtained from Somarribas et al (2013) ¹⁰¹ . The authors provide an estimate for the carbon accumulation rate pertaining to Cocoa agroforestry systems in Central America, in conditions similar to that of the Dominican Republic.		
Spatial level (local, regional, national or international):	National		
Discussion of key uncertainties for this parameter:	The carbon accumulation rates estimated by Somarribas et al (2013) for SAF-cocoa crops are not valid for the Dominican Republic.		
Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:	LULC	Mean t C*ha ⁻¹ *year ⁻¹	Standard Error
	Tree shaded crops	2.60	2.4

Table 8.3.15 Biomass change factors due to canopy cover change.

Description of the parameter including the forest class if applicable:	Emission/gain factor due to canopy density change in forests that remain as forest, including AGB. • Average AGB loss during the reference period 2006-2015 • Average AGB gain during the reference period 2006-2015		
Data unit (e.g. t CO₂/ha):	t CO ₂ *ha ⁻¹		
Value for the parameter:	Lands that remain as forests	Mean t CO ₂ *ha ⁻¹	
	Average AGB loss in Broadleaf forest 2006-2015	18.45	

¹⁰¹ Eduardo Somarribas, *, Rolando Cerdas, Luis Orozco, Miguel Cifuentes, Héctor Dávila, Tania Espina, Henry Mavisoya, Guadalupe Ávilaa, Estefany Alvaradoa, V. P., & Carlos Astorgaa, Eduardo Saya, O. D. (2013). Carbon stocks and cocoa yields in agroforestry systems of Central America. Agriculture, Ecosystems and Environment, 173, 46–57.

	<table><tr><td>Average AGB loss in Dry forest 2006-2015</td><td>12.29</td></tr><tr><td>Average AGB loss in Pine forest 2006-2015</td><td>20.02</td></tr><tr><td>Average AGB gains in Broadleaf forest 2006-2015</td><td>-19.27</td></tr><tr><td>Average AGB gains in Dry forest 2006-2015</td><td>-12.03</td></tr><tr><td>Average AGB gains in Pine forest 2006-2015</td><td>-22.41</td></tr></table>	Average AGB loss in Dry forest 2006-2015	12.29	Average AGB loss in Pine forest 2006-2015	20.02	Average AGB gains in Broadleaf forest 2006-2015	-19.27	Average AGB gains in Dry forest 2006-2015	-12.03	Average AGB gains in Pine forest 2006-2015	-22.41														
Average AGB loss in Dry forest 2006-2015	12.29																								
Average AGB loss in Pine forest 2006-2015	20.02																								
Average AGB gains in Broadleaf forest 2006-2015	-19.27																								
Average AGB gains in Dry forest 2006-2015	-12.03																								
Average AGB gains in Pine forest 2006-2015	-22.41																								
Source of data (e.g. official statistics, IPCC, scientific literature) or description of the assumptions, methods and results of any underlying studies that have been used to determine the parameter:	The emissions and removals resulting from degradation or enhancement of cover on land that remains as forest were assessed by relating the change in canopy density to the change in biomass. By means of the visual assessment of high resolution images, the canopy cover was determined in a subset of 270 NFI plots¹⁰², including broadleaf forest, dry forest and pine forests. The average biomass for 3 categories of canopy cover (low 33-56%, medium 67-78% and high 89-100%) were linked to the median of the category, for broadleaf, dry and pine forests (see Figure 8.3.6). This regression was applied in order to estimate the loss of biomass at each of the visual assessment points located on land that remained as forest land during the reference period (2006-2015). A copy of the database used to adjust the model can be obtained by following this link: https://app.box.com/s/9kb6hjlhp1xtvx4kliv0mitlr7woo740																								
Spatial level (local, regional, national or international):	National																								
Discussion of key uncertainties for this parameter:	The standard deviation of 1,000 estimation iterations of the average AGB change (loss and gain) was calculated using the mean square error (RMS) of the adjusted model, truncating the randomisation to the interval [0, maximum AGB value]. A copy of the database used to estimate the standard deviation can be obtained by following this link: https://app.box.com/s/ctl7k0ph97o9y95kq953qpq1b798nbf2 <table><tr><th>Forest type</th><th>Coefficient (tCO₂/ha)</th><th>intercept (tCO₂/ha)</th><th>MSE</th><th>RMS</th><th>AGB max (tCO₂/ha)</th></tr><tr><td>Broadleaf forest</td><td>74.024</td><td>61.858</td><td>76.10</td><td>365.81</td><td>74.024</td></tr><tr><td>Dry forest</td><td>58.102</td><td>35.026</td><td>35.64</td><td>169.27</td><td>58.102</td></tr><tr><td>Pine</td><td>92.19</td><td>82.322</td><td>57.50</td><td>283.15</td><td>92.19</td></tr></table>	Forest type	Coefficient (tCO ₂ /ha)	intercept (tCO ₂ /ha)	MSE	RMS	AGB max (tCO ₂ /ha)	Broadleaf forest	74.024	61.858	76.10	365.81	74.024	Dry forest	58.102	35.026	35.64	169.27	58.102	Pine	92.19	82.322	57.50	283.15	92.19
Forest type	Coefficient (tCO ₂ /ha)	intercept (tCO ₂ /ha)	MSE	RMS	AGB max (tCO ₂ /ha)																				
Broadleaf forest	74.024	61.858	76.10	365.81	74.024																				
Dry forest	58.102	35.026	35.64	169.27	58.102																				
Pine	92.19	82.322	57.50	283.15	92.19																				
Estimation of accuracy, precision, and/or confidence level, as applicable and an explanation of assumptions/methodology in the estimation:	<table><tr><th>Lands that remain as forests</th><th>Error</th></tr><tr><td>Average AGB loss in Broadleaf forest 2006-2015</td><td>94%</td></tr><tr><td>Average AGB loss in Dry forest 2006-2015</td><td>126%</td></tr><tr><td>Average AGB loss in Pine forest 2006-2015</td><td>147%</td></tr><tr><td>Average AGB gains in Broadleaf forest 2006-2015</td><td>132%</td></tr><tr><td>Average AGB gains in Dry forest 2006-2015</td><td>175%</td></tr><tr><td>Average AGB gains in Pine forest 2006-2015</td><td>155%</td></tr></table>	Lands that remain as forests	Error	Average AGB loss in Broadleaf forest 2006-2015	94%	Average AGB loss in Dry forest 2006-2015	126%	Average AGB loss in Pine forest 2006-2015	147%	Average AGB gains in Broadleaf forest 2006-2015	132%	Average AGB gains in Dry forest 2006-2015	175%	Average AGB gains in Pine forest 2006-2015	155%										
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Average AGB gains in Dry forest 2006-2015	175%																								
Average AGB gains in Pine forest 2006-2015	155%																								

¹⁰² A copy of the database used to adjust the model of biomass change in relation to canopy change can be obtained by following this link: <https://app.box.com/s/9kb6hjlhp1xtvx4kliv0mitlr7woo740>

Calculation of the average annual historical emissions over the Reference Period¹⁰³

Deforestation Reference Level: Average historical emissions are defined as the sum of emissions resulting from deforestation in each of the forest categories during the reference period; these are calculated on the basis of the activity data and carbon densities described in the previous section. Table 8.3.16 gives a summary of the calculations. The emissions due to deforestation are estimated by considering the carbon deposits in above-ground biomass, below-ground biomass, dead material, dead leaves and soil organic carbon. The annual average of emissions resulting from deforestation for the 10-year reference period is 3,203,463 t CO₂-e * year⁻¹. The following equation is used to calculate the deforestation emission factor:

$$EF = (C_{bio,pre} - C_{bio,post} + \{(CS_0 - CS_D)/D\}) \times \frac{44}{12}^{104} \text{ Equation 3}$$

EF : Emission factor, t CO₂-e ha⁻¹

C_{bio,pre}: C stock in biomass prior to forest change, t C/ha

C_{bio,post}: C stock in biomass prior post-deforestation, t C/ha

CS₀: Initial or reference soil organic carbon

CS_D: Soil organic carbon at default time D, tC/ha

D: Default time period to transition to a new equilibrium value (20 year)

The annual emissions of CO₂-e due to deforestation are calculated with the following equation:

Equation 4

$$RL_d = (AD_{bl-wv} * EF_{bl-wv} + AD_{bl-nwv} * EF_{bl-nwv} + AD_{df-wv} * EF_{bs-wv} + AD_{df-nwv} * EF_{bs-nwv} + AD_{p-wv} * EF_{p-wv} + AD_{p-nwv} * EF_{p-nwv} + AD_{ts-wv} * EF_{ts-wv} + AD_{ts-nwv} * EF_{ts-nwv}) / 10$$

RL_d: Deforestation reference level

AD_{bl-wv}: Activity Data Broadleaf forest to Woody vegetation

AD_{bl-nwv}: Activity data Broadleaf forest to Non-Woody vegetation

AD_{df-wv}: Activity data Dry forest to Woody vegetation

AD_{df-nwv}: Activity data Dry forest to Non-Woody vegetation

AD_{p-wv}: Activity data Pine to Woody vegetation

AD_{p-nwv}: Activity data Pine to Non-Woody vegetation

AD_{ts-wv}: Activity data Pine to Non-Woody vegetation

AD_{ts-nwv}: Activity data Pine to Non-Woody vegetation

EF_{bl-wv}: Emission Factor Broadleaf forest to Woody vegetation

EF_{bl-nwv}: Emission Factor Broadleaf forest to Non-Woody vegetation

EF_{df-wv}: Emission Factor Dry forest to Woody vegetation

EF_{df-nwv}: Emission Factor Dry forest to Non-Woody vegetation

EF_{p-wv}: Emission Factor Pine to Woody vegetation

EF_{p-nwv}: Emission Factor Pine to Non-Woody vegetation

EF_{ts-wv}: Emission Factor Pine to Non-Woody vegetation

EF_{ts-nwv}: Emission Factor Pine to Non-Woody vegetation

¹⁰³ A copy of the spreadsheet containing the calculation of the annual average for historical emission during the reference period can be obtained by following this link:

<https://app.box.com/s/297c6wkhw3crh7itx9zy0acachzv2x0f>

¹⁰⁴ Module 2.3 Estimating emission factors for forest cover change (deforestation and forest degradation) 12 REDD+ training materials by GOF-C-GOLD, Wageningen University, World Bank FCPF.

https://www.forestcarbonpartnership.org/sites/fcp/files/2015/May/Module%202.3%20Lecture_08_05_15_final_0.pdf

Table 8.3.16 Estimation of the deforestation reference level: reference period 2006-2015.

Land cover change classes	Carbon Density					Emission Factor		
	AGB+BGB+MM+H			SOC		AGB+BGB+M M+H	SOC	Annual Emission
	Annual Area converted	Prior conversion	Post conversion	Prior conversion	Post conversion			
	ha/yr	tCO ₂ /ha	tCO ₂ /ha	tCO ₂ /ha	tCO ₂ /ha	tCO ₂ /ha	tCO ₂ /ha	tCO _{2-e} /yr
11 Broadleaf forest to Woody vegetation	4,163.37	225.64	100.44	890.73	681.31	125.20	10.47	564,848.73
12 Broadleaf forest to Non-Woody vegetation	8,889.25	225.64	62.95	890.73	440.70	162.69	22.50	1,646,213.46
13 Dry forest to Woody vegetation	2,215.77	139.57	100.44	947.75	681.31	39.13	13.32	116,221.50
14 Dry forest to Non-Woody vegetation	1,989.29	139.57	62.95	947.75	440.70	76.62	25.35	202,852.50
15 Pine to Woody vegetation	475.90	220.68	100.44	383.69	681.31	120.24	-14.88	50,139.97
16 Pine to Non-Woody vegetation	872.97	220.68	62.95	383.69	440.70	157.73	-2.85	135,204.71
30 Tree shaded crops to Woody vegetation	626.61	232.94	100.44	457.62	681.31	132.50	-11.18	76,017.14
28 Tree shaded crops to Non-Woody vegetation	2,411.46	232.94	62.95	457.62	440.70	169.99	0.85	411,964.96
Total	21,644.61							3,203,462.98

Reference level for forest carbon stocks increase on land converted to forest land: The average historical removals resulting from the enhancement of carbon reservoirs in secondary forests and new tree crop areas was calculated as the sum of removals divided by the number of years in the reference period. The historical carbon removal is -2,140,071 t CO_{2-e}* year⁻¹ (Table 8.3.17). The following equation is used to calculate the annual removals of CO_{2-e} derived from secondary growth:

Equation 5

$$RL_e = \left\{ \left(50 * CA_{bl} * \left[\frac{AD_{wv-bl} + AD_{nwv-bl}}{10} \right] + 50 * CA_{df} * \left[\frac{AD_{wv-df} + AD_{nwv-df}}{10} \right] + 50 * CA_p * \left[\frac{AD_{wv-p} + AD_{nwv-p}}{10} \right] + 50 * CA_{ts} * \left[\frac{AD_{wv-ts} + AD_{nwv-ts}}{10} \right] \right) * \frac{44}{12} \right\} / 10$$

RL_e: Reference level of forest carbon enhancement in lands converted to forest land

AD_{wv-bl}: Activity Data Woody vegetation to Broadleaf forest

AD_{nwv-bl}: Activity data Non-Woody vegetation to Broadleaf forest

AD_{wv-df}: Activity data Woody vegetation to Dry forest

AD_{nwv-df}: Activity data Non-Woody vegetation to Dry forest

AD_{wv-p}: Activity data Woody vegetation to Pine

AD_{nwv-df}: Activity data Non-Woody vegetation to Pine

AD_{nv-ts}: Activity data Woody vegetation to Tree shaded crops

AD_{nwv-ts}: Activity data Non-Woody vegetation to Tree shaded crops

CA_{bl}: Carbon accumulation rate Broadleaf forest

CA_{df}: Carbon accumulation rate Dry forest

CA_p: Carbon accumulation rate Pine forest

CA_{ts}: Carbon accumulation rate Tree shaded crops

Table 8.3.17 Estimation of the reference level of increase in forest carbon stocks

Year of the Reference Period	17 Woody vegetation to Broadleaf forest		18 Woody vegetation to Dry forest		19 Woody vegetation to Pine		20 Woody vegetation to Tree shaded crops		21 Non-Woody veg to Broadleaf forest		22 Non-Woody veg to Dry forest		23 Non-Woody veg to Pine		24 Non-Woody veg to Tree shaded crops		TOTAL	
	Secondary growth forests	Carbon stock enhancement	Secondary growth forests	Carbon stock enhancement	Secondary growth forests	Carbon stock enhancement	Secondary growth forests	Carbon stock enhancement	Secondary growth forests	Carbon stock enhancement	Secondary growth forests	Carbon stock enhancement	Secondary growth forests	Carbon stock enhancement	Secondary growth forests	Carbon stock enhancement	tCO ₂ /yr	tCO ₂ /yr
Year	ha	tC/yr	ha	tC/yr	ha	tC/yr	ha	tC/yr	ha	tC/yr	ha	tC/yr	ha	tC/yr	ha	tC/yr	tC/yr	tCO ₂ /yr
1	13,670	-18,054	9,897	-13,071	2,361	-1,459	526	-684	13,912	-18,374	3,482	-4,599	1,164	-719	2,203	-2,864	-58,366	-214,007
2	27,339	-54,161	19,794	-39,213	4,721	-4,377	1,052	-2,052	27,825	-55,122	6,965	-13,798	2,328	-2,158	4,407	-8,593	-175,097	-642,021
3	41,009	-90,268	29,691	-65,354	7,082	-7,295	1,578	-3,420	41,737	-91,870	10,447	-22,996	3,492	-3,597	6,610	-14,322	-291,828	-1,070,035
4	54,679	-126,375	39,588	-91,496	9,442	-10,212	2,105	-4,788	55,649	-128,618	13,929	-32,194	4,657	-5,036	8,814	-20,051	-408,559	-1,498,049
5	68,349	-162,482	49,485	-117,638	11,803	-13,130	2,631	-6,156	69,562	-165,367	17,412	-41,393	5,821	-6,475	11,017	-25,780	-525,290	-1,926,064
6	82,018	-198,589	59,382	-143,780	14,163	-16,048	3,157	-7,524	83,474	-202,115	20,894	-50,591	6,985	-7,914	13,220	-31,508	-642,021	-2,354,078
7	95,688	-234,697	69,278	-169,921	16,524	-18,966	3,683	-8,892	97,387	-238,863	24,377	-59,789	8,149	-9,353	15,424	-37,237	-758,752	-2,782,092
8	109,358	-270,804	79,175	-196,063	18,884	-21,884	4,209	-10,259	111,299	-275,611	27,859	-68,988	9,313	-10,792	17,627	-42,966	-875,483	-3,210,106
9	123,027	-306,911	89,072	-222,205	21,245	-24,802	4,735	-11,627	125,211	-312,359	31,341	-78,186	10,477	-12,231	19,831	-48,695	-992,215	-3,638,120
10	136,697	-343,018	98,969	-248,346	23,605	-27,719	5,261	-12,995	139,124	-349,107	34,824	-87,384	11,641	-13,670	22,034	-54,424	-1,108,946	-4,066,134
																	-583,656	-2,140,071

Reference level for forest degradation and forest carbon stocks increase in forests that remains as forests: The average estimation of historic emissions and removals on land that remains as forest considers the above-ground biomass, the area of change in crown cover in natural forests, and the area of change in transitions from tree-shaded crops to natural forest (Broadleaf, Dry and Pine) and vice versa. The average emissions are estimated by dividing the sum of natural forest emissions and transitions of tree-shaded crops by the number of years in the reference period. The historical emission resulting from degradation is 567,240.32 tCO_{2-e}* year⁻¹ and the historical removal of carbon is -968,088.12 tCO_{2-e}* year⁻¹ (Table 8.3.18). In Tables 8.3.9 and 8.3.15 are activity data (AD) and emission factor (EF) used in the calculation of forest degradation and carbon stock enhancement. The following equation is used to calculate the annual emissions/removals of CO_{2-e} resulting from canopy degradation or canopy enhancement in natural forests:

Equation 6

$$RL_{degbn} = \frac{(AD_{deg-bl} * AL_{bl}) + (AD_{enh-bl} * AG_{bl}) + (AD_{deg-df} * AL_{df}) + (AD_{enh-df} * AG_{df}) + (AD_{deg-p} * AL_p) + (AD_{enh-p} * AG_p)}{10}$$

RL_{degbn} : Reference level of forest degradation and forest carbon enhancement in natural forests

AD_{deg-bl} : Activity Data Degraded Broadleaf forest

AD_{deg-df} : Activity Data Degraded Dry forest

AD_{deg-p} : Activity Data Degraded Pine forest

AD_{enh-bl} : Activity data Canopy recovered Broadleaf forest

AD_{enh-df} : Activity data Canopy recovered Dry forest

AD_{enh-p} : Activity data Canopy recovered Pine forest

AL_{bl} : Average AGB loss in Broadleaf forest during reference period 2005-2015

AL_{df} : Average AGB loss in Dry forest during reference period 2006-2015

AL_p : Average AGB loss in Pine forest during reference period 2006-2015

AG_{bl} : Average AGB gains in Broadleaf forest during reference period 2006-2015

AG_{df} : Average AGB gains in Dry forest during reference period 2006-2015

AG_p : Average AGB gains in Pine forest during reference period 2006-2015

In Tables 8.3.9 and 8.3.12 are activity data (AD) and carbon densities (considering AGB+BGB+MM+H in emission factor estimate - EF), used in the calculation of forest degradation and carbon enhancement. The following equation is used to calculate the annual emissions/removals of CO_{2-e} resulting from transitions from tree-shaded crops to natural forest and vice versa:

Equation 7

$$RL_{degts} = (AD_{ts-bl} * EF_{ts-bl} + AD_{ts-df} * EF_{ts-df} + AD_{ts-p} * EF_{ts-p} + AD_{bl-ts} * EF_{bl-ts} + AD_{df-ts} * EF_{df-ts} + AD_{p-ts} * EF_{p-ts}) / 10$$

RL_{degts} : Reference level of forest degradation and forest carbon enhancement in tree shaded crops transitions

AD_{ts-bl} : Activity Data Tree shaded crops to Broadleaf forest

AD_{ts-df} : Activity Data Tree shaded crops to Dry forest

AD_{ts-p} : Activity Data Tree shaded crops to Pine forest

AD_{bl-ts} : Activity data Broadleaf forest to Tree shaded crops

AD_{df-ts} : Activity data Dry forest to Tree shaded crops

AD_{p-ts} : Activity data Pine to Tree shaded crops

EF_{ts-bl} : Emission Factor Tree shaded crops to Broadleaf forest

EF_{ts-df} : Emission Factor Tree shaded crops to Dry forest

EF_{ts-p} : Emission Factor Tree shaded crops to Pine forest

EF_{bl-ts} : Emission Factor Broadleaf forest to Tree shaded crops

EF_{df-ts} : Emission Factor Dry forest to Tree shaded crops

EF_{p-ts} : Emission Factor Pine to Tree shaded crops

Table 8.3.18 Estimation of the forest degradation reference level and increase in forest carbon stocks on land that remains as forest

Land that remains as forest	Emissions (tCO _{2-e} *yr ⁻¹)	Removals (tCO _{2-e} *yr ⁻¹)	Total (tCO _{2-e} *yr ⁻¹)
Degraded Broadleaf forest	385,993.86	-700,671.60	-314,677.74
Degraded Dry forest	66,179.10	-97,203.74	-31,024.64
Degraded Pine forest	97,901.11	-164,354.33	-66,453.22
Total Natural forests	550,074.07	-962,229.68	-412,155.61
Tree shaded crops to Broadleaf forest	12,247.71		12,246.71
Tree shaded crops to Dry forest	3,582.33		3,582.33
Tree shaded crops to Pine forest	1,337.21		1,337.21
Broadleaf forest to Tree shaded crops		-3,622.27	-3,622.27
Dry forest to Tree shaded crops		-1,837.96	-1,836.96
Pine to Tree shaded crops		-399.21	-399.21
Total transitions from tree-shaded C to natural F and vice versa	17,166.25	-5,858.44	11,307.81
Total	567,240.32	-968,088.12	-400,847.80

8.4. Upward or downward adjustments to the average annual historical emissions over the Reference Period (if applicable)

Not applicable.

8.5. Estimated Reference Level

Table 8.5.1 shows the ER Programme Reference Level. The calculation report can be accessed at the following link: <https://app.box.com/s/297c6wkhw3crh7itx9zy0acachzv2x0f>.

Table 8.5.1 ER Program Reference Level

year t	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 Reference Period (tCO _{2-e} /yr)		Reference level (tCO _{2-e} /yr)
			Lands that remain as forest	Lands converted to forest lands	
1	3,203,463	567,240	-214.007	-968.088	2,588,608
2	3,203,463	567,240	-642.021	-968.088	2,160,594
3	3,203,463	567,240	-1,070,035	-968.088	1,732,580
4	3,203,463	567,240	-1,498,049	-968.088	1,304,566

5	3,203,463	567,240	-1,926,064	-968.088	876,552
6	3,203,463	567,240	-2,354,078	-968.088	448,538
7	3,203,463	567,240	-2,782,092	-968.088	20,523
8	3,203,463	567,240	-3,210,106	-968.088	-407.491
9	3,203,463	567,240	-3,638,120	-968.088	-835.505
10	3,203,463	567,240	-4,066,134	-968.088	-1,263,519
<i>Average 2006-2015</i>	3,203,463	567,240	-2,140,071	-968.088	662,545

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 UNFCCC¹⁰⁵, in which forest emissions are reported using TIER 1 methodology (Ministry of Environment and Natural Resources, 2018)¹⁰⁶. Through a GEF project, the Ministry is currently developing the Dominican Republic First Biennial Update Report (fBUR)¹⁰⁷. The development of the fBUR does not envisage the inclusion of the FREL of the Emissions

¹⁰⁵ United Nations Framework Convention on Climate Change

¹⁰⁶ Ministry of Environment and Natural Resources. (2018). Dominican Republic Third National Communication to the United Nations Framework Convention on Climate Change. 2014-2017.

¹⁰⁷ Dominican Republic First Biennial Update Report (fBUR).

<https://www.thegef.org/project/dominican-republic-first-biennial-update-report-fbur>

Reduction Programme¹⁰⁸. 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

9.1. Measurement, monitoring and reporting approach for estimating emissions occurring under the ER Program within the Accounting Area

During the ERP, greenhouse gas emissions resulting from deforestation will be estimated using a "stock change approach", as proposed in Chapter 2, Vol. 4 of the IPCC Guidelines (2006)¹⁰⁹ (equation 1). The changes in carbon stocks in the accounting area are calculated by the gain-loss method, as set out in Chapter 2, vol. 4 of the 2006 IPCC guidelines (Equation 2). In the same way that the Reference Level was estimated, the activity data (Table 9.1.1) and the emission factors (Table 9.1.2) will be estimated at each monitoring event. The same removal factors (Table 9.1.3) and the carbon emission and removal factors in forests that remain as forests (Table 9.1.4) will be used. The operational definition of forest and the land-use change categories of the FREL will be used to determine the activity data.

$$\Delta C = \frac{(C_{t_2} - C_{t_1})}{(t_2 - t_1)} \quad 1 \text{ Equation}$$

ΔC : Annual change in carbon stocks in the reservoir, t C yr⁻¹

C_{t_1} : Carbon stocks in the reservoir at the start of the period C_{t_1} ; t C.

C_{t_2} : Carbon stocks in the reservoir at the end of the period C_{t_2} ; t C.

¹⁰⁸ Personal communication, Rafael Beriguete, officer in charge of the fBUR at the Dominican Republic Ministry of Environment and Natural Resources.

¹⁰⁹ IPCC, 2006. IPCC Guidelines for National Greenhouse Gas Inventories. Volume 4 Agriculture, Forestry and Other Land Use.

$$\Delta C_B = \Delta C_G - \Delta C_L \quad 2 \text{ Equation}$$

ΔC_B : Annual change in carbon reserves in the biomass, in tonnes (t C yr⁻¹)

ΔC_G : Annual increase in the carbon reserves due to biomass growth, in tonnes (t C yr⁻¹)

ΔC_L : Annual decrease in carbon reserves due to the biomass losses, in tonnes (t C yr⁻¹)

The following annual monitoring events are planned, as of signature of the ERPA:

1. Pre-ERPA period: January 2016 - December 2019
2. First ERPA period: January 2020 - December 2020
3. Second ERPA period: January 2021 - December 2021
- Verification of estimations for the 2020-2021 period: January - July 2022
4. Third ERPA period: January 2022 - December 2022
5. Fourth ERPA period: January 2023 - December 2023
6. Fifth ERPA period: January 2024 - December 2024
- Verification of estimations for the 2022-2024 period: January - July 2025

Table 9.1.1 Summary of the procedures for generating activity data during the MMR.

Parameter:	Activity data
Description:	Activity data used to estimate the FREL reference level, determined for the monitoring period: Forest land converted to grassland and crops: • 11 Broadleaf forest to Woody vegetation • 12 Broadleaf forest to Non-Woody vegetation • 13 Dry forest to Woody vegetation • 14 Dry forest to Non-Woody vegetation • 15 Pine to Woody vegetation • 16 Pine to Non-Woody vegetation • 30 Tree shaded crops to Woody vegetation • 28 Tree shaded crops to Non-woody vegetation Land converted to forest land: • 17 Woody vegetation to Broadleaf forest • 18 Woody vegetation to Dry forest • 19 Woody vegetation to Pine • 29 Woody vegetation to Tree shaded crops • 20 Non-Woody veg to Broadleaf forest • 21 Non-Woody veg to Dry forest • 22 Non-Woody veg to Pine • 23 Non-Woody veg to Tree shaded crops Land remaining as forests • 2 Area of Broadleaf forest with recovery of canopy cover • 5 Area of Dry forest with recovery of canopy cover • 8 Area of Pine forest with recovery of canopy cover

	• 3 Area of degraded Broadleaf forest • 6 Area of degraded Dry forest • 9 Area of degraded Pine forest • 26 Tree shaded crops to Broadleaf forest • 31 Tree shaded crops to Dry forest • 32 Tree shaded crops to Pine forest • 27 Broadleaf forest to Tree shaded crops • 33 Dry forest to Tree shaded crops • 34 Pine forest to Tree shaded crops
Data unit:	Hectares
Source of data or measurement/calculation methods and procedures to be applied (e.g. field measurements, remote sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature), including the spatial level of the data (local, regional, national, international) and if and how the data or methods will be approved during the Term of the ERPA	The activity data are estimated by applying the best practices and methods described in FAO (2016)¹¹⁰. For each monitoring period, the area of forest land converted to grassland and crops (deforestation) and the area of land converted to forest land is estimated. The total areas of change and associated uncertainties are calculated on the basis of a systematic grid of 1,942 visual assessment plots, each 90 x 90 m in size (equivalent to 3 x 3 Landsat pixels). An internal grid of 3 x 3 m (within each 90 x 90 m plot) was used to measure the cover of each element. Land cover is assessed for the start and end of the monitoring period using high-resolution images available in the Google Earth and Collect Earth Online repositories¹¹¹ (Planet images). In parallel to the visual assessment with the systematic grid, maps of the change in land use and land cover will be constructed following the methodology of Ovalles (2018). The areas of change of the transitions not included in the systematic grid are calculated by means of cartographic comparison of land cover maps.
Frequency of monitoring/recording:	Annual (every year)
Monitoring equipment:	The Department of Environmental Information and Natural Resources (DIARENA) has the requisite human resources, computer equipment and technological platform to estimate the activity data and to publish the information generated in the emissions and removals estimation process of the ERP. In addition, the DIARENA personnel are qualified to carry out multitemporal visual assessment on low and high resolution images, required for the estimation of activity data. However, it is necessary to carry out an assessment of needs in terms of personnel and technology, in order to ensure the satisfactory performance of this monitoring unit during and after the ERP.
Quality Assurance/Quality Control procedures to be 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 Reference Level: i. Control of photo interpretation bias,

¹¹⁰ FAO. (2016). Map Accuracy Assessment and Area Estimation Map Accuracy Assessment and Area Estimation: A Practical Guide, (46), 69. Retrieved from <http://www.fao.org/3/a-i5601e.pdf>

¹¹¹ <http://collect.earth/>

	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, discussed and agreed in advance with the personnel of DIARENA and the Forest Monitoring Unit (see <i>Annex 1. Multitemporal visual assessment protocol for obtaining reference data for estimation of activity data uncertainty</i>). The development of land-use and cover maps will be carried out through consultants and supervised by DIARENA specialists.
Identification of sources of 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): ii. interpretation of the cover: iii. quality of the images available for the purposes of assessing the cover: iv. uncertainty in the calculation of areas of the cartographic comparison of the 2005 and 2015 land-use and cover maps. The methodological approach used to estimate DA and EF has limitations to differentiate the mature and secondary forests present at the beginning of the reference period. In the analysis of change in land use and coverage, it was assumed that the forest lands present at the beginning of the reference period (2005) are mature forests, which is unlikely. The non-differentiation between mature and secondary forests could overestimate emissions from deforestation and forest degradation, as the carbon densities are significantly different. The country will carry out an analysis of forest cover prior to the reference period. Considering the historical availability of remote sensing images, this analysis could be from 1985 to 2004. With this analysis it would be possible to differentiate the mature and secondary forests present at the beginning of the reference period and in this way apply the corresponding EFs for deforestation. The country will also set up biomass estimation plots in regenerated forests. Using time series analysis algorithms (e.g. TerraPulse or BFAST), the age of the secondary forest where the biomass estimation plot is established will be determined. With this information it is possible to estimate the initial change in carbon stocks when moving from other lands to forest land, as well as the annual increase in carbon stocks. See tables 9.1.1 and 9.1.2 in Section 9 ERPD and the Work Plan for the reduction of uncertainty in the estimation of emissions during monitoring events.

Process for managing and reducing uncertainty associated with this parameter

i. Sample size (density of the systematic grid): In the land-use change categories in which the systematic grid of 1,942 points produces errors in excess of 60%, the sample of points will be enlarged using an intensified nested grid of 1 x 1 km. Sampling intensification will be carried out primarily on the surface of the change category to be analysed, and it will therefore be necessary to develop a wall-to-wall map from Landsat images following the methodology developed by [Ovalles \(2018\)](#)¹¹², or using the methodology applied by [Terrapulse](#).

ii. Interpretation of land cover: Bias in the photo interpretation of land use/land cover and canopy density is controlled by means of criteria standardization and the establishment of decision trees for the visual assessment of high- and low-resolution images (Annex 1. Multitemporal visual assessment protocol for obtaining reference data for estimation of activity data uncertainty). 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 land use assessment: 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.

The methodological approach used to estimate DA and EF has limitations to differentiate the mature and secondary forests present at the beginning of the reference period. In the analysis of change in land use and coverage, it was assumed that the forest lands present at the beginning of the reference period (2005) are mature forests, which is unlikely. The non-differentiation between mature and secondary forests could overestimate emissions from deforestation and forest degradation, as the carbon densities are significantly different.

The country will carry out an analysis of forest cover prior to the reference period. Considering the historical availability of remote sensing images, this analysis could be from 1985 to 2004. With this analysis it would be possible to differentiate the mature and secondary forests present at the beginning of the reference period and in this way apply the corresponding EFs for deforestation.

The country will also set up biomass estimation plots in regenerated forests. Using time series analysis algorithms (e.g. TerraPulse or BFAST), the age of the secondary forest where the biomass estimation plot is established will be determined. With this information it is possible to estimate the initial change in carbon stocks when moving from other lands to forest land, as well as the annual increase in carbon stocks.

¹¹² 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, Dominican Republic

	See tables 9.1.1 and 9.1.2 in Section 9 ERPD and the Work Plan for the reduction of uncertainty in the estimation of emissions during monitoring events.
Any comment:	Due to the need for sampling intensification in areas of change with an estimation error in excess of 60%, it will still be necessary to develop a wall-to-wall map from Landsat images or other available satellite images, on the occasion of each monitoring event. To investigate the feasibility to apply Wall-to-wall mapping of yearly LC and LC-change with acceptable limits of confidence, the Government of the Dominican Republic (GdRD), with the support of the World Bank, hired TerraPulse Inc. (https://www.terrapulse.com) to estimate deforestation, forest degradation and increase in carbon stocks using the analysis of annual time series of Landsat and MODIS data. TerraPulse is developing and applying data extraction and machine learning algorithms to large volumes of satellite images to monitor deforestation and degradation, based on a probability estimator of canopy cover. The process offers a long-term and coherent mapping and monitoring option of the forest cover and allows the recovery of historical reference levels of the satellite registry, as well as the detection of deforestation, degradation and recovering over time. It also facilitates the calibration of readily available reference data sources (eg lidar, Sexton et al., 2013) and adaptation to any national forest definition (Sexton et al., 2016). The procedure applied by Terrapulse includes an assessment of the accuracy of the activity data, which is a requirement of the Methodological Framework of the Carbon Fund. The advantage of the procedure applied by Terrapulse, compared to the procedure applied in the current estimation, will be a wall to wall estimation of yearly LC-change that include accuracy estimations. Currently, we are in the process of validating the products that are delivered by Terrapulse. The following procedures are required to adjust the Terrapulse products to activity data that can be used to estimate the reference scenario: 1. Validate the deforestation and forest degradation maps of Terrapulse via visual interpretation of sampling points according to Olofsson et al 2014 that are subsequently compared to the Terrapulse products via a confusion matrix. 5000 sampling points will be selected for the validation, using an optimal stratified sampling approach, distinguishing three strata: 1. stable forest; 2. Stable non-forest; (both strata with low probability of change and error) 3; bufferzone around the points where changes were observed between 2002-2018 (areas with high probability of change and error). Once the products are validated, the following procedures will be

	carried out to convert these products to activity data that will be the basis of the reference scenario and RE estimation: tree cover data and detecting changes. If this new cartographic product is duly validated, the activity data calculated from this product will be used in the estimation of reference levels and applied in the final version of the ERPD. 2. Conversion of the pixel-level tree cover classes to intact forest, degraded forest, heavily degraded forest and non-forest classes, based on the definition of forest (0.81 ha or 3 x 3 landsat pixels). 3. Assign LC-attributes to each forest and non-forest class, according to the official LC-map of 2015 of the country and other auxiliary resources available. 4. Generate annual or periodic LC and LC-change matrices, with error estimations based on the 5000 and 2000 sampling points available. Once the maps are validated by MARENA, the applied methodology will be converted to standard operating procedures with guidelines to QA/QC assessments of all steps. MARENA personnel will be trained in all aspects of the procedure, starting from applying the TERRAPULSE algorithms, post-processing and validation of all products.
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Table 9.1.2 Summary of procedures for generating emission factors during MMR

Parameter:	Carbon density
Description:	Carbon densities used to estimate the FREL, including AGB, BGB, MM, H and SOC: • Broadleaf forest • Dry forest • Pine • Tree shaded crops • Woody vegetation • Non-Woody vegetation
Data unit:	t CO ₂ *ha ⁻¹
Source of data or measurement/calculation methods and procedures to be applied (e.g. field measurements, remote sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature), including the spatial level of the data (local, regional, national, international) and if and how the data or methods will be approved during the Term of the ERPA	The data from the National Forest Inventory (NFI) and from "Evaluating the Biomass and Carbon Content in Non-Forest Cover in the Dominican Republic" (ISNB) were used to estimate the carbon density in each of the land uses. Both inventories were carried out using the same primary plot and nested plots to determine the carbon density for each component recognised as a sink. Due to there being no specific allometric equations for broadleaf woodlands in the Dominican Republic, aerial biomass calculations are carried out using the allometric equations of Chave et al. (2014). For pine, a local allometric equation is used. (Márquez, 2000). Allometric equations developed in Nicaragua and Costa Rica are used for coffee, cocoa, coconut, mango, avocado, and guava (see Table 8.3.11). The Cairns et al. (1997) equation is used to quantify below-ground biomass (1997). In both inventories, the carbon factor that is used is the IPCC's default value (0.47).
Frequency of monitoring/recording:	The Dominican Republic recently (October 2018) finalized the National Forest Inventory and the study "Evaluating the Biomass and Carbon Content in Non-Forest Cover in the Dominican Republic" (ISNB). The Forest Monitoring Unit has drawn up the re-measurement schedule. and is planning to remeasure 25% of the plots in 2019 or 2020, once a budget is allocated. These data will be used to generate stock-change estimates of the different forest and agroforest LC classes.
Monitoring equipment:	The Forest Monitoring Unit is responsible for updating the National Forest Inventory (NFI), and for carrying out specific inventories for assessing the condition of forests throughout the country.
Quality Assurance/Quality Control procedures to be applied:	In case The emission factors for the estimation of forest emissions and removals during monitoring events may change from those used in the construction of the reference level with the data that become available from the remeasurements, the

	same QA/QC procedures used in both inventories and established by the Forest Monitoring Unit, will be applied.
Identification of sources of uncertainty for this parameter	There are three sources of uncertainty associated with the estimation of the EFs: • The country has allometric equations for the estimation of biomass in pine forests (<i>Pinus occidentalis</i>) only. The equations used to calculate AGB and BGB for the remaining forest and non-forest LC-cover classes are not calibrated specifically for the Dominican Republic. • Secondary forests were not separated from primary forest at the start of the reference period (2005), which may overestimate the emissions from deforestation and forest degradation or underestimate the removal of carbon during the process of biomass recovery in secondary forests. It was assumed that the forest present in 2005 were primary forests, which is not likely. • The error in the estimation of soil organic carbon (SOC) is very high in all LC classes, due to the low number of sampling points with SOC data. Also, differences in SOC due to soil type was also not taken into account.
Process for managing and reducing uncertainty associated with this parameter	• The Forest Monitoring Unit will validate the allometric equations used in the NFI and ISNB. • Secondary forests, present in 2005 will be derived from a time series analysis (e.g. Terrapulse or BFAST¹¹³) and the data available in the INF and ISNF. From the time series, historical change from non-forest to forest of all pixels will be determined back to 1986 and any plot of the inventory that changed in this period will be used to estimate average increase in biomass and the age of the forest plot. • Data on SOC will be improved by analyzing SOC of the remaining inventory plots. Soil type of all plots will be determined by overlaying the location of the plots on soil maps and a number additional plots will be established in those LC-soil type classes that are not well represented.
Any comment:	

¹¹³ BFAST, Breaks for Additive Season and Trend, integrates the decomposition of time series into trend, season, and remainder components with methods for detecting and characterizing change within time series. BFAST iteratively estimates the time and number of abrupt changes within time series and characterizes change by its magnitude and direction. BFAST can be used to analyze different types of time series (e.g. Landsat, MODIS) and can be applied to other disciplines dealing with seasonal or non-seasonal time series, such as hydrology, climatology, and econometrics. The algorithm can be extended to label detected changes with information on the parameters of the fitted piecewise linear models. <https://sepal.io/>

Table 9.1.3 Summary of procedures for generating removal factors during MMR

Parameter:	Removal factors
Description:	Removal factors used to estimate the FREL reference level: • Secondary Broadleaf forest • Secondary Dry Forest • Pine regeneration • Tree shaded crops
Data unit:	t C*ha ⁻¹ *year ⁻¹
Source of data or measurement/calculation methods and procedures to be applied (e.g. field measurements, remote sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature), including the spatial level of the data (local, regional, national, international) and if and how the data or methods will be approved during the Term of the ERPA	Rates of biomass growth for secondary forests are not estimated in the National Forest Inventory (NFI). Sherman et al (2012) provide the carbon clearance rate for secondary broadleaf woodland, dry woodland and pine woodland¹¹⁴. The authors estimate the net growth in above-ground biomass for broadleaf forests, dry forests and pine forests in the Cordillera Central of the Dominican Republic. In addition, in neither the National Forest Inventory (NFI) nor "Evaluating the Biomass and Carbon Content in Non-Forest Cover in the Dominican Republic" (ISNB) are the rates of carbon accumulation in tree crops estimated. In the absence of studies for the Dominican Republic, the rate of carbon removal resulting from tree crops is obtained from Somarribas et al (2013)¹¹⁵. The authors provide an estimate for the carbon accumulation rate in above-ground biomass pertaining to cocoa agroforestry systems in Central America.
Frequency of monitoring/recording:	Before the first monitoring event, the plan is to establish or re-measure sampling plots in all LC classes, particularly in secondary broadleaf, dry forests, in pine regeneration and tree crop areas
Monitoring equipment:	The Forest Monitoring Unit is responsible for updating the National Forest Inventory (NFI), and for carrying out specific inventories for assessing the condition of forests throughout the country.
Quality Assurance/Quality Control procedures to be applied:	In case that the removal factors for the estimation of forest emissions during monitoring events will be identical to those used in the construction of the reference level, it is not necessary to apply a QA/QC procedure. In case of having local estimates of rates of biomass growth, resulting from sampling plots, QA/QC controls will be applied to these data following

¹¹⁴ Sherman, R. E., Fahey, T. J., Martin, P. H., & Battles, J. J. (2012). Patterns of growth, recruitment, mortality and biomass across an altitudinal gradient in a neotropical montane forest, Dominican Republic. *Journal of Tropical Ecology*, 28(5), 483–495. <http://doi.org/10.1017/S0266467412000478>

¹¹⁵ Eduardo Somarriba, *, Rolando Cerda, Luis Orozco, Miguel Cifuentes, Héctor Dávila, Tania Espina, Henry Mavisoy, Guadalupe Ávila, Estefany Alvarado, V. P., & Carlos Astorga, Eduardo Saya, O. D. (2013). Carbon stocks and cocoa yields in agroforestry systems of Central America. *Agriculture, Ecosystems and Environment*, 173, 46–57.

	methods and guidance from Global Forest Observatory Initiative and the National Forest Monitoring Unit. ¹¹⁶
Identification of sources of uncertainty for this parameter	The Sherman et al (2012) study may underestimate the carbon accumulation rate. The study is restricted to the altitudinal gradient that is prone to frequent upheaval (fires, winds, flooding and landslides), located in the Central Cordillera of the Dominican Republic, in a mountainous tropical woodland with a relatively low AGB. The rates of carbon accumulation estimated by Somarribas et al (2013) for SAF-Cacao crops, have not been validated for the Dominican Republic.
Process for managing and reducing uncertainty associated with this parameter	The Forest Monitoring Unit will establish time sampling plots in moist and dry secondary broadleaf forests, pine regeneration areas and tree crop areas, for the purposes of validating the carbon accumulation rates estimated by Sherman et al (2012) and Somarribas et al (2013).
Any comment:	

Table 9.1.4 **Summary of procedures for the emission/gain factor due to canopy density change in forest land remaining forest land**

Parameter:	Emission/gain factor due to canopy density change in forests that remain as forest, including AGB.
Description:	Factors used to estimate the FREL reference level • Average AGB loss in Broadleaf forest 2006-2015 • Average AGB loss in Dry forest 2006-2015 • Average AGB loss in Pine forest 2006-2015 • Average AGB gains in Broadleaf forest 2006-2015 • Average AGB gains in Dry forest 2006-2015 • Average AGB gains in Pine forest 2006-2015 • AGB Emission Factor Tree shaded crops to Broadleaf forest • AGB Emission Factor Tree shaded crops to Dry forest • AGB Emission Factor Tree shaded crops to Pine forest • AGB Emission Factor Broadleaf forest to Tree shaded crops • AGB Emission Factor Dry forest to Tree shaded crops • AGB Emission Factor Pine to Tree shaded crops
Data unit:	t CO ₂ *ha ⁻¹
Source of data or measurement/calculation methods and procedures to be applied (e.g. field measurements, remote	The emissions and removals resulting from degradation or enhancement of cover on land that remains as forest are assessed by taking into account the relationship between the change in canopy density and the change in biomass. By means

¹¹⁶ https://www.reddcompass.org/mgd-content-v2/dita-webhelp/en/s2_3_4.html

sensing data, national data, official statistics, IPCC Guidelines, commercial and scientific literature), including the spatial level of the data (local, regional, national, international) and if and how the data or methods will be approved during the Term of the ERPA	of the visual assessment of high resolution images, the canopy cover was determined in a subset of 278 NFI plots ¹¹⁷ , including broadleaf forest, dry forest and pine forests. The average biomass for 3 categories of canopy cover (low 33-56%, medium 67-78% and high 89-100%) were related to the median of the category for broadleaf, dry and pine forests (see Figure 8.3-6). This regression is applied in order to estimate the loss of biomass at each of the visual assessment points located on land that remains as forest land. A copy of the database used to adjust the model can be obtained by following this link: https://app.box.com/s/9kb6hjlhp1xtvx4kliv0mitlr7woo740
Frequency of monitoring/recording:	Biennial (every two years)
Monitoring equipment:	idem Table 9.1
Quality Assurance/Quality Control procedures to be applied:	idem Table 9.1
Identification of sources of uncertainty for this parameter	The uncertainty of the biomass-canopy model is high (RMS).
Process for managing and reducing uncertainty associated with this parameter	It is necessary to establish time plots at the various levels of degradation and various types of forest in order to assess the possibility of obtaining a better adjusted biomass-canopy model.
Any comment:	

¹¹⁷ A copy of the database used to adjust the model of biomass change in relation to canopy change can be obtained by following this link: <https://app.box.com/s/9kb6hjlhp1xtvx4kliv0mitlr7woo740>

Work plan for the reduction of uncertainty in the estimation of emissions during monitoring events:

Two adjustments to the FREL are planned: i. A first adjustment in activity data before the signing of the ERPA and ii. A second adjustment to the emission factors before the first monitoring.

i. First Adjustment of the FREL:

a. Re-estimation of activity data (Table 9.1.1).

After validating the results of the TerraPulse consultancy, the deforestation, reforestation and degradation activity data for the periods 2005-2010, 2010-2015 and 2015-2018 will be re-estimated, applying the methodology of Olofsson et al, 2014 to the products of Terrapulse. The forest cover determined by TerraPulse will be subdivided by forest types (broad-leaved, dry broad-leaved, pine forest and wooded crops). In the case of tree crops, information generated by the GIZ initiative will be used to differentiate agroforestry systems from natural forests.

b. Determination of a preliminary growth rate for dry broadleaf forests.

From the biomass estimated in the INF in plots where the age of the secondary forest can be defined by time series analysis (eg TerraPulse or BFAST), an average preliminary rate of annual change in the carbon reserves in converted lands will be estimated. to forest lands.

ii. Second adjustment of the NREF:

A second recalculation of the NREF will be carried out considering the available results of the following studies:

a. Separation of mature and broad-leaved pine forests and stands present at the beginning of the 2005 reference period (Table 9.1.1):

To separate the mature and secondary forests present in 2005, an analysis of forest cover prior to the reference period will be carried out. Considering the historical availability of remote sensing images, this analysis could be from 1985 to 2004. With this analysis it would be possible to differentiate the mature and secondary forests present at the beginning of the reference period and in this way apply the corresponding EFs for deforestation.

b. Validation of allometric equations (Table 9.1.2)

The Forestry Monitoring Unit, by harvesting and weighing representative individuals, will validate the allometric equations used in estimating biomass.

c. Determination of annual change rates in carbon stocks in land converted to forest land (Tables 9.1.2 and 9.1.3).

Biomass estimation plots will be established to determine the initial change in carbon stocks and the annual increase in carbon stocks due to the growth of biomass, in dry and moist broadleaved secondary forests, pine forests and wooded crops (coffee, cocoa, mango and avocado). The age of the secondary forest where the biomass estimation plot is established would be determined by time series analysis algorithms (e.g. TerraPulse or BFAST), which have been applied in República Dominicana. Likewise, the same plot design used in the NFI and ISNB will be used.

d. Improvement of the adjustment of the biomass model as a function of the canopy density. (Table 9.1.4)

It is necessary to establish biomass estimation plots in the different levels of degradation in various types of forests to evaluate the possibility of obtaining a better adjusted biomass-canopy model.

e. Improvement of Soil organic carbon estimations (Table 9.1.2)



The estimation of soil carbon will be improved (SOC), by increasing the sample size and improving the sampling design taking into account the type of soil.

f. Improvement of data collection for the estimation of emissions by fires (Table 7.2.2).

The forest fire registration system will be improved in order to obtain spatially explicit data on the impact of fires, type of fuel and percentage of fuel consumed, on forest land converted to another use and forest land that remains as such. Based on this information, the estimation of non-carbon gases by forest fires will be included in the FREL.

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 organisational structure of the ERP MMR 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 9.2-1 and Table 9.2.1 present the responsibilities and powers of each of these agencies.

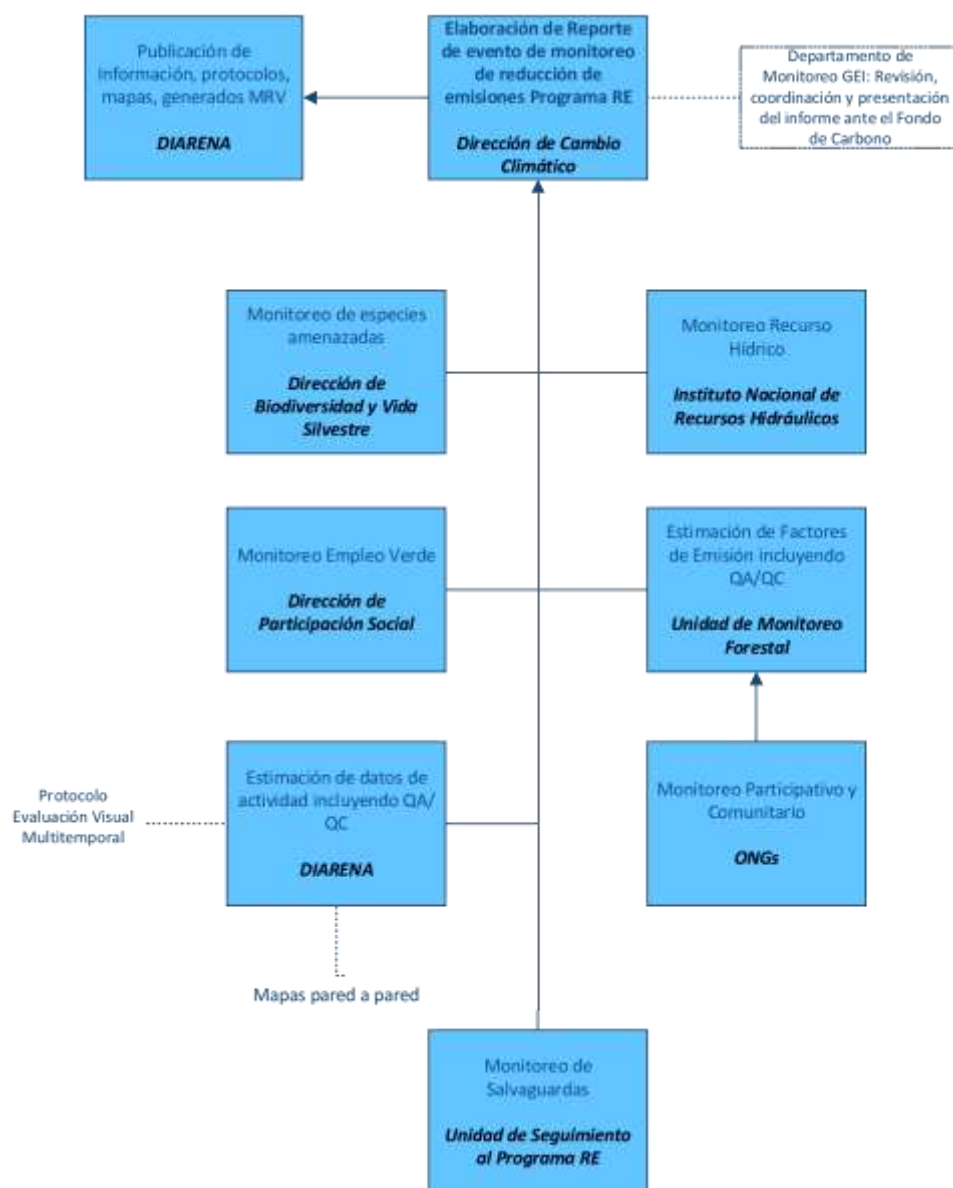


Figure 9.2-1 **Organizational structure for ERP measurement, monitoring and reporting in the Dominican Republic.**

Table 9.2.1 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 Organisations 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 programmes
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 Labour 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.

10. DISPLACEMENT

10.1. Identification of risk of Displacement

The Table below gives the rating of the risk of displacement for each of the drivers of deforestation identified in Section 4, together with the explanation for the risk assessment. It should be noted that the area of accountability is national, and therefore the risk of displacement is only analysed from the international perspective, that is to say, activities are displaced to the neighbouring country, Haiti.

Table 10.1.1 Identification of risk of displacement

Driver of deforestation or degradation	Risk of Displacement. (Categorize as High, Medium or Low)	Explanation / justification of risk assessment
Unsustainable management and use of land for livestock production: Commercial livestock/Grazing of livestock in forests	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. However, 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 mode in all mountainous forest areas (Geilfus, 2002). <i>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 neighbouring country.</i>
Unsustainable management and use of land for agricultural production: Commercial agriculture; migratory/subsistence agriculture	Low	
Unsustainable management and use of forest land: Extraction of wood, firewood/coal; poorly managed/poorly executed management plans; illegal felling of natural forest	Low	Haiti imports a large proportion of the coal production of the Dominican Republic. Also, the country is significantly reducing coal consumption. According to Checo (2010), the volume of coal produced in the five provinces of the border region stands at 97,425 sacks annually, of which 46% is sold locally and 54% in Haiti. 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. In addition, bakeries, confectioners, cassava factories, laundries, restaurants and cheese dairies, among others, also use firewood and coal (ENIGH, 2007, cited by the Ministry of Environment-UASD-UNEP, 2010). The REDD+ strategy envisages the promotion of models for the management of natural resources that contribute to the conservation and sustainable use of the forests and to increased forest cover. It is hoped

		that, with the implementation of sustainable management, domestic and external demand for coal will continue to be met.
Forest fires	Low	The majority of forest fires are of anthropic origin - not natural (SEMERENA, 2007) and are linked to agricultural practices and the enlargement of the area given over to livestock in the country. The actions aimed at strengthening Fire Management in the Dominican Republic should reduce the incidence of fires which will also benefit the neighbouring country.
Open-cast mining	Low	The construction industry depends on the extraction of aggregates, demand for which doubled between 1995 and 2000 (16 million m ³ per year). Extraction by gravel extraction companies (10,000 m ³ per day in the lower basin of the Nizao River and 14,000 m ³ per day in the Cibao Valley in 2000), generally takes place with poor planning and chaotic extraction, with no subsequence restitution, apart from a few companies. Dominican mining directly employs more than 10,000 people. The unregulated extraction of materials on river banks is causing the destruction of the forested buffer strips (Díaz and Hernández, 2006; and Geilfus, 2002). Improved protection of the forest resource could strengthen the regulation of aggregate extraction, leading to the displacement of the activity to the neighbouring country.
Plagues and tree diseases	Low	With regard to pests that attack coniferous forests, the presence of <i>Ips calligraphus</i> , also known as the coarsewriting engraver or bark beetle, has been established. This boring insect primarily attacks <i>Pinus occidentalis</i> (creole pine) or natural coniferous forest. In the last few years, a particular infestation of this pest has been recorded in the conifer forests of the provinces of Santiago and Dajabón, which are regarded as strategic from a water-forest viewpoint, since they constitute an important resource for the local timber industry as an input for the production of furniture and other household goods. Improved phytosanitary management in the Dominican Republic (strengthening the phytosanitary protection programme in priority forested areas) will reduce the risk of incidence of pests and diseases, which will also benefit the neighbouring country.
Productive infrastructure expansion, such as roads, urban and industrial areas	Low	In the last couple of years, a horizontal expansion has occurred in all of the country's main cities. This has meant that there is less agricultural land available and less natural vegetation cover around these cities. The country's economic development led to accelerated industrial development; territorial infrastructure has increased, quite often to the detriment of natural vegetation. Furthermore, more and more space is taken up by tourism-related infrastructure, which results in significant woodland depletion, especially along the coast. The strategy at REDD is to promote the introduction, strengthening and application of public policies aimed at limiting and/or containing woodland infrastructure expansion; this may lead to tourism-related and industrial growth to shift to countries with fewer environmental regulations.
Natural disasters	Not applicable	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.

10.2. ER Program design features to prevent and minimize potential Displacement

The ERP 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.

11. REVERSALS

11.1. Identification of risk of Reversals

The FCPF emissions reduction program guidelines for establishing a buffer identify¹¹⁸ 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 the following Table.

Table 11.1.1 Identification of risk of Reversals

Risk Factors	Examples	Risk level and percentage associated	Assessment
Default Risk	Not applicable	10%	This is the minimum % of reversal risk set by the FCPF.
A. Lack of broad and sustained stakeholder support	Insufficient consultation of interested parties	Low (0%)	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.

¹¹⁸ 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>

Risk Factors	Examples	Risk level and percentage associated	Assessment
			Workshops involving key players (309 people) were held as part of the Participation and Consultation plan.
B. Lack of institutional capacities and/or ineffective vertical/cross sectoral coordination	Lack of experience in implementing policies and programs. Lack of intrasectoral cooperation between different levels of government	Medium (5%)	In accordance with Decree No. 269-15 ¹¹⁹ , 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).
C. Lack of long-term effectiveness in addressing underlying drivers	Disconnection between deforestation, degradation and economic activities has limited success. Laws and regulations do not lead to compliance with REDD+ objectives	Low (0%)	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 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 ¹²⁰ .
D. Exposure and vulnerability To natural disturbances	Exposure, vulnerability to upheaval and natural disasters. Limited prevention capacity.	High (5%)	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.

¹¹⁹ Dec. No. 269-15 establishing a National Climate Change Policy Repeals Decree No. 278-13. G. O. No. 10813 of 2 October 2015.

¹²⁰ De los Santos, J., Muñoz, G., Egas, J. J., De Salvo, C. P., & Schmitd, T. D. (2018). Farming Policies, DR-CAFTA and Climate Change in the Dominican Republic



Risk Factors	Examples	Risk level and percentage associated	Assessment
Total		20%	

11.2. ER Program design features to prevent and mitigate Reversals

The ERP includes the following Strategic Actions aimed at preventing and mitigating the risk of reversals:

Capacity-building program for implementing institutions (Strategic Action 1.6): There are several bodies that are in charge of implementing the REDD+ actions. They differ in terms of institutional capacity. Institutional capacity-building implies a series of actions aimed at making the implementation of REDD+ actions as coherent as possible. To that end, the group's internal dynamics, structure, hierarchies, decision-making bodies and functioning will be strengthened, both at the level of the internal workings of the group and its wider setting. Institutional capacity-building also looks at the organisation's resource base: human, material and financial resources. Therefore, in the short and medium term, there are plans to review, establish and assign human and logistical resources in order to implement REDD+ at the institutional level, as well as establish a capacity-building program to operate centrally and locally across all REDD+'s governance structures.

Reforestation and regeneration of degraded natural areas (Strategic Actions 3.6, 3.8 and 3.9): In the short term, the aim is to repopulate fragile areas with several species of trees, boost natural regeneration and protect forest cover. To reach this goal, incentives will be created to promote activities aimed at recovering degraded land via natural regeneration and increasing surfaces under sustainable forest management. Review, assessment and broadening the scope of existing incentives. The Dominican Republic has experience with financial instruments and mechanisms to develop production, conservation and forest ecosystem restoration activities. These include: i) the Payment for Environmental Services (PSA) system in the North Yaque basin, ii) several Water Funds, iii) the MARENA Fund, iv) the CONALECHE Program which provides low interest rate loans, v) the compensation scheme for reforestation in the area of influence El Zorzal Private Reserve. This experience will be analysed in order to define, reinforce and/or implement financial instruments and mechanisms designed to achieve sustainable production, conservation and the restoration of forest ecosystems.

11.3. Reversal management mechanism

Table 11.3.1 Selection of Reversal management mechanism

Reversal management mechanism	Selected (Yes/No)
Option 1: The ER Program has in place a Reversal management mechanism that is substantially equivalent to the Reversal risk mitigation assurance provided by the ER Program CF Buffer approach	No
Option 2: ERs from the ER Program are deposited in an ER Program -specific buffer, managed by the Carbon Fund (ER Program CF Buffer), based on a Reversal risk assessment.	Yes

Level of risk associated with the ERP

In accordance with the FCPF ER Program Buffer Guidelines, the following risk factors may be identified: i. Lack of experience in implementing policies and programs. Lack of intrasectoral cooperation and lack of



cooperation between the different levels of government (Average Risk 5%) and ii. Exposure, vulnerability to upheaval and natural disasters. Limited prevention capacity (Average Risk 5%) Taking into account the 10% *Default Risk*, the total risk associated with the ERP is 20%.

11.4. Monitoring and reporting of major emissions that could lead to Reversals of ERs

Monitoring compliance with the Capacity-Building Program: Every year, the progress made by institutions in charge of implementing the capacity-building Program will be measured on the basis of a series of performance indicators.

Monitoring of restoration of ecosystems affected by natural disasters: The Forest Monitoring Unit, in collaboration with the Biodiversity Directorate will keep a record of all ventures aimed at restoring ecosystems affected by natural disasters. This log will include statistics pertaining to surface area, geographic location and type of restoration. Areas restored in previous years will also be monitored in order to guarantee the successful restoration of affected areas.

12. UNCERTAINTIES OF THE CALCULATION OF EMISSION REDUCTIONS

The uncertainty of the Emissions and forest clearance reference level (NREF) estimate is quantified using the Monte Carlo method. Sources of error pertaining to the reference levels of deforestation, degradation and improvement of carbon reserves are combined into a single uncertainty estimate taken from the confidence level of 90% of two tails.

12.1. Identification and assessment of sources of uncertainty

The two main sources of uncertainty are those errors pertaining to activity data and emission or clearance factors.

Activity data:

Activity data used in the NREF calculation are estimated based on the Reference Data, obtained via a visual assessment of soil use gleaned from high-resolution images over a systematic grid measuring 5 x 5 km (1942 points). A systematic sample was carried out in order to guarantee homogenous distribution of the points sample over all change categories. It should be noted that for the pine to woody vegetation (15) and to non-woody vegetation (16) conversion categories, sampling had to be increased by 141 additional points, using an intensified grid measuring 1 x 1 km (Figure 8.3-3).

The sources of uncertainty in the visual assessment of the systematic grid are associated with i. sample size (systematic grid density), ii. cover interpretation and iii. quality of the images available to assess the cover.

i. Sample size: Systematic grid density was assessed by analysing a systematic sample comprising 474 assessment points and created by Ovalles (2018). In accordance with this analysis, a 1942-sized sample implies a standard error in the overall precision of $S(\hat{\sigma}) = 0.01$. Bearing in mind the additional points on the intensified 1x1 km grid in the pine change categories, the sample has a total of 2083 points. Nevertheless, this sample can be the most significant source of uncertainty. In only 6 of the 19 categories of use change is the error pertaining to the 90% significance less than 20%. Use change categories below 13,000 ha imply 71 to 109% uncertainty.

iii. Cover interpretation: Bias in the photo interpretation of land use and crown density is controlled by means of criteria standardization and the establishment of decision trees for the visual assessment of high- and low-resolution images (Annex 1. Multitemporal visual assessment protocol for obtaining reference data for estimation of activity data uncertainty). In order to reduce variability between photo interpreters, training exercises were carried out using common samples until an appropriate level of consistency was achieved (see Figure 12.1-1).

iii. Quality of available images: Availability and spatial resolution of images is not considered to constitute an important source of uncertainty. We were able to determine reference use for the entire sample for two dates: 2005 and 2015. The main source of errors could be linked to temporal resolution. For 2005, we had to use images from up to 3 years before and 2 years after. For 2015, the assessment window is more limited. In summary, for 76% of the sampling points in 2005 and

90% of the sampling points in 2015, we were able to obtain high-resolution images close to the year under assessment (Table 12.1.1).

Table 12.1.1 **Spatial and temporal resolution of images used in determining land use and crown density.**

Assessment 2005	Resolution			Total
	Low	Medium	High	
< 2002	0%	0%	2%	2%
2002-2007	20%	0%	76%	96%
>2007	0%	0%	2%	2%
Total	20%	0%	80%	100%
Assessment 2015	Resolution			Total
	Low	Medium	High	
< 2013	0%	0%	3%	3%
2013-2017	4%	0%	90%	94%
>2017	0%	0%	3%	3%
Total	4%	0%	96%	100%

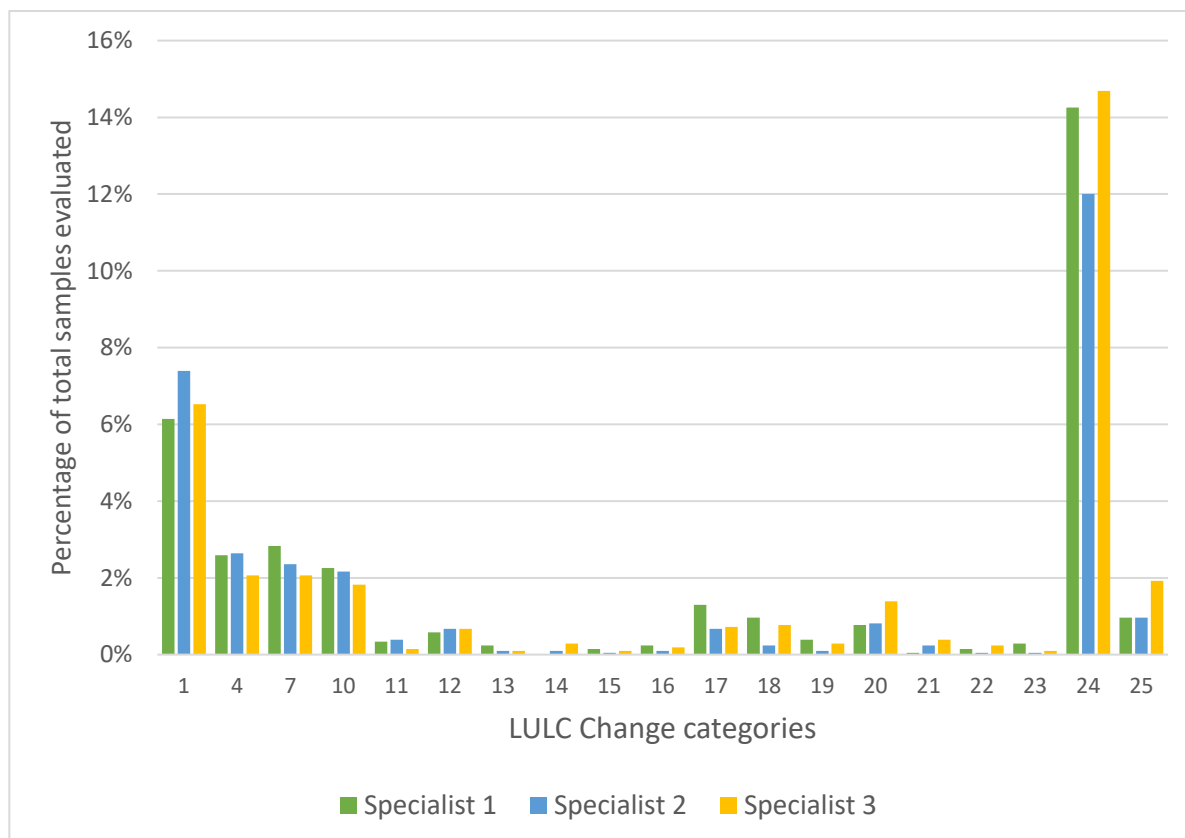


Figure 12.1-1 **Land-use change assessment consistency between interpreters.** Source: Reference data.

Emission factors

Data from the National Forest Inventory (NFI) and the Assessment of biomass and carbon content in non-woody systems in the Dominican Republic (ISNB) were relied upon in order to estimate carbon density for each land use and emission factors pertaining to the change of land use categories. Both inventories were compiled using the same main plot and nested plots in order to determine carbon density for each component recognized as a sink (Table 8.3.4 and Table 8.3.10).

Due to there being no specific allometric equations for broadleaf woodlands in the Dominican Republic, aerial biomass calculations are carried out using the allometric equations of Chave et al. (2014). A local allometric equation is used for pine (Márquez, 2000). Allometric equations developed in Nicaragua and Costa Rica are used for coffee, cocoa, coconut, mango, avocado, and guava (see Table 8.3.11). The Cairns et al. (1997) equation is used to quantify subterranean (1997). In both inventories, the carbon factor that is used is the IPCC's default value (0.47).

The main source of error pertaining to emission factors is due to the fact that none of the equations – used to calculate AGB and BGB, forest cover (excluding pine woodland), farmland, and agricultural land – are specifically calibrated for the Dominican Republic.

On the other hand, the other source of error may relate to the clustering of non-forest use categories, and to the fact that some of these land-use categories do not have carbon estimation plots (AGB, MM, H and SOC): i. Natural and planted palm, ii. annual crops and sugar cane, iii. Vegetationless soil and iv. Urban areas (see Table 8.3.1). Nevertheless, the errors found in the Ligneous Vegetation and Non-Ligneous Vegetation land use categories are standard and similar to those present in the Forest categories.

Clearance factors:

Neither inventory (NFI and ISNB) offers biomass growth rate estimates for secondary woodland or tree-lined crops. In the absence of specific studies dealing with the Dominican Republic, and assuming that during the implementation of the emissions reduction program, the greatest increase of tree-lined crops took place in a cocoa-AFS context, it is fair to accept Somarribas et al (2013)'s assessment of the carbon clearance rate for tree-lined crops¹²¹. The authors provide an estimate for the carbon accumulation rate pertaining to Cocoa agroforestry systems in Central America. The carbon accumulation rates estimated by Somarribas et al (2013) for SAF-cocoa crops are not valid for the Dominican Republic.

Sherman et al (2012) provide the carbon removal rate for secondary broadleaf forest, dry forest and pine forest¹²². The authors estimate the net growth in AGB for broadleaf forests, dry forests and pine forests in the Dominican Republic. The Sherman et al (2012) study may underestimate the carbon accumulation rate. The study is restricted to the altitudinal gradient that is prone to frequent upheaval (fires, winds, flooding

¹²¹ Eduardo Somarribas, *, Rolando Cerda, Luis Orozco, Miguel Cifuentes, Héctor Dávila, Tania Espina, Henry Mavisoy, Guadalupe Ávila, Estefany Alvarado, V. P., & Carlos Astorga, Eduardo Saya, O. D. (2013). Carbon stocks and cocoa yields in agroforestry systems of Central America. *Agriculture, Ecosystems and Environment*, 173, 46–57.

¹²² Sherman, R. E., Fahey, T. J., Martin, P. H., & Battles, J. J. (2012). Patterns of growth, recruitment, mortality and biomass across an altitudinal gradient in a neotropical montane forest, Dominican Republic. *Journal of Tropical Ecology*, 28(5), 483–495. <http://doi.org/10.1017/S0266467412000478>

and landslides), located in the Central Cordillera of the Dominican Republic, in a mountainous tropical woodland with a relatively low AGB.

12.2. Quantification of uncertainty in Reference Level setting

A Monte Carlo simulation was carried out to achieve the combination of sources of error pertaining to activity data and to emission and clearance factors, using XLSTAT's propagation tool¹²³. A quantified measure of uncertainty was achieved using confidence intervals obtained out of 10,000 simulations.

Deforestation reference level: the information recorded in Table 12.2.1, Table 12.2.2, and in the model Equation 12.1 was used in order carry out the simulation and quantify total emissions due to forest loss, as well as the associated uncertainty. The underlying distribution (probability distribution function) of the emission factors (AGB+BGB+MM+H and SOC) were taken into account in order to estimate the uncertainty pertaining to this reference level.¹²⁴ Uncertainty associated with measurements, parameters and biomass allometric equations were not taken into account when estimating error using the Monte Carlo method. According to the Monte Carlo analysis, uncertainty was estimated at 1.34% for the Deforestation Reference Level (Table 12.2.3). The report on the calculation of the uncertainty of the Deforestation Reference Level can be accessed by following this link:

<https://app.box.com/s/u8oicelmvns0lmimqmftz7woh1wo6ma9>

12.1 Equation

$$RL_d = (AD_{bl-wv} * EF_{bl-wv} + AD_{bl-nwv} * EF_{bl-nwv} + AD_{df-wv} * EF_{bs-wv} + AD_{df-nwv} * EF_{bs-nwv} + AD_{p-wv} * EF_{p-wv} + AD_{p-nwv} * EF_{p-nwv} + AD_{ts-wv} * EF_{ts-wv} + AD_{ts-nwv} * EF_{ts-nwv}) / 10$$

RL_d : Deforestation reference level

AD_{bl-wv} : Activity Data Broadleaf forest to Woody vegetation

AD_{bl-nwv} : Activity data Broadleaf forest to Non-Woody vegetation

AD_{df-wv} : Activity data Dry forest to Woody vegetation

AD_{df-nwv} : Activity data Dry forest to Non-Woody vegetation

AD_{p-wv} : Activity data Pine to Woody vegetation

AD_{p-nwv} : Activity data Pine to Non-Woody vegetation

AD_{ts-wv} : Activity data Pine to Non-Woody vegetation

AD_{ts-nwv} : Activity data Pine to Non-Woody vegetation

EF_{bl-wv} : Emission Factor Broadleaf forest to Woody vegetation

EF_{bl-nwv} : Emission Factor Broadleaf forest to Non-Woody vegetation

EF_{df-wv} : Emission Factor Dry forest to Woody vegetation

EF_{df-nwv} : Emission Factor Dry forest to Non-Woody vegetation

EF_{p-wv} : Emission Factor Pine to Woody vegetation

EF_{p-nwv} : Emission Factor Pine to Non-Woody vegetation

EF_{ts-wv} : Emission Factor Pine to Non-Woody vegetation

EF_{ts-nwv} : Emission Factor Pine to Non-Woody vegetation

Donde: $EF = (C_{bio,pre} - C_{bio,post} + \{(CS_0 - CS_D)/D\} \times \frac{44}{12}$

EF : Emission factor, t CO₂-e ha⁻¹

$C_{bio,pre}$: C stock in biomass prior to forest change, t C/ha

$C_{bio,post}$: C stock in biomass prior post-deforestation, t C/ha

¹²³ XLSTAT 2017: Data Analysis and Statistical Solution for Microsoft Excel. Addinsoft, Paris, France (2017)

¹²⁴ The spreadsheets with the details of the fit of the probability distribution functions for each land-use and land-cover change category can be accessed by following this link:

<https://app.box.com/s/awuad5d901itjvgtf1cpghnchgbu0zj>



CS_0 : Initial or reference soil organic carbon

CS_D : Soil organic carbon at default time D , tC/ha

D : Default time period to transition to a new equilibrium value (20 year)

Table 12.2.1 Estimated carbon density, associated error and underlying distribution of the data.

LULC	n	Mean tCO ₂ ha ⁻¹	Median tCO ₂ ha ⁻¹	Standard Error	Probability density function	Parameters	P value (Two tailed)
AGB+BGB+MM+H							
Broadleaf forest	223	225.64	175.45	10.18	Log-normal	$\mu = 5.245; \sigma: 0.569$	0.310
Dry forest	57	139.57	119.29	9.67	Beta 4	$\alpha: 1.837; \alpha: 29.764; c: 60.764; d: 1393.757$	0.743
Pine	57	220.68	222.32	11.28	Normal	$\mu=220.679; \mu:84.392$	0.506
Tree shaded crops	79	232.94	214.19	15.39	Fisher-Tippett (2)	$\beta=102.415; \beta:172.742$	0.964
Woody vegetation	45	100.44	92.5	11.65	Fisher-Tippett (2)	$\beta=60.581; \beta:64.269$	0.726
Non-Woody vegetation	26	62.95	28.89	22.52	Fisher-Tippett (2)	$\beta=47.008; \beta:28.145$	0.358
SOC							
Broadleaf forest	118	890.73	766.99	55.49	Log-normal	$\mu = 6.557; \sigma: 0.709$	0.139
Dry forest	33	947.75	865.94	96.29	Log-normal	$\mu = 6.702; \sigma: 0.554$	0.951
Pine	33	383.69	342.2	32.35	Log-normal	$\mu = 5.848; \sigma: 0.448$	0.977
Tree shaded crops	79	457.62	459.91	33.49	Normal	$\mu=467.625; \mu:295.76$	0.914
Woody vegetation	40	681.31	680.19	66.27	Logistic	$\mu = 658.01; s: 231.191$	0.862
Non-Woody vegetation	26	440.7	383.79	50.94	Normal	$\mu=440.823; \mu:254.716$	0.751

Table 12.2.2 Forest conversion area and estimation error.

LULC change category	Area (ha)	Error (ha) (relative 90% significance level)	Confidence level (90%)
11 Broadleaf forest to Woody vegetation	41,634	16,553	25080 - 58187
12 Broadleaf forest to Non-Woody vegetation	88,892	24,283	64609 - 113176
13 Dry forest to Woody vegetation	22,158	12,184	9974 - 34342
14 Dry forest to Non-Woody vegetation	19,893	11,539	8353 - 31432
15 Pine to Woody vegetation	4,759	5,175	-416 - 9934
16 Pine to Non-Woody vegetation	8,730	7,574	1156 - 16303
30 Tree shaded crops to Woody vegetation	6,266	6,814	548 - 13080
28 Tree shaded crops to Non-woody vegetation	24,115	12,556	11559 - 36670

Table 12.2.3 Annual emissions from deforestation and their respective uncertainty.

REFERENCE LEVEL	Emissions (t CO _{2-e} *yr ⁻¹)	Standard deviation (t CO _{2-e} *yr ⁻¹)	Lower limit 5% (t CO _{2-e} *yr ⁻¹)	Upper limit 95% (t CO _{2-e} *yr ⁻¹)	Error (90%)
RL Deforestation	3,426,382	2,336,256	3,380,587	3,472,177	1.34%

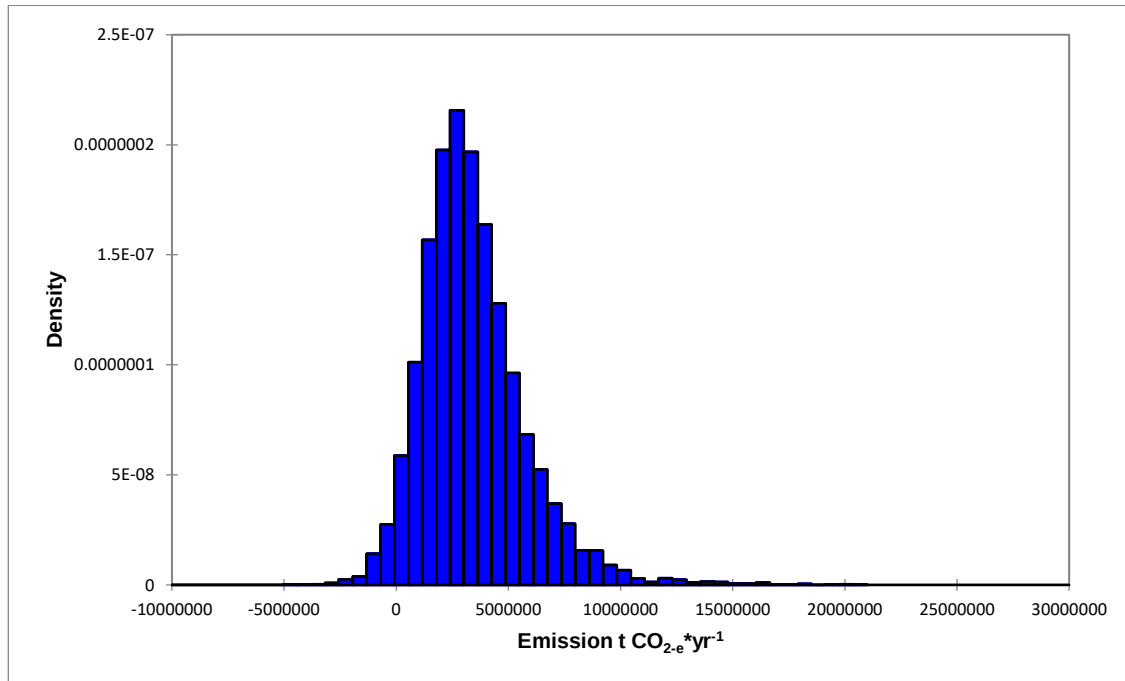


Figure 12.2-1 Monte Carlo iteration frequency distribution for measuring the Reference Level uncertainty pertaining to forest emissions caused by deforestation.

Reference level for the increase of forest carbon on land converted to forest land: the information recorded in Table 12.2.4, Table 12.2.5, and in the model Equation 12.2 was used in order carry out the simulation and quantify total removals on land converted to forest, as well as the associated uncertainty. According to the Monte Carlo analysis, uncertainty was estimated at 0.87% for the Forest Removals Reference Level (Table 12.2.6). The report on the calculation of the uncertainty of the Removals Reference Level can be accessed by following this link:

<https://app.box.com/s/7i9ulfyllm9x1s3nr09a46ch3myiggqd>

12.2 Equation

$$RL_e = \left\{ \left(50 * CA_{bl} * \left[\frac{AD_{wv-bl} + AD_{nwv-bl}}{10} \right] + 50 * CA_{df} * \left[\frac{AD_{wv-df} + AD_{nwv-df}}{10} \right] + 50 * CA_p * \left[\frac{AD_{wv-p} + AD_{nwv-p}}{10} \right] + 50 * CA_{ts} * \left[\frac{AD_{wv-ts} + AD_{nwv-ts}}{10} \right] \right) * \frac{44}{12} \right\} / 10$$

RL_e : Reference level of forest carbon enhancement in lands converted to forest land

AD_{wv-bl} : Activity Data Woody vegetation to Broadleaf forest

AD_{nwv-bl} : Activity data Non-Woody vegetation to Broadleaf forest

AD_{wv-df} : Activity data Woody vegetation to Dry forest

AD_{nwv-df} : Activity data Non-Woody vegetation to Dry forest

AD_{wv-p} : Activity data Woody vegetation to Pine

AD_{nwv-df} : Activity data Non-Woody vegetation to Pine

AD_{nv-ts} : Activity data Woody vegetation to Tree shaded crops

AD_{nwv-ts} : Activity data Non-Woody vegetation to Tree shaded crops

CA_{bl} : Carbon accumulation rate Broadleaf forest

CA_{df} : Carbon accumulation rate Dry forest

CA_p : Carbon accumulation rate Pine forest

CA_{ts} : Carbon accumulation rate Tree shaded crops

Table 12.2.4 Regeneration area and estimation error.

LULC change category	Area (ha)	Error (ha) (relative 90% significance level)	Confidence level (90%)
17 Woody vegetation to Broadleaf forest	136,697	29,909	106789 - 166606
18 Woody vegetation to Dry forest	98,969	24,555	74414 - 123524
19 Woody vegetation to Pine	23,605	12,548	11057 - 36153
29 Woody vegetation to Tree shaded crops	5,261	6,130	-868 - 11391
20 Non-Woody veg to Broadleaf forest	139,124	30,037	109087 - 169161
21 Non-Woody veg to Dry forest	34,824	15,230	19594 - 50054
22 Non-Woody veg to Pine	11,641	8,520	3122 - 20161
23 Non-Woody veg to Tree shaded crops	22,034	12,277	9757 - 34311

Table 12.2.5 Removal factors and associated standard error.

LULC	Mean t C*ha ⁻¹ *year ⁻¹	Standard Error
Tree shaded crops	2.60	2.4
Broadleaf forest	2.64	1.38
Dry forest	2.64	1.38
Pine	1.24	0.21

Table 12.2.6 Annual removals from carbon accumulation and their respective uncertainty, on land converted to forest land.

REFERENCE LEVEL	Emissions (t CO _{2-e} *yr ⁻¹)	Standard deviation (t CO _{2-e} *yr ⁻¹)	Lower limit 5% (t CO _{2-e} *yr ⁻¹)	Upper limit 95% (t CO _{2-e} *yr ⁻¹)	Error (90%)
RL Removals	-2,294,122	-1,017,527	-2,314,067	-2,274,176	0.87%

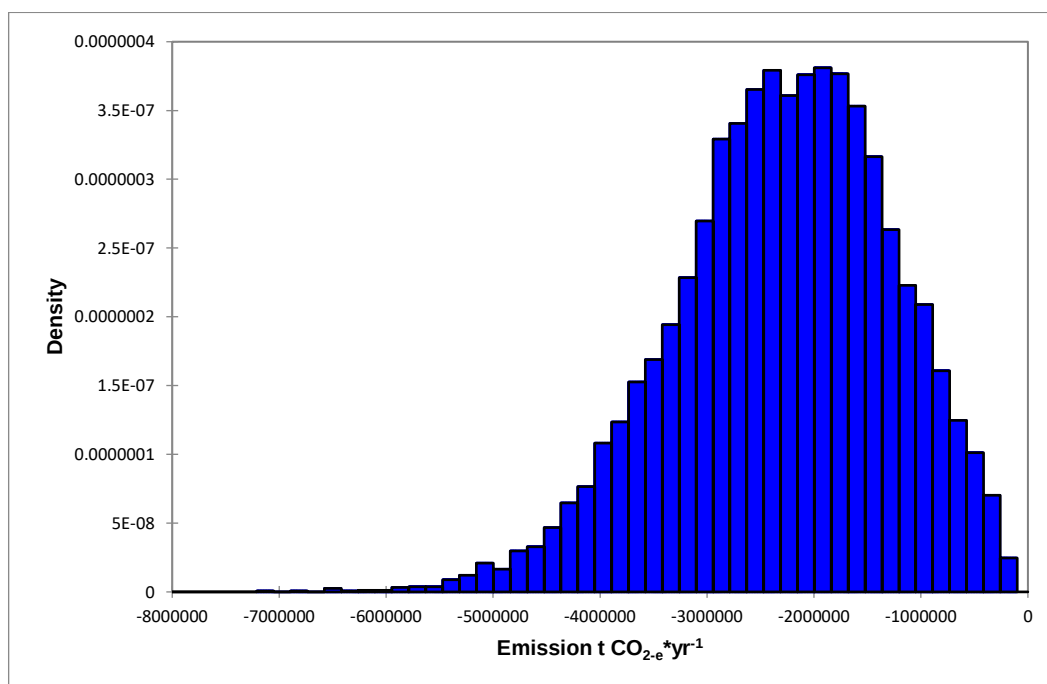


Figure 12.2-2 Frequency distribution of Monte Carlo iterations for estimating the uncertainty of the forest removal Reference Level on land converted to forest land.

Forest degradation reference level and increase in forest carbon on land that remains woody: the information recorded in Table 12.2.7, Table 12.2.8 and in the model Equation 12.3 was used in order carry out the simulation and quantify total emissions and removals on forest land remaining forest land, as well as the associated uncertainty. According to the Monte Carlo analysis, uncertainty was estimated at 5.56 % for net annual reference level emissions due to degradation (Table 12.2.9). The report on the calculation of the uncertainty of the Degradation Reference Level can be accessed by following this link: <https://app.box.com/s/lfarevry3ba63s23fl2wx1kp0n7xeplz>

Table 12.2.7 Average loss and gain of AGB and their respective uncertainty on forest land remaining forest land

Forest land remaining forest land	Mean t CO ₂ *ha ⁻¹	Error
Average AGB loss in Broadleaf forest 2006-2015	18.45	94%
Average AGB loss in Dry forest 2006-2015	12.29	126%
Average AGB loss in Pine forest 2006-2015	20.02	147%
Average AGB gains in Broadleaf forest 2006-2015	-19.27	132%
Average AGB gains in Dry forest 2006-2015	-12.03	175%
Average AGB gains in Pine forest 2006-2015	-22.41	155%

Table 12.2.8 Area of change in crown cover and its respective uncertainty on forest land remaining forest land

Degradation/enhancement in Forest land remaining forest land	Area (ha)	Error (ha) (relative 90% significance level)	Confidence level (ha) (90%)
2. Area of Broadleaf forest with recovery of canopy cover	363,546.21	56,375	307171 - 419921
5 Area of Dry forest with recovery of canopy cover	80,792.91	28,966	51827 - 109759
8 Area of Pine forest with recovery of canopy cover	73,348.59	22,383	50965 - 95732
3 Area of degraded Broadleaf forest	209,163.58	47,385	161779 - 256548
6 Area of degraded Dry forest	53,861.94	24,720	29142 - 78582
9 Area of degraded Pine forest	48,899.06	19,414	29485 - 68313
26 Tree shaded crops to Broadleaf forest	16,766.32	446	-62 - 830
31 Tree shaded crops to Dry forest	383.67	1,268	-177 - 2359
32 Tree shaded crops to Pine forest	1,090.71	5,769	-807 - 10731
27 Broadleaf forest to Tree shaded crops	4,962.01	229	-32 - 425
33 Dry forest to Tree shaded crops	196.74	379	-53 - 704
34 Pine forest to Tree shaded crops	325.62	446	-62 - 830

12.3 Equation

$$RL_{deg} = RL_{degbn} + RL_{degts}$$

Where:

$$RL_{degbn} = \frac{(AD_{deg-bl} * AL_{bl}) + (AD_{enh-bl} * AG_{bl}) + (AD_{deg-df} * AL_{df}) + (AD_{enh-df} * AG_{df}) + (AD_{deg-p} * AL_p) + (AD_{enh-p} * AG_p)}{10}$$

RL_{deg} : Reference level of forest degradation and forest carbon enhancement in natural forest

AD_{deg-bl} : Activity Data Degraded Broadleaf forest

AD_{deg-df} : Activity Data Degraded Dry forest

AD_{deg-p} : Activity Data Degraded Pine forest

AD_{enh-bl} : Activity data Canopy recovered Broadleaf forest

AD_{enh-df} : Activity data Canopy recovered Dry forest

AD_{enh-p} : Activity data Canopy recovered Pine forest

AL_{bl} : Average AGB loss in Broadleaf forest during reference period 2005-2015

AL_{df} : Average AGB loss in Dry forest during reference period 2006-2015

AL_p : Average AGB loss in Pine forest during reference period 2006-2015

AG_{bl} : Average AGB gains in Broadleaf forest during reference period 2006-2015

AG_{df} : Average AGB gains in Dry forest during reference period 2006-2015

AG_p : Average AGB gains in Pine forest during reference period 2006-2015

$$RL_{degts} = (AD_{ts-bl} * EF_{ts-bl} + AD_{ts-df} * EF_{ts-df} + AD_{ts-p} * EF_{ts-p} + AD_{bl-ts} * EF_{bl-ts} + AD_{df-ts} * EF_{df-ts} + AD_{p-ts} * EF_{p-ts}) / 10$$

RL_{degts} : Reference level of forest degradation and forest carbon enhancement in tree shaded crops transitions

AD_{ts-bl} : Activity Data Tree shaded crops to Broadleaf forest

AD_{ts-df} : Activity Data Tree shaded crops to Dry forest

AD_{ts-p} : Activity Data Tree shaded crops to Pine forest

AD_{bl-ts} : Activity data Broadleaf forest to Tree shaded crops

AD_{df-ts} : Activity data Dry forest to Tree shaded crops

AD_{p-ts} : Activity data Pine to Tree shaded crops

EF_{ts-bl} : AGB Emission Factor Tree shaded crops to Broadleaf forest

EF_{ts-df} : AGB Emission Factor Tree shaded crops to Dry forest

EF_{ts-p} : AGB Emission Factor Tree shaded crops to Pine forest

EF_{bl-ts} : AGB Emission Factor Broadleaf forest to Tree shaded crops

EF_{df-ts} : AGB Emission Factor Dry forest to Tree shaded crops

EF_{p-ts} : AGB Emission Factor Pine to Tree shaded crops

Table 12.2.9 **Net annual emissions from degradation and canopy cover recovery, and its respective uncertainty, on forest land remaining forest land.**

REFERENCE LEVEL	Emissions (t CO _{2-e} *yr ⁻¹)	Standard deviation (t CO _{2-e} *yr ⁻¹)	Lower limit 5% (t CO _{2-e} *yr ⁻¹)	Upper limit 95% (t CO _{2-e} *yr ⁻¹)	Error (90%)
RL Net Emission ¹²⁵	-400,518	1,135,608	-422,778	-378,258	5.56%

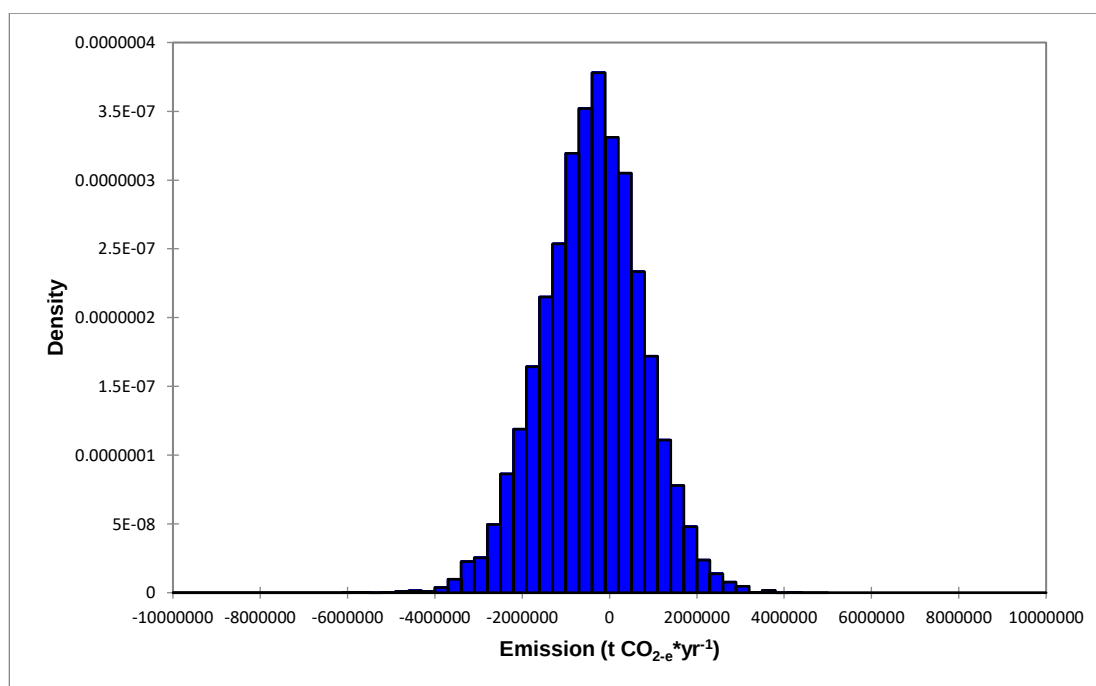


Figure 12.2-3 **Frequency distribution of Monte Carlo iterations for estimating the uncertainty of the reference level for forest degradation and the increase of forest carbon stocks on forest land remaining forest land**

¹²⁵ Average emissions and confidence limits measured using the *Bootstrapping* method (1000 resamplings).

ER Program Reference Level (FREL): The combination of the uncertainties of all of the reference levels is obtained from the model Equation 12.4. According to the Monte Carlo analysis, uncertainty was estimated at 7.22% for the FREL (Table 12.2.10). This analysis takes 49 variables (distributions) into account, of which 9 contribute 91.53% of variability of the results (Table 12.2.11): i. CD_{bl} : Carbon density Broadleaf forest (32%); ii. CA_{bl} : Carbon accumulation rate Broadleaf forest (17%); iii. AG_{bl} : Average AGB gains in Broadleaf forest during reference period 2006-2015 (13%); iv. CD_{nwv} : Carbon density Non-Woody vegetation (12%); v. CD_{wv} : Carbon density Woody vegetation (5%); vi. CD_{ts} : Carbon density Tree shaded crops (4); vii. AD_{bl-nwv} : Activity data Broadleaf forest to Non-Woody vegetation; viii. AL_{bl} : Average AGB loss in Broadleaf forest during reference period 2006-2015 (3%) y ix. CS_{bl} : Soil organic carbon Broadleaf forest (2%). The report on the calculation of the uncertainty of the FREL of the ER Program can be accessed by following this link:

<https://app.box.com/s/zeu79k4i9yzoy5a9doi379q99cnj8unj>

12.4 Equation

$$FREL = RL_d + RL_e + RL_{deg}$$

Table 12.2.10 Forest Reference Emissions Level with its respective uncertainty

FREL	Emissions (t CO _{2-e} *yr ⁻¹)	Standard deviation (t CO _{2-e} *yr ⁻¹)	Lower limit 5% (t CO _{2-e} *yr ⁻¹)	Upper limit 95% (t CO _{2-e} *yr ⁻¹)	Error (90%)
FREL ER Program	838,066.81	2,709,314	682,635	788,851	7.22%

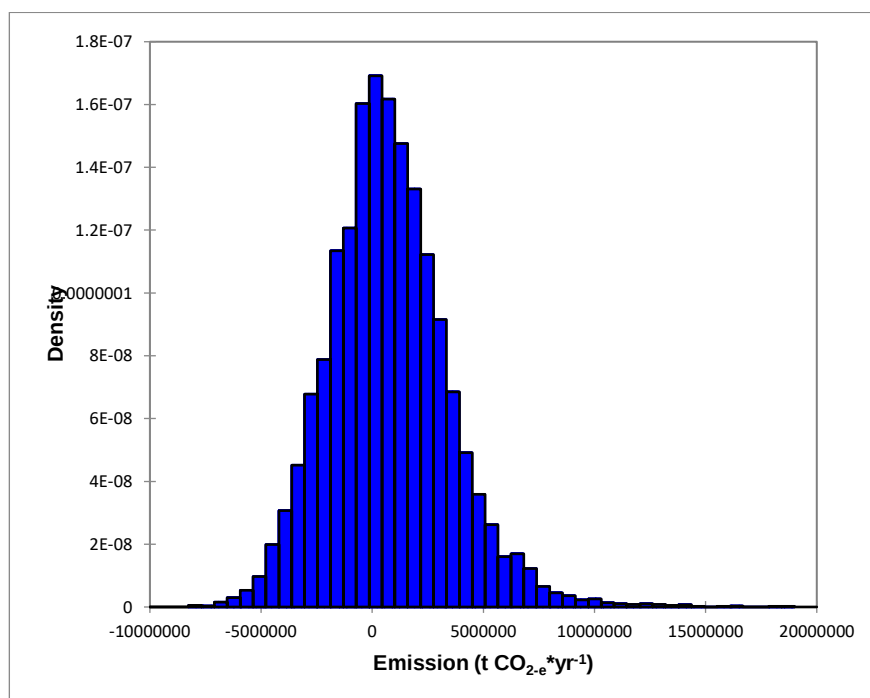


Figure 12.2-4 Frequency distribution of Monte Carlo iterations for estimating the uncertainty of the Forest Reference Emissions Level

Table 12.2.11 Results of the sensitivity analysis.

Parameter	Correlation	Contribution	Contribution (Absolute)
CD _{bl} : Carbon density Broadleaf forest	0.517	32.03%	32.03%
CA _{bl} : Carbon accumulation rate Broadleaf forest	-0.372	-16.58%	16.58%
AG _{bl} : Average AGB gains in Broadleaf forest during reference period 2006-2015	0.335	13.43%	13.43%
CD _{nwv} : Carbon density Non-Woody vegetation	-0.316	-11.96%	11.96%
CD _{wv} : Carbon density Woody vegetation	-0.212	-5.38%	5.38%
CD _{ts} : Carbon density Tree shaded crops	0.191	4.39%	4.39%
AD _{bl-nwv} : Activity data Broadleaf forest to Non-Woody vegetation	0.165	3.25%	3.25%
AL _{bl} : Average AGB loss in Broadleaf forest during reference period 2006-2015	0.147	2.59%	2.59%
CS _{bl} : Soil organic carbon Broadleaf forest	0.126	1.91%	1.91%
Other distributions			8.47%

13. CALCULATION OF EMISSION REDUCTIONS

13.1. Ex-ante estimation of the Emission Reductions

Emission reduction was assessed ex ante using the ERP's strategic actions (see session 4). Implementation levels pertaining to each of the Priority Areas (see chapter 4.1), Protected Areas (SINAP) and the Rest of the Country, in addition to the annual implementation level during the lifespan of the Program are recorded in Table 13.1.1 and Table 13.1.2. The implementation level is only taking into account the actions that will be registered to the ERP by the participating programs, and thus can be considered as additional.

Strategic actions that have an impact on carbon stock improvement reference level include: i. Setting up or induction of 62,000 ha of natural regeneration and reforestation, ii. Setting up 27,834 ha of silvopasture, iii. Establishing 12,000 ha of Coffee and agroforestry Systems and iv. Setting up 15,000 ha of Cocoa Agroforestry Systems.

The strategic actions that have an impact on deforestation and degradation reference levels include: i. Deforestation and degradation monitoring of 200,000 ha of Protected Areas, ii. Natural and secondary woodland management of 14,200 ha, iii. Adding 2,000 ha of woodland in the Payment for Environmental Services Program, iv. Protecting 7,900 ha of woodland on farms that have set up Silvopasture Systems.

The deforestation rates and emission/removal factors taken into account when measuring emission reductions are presented in Table 13.1.3 and Table 13.1.4.

The ex-ante assessment of ERP Emission Reductions is presented in Table 13.1.5. The impact of strategic actions is felt at each reference level (deforestation, degradation and improved carbon stock). It is hoped that by implementing 100% of the strategic actions, a total reduction of 6,321,442 tCO_{2-e} can be achieved. According to the uncertainty analysis, the corresponding buffer is 0% and according to the reversal analysis the corresponding buffer is 20%. As such, the quantity of reductions, which must be set aside to reflect the uncertainty level and the risk of reversals, is 1,053,574 tCO_{2-e}. Total emission reductions for the ERP are then 5,267,868 tCO_{2-e}. With the implementation of the program, the country will be converted from a source to a net sink of CO₂ in the forestry sector.

Table 13.1.1 : Strategic actions that have an impact on the carbon stock enhancement reference level

Strategic Actions	Year	Area 1 (ha)	Area 2 (ha)	Area 3 (ha)	Area 4 (ha)	Area 5 (ha)	SINAP: (ha)	Rest of the Country (ha)	Total (ha)
3.1 Quisqueya Verde, 3.6 Private Restoration Efforts (zone 4), 3.11 Environmental Ministry Program for Restoring areas affected by fire	1	529	235	1,755	303	778	996	7,804	12,400
	2	529	235	1,755	303	778	996	7,804	12,400
	3	529	235	1,755	303	778	996	7,804	12,400
	4	529	235	1,755	303	778	996	7,804	12,400
	5	529	235	1,755	303	778	996	7,804	12,400
Total area (ha)		2,647	1,174	8,774	1,514	3,888	4,982	39,022	62,000
3.1 SAF Program, 3.2 Actions created by the Ministry of Agriculture,	1	480	192	888	960	2,687	-	3,867	10,967
	2	480	192	888	960	2,687	-	3,867	10,967
	3	480	192	888	960	2,687	-	3,867	10,967

INDOCAFE (Silvopastures, Shade-grown coffee, Shade-grown Cocoa), resilient Agriculture (IRBD)	4	480	192	888	960	2,687	-	3,867	10,967
	5	480	192	888	960	2,687	-	3,867	10,967
Total area (ha)		2,400	960	4,440	4,800	13,435	-	42,509	54,834

Table 13.1.2 Strategic actions that have an impact on deforestation and degradation reference levels

Strategic Actions	Year	Area 1 (ha)	Area 2 (ha)	Area 3 (ha)	Area 4 (ha)	Area 5 (ha)	SINAP: (ha)	Rest of the Country (ha)	Total (ha)
SINAP Deforestation Monitoring (3.4, 3.5)	1								-
	2						50,000		50,000
	3						100,000		100,000
	4						150,000		150,000
	5						200,000		200,000
Average area (ha/year)							100,000		100,000
3.8 Secondary Woodland private-sector initiatives	1	100		200		1,700			2,000
	2	200		400		1,900			2,500
	3	300		600		2,100			3,000
	4	400		800		2,300			3,500
	5	500		1,000		2,500			4,000
Average area (ha/year)		300		600		2,100			3,000
3.3 Woodland Management + Financial Stimulus (PES) private initiatives	1	6,000	2,000	2,000					10,000
	2	6,000	2,000	2,000					10,000
	3	6,600	2,200	2,200					11,000
	4	7,200	2,400	2,400					12,000
	5	7,800	2,600	2,600					13,000
Average area (ha/year)		6,720	2,240	2,240					11,200
3.10 Ministry of Environment Program for controlling Fire	1							-	-
	2							200	200
	3							400	400
	4							600	600
	5							800	800
Average area (ha/year)								400	400
3.9 Payment for Environmental Services Scheme	1			2,000					2,000
	2			2,000					2,000
	3			2,000					2,000
	4			2,000					2,000
	5			2,000					2,000
Average area (ha/year)				2,000					2,000
3.2 Cattle Farming Intensification (CONALECHE, resilient Agriculture)	1					-		-	-
	2					500		1,400	1,900
	3					1,000		2,900	3,900
	4					1,500		4,400	5,900
	5					2,000		5,900	7,900
Average area (ha/year)						1,000		2,920	3,920
Grand total	1	6,100	2,000	4,200	-	1,700	-	-	14,000
	2	6,200	2,000	4,400	-	1,900	50,000	1,600	66,100
	3	6,900	2,200	4,800	-	2,100	100,000	3,300	119,300
	4	7,600	2,400	5,200	-	2,300	150,000	5,000	172,500
	5	8,300	2,600	5,600	-	2,500	200,000	6,700	225,700
Average area (ha/year)		7,020	2,240	4,840	-	2,100	100,000	3,320	120,520

Table 13.1.3 Characteristics of the ERP intervention areas.

Parameter	Priority area (ha)						Priority Areas Total	Rest of the country	Total
	Area 1	Area 2	Area 3	Area 4	Area 5	SINAP:			
Deforestation probability									
1_Very high	539	270	3,290	5	25	1,454	5,584	848	6,432
2_Alta	3,624	7,490	2,338	25	158	6,227	19,861	9,366	29,227
3_Media	2,750	566	2,783	135	652	4,579	11,465	2,227	13,692
Subtotal	6,913	8,326	8,411	165	835	12,260	36,910	12,441	49,351
Land-use change									
Deforestation 05-15	12,602	20,867	22,889	-	18,143	14,762	89,264	81,438	170,702
Regeneration 05-15	17,643	7,825	58,493	10,092	25,919	33,216	153,188	260,148	413,336
2015 Woodland Total	171,393	52,168	292,465	75,692	85,531	372,752	1,050,001	830,212	1,880,214
Pasture	100,861	63,961	118,081	22,140	56,581	7,380	369,005	750,309	1,119,314
Non-forest land	25,163	61,243	118,433	38,413	44,502	118,101	405,855	787,959	1,193,814
Land use subtotal	327,664	206,065	610,361	146,337	230,676	546,211	2,067,313	2,710,067	4,777,380
Deforestation rate									
Deforestation rate 05-15	0.71%	3.36%	0.75%	0.00%	1.92%	0.39%	0.82%	0.94%	0.87%
Wood cover ratio	52.31%	25.32%	47.92%	51.72%	37.08%	68.24%	50.79%	30.63%	39.36%

Table 13.1.4 Emission and removal factors considered in the estimation of the Emission Reductions of the ERP.

REDD Actions	Emission / Clearance Factor (tCO ₂ *ha ⁻¹)	Reduction type
Actions on land that remains forest land (3.4, 3.7, 3.8, 3.9, 3.10 and 3.12 – deforestation and degradation)	133.7	Avoided deforestation (AGB+BGB+MM+H)
	14.3 annual	Avoided degradation (SOC)
	0.40	Avoided degradation
	9.7	Clearances due to secondary woodland growth and reforestation
Actions on land converted into forest land (3.1, 3.2 and 3.6)	5.7	Clearances due to silvopasture tree growth
	9.5	Clearances due to SAF Coffee growth
	9.5	Clearances due to SAF Cocoa growth

Table 13.1.5 Ex-ante estimation of the ERs expected from the ER Program

ERPA term year t	Reference level (tCO ₂ -e/yr)					Estimation of expected emissions / removals under the ER Program (tCO ₂ -e/yr)					Emission Reduction	Estimation of expected set- aside to reflect the risk of reversal and level of uncertainty associated with the estimation of ERs during the Term of the ERPA (tCO ₂ - e/yr)	Estimated Emission Reduction s (tCO ₂ - e/yr)
	Annual Emission (t CO ₂ -e/yr)		Annual Removals (t CO ₂ -e/yr)		FREL	Annual Emissions (t CO ₂ -e/yr)		Annual Removals (t CO ₂ - e/yr)		FREL projected			
	Forest lands converte d to croplands / pastures	Lands that remains as forest	Lands converted to forest lands	Lands that remains as forest		Forest lands converted to croplands / pastures	Lands that remains as forest	Lands converted to forest lands	Lands that remains as forest				
2020	3,203,463	567,240	(2,140,071)	(968.088)	662,545	3,020,604	561,641	(2,333,882)	(968.088)	280,274	382,271	63,712	318,559
2021	3,203,463	567,240	(2,140,071)	(968.088)	662,545	2,520,187	540,041	(2,527,694)	(968.088)	(435.554)	1,098,098	183,016	915,082
2022	3,203,463	567,240	(2,140,071)	(968.088)	662,545	2,452,745	517,962	(2,721,505)	(968.088)	(718.887)	1,381,431	230,239	1,151,193
2023	3,203,463	567,240	(2,140,071)	(968.088)	662,545	2,432,048	495,883	(2,915,317)	(968.088)	(955.474)	1,618,019	269,670	1,348,349
2024	3,203,463	567,240	(2,140,071)	(968.088)	662,545	2,424,334	473,804	(3,109,129)	(968.088)	(1,179,079)	1,841,623	306,937	1,534,686
Total											6,321,442	1,053,574	5,267,868

14. SAFEGUARDS

14.1. Description of how the ER Program complies with the social and environmental safeguards of the World Bank and promotes and supports the safeguards included in the UNFCCC guidance related to REDD+

In December 2010, the 16th Conference of the Parties (COP 16) of the United Nations Framework Convention on Climate Change (UNFCCC) held in Cancun agreed a set of seven safeguards that support the implementation of REDD+ (hereinafter, REDD+ Safeguards of the UNFCCC). Likewise, given that REDD+ programs can be supported by multiple multilateral institutions, compliance with the operational policies of the World Bank was established.

The aim of the Safeguards is not only to mitigate the risk attached to the negative social and environmental impacts implied by the REDD+ measures, but also to actively promote its positive effects, aside from carbon emission reductions, such as increased land tenure safety, the empowerment of interested parties – ensuring they participate fully and effectively – the conservation of biodiversity and forest governance. These Safeguards provide an outline of a global framework of social, environmental and governance principles, in compliance with which REDD+ activities and measures will be implemented.

When the Conference of Parties (COP 19) adopted the 'Warsaw Framework for REDD+' in 2013, REDD+ became a UNFCCC mechanism, encouraging countries to move ahead with developing and implementing national REDD+ programs. These countries must fulfil three safeguard requirements in order to qualify for results-based financing. These requirements are as follows:

1. Countries must ensure that – independently from funding source and type – REDD+ activities are implemented in a way that is coherent with UNFCCC REDD+ Safeguards.¹²⁶
2. Countries must set up a system to provide information on the concrete steps which are being taken to tackle and comply with UNFCCC R¹²⁷
3. Countries must provide a summary report on how UNFCCC R¹²⁸

From the early days of the REDD+ Program, the country has been developing actions aimed at complying with both the safeguards of the Convention and the operational policies of the World Bank. It has done so in addition to adopting necessary measures aimed at establishing mechanisms and developing appropriate tools for monitoring and reporting efficiently on REDD+ Safeguards in the implementation and payment for results stages.

As part of the requirements established under the *common approach*, the safeguards of the UNFCCC and the operational policies of the Bank require the performance of a Social and Environmental Strategy Assessment (SESA), the preparation of an Environmental and Social Management Framework (ESMF), the establishment of a Feedback and Grievance Redress Mechanism (FGRM) and of a Safeguards Information System (SIS) as part of the REDD+ National Strategy (REDD+ NS) and the Emissions Reduction Program (ERP).

The SESA complies with OP. 4.01 on Environmental Assessment. A process that was both participatory and analytical was carried out by means of a consultation process with key stakeholders linked to forestry

¹²⁶Decision 1/CP.16, paragraph 69 of the UNFCCC.

¹²⁷Decision 2/CP.17, paragraph 63 of the UNFCCC.

¹²⁸Decision 1/CP.16, paragraph 71 (d) and Decision 9/CP.19, paragraph 3 of the UNFCCC.

sectors, agroforestry and livestock to identify and analyse the positive and negative impacts, as well as the likely risks and opportunities of the REDD+ strategic options. Based on the SESA, the country is in the process of drafting the Environmental and Social Management Framework for the impacts and risks identified and linked to the implementation of the REDD+ actions. The ESMF, the Feedback and Grievance Redress Mechanism (FGRM) and the Safeguards Information System (SIS) are all at the advanced stage of formulation and design. Their preliminary versions were presented to the Technical Advisory Committee (TAC) and to the key stakeholders for their discussion and validation in April 2019 through two national workshops. In general, participants agreed with the institutional arrangements, procedures and criteria established. Work is in process for final version, and will include any recommendations and observations by the participants that can be dealt with.

During the development of the Social and Environmental Strategy Assessment, a detailed analysis was performed of the legal framework of the Dominican Republic, identifying the convergence of legal provisions in force with the principles and essential elements of the Operational Policies of the Bank and of the safeguards of the Convention, in order to identify any legal gaps which may exist and propose the necessary measures to plug them. This analysis served as the basis for preparing the National Approach to Safeguards, for carrying out the analysis of the NS REDD+ Strategic Options, as well as formulating the Environmental and Social Management Framework and the ESMP's for the 5 prioritized areas.

14.1.1. Elements of the Dominican Republic's National Safeguards Approach

A national safeguards approach needs to define and provide guidelines aimed at: (i) describing the concrete ways compliance with REDD+ safeguards will be guaranteed, (ii) setting out a legal and political framework together with institutions responsible for implementation and (iii) determining facets of compliance such conflict resolution, non-compliance mechanisms and matching sanctions, and generated data reporting.

Generic steps for designing a national approach to safeguards include:

1. Setting up a safeguards coordination body in which several stakeholders are represented, including state institutions, civil society non-governmental organizations, indigenous community associations, women's groups, academics, private and business sector representatives, amongst others (Safeguards Working Group). This body was set up in 2016 and will continue to be strengthened.
2. Setting out aims and scope, which should be established bearing in mind relevant international treaties – climate change, biodiversity, endangered species, human rights, amongst others – and the national legal framework, local regulations and customary law, where applicable, as well as national programs aimed at mitigation and adaptation, in accordance with those commitments expressed by countries in their ER-PIN, RPP, and INDC documents and their National Climate Change Strategies. These considerations were taken into account in the process of constructing the NS REDD+ and the ERP.
3. Review, identification, analysis and assessment of systems or underlying structures:
 - Legal framework: composed of policies, laws, regulations, plans and programs linked to REDD+, both in the forestry sector and in other related sectors, for example, the agriculture sector, livestock, energy and industry. Furthermore, international agreements and treaties to which the country is a party are also taken into account (this review covers issues related to human rights, transparency, inclusion and the rights of indigenous communities, as expounded in international treaties and national laws, as well as REDD+ gender issues).

The results of the review of the **legal framework** in relation to the Cancun Safeguards, which took place in May 2018, highlighted the following:

- (a) the measures are complementary to or compatible with the objectives of the national forestry programs and the international conventions and agreements on the matter; *the national interpretation of this safeguard was proposed as follows: The National REDD+ Strategy is aligned and compatible with the national forest policy, as well as with the objectives of relevant international conventions and agreements to which the Dominican Republic is a party, on the following matters: biodiversity, climate change, desertification and drought, and human rights.*
- (b) national forestry governance structures are transparent and efficient, bearing in mind national legislation and sovereignty; *the national interpretation of this safeguard was proposed as follows: Transparency – meaning the right to access information, outreach promotion, accountability, and anti-corruption measures – is guaranteed in the area of the application of the National REDD+ Strategy and all associated national programs, all aimed at reducing deforestation and degradation of goods and services yielded by the ecosystems. Furthermore, an efficient forestry governance is guaranteed; this entails that the application of the National REDD+ Strategy is permeated by the recognition and protection of land tenure, equitable profit distribution, the recognition and promotion of gender equality, and access to justice via conflict resolution mechanisms and intersectoral coordination.*
- (c) stakeholders, particularly indigenous peoples and local communities, participate fully and effectively in the actions mentioned in paragraphs 70 and 72 of this decision; *the national interpretation of this safeguard was proposed as follows: The right to participate is recognised. Full and effective participation of all participants, and particularly communities, is guaranteed, regardless of gender, via mechanisms and procedures that are both suitable and culturally appropriate in the context of the application of the National REDD+ Strategy.*
- (d) The compatibility of the measures with the conservation of natural forests and biological diversity, ensuring that those indicated in paragraph 70 of this decision are not used for the conversion of natural forests, but should instead be used to provide incentives for the protection and conservation of these forests and the services deriving from their ecosystems and to promote other social and environmental benefits; *the interpretation of this safeguard was proposed as follows: The National REDD+ Strategy is in line with the national measures aimed at protecting woodland and biodiversity, thereby guaranteeing that natural woodland is not converted, as well as promoting environmental and social gains.*
- (e) Actions to counter reversal risks; and
- (f) Actions to reduce the displacement of emissions; *the national interpretation of this safeguard was proposed as follows: Handling reversion and emissions displacement risks is required in the context of the application of the National REDD+ Strategy.*

With regard to the Operational Policies of the WB, the results are included in point 14.1.3 of this document.

- **Institutional Framework:** it defines the roles and responsibilities of the institutions in charge of forestry governance, natural resources, land use and biodiversity, with the aim of designing and implementing the national approach to safeguards, in its readiness, implementation and results-

based payment stages; the importance of the review and adjustment of this framework resides in the emphasis that needs to be placed on those institutions that are involved in ensuring compliance with the safeguards and drafting relevant reports,

- **Compliance Framework:** it will comprise a) the Safeguards Information Systems, b) the feedback and grievance redress mechanisms and c) the non-compliance mechanisms.
4. Outline and design of the National Approach to Safeguards, requiring a methodological procedure in order to assist the Safeguards Working Group in outlining its approach to Safeguards and to other National REDD+ Strategy procedures or components, such as consultation and free, prior and informed consent (FPIC), the distribution of economic and non-economic benefits associated with REDD+ and the information system, associated with the MRV review, verification and monitoring, as well as with the correct interpretation of safeguards in a national and local context.
 5. The launch of the REDD+ Safeguards Information System (REDD+ SIS) must generate synergies between the institutions that are called upon to report on safeguard compliance, and operate within the established governance framework and the reviewed legal framework.

14.1.2. Outline of the Dominican Republic's National Approach to Safeguards REDD+

In order to facilitate the planning and setting up process pertaining to the Dominican Republic's National Approach to Safeguards REDD+, since 2017 the Safeguards Working Group has been devising a roadmap to serve as an orientation tool based on the five generic steps that need to be completed in order to finalise this National Approach to Safeguards.

The following pages describe the step-by-step process followed by the Ministry of the Environment and Natural Resources and the Safeguards Working Group in order to cover all five generic steps needed in a National Approach to Safeguards (Figure 14.1):

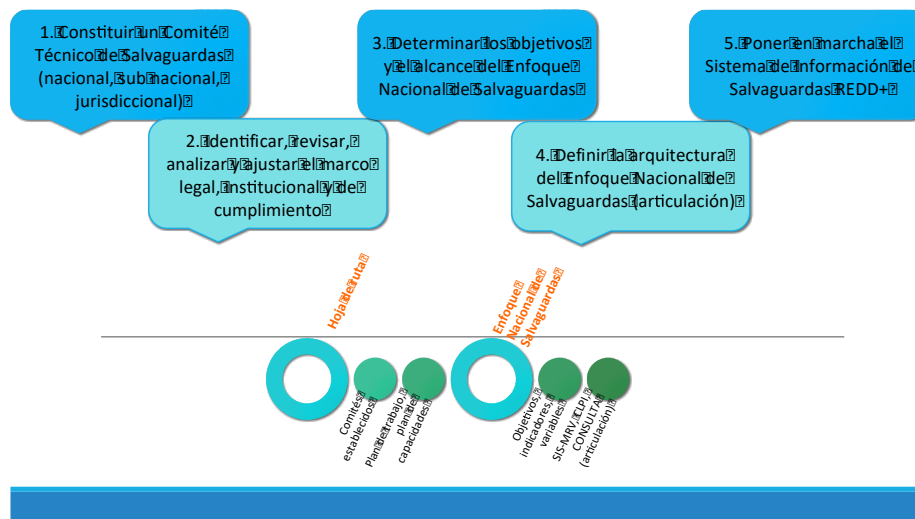


Figure 14.1-1 Generic steps for designing and constructing the Dominican Republic's National Approach to Safeguards.

Source: Regional guide for the incorporation of the Cancún Safeguards into the National REDD+ Strategies of Central American Countries and the Dominican Republic (RCCP-USAID-CARE, 2017)

The following table reveals the progress made in constructing the Dominican Republic's National Approach to Safeguards:

Table 14.1.1 Progress and achievements in constructing the National Approach to Safeguards

Step 1.	
Achievement: Safeguards Working Group composed of key public, social and private stakeholders related to the different REDD+ sectors of interest, functioning normally, participating actively in the design, construction and validation of the studies and proposals for the definition of the National Approach to Safeguards, Social and Environmental Strategy Assessment (SESA), Environmental Management Framework (ESMF), Feedback and Grievance Redress Mechanism (FGRM), Safeguards Information System (SIS), Environmental and Social Management Plans (ESMPs) and their subsequent implementation.	
Process milestones	Mid-term results
- On September 9 and 10, 2014, in the context of the REDD/Central American Commission for Environment and Development (CCAD)/GIZ (German Development Agency) Program, a workshop was held in Santo Domingo to define the National Approach to Safeguards. As part of this, the need to establish a working group was identified. - During the workshop held on April 18 and 19, 2017 a Safeguards Working Group was	- A training plan was developed on the concepts, approaches and mechanisms for approaching safeguards in order to strengthen Working Group participants' command of the criteria and concepts. - Actions performed relating to the interpretation of safeguards. To this end, at least two workshops were carried out. In these, the representatives of several actors debated each safeguard on the basis of their experiences and the practical realities on the ground in the Dominican Republic. In this way, it was possible to establish what each safeguard means for each local actor, and what

formed with multiple stakeholders, including government, civil society, private sector and academic representatives. Through voluntary participation, each body formally appointed a representative and a substitute to represent it in the Safeguards Working Group. - On the June 6 and 7, 2017, a socialization workshop took place with the Safeguards Working Group. Progress and future steps in relation to the construction of the National Approach to Safeguards were discussed. CARE/RCCP and a team from Mi Ambiente Honduras were present. - During a workshop held on August 11, 2017, new stakeholders connected with Environmental and Social Safeguards were encouraged to take part. Safeguard compliance efforts to date were shared, more specifically those efforts made in order to guarantee full and effective participation by interested parties, in the context of the preparation and implementation of REDD+, ensuring – in particular – that the representation of women and other vulnerable groups was taken into account. Thanks to this, the Working Group was bolstered with bodies deemed extremely important and that had yet to join.	strategies or measures might be necessary in order to tackle and comply with these safeguards in the Dominican context. - The plan to enhance expertise did not focus solely on capacity-building and the empowerment of the Safeguards Working Group. It also had an impact on represented interested parties (Private Sector, Government, academics, Civil Society). In this regard, the members of the working group acted as knowledge multipliers for their pairs, sharing the knowledge and processes developed with the actors operating in the same field. - This training process operated by the Safeguards Working Group will continue from March 2019 onwards, through the consolidation of groups of facilitators who will act as knowledge multipliers on the issues of respecting and approaching safeguards in the Dominican Republic.
Step 2: Achievement: Definition of Aims and Scope of the National Approach to Safeguards (NAS), establishing the UNFCCC safeguards and operational policies of the WB that will be applied in the implementation of REDD+ activities.	
Process milestones In working sessions during 2017, both the Environmental and Social Safeguards of the UNFCCC and the Operational Policies of the World Bank activated for REDD+ in the country were identified. Regarding the latter, special attention will be paid to the following: Involuntary Resettlement (OP 4.12), Environmental Assessment (4.01), Natural Habitats (4.04), Forests (4.36), Pest	Intermediate results - The Dominican Republic's National Approach to Safeguards provides a framework of citizen rights that ensures full, active and effective participation of the local communities and vulnerable groups, especially women and young people, and guarantees that social and environmental processes remain transparent. - The Safeguards Working Group was created for the purpose of ensuring the full and effective participation of all relevant stakeholders, including the transparency and

Control (4.09), and Physical Cultural Resources (4.11). • There are no indigenous communities in the country, meaning operational policy 4.10 does not apply. • The concept of local communities and vulnerable groups was defined, and populations living in the rural areas most strongly linked to the land affected by REDD+ were identified, as well as sectors of the population who are excluded or at risk of being excluded, especially women and young people. • The following strategic options were validated in 2018: ○ Strengthen the legal and institutional framework pertaining to the conservation of natural heritage and the sustainable use of natural resources. ○ Set up, strengthen and apply public policies to limit and/or contain the expansion of the agricultural and cattle farming frontier, including infrastructures in woody areas. ○ Promote models of sustainable Natural Resource management that contribute towards conservation, sustainable woodland use, and the increase of woody cover in the country. • In August 2018, the programs and projects to be included in REDD were validated during an expanded session of the Technical Advisory Committee and the Safeguards Working Group.	accountability of all processes. It is made up of representatives of the different sectors connected with REDD+ (Public, Private, NGOs, academics, and Civil Society Members). This Working Group has an impact on the program's areas of influence. It aims to incorporate the Safeguards into the NS REDD+ and the ERP through socialisation and validation of the different results of the studies and consultancy reports carried out in view of creating the NS REDD+ and the ERP, as well as for the implementation of REDD+ Programs and Projects. ▪ The setting up of REDD+ measures and activities for the REDD+ National Strategy in the Dominican Republic made it possible to gain the perspective needed to interpret the safeguards in accordance with the Dominican Republic's Legal Framework, in addition to determining institutional competence and compliance mechanisms to ensure compliance with these Safeguards. ▪ The preparation of the Social and Environmental Strategic Assessment, and the creation of the Environmental and Social Management Framework (MGAS) highlighted inherent risks: those pertaining to the implementation of REDD+ measures and actions, plus mitigation measures, which need to be implemented if potentially conflicting events occur. ▪ National Programs were identified and agreed in accordance with multiple Executing Entities, by which REDD+ strategic actions shall be implemented in relation to selecting the types of actions from each National Program to be linked to REDD+. ▪ Social and Environmental Management Plans have been formulated for each area of priority REDD+ intervention (include the types of actions linked). These have been validated in conjunction with representatives from each of the priority areas in April 2019, followed by subsequent inclusion into the final version of the Emissions Reduction Programme Document (ERPD).
Step 3: Milestone: Identification, review, analysis and adjustment of the basic components of the National Approach to Safeguards: Legal Framework, Institutional and general compliance. Proposal for the Grievance, Redress and Conflict Resolution Mechanism.	
SUMMARY OF THE PROCESS ▪ In April 2015, a study was released concerning the identification of the Legal	Intermediate Results ▪ An analysis of the Legal, Institutional and compliance Framework applicable to all UNFCCC Environmental and

Framework in relation to REDD+ and the safeguards. ▪ An update, expansion and in-depth study of the results of the Legal Framework took place during the first quarter of 2018. ▪ Furthermore, a text analysis of each UNFCCC REDD+ safeguard was carried out in order to provide a preliminary formulation of the “components” of each safeguard within the context of the Dominican Republic. ▪ Based on the inputs mentioned above, a preliminary document containing an interpretation of all safeguards has been included, plus additional information on the legal framework, and a proposal on how to explain these safeguards within a Dominican Republic context. ▪ In addition to the SESA assessment participation processes and the definition of the Environmental and Social Management Framework, work is also being done on mapping out the Grievance, Redress and Conflict Resolution Mechanism (MQRC) and the Safeguards Information System (SIS). ▪ This system allows for all safeguard-related information to be updated, in addition to serving as the basis for the periodic reports made to the UNFCCC on Social and Environmental Safeguard compliance, and any other kind of report dealing with these matters.	Social Safeguards and of the World Bank's Operational Policies applicable to REDD+ was carried out. ▪ The analysis of the legal, institutional and compliance framework identified the strengths and opportunities for improving gaps in laws and regulations in relation to the safeguards; it also provided support for the creation of the ESMF. • The Grievance, Redress and Conflict Resolution Mechanism is currently under reviewed and include the feedback of all relevant stakeholders, with its context being based on the current system for receiving environmental complaints from the Ministry of Environment and Natural Resources, better known as the Green Line. This system provides a way of following up on environmental and social issues concerned with the Environment, across the whole country. Complaints are received through several media (phone, direct messages, local offices, website). There are deadlines for providing solutions and feedback. In addition to making a number of changes, the scope of action shall be broadened to meet the needs of all REDD+ activities. ▪ The Grievance, Redress and Conflict Resolution Mechanism is connected to the SIS, in such a way that the information generated by the former feeds into the latter. ▪ Both the Grievance, Redress and Conflict Resolution Mechanism and SIS are currently undergoing an advanced process of design, and shall be validated in relation to all relevant stakeholders in April 2019.
Step 4: Milestone: Coordinate the national safeguard interpretation process in tandem with the World Bank's Operational Policies and other Dominican Republic REDD+ NS components.	
SUMMARY OF THE PROCESS To date, thanks to the participation-based processes which were carried out, we have: • Consultation and participation platform. SESA	Intermediate Results ▪ Advanced design of all instruments concerning the approach towards, and implementation, of operational World Bank safeguards and policies. These have been validated April 2019, and included in the Emissions Reduction Programme Document for May 2019.

▪ Socialisation of inputs from different actors, via a Social and Environmental Strategic Assessment (SESA) ▪ SESA and MGAS outreach and capacity building. ▪ . SESA conducted by means of wide-ranging consultation across various regions of the country. Validated at national level. ESMF ▪ The Management Framework for Environmental and Social Safeguards has been validated in April 2019. ▪ The Grievance, Redress and Conflict Resolution Mechanism has been validated in April 2019. ▪ Advanced design of the Safeguards Information System (SIS) has been validated in April 2019. ▪ The Involuntary Resettlement Policy Framework (MPRI) has been validated in April 2019. ▪ Legal, Institutional and Compliance with Safeguards Framework. ▪ Preparation of the Environmental and Social Management Plans linked to REDD+, to be validated in March 2019 in each priority area. ▪ Communication Strategy under execution for REDD+ and ERP. ▪ Design of the Monitoring, Reporting and Verification (MRV) system. Institutional arrangements for the Distribution of Benefits, design and consultation process with key stakeholders.	▪ Gender study and creation of an action plan on gender transversality in NS REDD+ and the ERP. Additionally, recommendations for this plan to be integrated into the REDD+ Programs and Projects to be carried out in 2019.
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Source: Progress made in the preparation of the Dominican Republic's National Approach to Safeguards, updated in April 2019.

14.1.3. Relevant legal framework for the application of WB Operational Policies

The Management Framework for Environmental and Social Safeguards includes an extensive analysis of the country's Legal and Institutional Framework in relation to the World Bank's operational policies, with the aim of identifying existing shortcomings and proposing measures to remedy them. In general terms, the laws and regulations of the Dominican Republic are considered to be compatible with the World Bank's operational policies. However, there are some differences that are tackled in the ESMF and in particular in the Resettlement Policies Framework. Below is a summary of the afore mentioned analysis for each of



the operational policies activated for the NS REDD+ and the ERP in the Dominican Republic.

Table 14.1.2 **Analysis of the Legal Framework in Relation to the Operational**

Policies of the World Bank.

OPERATIONAL POLICIES OF THE WORLD BANK	Policy Components	Applicable national legal framework	Gap analysis
OP 4.01 on Environmental Assessment	- To guarantee environmental solidity and sustainability, find mitigation alternatives to negative impacts, and enhance all benefits. - Each project must submit an Environmental Assessment, including: - Possible environmental risks in its zone of influence - The examination of potential project alternatives - Identification of ways to improve selection, localization, planning, layout and the execution of projects, by means of environmental prevention, mitigation or compensation, plus the potentization of positive impacts. - Inclusion of environmental mitigation and management during project execution. - Consideration of natural and social aspects, including human health and safety in a comprehensive manner (involuntary resettlement, indigenous populations and cultural assets); plus, consideration of cross-border and world aspects. - Take into consideration country-specific environmental studies;	The environmental regulation in force in the Dominican Republic establishes that any project, work or activity that by its nature could affect, in any way, environmental and natural resources, must obtain from the Ministry of the Environment and Natural Resource, prior to its execution, the corresponding environmental authorization in accordance with the scale of the effects that it could cause, with the aim of preventing, controlling and mitigating the potential impact on environment and natural resources. Article 38 of Law No. 64-00, General Provisions on the Environment and Natural Resources specifies the management instruments on which the environmental assessment shall be based, namely: a) Environmental Impact Statement (EIS); b) Strategic Environmental Assessment; c) Environmental Impact Study; d) Environmental Report; e) Environmental License; f) Environmental Permit; g) Environmental Audits; and h) Public Consultation. Similarly, in accordance with Article 41, the following are established as projects that require mandatory Environmental Assessment: tourist projects, mining projects, urban development, agroindustries, slaughterhouses and agricultural plantations. Likewise, the Law on the National Development Strategy 20-30 (NDS, Law 1-12), in line with action 4.1.6, orders the creation of evaluation and assessment systems for natural resources and their inclusion in the system of national accounts.	As can be observed from the undertaken analysis; National Dominican Republic Law and the implementation processes for formulation of the REDD+ National Strategy are in full compliance with OP 4.01. National laws take appropriate measures into account for the assessment of possible environmental risks and repercussions in relation to design and layout, in addition to measures for mitigating negative impacts and for enhancing benefits. In this respect, National Legislation covers environmental and social aspects by fully analysing all existing risks, in addition to avoiding any potential damage derived from the programs that it supports, by means of Operational Rules that govern its programs through inclusion of measures for the prevention of impacts derived from its implementation, plus additional criteria to verify its fulfilment. The need, however, to strengthen monitoring of the correct application of forest mitigation measures is fully recognized. Therefore, monitoring correct implementation of the application of



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	national environmental protection plans; national policies, national legislation and institutional capacity. - Define projects according to type, localization, sensitivity and scale, in addition to the nature and magnitude of their potential environmental impacts, in correspondence with this project. - Category B: Impacts are specific to each location, but practically none of these are irreversible, with it also being possible to adopt mitigation measures with greater ease in the majority of instances. - Consultation processes shall be carried out for all category B projects in relation to groups affected by non-governmental organizations, in relation to national environmental aspects, while also taking all points of view into account.	Based on national technical studies, it was then possible to determine the causes of deforestation and forest degradation, including the options and strategic actions that need to be prepared for the REDD+ National Strategy. - A Strategic Environmental and Social Assessment (SESA) took place to identify the environmental risks and impacts of such options, as well as to propose measures, policies and actions to prevent, mitigate or compensate for the identified risks. The result of the aforementioned assessment categorized the project as Category B, by which the potential risks and impacts were identified, mostly involving benefits, risks and negative impacts, largely on a one-to-one basis, plus the inclusion of mitigation measures. - Due to the SESA process being of a participative analytical nature, all analytical phases were submitted for consultation on the part of relevant stakeholders in relation to the requirements of 4.01. - Additionally, an institutional structure and multi-sectoral governance process was included, classified as the Technical Advisory Group, for representation of participating institutions and relevant stakeholders, consisting of thematic workgroups, including the safeguards workgroup which is responsible for, among other aspects, verifying the application and fulfilment of the safeguards in relation to implementation of the REDD+ National Strategy.	the safeguards has become an area of opportunity for the REDD+ National Strategy.
OP 4.04 on Natural Habitats:	To ensure maintenance of natural habitats, the OP endorses the protection, maintenance and rehabilitation of all-natural habitats and their functions, in addition to establishing specific measures within a nationwide development strategy context.	National standards order the protection and conservation of natural habitats, as indicated in the Dominican Political Constitution (DPC) in articles 66 and 67. The General Law on the Environment and Natural Resources (Law 64-00), articles 16, 136 and 176, declares that flora, native and endemic fauna, and the habitats of species included in national biodiversity, are of high natural interest.	National legislation is congruent with OP 4.04 in respect towards ensuring protection and maintenance, plus ecological, biological, sociocultural and economic benefits across the application of projects, demonstrating a suitable approach, and minimizing risk associated with deforestation and forest



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	Through its operations, the Bank promotes the application of preventive criteria in relation to the maintenance of natural resources, aimed at ensuring development opportunities from an environmental perspective.	- Likewise, the National Development Strategy 20-30 (NDS, Law 1-12), in article 10 of the fourth axis, is aimed at a society of environmentally sustainable production and consumption that is adapted to climate change, promoting the protection of resources and natural habitats. - Sectoral Law on Protected Areas and Biodiversity (Law No. 202-04) is the fundamental principal for the protection of habitats, by mandate of Law 64-00, with the aim of integrating conservation, sustainable use and the management of protected areas as part of the development of socio-cultural, economic and environmental policies, plus the full utilisation of assets and services afforded to society. The National System of Protected Areas (SINAP) was therefore created to comply with all of the conservation objectives established by this law. - Finally, the Sectorial Law on Biodiversity (No. 333-15) establishes in article 1.2 the necessary legal framework for promoting the maintenance and recovery of biodiversity, contributing to re-establishing the balance and trends and ecosystems and associated ecological processes in the national territory, as part of the Natural Heritage of the Dominican Republic. - The development and execution of national projects shall take into account the guidelines established by Law 333-15 for the protection of diversity, requiring implementation of the following tools: - Participation in the National Strategy for Conservation and Sustainable Use of Biodiversity, and the 2011-2020 Plan of Action (ENBPA). - In instances of projects in protected areas, the technical tools at the disposal of the Ministry of the Environment in Law 202-04 for the management of the National System of Protected Areas, requiring the implementation of the following tools, shall be applied:	degradation agents in Protected Natural Areas and Critical Habitats. Protected natural areas are largely dependent on a management program, consisting of a guiding tool for planning and regulation, which establishes the basic activities, actions and guidelines for the management and administration of the protected natural area, in addition to specifying the policies and strategies for its conservation and use, by establishing permitted activities and basic actions and guidelines for the management and administration of such areas. The REDD+ National Strategy encourages strategic options and actions, in addition to the implementation of activities whose fundamental objective is to avoid the degradation of natural habitats, forests and environmental services.
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		• Management plans • Operational plans • SINAP policies • SINAP strategy • Co-management agreements The National Projects selected for participation in the REDD+ Strategy have been formulated on the basis of these provisions. Selection criteria are established within the Management Framework for Environmental and Social Safeguards for participation in REDD+, emphasizing that the development of any projects that involve degradation or conversion of forests or natural habitats are not accepted. It shall also be necessary to demonstrate that: ➤ Improvements are made to the livelihoods of the local population. ➤ Participation is enhanced by the local communities in the overall management of the forest landscape. ➤ Guidance towards the promotion of a low carbon emission system with products and value chains based on sustainable forest landscape management. ➤ There is sufficient capacity to offer additional environmental benefits to ER, such as biodiversity and hydrological services.	
OP 4.36 on Forests	• Applies to projects that could have an impact on the quality of forest health, affecting the rights and well-being of populations who depend on forest resources, with the overall aim of generating changes in the management, protection or utilization of natural forests or plantations, irrespective of public, private or community ownership.	• National regulations require the following multiple objectives for the conservation and protection of forests, as indicated in: • The General Law on the Environment and Natural Resources (Law 64-00) as addressed in articles 154-159 on the subject matter of forests and their management, and the use of forest soil in terms of exploitation, recovery and sustainable forest usage.	Dominican National legislation is congruent with the principles of forest sustainability established in OP 4.36, on the basis of promoting the sustainable use of this resource and applying planning tools as requisites for its implementation, in addition to protecting the rights and well-being of the populations that depend on forest resources.

The OP establishes the mandatory requirements for a forest certification system, which must include compliance with all relevant law, recognize and respect legally documented land tenure and use, the inclusion of indigenous populations and the conservation of biological diversity and ecological functions, by adopting measures for maintaining and strengthening the environmental benefits that generate the forest, in addition to having forest management planning, plus an independent third-party assessment which includes significant participation by representatives of the local and indigenous communities.

- The Forest Regulation (FR) proposes to establish standards within the legal framework of law 64-00 in order to promote the protection and sustainable use of forest resources, while also guaranteeing the structure, conservation and sustainable development of forests on lands with suitable terrain, aimed at complying with the need to conserve soils, water and biodiversity, and contribute to increases in input, reductions in poverty, and improve the quality of life of the Dominican nation.

Law No. 57-18, Forestry Sector of the Dominican Republic:

The principal objective of this law is to regulate and promote the management of sustainable forests, by encouraging appropriate conservation, utilization, production, industrialization and commercialization, in addition to the protection of other natural resources that make up part of its ecosystems, in addition to maintaining biodiversity and regenerating capacity.

- Law No.44-18 establishes Payment for Environmental Services as a mechanism to encourage conservation, preservation, restoration and the sustainable use of ecosystems, with the aim of ensuring that such environmental or ecosystem resources work, through a general framework for compensation and remuneration for services rendered.

- Finally, the Technical Regulations for Sustainable Forest Management Plans (NTMF) which promote the efficient use of multiple forest products and services, to ensure economic viability and a wide range of environmental and social benefits generated through appropriate application of the Plan.

The legal tools defined in the Forestry Regulation (FR) and the Technical Regulations for Sustainable Forest Management Plans (NTMF) are applicable to the Plans for the sustainable management of the Forests,

Identified as an area of opportunity, is the need to ensure the development and implementation of monitoring and assessment of soil and forest usage by means of a national monitoring, reporting and verification (MRV) system, with the aim of evaluating and systematizing the reduction of emissions, derived from actions to prevent and combat deforestation and degradation of forest ecosystems.

On the other hand, the REDD+ Strategy encourages certification of good forest management, by supporting forest owners so that they can obtain such certification, thus ensuring the extraction of raw materials and products takes place without damaging the environment, while generating environmental, social and economic benefits for the respective communities.

		which outline the measures that must be carried out in order to achieve sustainable management and utilization of forests, in addition to placing emphasis on the application of measures defined for achieving appropriate use.	
OP 4.09, Pest Control	- The World Bank encourages the biological management of pests, with the aim of achieving independence from synthetic pesticides. - Assess the capacity of regulatory and institutional borrower/debtor frameworks in order to define their capacity to manage pests in a “friendly” and environmental manner, in addition to encouraging integrated pest management (IPM). - Among the farming operation financed by the Bank, pests are controlled by means of integrated management processes such as biological control, specific farming practices, and the creation of pest resistant varieties. - The OP establishes the criteria that apply to the selection and use of pesticides, in accordance with the guidelines of the World Health Organization.	- In National Legislation, the matter of Pest Control is tackled in Forest Regulation, Article 6, section g, Article 61 and Article 62 – aspects relative to forest health, including monitored fellings, and enforcement procedures on forest lands under the supervision of the vice-minister of forest resources. - Law No. 4990-55 on Plant Health in the Dominican Republic establishes the capacities and responsibilities of the Ministry of Agriculture in its work concerning the prevention, management and control of pests that effect such plants, being focused on this responsibility and the application of the agricultural aspect, but does not necessarily refer to the forestry aspect. - Additionally, in terms of strengthening this Regulation within the Management Framework for Environmental and Social Safeguards, a Protocol is included for the integrated management of pests developed for REDD+ activities, which, among other aspects, emphasizes health and safety measures for the protection of participants using and applying pesticides.	In terms of managing forest-related pests, Dominican law provides a basic forest health standardization framework for the control and combat of forest diseases, in addition to sanctions in instances of non-compliance. Authorizations for forest utilization, including the implementation of commercial forest plantations, shall oblige the applicant to establish and execute all necessary measures to control and fight pests and diseases within the corresponding management programs. On the other hand, in terms of REDD+ activities, compliance with the components mentioned in OP 4.09 shall be fulfilled by means of the protocol included in the Management Framework for Environmental and Social Safeguards. An area of opportunity has been identified in the REDD+ implementation framework, as the need to strengthen training exercises in relation to forest health, for Providers of Technical Forest Services interested in managing pests and diseases, in addition to plant producers, forest planters, and owners or holders of forest lands, by means of workshops or training courses on such topics.



OP 4.11 on Physical Cultural Resources:	The purpose of this OP is to provide assistance for the preservation of cultural property and sites of archaeological, paleontological, historical, religious and cultural value. - It generally encourages the provision of assistance in terms of preservation, and the prevention of such sites and areas from being eliminated. - The OP discourages funding of projects that damage cultural property. - The policy establishes that, as part of the environmental assessment, any risks and impacts which such a project could cause to cultural patrimony are assessed, in addition to establishing measures for corresponding prevention, mitigation and compensation.	- The national standard establishes protection for physical-cultural patrimony, as indicated in the Political Constitution of the Dominican Republic (PCD). Article 16 of the constitution gives reference to the protection of protected areas, which above all refers to those areas that were principally established to protect resources that comprise cultural patrimony, consisting of several caves comprising archaeological riches, which are part of the National System of Protected Areas. Articles 64, 66, 93 and 193 establish care in the protection of the material and non-material cultural heritage of the nation, placing the latter under the safeguard of the State in order to guarantee its protection, enrichment, conservation, restoration and enhancement. - Other regulations related to this approach are: Law on the National Development Strategy (Law 1-12) in its lines of action, 1.2.2.3., 2.6.1.8 and 3.5.5.11; and the General Law on the Environment and Natural Resources (Law 64-00), articles 1, 2, 4, 15, 16, 34 and 160. The Sectorial Law on the Protected Areas (Law 202-04), articles 1, 4 and 7. The Law creating the Ministry of Culture (Law 41-00), articles 1 and 2. And finally the Preliminary Draft of the Sectorial Forestry Law, article 13. - OP 4.11 compliance shall address physical cultural resources, utilizing the national regulatory framework as its basis, while also taking into account the institutional capacities and arrangements of entities that deal with the subject material in the Dominican Republic, including those defined in the Management Framework for Environmental and Social Safeguards, as part of the procedure to ensure the protection of physical cultural patrimony during the implementation of specific REDD+ activities.	Legislation takes the care and protection of physical cultural resources into account. However, to comply with the precept of the OP in relation to discouraging the financing of projects that involve damage to cultural property, as part of the subproject for the assignment of procedures; established within the exclusion list are activities that irreversibly affect archaeological or historical sites (including sites with unique archaeological, paleontological, historical, religious or natural values). However, to strengthen compliance with this OP at Executing Entity level of REDD+ activities, a Procedure has been established within the Management Framework for Environmental and Social Safeguards to ensure protection of physical cultural patrimony during the implementation of specific REDD+ activities.
OP 4.12 on Involuntary Resettlement	This operational policy covers:	At first impression, the land tenure system in the Dominican Republic presents great difficulties in accessing formal ownership rights. However,	This is congruent with the provisions of OP 4.12, inasmuch that existing law ensures that suitable respect is given to



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- displacement or loss of dwelling.
- loss of assets, or access to such assets; and loss of sources of income or means of subsistence (irrespective of whether transfer is required or not).
- Involuntary restriction of access to protected areas.

Displacement shall be applicable to:

- those with legal rights in relation to land.
- those who do not have officially established legal rights, but who claim rights (in accordance with national law), and those who do not have a legal right or a recognizable claim.

Compensations shall include:

- People with rights in relation to land, and those with no rights but claims in accordance with the law, shall receive: compensation for land and other losses, in addition to assistance.
- People with no legal right or recognizable claim, but who have occupied or used the protected zone on a prior basis, shall receive resettlement assistance or other types of assistance (e.g. ready cash or other assets).

The following is established as criteria to assess compensation:

- grant the displaced population with rapid indemnification and cash payments equivalent to the total cost of replacement, or loss of assets attributable to the project.

from the point of view of the institutional arrangements to be formalized as a consequence of the execution of the modes of action proposed by the National Strategy for REDD+, the effective implementation of an Emissions Reduction Program shall result in positive consequences with respect to the gaps and ambiguities identified above.

- In this respect, the presented Emissions Reduction Program seeks to support and facilitate compliance with all existing legal frameworks. To this effect, an information and data generation survey should be conducted into informal usufructuaries who comply with the necessary requisites in terms of acquisitive prescription, and who could qualify for the commencement of a formal certification process in relation to Real Estate Law. To this extent, current occupiers could be awarded ownership titles, giving them greater legal certainty and, therefore, better possibilities of accessing the compensation mechanisms and sources of financing that, in turn, allow them to make appropriate use of the land.

- Below are two (2) positive aspects that arise from this implementation:

- Support for simplification and streamlining of the procedure for the recognition, registration and ownership of lands that are yet to be formalized.

- Management of effective solutions to resolve controversies related to formal land owners and de-facto owners.

- Regarding the recognition of de facto ownership, there are a number of recognized customary mechanisms that enable peaceful interventions to take place under the acquisitive prescription system or the assumption of informal possession legality. For recognition of assumption of legality in terms of land ownership or tenancy,

land owners and, even though the formal land tenure system plays an important role in determining the land usage; informal tenure in the Dominican Republic does not function as an obstacle in being able to recognize the benefits derived from the reduction of emissions, which can be received by the de-facto owners.

- An example of this is the payment for environmental services (PES) scheme executed by the PSA-CYN Pilot Project in the Yaque del Norte River Basin, in which the majority of project beneficiaries, who enjoy incentives and compensations, do not have formal titles for the land on which they carry out their activities of conservation and sustainable use of the forest.

- As additional supplementation, an acknowledgment of informal possession can be undertaken by checking all elements and characteristics, which comprise the acquisitive prescription, followed by the signing of a contract that establishes the rights and obligations between the beneficiary and the Ministry of Environment and Natural Resources, for the payment of any such compensation.

- It's not expected involuntary physical displacements of people or populations within REDD+ Emissions Reduction Program.

- All actions shall mandatorily refer to the policies and procedures established in the Resettlement Policy Framework (RPF-MPRI) of the



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	Resettlement/displacement management tools: • resettlement plans / resettlement planning frameworks / procedural standards for involuntary restriction in protected areas. In instances that cause physical transfer, displaced persons shall be guaranteed the following: - the receipt of assistance (subsidies) during the transfer, and - the receipt of dwellings, or sites for such dwellings, whose productive potential shall be at least the advantageous equivalent of the previous location or site. • Preference shall be given to the delivery of lands to displaced people whose means of subsistence are dependent on the land. - Displaced persons must be informed about their options and rights. - Displaced persons must be given the choice of viable resettlement alternatives. - These people must be informed and consulted about all Resettlement tools. In terms of physical resettlement, all host communities must be included in these consultations. • A Census shall take place for the purposes of identifying displaced persons, and to discourage an influx of persons without rights.	through implementation of the Emissions Reduction Program, the following documents or acts shall be considered valid, namely: • Registered and transcribed, notarised deed of purchase of communal lands without a survey of the occupier. • Registered and transcribed, notarised deed of purchase of communal lands without a survey of the occupier. • Non-notarised deed of purchase and sale with the mayor as a witness. • Deed of purchase and sale of surveyed lands • Sworn statement of possession, notarised with the presence of witnesses • Determination of heirs, for cases of succession. • As explained in Chapter 4.4 about the land ownership and tenancy system, the principal manner of transmitting property rights is through the assignment or transfer of ownership. As of this event, the Dominican property ownership right is undoubtedly based on private documentation, i.e., that which transfers the right between individuals, which transfers the title acquired from the original owner and which accredits them as legitimate owners. On the contrary, the uncertificated right is characterised, in principle, by the possession or material taking of the property. • It is currently an initial fact that serves as a basis for acquiring by prescription, provided that the other characteristics required by law are met; but that is distinguished from the ownership right and that can be had independently of it, although generally one of the forms, the most characteristic of making this right ostensible, is materially possessing the property. • To enable the uncertified right to be legally consolidated, or failing this, so that it can be classified as a de-facto possession or informal	Environmental and Social Management Framework. On the other hand, scope b) of OP 4.12 discusses limited access to resources in areas protected by law, representing disparities in terms of national legislation but, however, with the existence of available practices, through the selected national programs, that provide mechanisms to tackle the effects that these limitations could imply, and which must comply with Procedures in order to mitigate all potential risks in accessing the natural resources defined in the MPRI.
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	For instances of resettlement in Protected Areas: - Procedural Standards shall be prepared in a participative manner with displaced persons of populations, which shall describe: - all eligibility criteria for the purposes of identifying displaced persons. - all necessary measures to help such persons, at least by re-establishing their means of subsistence in real terms. - a description of all process execution and monitoring mechanisms. - Before execution, a Plan of Action shall be prepared describing concrete assistance measures (which may consist of a natural resources management plan prepared for the project).	tenancy available to all applicable persons, including the State - which the law in principle assumes to be the original owner, it shall be necessary to comply with all conditions and requirements established in the Civil Code and Real Estate Registration Law, for recognition of acquisitive prescription or usucaption. With respect to the lands that are included in the property assets of the Dominican State, Sectoral Law No. 202-4 on Protected Areas stipulates in its Article 9 that: <i>"Lands belonging to the State that make up the National System of Protected Areas are imprescriptible and inalienable and no private right can be constituted over them"</i>. These characteristics are confirmed by the Dominican Constitution in its Article 16 when it establishes that: <i>"The wildlife and the conservation units that make up the National System of Protected Areas and the ecosystems and species that it contains, constitute property assets of the Nation and are inalienable, non-seized and imprescriptible. The limits of the protected areas can only be reduced by law with the approval of two thirds of the votes of the members of the chambers of the National Congress"</i>¹²⁹. Therefore, according to the Constitution and the Sectoral Law on Protected Areas, these spaces that are inalienable, non-seized and imprescriptible, are outside of all trade and outside the scope of the private domain of individuals and in no case is the registration of the ownership right resulting from the reorganisation process admissible. On this issue it is important to distinguish what happens if the protected area status of a space or ecosystem has been vested after the existence of plots duly registered in such area. For this case, we should highlight the provisions of the paragraph of Article 9 of Law 202-04 which states that: "Private domain lands with an ownership title legally	
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¹²⁹Sectoral Law No. 202-04 on Protected Areas, of 30 July 2004; O.G. 10582 of 3 August 2004. </4861



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registered in the corresponding Register of the Higher Land Court prior to the enactment of the General Law on the Environment and Natural Resources, which are within the protected areas, shall be recognized as such"¹³⁰. In this regard, private lands are recognised as such (i.e., as plots duly registered in favour of individuals), with an ownership title registered in the corresponding Registry of Titles prior to the enactment of the Law, and that are within protected areas. Furthermore, it is important to clarify that the Declaration of a Protected Area does not in any way imply the expropriation by the Dominican State of privately-owned properties located within its boundaries.

- **Customary Rights**

There are a number of recognized and adopted customary practices, irrespective of legal provisions that may establish a formal system of registration of property rights, mainly applying to the informal occupation or ownership of land, either rural or urban, by individuals who do not have access to such land, by means of conventional legal procedures or other procedures that are undergoing a phase of discontinuation, or in which the renovation or remediation process has expired.

- When land occupied by social groups in the property of the Dominican State, the occupants can demonstrate that they possess this land because they cultivate it or use it for some other profit-making purpose (material possession), either because they surround the land, or because it serves to determine their territory and boundaries, or because their names appear as claimants in a cadastral map created by the surveyor who took the measurement, which must appear in a duly registered measurement document (theoretical possession), also indicating the number of years of occupation (five, ten or twenty years), in a public, continuous, uninterrupted, peaceful manner, and as

¹³⁰ Sectoral Law No. 202-04 on Protected Areas, of 30 July 2004; O.G. 10582 of 3 August 2004. </4877



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		the owner. In this case the occupant has the right to claim before the Land Court the award of these rights by usucaption or acquisitive prescription, thus initiating the Cadastral Rectification process. • Please note that prolonged de-facto possession can be accepted by demonstrating that occupation has taken place through generations of occupying families, based on valid documentation, as proof and as accepted by DR legal system. • Notwithstanding this situation, the Dominican Government has enacted a law (Law 44-180) ¹³¹ for implementation of payment for environmental services (PES) scheme, in order to encourage producers, and to ensure continued use of the land in a compatible manner with forest protection.	
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¹³¹Law No. 44-18 on Payments for Environmental Services, of 31 August 2018.

14.1.4. Methodology used to write up the MGAS

The Strategic Environmental and Social Assessment was undertaken by means of a wide-ranging consultation and participation process involving all key stakeholders, at regional and national workshops, in addition to multiple Legal Work Group sessions, Safeguards, and Technical Advisory Group Land and Forest Usage. The objectives and progress of this analytical participative process are described in Chapter 5 of this document. The SESA led to the identification of the likely impacts and risks implied by the strategic options and actions, REDD+ programs and projects, as well as the environmental and social management measures needed in order to tackle these risks and impacts.

The SESA paved the way for the preparation of an Environmental and Social Management Framework (MGAS), functioning as an operational document by which principles, guidelines and procedures may be adopted in the interest of tackling, avoiding and minimizing risks and unfavourable impacts associated with the implementation of activities, projects, programs, policies and/or regulations connected with future REDD+ National Strategies and ERP implementation, in addition to complying with national guidelines and international conventions, such as UNFCCC safeguards and World Bank Operational Policies. .

As previously mentioned, the MGAS layout is the result of the Strategic Environmental and Social Assessment (SESA)¹³² implemented between May and August 2018, during which it was able to identify and prioritize the possible risks and impacts (adverse and positive) that could arise as a consequence of the implementation of the Strategic Options and Actions defined for the REDD+¹³³ National Strategy.

In order to be in a position to develop said analysis in the run-up to the REDD+ National Strategy, a number of studies were carried out to enhance the strategy and to provide input and other SESA matters for analysis, in addition to being useful during the MGAS preparation phase. These studies included:

- Definition and prioritisation of the main causes of woodland deforestation and degradation in the Dominican Republic, in view of defining appropriate REDD+ actions in the country¹³⁴
- Definition of REDD+ strategic options and actions
- Analysis of the current legal framework in the Dominican Republic, identification of gaps in relation to World Bank's Operational Policies and UNFCCC Safeguards¹³⁵
- SESA participation and consultation plan
- Existing grievance mechanisms in the Dominican Republic
- Existing environmental and social monitoring and follow-up mechanisms in the Dominican Republic
- Existing REDD+ National Programs

¹³²SESA Doc in Annex 4

¹³³See SESA in Annex 4

¹³⁴See the analysis of the direct and indirect causes (drivers) of woodland deforestation and degradation (DD) within the Dominican Republic, including proposals for alternative sustainable land use aimed at reducing DD, and to increase carbon sinks, written by the Sud-Austral Consulting S.p.A. and Forest Finest Consortium, in 2018, in preparation for REDD+.

¹³⁵[See the analysis of the current legal framework in the Dominican Republic in relation to the REDD+ Safeguards of the UNFCCC, contained in the "Analysis of the legal, institutional and compliance framework in relation to REDD+ safeguards" consultation paper, April 2019.](#)

This participative analysis highlighted the elements needed to develop a National Safeguard Strategy and an Environmental and Social Management Framework, with the main elements of which being described below, and emphasizing how the country is getting ready to comply with World Bank Operational Policies (common approach) and Convention Safeguards, through the REDD+ National Strategy and ERP implementation.

Please note that safeguard instruments were developed in accordance with FCPF guidelines¹³⁶ and the country's legal and institutional framework. They were reviewed by the Technical Management Unit (UTG) and the Ministry of the Environment and Natural Resources. Two workshops were held in April 2019. One was nationwide and consist of representatives from the multiple territorial stakeholders involved in the SESA. The other workshop seeks feedback and validation from the Technical Assessment Committee. Following the conclusion of these workshops, preparation of the final version of the SESA and MGAS were made, with participant recommendations being taken into consideration.

14.1.5. Environmental and Social Management Framework components (MGAS).

The Environmental and Social Management Framework includes a series of components for identifying and designing the management tools needed to implement the REDD+ NS and the ERP.

This is based on a summary of the Diagnosis on the causes of Deforestation and Degradation as identified in the Dominican Republic, including identification of strategic options and actions to counteract the main causes, plus an analysis of the regional and national programs and projects likely to fit into the Strategy and the emissions reduction program, as well as an identification and presentation of the characteristics of the activities pertaining to these programs that would be eligible during the implementation of the ERP.

Furthermore, there is a broad analysis of environmental and social National Legislation in respect towards the ERP, including its connection with Convention safeguards and the World Bank's Operational Policies, making it possible to identify existing gaps and come up with recommendations to remedy them (with the full analysis being incorporated into the MGAS). Analysis of the institutional framework thereby made it possible to define the existing structures that would be needed in order to implement the REDD+ National Strategy, to identify strengthening requirements, and where capacity-building might be needed.

Undertake due diligence of selected National Programs in order to identify all procedures and environmental and social programs that apply to each selected activity, such as the necessary institutional capacity of assessing and applying safeguards, plus the monitoring and follow-up mechanisms used by these safeguards. In parallel to this, carry out an environmental and social characterization of the areas prioritized for REDD+ interventions which, in unison with the previous information, make it possible to contextualize and deepen identification of Environmental Risks and Impacts in relation to REDD+ activities. All information shall be used for the preparation of the Environmental and Social Management Plans for the seven types of activities selected for REDD+. These Plans shall include a systemized information system for ensuring full compliance with all safeguards during implementation.

The Environmental and Social Management Plans shall be presented and validated in conjunction with all key and local stakeholders for each of the priority REDD+ areas, by means of five workshops to take place

in March 2019. Once validated, these Plans shall be included in the final ERP version to be delivered in April 2019.

The MGAS, the Resettlement Political Framework and the Procedural Standards for the involuntary restriction of access to natural resources in protected areas, in addition to the Environmental and Social Management Plans for the seven types of selected activities, including detailed information on the Specific Actions of the REDD+ National Strategy, contain all necessary procedures and mitigation measures to implement activities in a sustainable manner, in accordance with the safeguard policies of the WB and the Convention.

The MGAS supplements the Grievance and Conflict Resolution Mechanism and the Safeguards Information System described in this document in sections 14.3 and 14.4.

Environmental and Social Assessment of the REDD+ Strategic Options and Actions for the MGAS.

For the purposes of the analysis, environmental and social risks shall be classified as a combination of the probability that certain hazards shall take place, and the seriousness of the impacts that result from this. In this respect, environmental and social impacts refer to all potential and real changes, in: i) the physical, natural or cultural environment, and ii) the surrounding community and its workers, as a result of project activity that shall be supported.¹³⁷

Identification of environmental and social risk related to the implementation of REDD+ strategic options was conducted by means of a wide-ranging consultation and participation process developed under the framework of the Strategic Environmental and Social Assessment (SESA). This resulted in the implementation of eight regional workshops, a national workshop, technical meetings with the REDD+ Technical Management Unit, and workshops with the Safeguards Working Group, aimed at socializing and validating the results of the SESA.

The analysis process started with a preliminary desktop identification of potential impacts, serving as the basis for basic training for participants from each region about the REDD+ program and its associated processes (SESA, MGAS, SIS, and the Redress and Conflict Resolution Mechanism). Similarly, all relevant stakeholders were asked to identify potential risks and impacts, which, in their opinion or experience, could arise from the implementation of the REDD+ strategic options proposed at the eight regional workshops.

Utilizing this compiled data, the matrices for the eight regional workshops were then analysed and compiled, followed by vertical integration of all information in order to attain a national representation of the main risks and potential impacts identified through the regional SESA consultations. It should be noted that the selected negative and positive risks and impacts are those that are common to all regions (identified and prioritized at all workshops). Furthermore, additional technical work was carried out to supplement relevant studies. These risks and impacts were, in turn, analysed for feedback and validated by the participants of the SESA National Workshop. For more details about the SESA process, see the SESA report and the systematization reports for the corresponding workshops.

With these results in hand, through technical discussions between experts in the forest, environmental, legal and social fields, an analysis took place into the possible environmental and social risks and impacts in relation to the implementation of the strategic options and actions, in addition to comparing such

¹³⁷World Bank ESF, page 3.



information with the operational policy and safeguards that are triggered by the occurrence of such impacts and risks. Below is the representation of such information in a table.

Table 14.1.3 Participative environmental and social technical analysis of the risks and impacts of the strategic options and actions, including identification of associated safeguards (Results of the SESA process).

STRATEGIC OPTIONS	Strategic Actions	Social and environmental impact assessment	Operational policy of the WB, plus UNFCCC safeguards relevant to the Strategic Option.
Strategic Option 1: Strengthen the legal and institutional framework for the natural and sustainable use of natural resources	1.1 Promote the enactment and application of all Forest Law regulations, plus Payments for Environmental Services.	- Design and application of public policies that exclude key stakeholders. - Development of policies without consideration for the land tenure problem. - Resistance of stakeholders involved in changes and application of the Law.	Environmental Assessment (4.01) Natural habitats (OP 4.04) Forests (4.36) Involuntary resettlement (OP 4.12) UNFCCC A, B, D, E, F and G Safeguards
	1.2 Revise, draft and apply regulatory provisions on sustainable forestry management.	- Development of policies without consideration for the land tenure problem. - Design and application of public policies that exclude key stakeholders. - Resistance of stakeholders involved in changes and application of the Law. - Creation of protected areas without participation of the key stakeholders, generates conflicts when the population perceives that regulations for sustainable forest management limit the possibilities of getting involved in productive activities.	Natural habitats (OP 4.04) Forests (4.36) Environmental Assessment (4.01) Involuntary resettlement (OP 4.12) UNFCCC A, B, D and E Safeguards
	1.3 Foster effective governance structures for	Lack of knowledge of traditional community practices, and more specifically, of practices undertaken by women.	Natural habitats (OP 4.04) Forests (4.36)

STRATEGIC OPTIONS	Strategic Actions	Social and environmental impact assessment	Operational policy of the WB, plus UNFCCC safeguards relevant to the Strategic Option.
	conservation of natural heritage in the REDD+ area.	• Involuntary displacement of communities through the establishment of protected areas and land-use change. • Lack of knowledge of governance/community practices in relation to national/local patrimony, and the use of natural resources.	Environmental Assessment (4.01) Physical and cultural resources (4.11) UNFCCC A, B, D and E Safeguards
	1.4 Define and apply legal mechanisms regarding land tenure and Payment for Ecosystem Services in the REDD+ area.	• Loss of rights of ownership in relation to land tenure. • Involuntary displacement of communities through the establishment of protected areas and land-use change. • Limitation or exclusion of tenancy rights holders if legal differences over land tenure are not addressed. • Resistance of stakeholders involved in changes to, and application of, the law. • Involuntary resettlement is brought about as a consequence of transferring the problem from one place to another, including lack of consideration for production dynamics. • Emergence of conflicts of interest between multiple stakeholders and sectors. Non-establishment of an agreement for the development of sustainable projects. Implementation of authoritarian measures.	Natural habitats (OP 4.04) Forests (4.36) Environmental Assessment (4.01) Involuntary resettlement (4.12) UNFCCC A, B, D and E Safeguards

STRATEGIC OPTIONS	Strategic Actions	Social and environmental impact assessment	Operational policy of the WB, plus UNFCCC safeguards relevant to the Strategic Option.
		Poor participation of local stakeholders in the design of management plans could lead to limited and/or unequal access to benefits on the part of local communities, leading to potential sources of conflict.	
	1.5 Strengthen mechanisms for forest control and oversight including determining legal origin, use and marketing of forest products and subprojects.	- Development of policies without taking the land tenure situation into account. - Market insecurity reduces opportunities for the utilization and commercialization of forest products and sub-products, due to a lack of control and inspection policies. - Lack of equality in the application of laws, including deficiencies in control and sanction mechanisms. - Non-compliance with authority-related agreements, and lack of continuity of public policies aimed at the natural conservation and sustainable use of natural resources.	Natural habitats (OP 4.04) Forests (4.36) Environmental Assessment (4.01) UNFCCC A, B, D, E, F and G Safeguards
	1.6 Strengthen the institutional capacity of bodies responsible for implementing REDD+ actions.	- Deficient control and surveillance mechanisms on the part of the authorities in denouncing illegal environmental acts in relation to natural conservation and sustainable usage projects. - Not taking into account the continuous strengthening of the capacities of technical personnel working for public institutions under the legal institutional framework.	Natural habitats (OP 4.04) Forests (4.36) Environmental Assessment (4.01) UNFCCC A, B, D, E, F and G Safeguards

STRATEGIC OPTIONS	Strategic Actions	Social and environmental impact assessment	Operational policy of the WB, plus UNFCCC safeguards relevant to the Strategic Option.
Strategic Option 2. Set up, strengthen and apply public policies to limit and/or contain the expansion of the agricultural and cattle farming frontier, including infrastructures in woody areas.	2.1 Strengthen effective inter-institutional coordination mechanisms for coherence of public conservation policies, sustainable use and forest restoration.	- Deficient inter-institutional planning and/or execution of public policies. - Lack of base studies for the preparation and application of public policies, projects and programs based on scientific evidence. - Ignorance on the part of decision-makers of the traditional production activities of the families affected generates discontent, resistance and disputes.	Natural habitats (OP 4.04) Forests (4.36) Environmental Assessment (4.01) UNFCCC A, B, D and E Safeguards
	2.2. Establish new areas for forest management, reforestation, clean-up, protection of water basins, conservation of biodiversity, and for other environmental services derived from forest ecosystems	- Resistance of farmers and livestock producers in reducing the use of fire for the generation of productive or livestock units or areas. - Development of policies without taking the land tenure situation into consideration. - Lack of base studies for the preparation and application of public policies, projects and programs based on scientific evidence. - Cultural resistance to changes concerning application of a sustainable management model focused on the conservation of biodiversity, and for other environmental services. - Increases in forest fires for retaliatory reasons, and lack of application of effective, punitive, and sanction-based controls.	Natural habitats (OP 4.04) Forests (4.36) Environmental Assessment (4.01) A, B, D, E, F and G
	2.3 Develop crop, livestock and infrastructure zoning	Development of policies without taking the land tenure situation into consideration.	Natural habitats (OP 4.04) Forests (4.36)

STRATEGIC OPTIONS	Strategic Actions	Social and environmental impact assessment	Operational policy of the WB, plus UNFCCC safeguards relevant to the Strategic Option.
	programmes compatible with forest conservation.	• Loss of sources of labour before zoning takes place, due to restrictions imposed by institutional policies. • Loss of trust and interest on the part of key stakeholders, and/or the rejection of imposed institutional policies.	Environmental Assessment (4.01) UNFCCC A, B, D, E, F and G Safeguards
	2.4 Strengthen the basin-based focus on programmes for ecological management and restoration.	• Development of policies without taking the land tenure situation into consideration. • Not taking traditional production activities and land availability capacities into account in relation to ecological management and restoration programs. • Program failure due to lack of inclusion of governance mechanisms, and insufficient traditional knowledge of different zones and areas. • Reduction of agricultural land, and potential reductions in food-based safety of restored basins.	Natural habitats (OP 4.04) Forests (4.36) Environmental Assessment (4.01) UNFCCC A, B, D and E Safeguards
Strategic Option 3. To promote management models for natural resources that contribute to the conservation and sustainable use of forests and an	3.1 Strengthen reforestation and agroforestry plans, programmes such as the National Quisqueya Verde Plan, and the Agroforestry Programme.	• Reduction in economic resources originating from the forests, affecting the quality of life of the population who live off natural resources. • Increase in forest fires if methods of prevention are not properly monitored, especially if planted species are not very diverse and have a tendency to be monocultures. • Development of policies without taking the land tenure situation into consideration.	Natural habitats (OP 4.04) Forests (4.36) Environmental Assessment (4.01) Involuntary resettlement (OP 4.12) UNFCCC A, B, D, E, F and G Safeguards

STRATEGIC OPTIONS	Strategic Actions	Social and environmental impact assessment	Operational policy of the WB, plus UNFCCC safeguards relevant to the Strategic Option.
increase in forest coverage.		Replacement of zone-based endemic species for the purposes of establishing sustainable models, possibly generating conflicts due to the introduction of new species in the place of native species.	
	3.2 Promote incorporation of agroforestry systems for farm and livestock estate management.	- Development of policies without taking the land tenure situation into consideration. - Soil impoverishment and possible reductions in productivity.	Natural habitats (OP 4.04) Forests (4.36) Environmental Assessment (4.01) UNFCCC A, B, D, E, F and G Safeguards
	3.3 Develop programmes to raise awareness and consciousness of key stakeholders in environmental management matters and sustainable forest management.	- Limited participation of women's organizations in training programs on environmental and sustainable management, increasing lack of knowledge among men, and reducing the possibility of gaining access to loans for sustainable projects. - Emergence of potential conflicts if key stakeholders, with impact on communities in relation to training programs, are not taken into consideration. - Lack of knowledge of traditional community practices, and those developed by women.	UNFCCC A, B, C, D and E Safeguards
	3.4 Reduce and/or stop deforestation and forest degradation in relevant	The development of restoration projects without adequate maintenance, generates loss of investment and mortality.	Natural habitats (OP 4.04) Forests (4.36)

STRATEGIC OPTIONS	Strategic Actions	Social and environmental impact assessment	Operational policy of the WB, plus UNFCCC safeguards relevant to the Strategic Option.
	protected areas for conservation of forest resources	• Loss of soil fertility due to structural degradation, reductions in organic material, erosion, and loss of nutrients or its overall availability, due to disallowed or inadequate agricultural practices. • Emergence of potential conflicts if key stakeholders with impact in their respective communities are not taken into consideration. • Potential conflicts due to loss of access to resources and/or due to loss of income.	Environmental Assessment (4.01) Involuntary resettlement (OP 4.12) UNFCCC A, B, D, E, F and G Safeguards
	3.5 Strengthen the protection and surveillance programme in relevant protected areas for conservation of forest resources.	• Emergence of potential conflicts if key stakeholders, with impact on communities in relation to training programs, are not taken into consideration. • Potential conflicts due to loss of access to resources and/or due to loss of income.	Natural habitats (OP 4.04) Forests (4.36) Environmental Assessment (4.01) Involuntary resettlement (OP 4.12) UNFCCC A, B, D and E Safeguards
	3.6 Rehabilitate forest ecosystems in relevant fragile areas to facilitate connectivity among forest fragments.	• Development of policies without taking the land tenure situation into consideration. • Replacement of zone-based endemic species for the purposes of establishing sustainable models, generating potential conflicts due to the introduction of new species in the place of native species.	Natural habitats (OP 4.04) Forests (4.36) Environmental Assessment (4.01) Involuntary resettlement (OP 4.12) UNFCCC A, B, D, E, F and G Safeguards

STRATEGIC OPTIONS	Strategic Actions	Social and environmental impact assessment	Operational policy of the WB, plus UNFCCC safeguards relevant to the Strategic Option.
	3.7 Establish a forest evaluation and monitoring management system.	• In which the project and program interventions are not monitored. • Non-availability of forest management tracking indicators. • Non-involvement of communities in establishing and putting the assessment and monitoring system into motion. • Institutional incapacity in establishing and applying assessment and monitoring systems.	Natural habitats (OP 4.04) Forests (4.36) Environmental Assessment (4.01) UNFCCC A, B, D and E Safeguards
	3.8 Promote the management of natural regeneration of tree species among private farms and community organizations.	• Development of policies without taking the land tenure situation into consideration. • Lack of planned utilization of forests could impact the structure of the land through water and wind erosion, loss of macro and micro-nutrients, and changes to microflora and microfauna.	Natural habitats (OP 4.04) Forests (4.36) Environmental Assessment (4.01) Involuntary resettlement (OP 4.12) UNFCCC A, B, C, D and E Safeguards
	3.9 Define and implement financial instruments and mechanisms to develop productive forest and agro-forest conservation and restoration activities.	• Development of policies without taking the land tenure situation into consideration.	Natural habitats (OP 4.04) Forests (4.36) Environmental Assessment (4.01) Involuntary resettlement (OP 4.12) UNFCCC A, B, D and E Safeguards

STRATEGIC OPTIONS	Strategic Actions	Social and environmental impact assessment	Operational policy of the WB, plus UNFCCC safeguards relevant to the Strategic Option.
	3.10 Update and apply the National Fire Management Strategy in the Dominican Republic	• Development of policies without taking the land tenure situation into consideration. • Increases in forest fires for retaliatory reasons, and lack of application of effective, punitive, and sanction-based controls.	Natural habitats (OP 4.04) Forests (4.36) Environmental Assessment (4.01) UNFCCC A, B, D and E Safeguards
	3.11 Developing a programme for the restoration of post fire affected ecosystems.	• Increases in forest fires for retaliatory reasons, and lack of application of effective, punitive, and sanction-based controls.	Natural habitats (OP 4.04) Forests (4.36) Environmental Assessment (4.01) UNFCCC A, B, D, E, F and G Safeguards
	3.12 Enhancing the programme for plant protection in priority wooded areas.	• Phytosanitary programmes may negatively affect biodiversity and water resources, if implemented without carrying out an environmental impact assessment. • Contamination of land and water resources negatively affects health due to inadequate use of chemical pesticides and fertilizers. • Stakeholder resistance to the application of control measures for phytosanitary protection, if not appropriately consulted in terms of design. • Lack of employment due to limitations in agricultural activity caused by the phytosanitary protection program.	Natural habitats (OP 4.04) Forests (4.36) Environmental Assessment (4.01) UNFCCC A, B, D and E Safeguards



14.1.6. Plans/programmes/projects and actions for REDD+

Strategic options and actions are defined in chapter 4.3 of the Emissions Reduction Program Document (ERPD). **Strategic Options** are a set of action mechanisms consistent with forest diversity and the different local realities in the Dominican Republic, that aim to address the causes of deforestation, forest degradation, and factors that hinder or have a negative impact on the implementation of restoration, conservation, sustainable management, enrichment and regeneration of forest resources. On the other hand, strategic action is conceived as the concrete definition of a measure contained within a strategic option which, in terms of the latter, could coincide with one or more causes of deforestation and forest degradation, and are classified into direct actions and enabling actions (see table 4.3.1. Options and strategic actions, scope and corresponding type of action)

Direct actions are actions that directly generate environmental, social and economic advantages across the territory, by virtue of their operational nature. The **enabling actions** are those that facilitate or boost the implementation of the direct measures or actions. Additionally, there are three types of ERPD direct actions: i) those that prevent deforestation; ii) those that prevent forest degradation; and iii) those that improve woodland carbon stock.

As already mentioned, all direct strategic actions ('Improve Carbon Stocks' and 'Avoid Deforestation / Forest Degradation') shall be implemented by means of existing national Programs and Projects that demonstrate the following:

- Improving the livelihoods of the local population.
- Enhancing the participation of local communities in the overall management of the forest landscape.
- Directing them towards a low carbon emission system including products and value chains based on sustainable forest landscape management.
- Having the capacity to offer additional environmental benefits to ER, such as biodiversity and hydrological services.

The list of existing Programmes and Projects identified below was approved by a multidisciplinary team from the Ministry of the Environment and, subsequently, by the extended Technical Advisory Committee.

Table 14.1.4 List of Programmes and Projects selected for the REDD+ National Strategy

Selected Programs and Projects	Brief Description
Green Quisqueya National Plan (Sub-Ministry of Forest Resources).	The Green Quisqueya National Plan is a social investment program undertaken by the Ministry of the Environment and Natural Resources, aimed at mitigating extreme poverty by means of reforestation activities and the recovery of natural green areas. It was created by means of Executive Power Decree No. 138-97 on 21 March 1997, as a Dominican government initiative to counteract the accelerated deterioration process of natural resources, including high indices of poverty of families that inhabit rural areas within the Dominican Republic.
National System of Protected Areas – SINAP (Sub-Ministry of Protected Areas and Biodiversity)	Ministry of the Environment and Natural Resources, Vice-Ministry of protected areas and biodiversity. As part of the national policies for the conservation of biodiversity, the Dominican Republic relies on a National System for Protected Areas (SINAP) consisting of 128 conservation units, classified into six different management categories and three sub-categories.
Agroforestry Development Program (Interministerial structure) Presidency of the Republic	Its priority is to promote and encourage agroforestry activities for the purposes of maximizing agricultural production, while preserving environmental balance and generating food-based and economic sustainability in the poorest communities of the Dominican Republic. For implementation of this project, a Coordinating Unit for Agroforestry Development Projects was created, in addition to a Technical Execution Unit for Agroforestry Development Projects, to coordinate and supervise the implementation of reforestation projects and sustainable development, as approved by the President of the Republic. This Unit is integrated into the current system by the Administrative Ministry of the Presidency through the Vice-Ministry of Community Production and Development; the Ministry of the Environment and Natural Resources through the Vice-Ministry of Forest Resources; and the Ministry of Agriculture through the Vice-Ministry of Agricultural Sector Planning.
Agroforestry System with shade-grown cocoa (Department of Cocoa, Ministry of Agriculture).	The Ministry of Agriculture, since 2007 with the backing of the United Nations Development Program (UNDP), drew up an alliance that sought to facilitate and identify the key actions in terms of Inter-institutionality, that enables the expansion and elaboration of an action plan to achieve better livelihoods for those involved in the cocoa sector. Its purpose is to ensure the economic, social and environmental sustainability of cocoa producers, by means of practices that increment their opportunities, propitiate

Selected Programs and Projects	Brief Description
	human development, and maximize environmental benefits, produced by means of appropriate crop control.
Agroforestry System with shade-grown coffee (Dominican Coffee Institute - INDOCAFE).	The Ministry of Agriculture, through the Dominican Institute of Coffee (INDOCAFE) provides a factory production service through a set of distinct processes, through which it is then possible to respond to the material needs of the factories of multiple-item producers and, in the instance of coffee growers, translates into the need to provide seeds and/or coffee seedlings across various different stages.
Silvopastoral system and conservation of forests on livestock farms (Livestock Directorate and National Council for the Regulation and Promotion of the Dairy Industry - CONALECHE).	The role of the General Directorate of Livestock (DIGEGA) in matters of Zoosanitary Quarantine, includes activities involving the export of animals, animal-products and sub-products, by means of animal health certification from the exporting establishments, including the export livestock products for the purposes of ensuring that the animal health quality of these products, sent to importing countries, is guaranteed. Ministry of Agriculture. The National Council for the Regulation and Promotion of the Dairy Industry (CONALECHE), was created by means of Law 180-01, functioning as the official institution responsible for ensuring the growth and development of the dairy industry in the Dominican Republic. It is dedicated to the preparation and execution of a dairy policy that promotes self-sufficiency and improvements in terms of the productivity and competitiveness of the dairy sector. It is focused on developing and classifying the national dairy industry by encouraging production, industrialization, commercialization and the consumption of milk and its derivatives.
Sustainable forest management (Sub-Ministry of Forest Resources, Association for the Sustainable Development of Forest Restoration - ASODEFOREST, San Ramón Foresters' Association).	These are initiatives that have been implemented throughout the country, in coordination with government entities, NGOs, or in conjunction with civil society through the financial support of international organizations. Three particular instances stand out: La Celestina: Sierra Plan / San Ramón Association of Foresters in the municipality of San José de Las Matas. La Celestina Sustainable Forest Management Project. Execution of the first Sustainable Forest Management Plan in the Dominican Republic commenced in 1983, receiving technical and economic support from the Swedish government through the Swedish Agency for International Technical and Economic Cooperation (BITS) and Swedforest Consulting AB. Once the first phase of the project was completed, which was merely demonstrative for the purposes of extending the experience to private forest owners, in June 2004 the Sierra Plan transferred project land ownership deeds to the San Ramón Association of Foresters, in recognition that the families who lived in this region were the legitimate

Selected Programs and Projects	Brief Description
Payment for Yaque del Norte Basin Environmental Services (Sub-Ministry of Forest Resources).	owners of these lands. The Association is now the legitimate owner of this land, under condition that it cannot change usage of the land, nor subdivide the property, but must remain a collective. The PES program is coordinated by the Ministry of the Environment and Natural Resources, together with the Aqueduct and Sewerage Corporation of Santiago (CORAASAN) and the Dominican Hydroelectric Generation Company (EGEHID). By means of training and construction for a proposed hydric payment for environmental service (PES) program, involving 34 organizations, an action plan for the basin commenced in January 2008, coordinated by the afore mentioned entities including participation by a number of community organizations. Its aim was to use Payment for Environmental Services to help to conserve the bodies of water via this PES system, aimed at contributing to the sustainability of water resources in relation to quality and quantity.
Resilient agriculture and integrated management of water resources (RAIWRM; IBRD).	The Dominican State, through several sectoral entities, which includes the Ministry of Environment and Natural Resources, Ministry of Agriculture, National Institute of Drinking Water and Sewerage (INAPA) and National Institute of Hydraulic Resources (INDRHI), under the coordination of the Ministry of Economy, Planning and Development (MEPyD), has undertaken an integral project, whose objective is "to carry out an integral management and sustainable productive use of the essential natural resources to improve the availability and quality of water, increase soil fertility" , recover forest areas, restore biodiversity and increase resilience in project intervention areas, in the basins of the Yaque del Norte and Ozama-Isabela rivers.

14.1.7. Types of actions of national and regional projects and programmes linked to direct strategic actions.

On the basis of the SESA workshops having carried out the risks and impacts analysis at the strategic options level, and based on REDD+ actions being conducted on the basis of existing programs and projects, CTA was thus decided to elaborate a typology of all such actions that enabled the standardization and description of activities through such programs, as part of the ERP of the REDD+ National Strategy.

This enabled definition of the following seven types of actions:

1. Sustainable Forest Management (SFM)
2. Reforestation in the context of REDD+
3. Agroforestry systems: SAF Coffee, Cocoa)
4. Silvopastoral systems
5. Assisted natural regeneration in degraded zones
6. Fuelwood plantations (arboreal species plantations for fire and charcoal purposes)
7. Forests conservation activities in priority protected areas with social stakeholders participation

Action typology is indicative of which REDD+ strategic actions are thus associated, the regulations to which such actions apply, the basic technical processes involved, plus the potential socio-economic impacts, the operational policy and all applicable mitigation measures.

Due diligence is currently in place for the multiple programs selected to identify the environmental and social requirements and procedures that apply to each selected activity, in addition to the institutional capacity which is used to assess and apply the safeguards and the monitoring and tracking mechanisms which are set in place.

In parallel to this, an environmental and social characterization of the REDD+ priority interventions took place, which, in combination with the previous information, made possible to contextualize and deepen identification of Environmental Risks and Impacts in relation to REDD+ activities. All information have been used for preparation of the Environmental and Social Management Plans for the 5 prioritized areas selected for REDD+, including the types of activities linked to each one. Besides, such plans include a systemized information mechanism to monitor compliance with all safeguards during implementation **and is linked with the Safeguards Information System (SIS).**

Table 14.1.5 **Environmental and social assessment of the activity types selected for REDD+.**

Types of activities	Specific activities	Possible social and environmental impacts and risks	Mitigation measures
1. Sustainable forest management Associated Operational Policies: Natural Habitats (OP 4.04) Forests (4.36) Environmental Assessment (4.01) Physical and cultural resources (4.11)	Implementation of forestry programs for the purposes of increasing the productivity of forest biomass, such as suitable forest utilisation, for example, the utilization and commercialization of non-timber forest, forest fire control, integrated management of pests and the maintenance of forest volumes, plus additional research and development. Monitoring and tracking: forest, carbon, biodiversity and water monitoring activities.	Poorly managed or badly utilized forest can impact land and soil structure through water and wind erosion, the loss of macro and micro-nutrients, changes to microflora and microfauna, and other adverse effects linked to compaction, insolation, waterlogging, and even the disappearance of organic layers at sites with steep slopes. Soil pollution and potential hazards to health due to improper use of oils and fuel. Destruction of habitats (nesting and night perching areas, burrows, sources of food, shelters and other habitats) causing the displacement of individuals, plus affectation of pollinating and seed spreading animals which, in turn, could have an impact on biodiversity. Soil erosion and loss of its physical, chemical and vegetation properties: emission of CO₂ into the atmosphere, affecting flora and fauna. Direct and adverse impacts on natural vegetation through changes to the predominant lifeforms; genetic erosion of the forest; growth activation of pioneering species; mechanical damage to remaining individual specimens and seed-spreading trees; and degradation of the economic value of the forest.	Undertake an environmental impact assessment prior to execution of measures for forest management. Obtain all necessary and relevant authorizations, permits and tools for the execution of productive activities. (included in the Environmental and Social Management Plans) Prepare up-to-date sustainable forest management plans, including soil usage indicators. Boost implementation of systems for the sustainable harvesting and production of timber and non-timber products. Application of good environmental practices established through silvicultural programs. (Environmental and Social Management Plans) Promote the use of natural pest control systems. In instances of agrochemical usage, existing standards for their correct usage and handling, as established in the Environmental and Social Management Framework and the Environmental and Social Management Plans, shall apply. Promote an up-to-date cadastral registry of preferably forest lands.

Types of activities	Specific activities	Possible social and environmental impacts and risks	Mitigation measures
		Lack of possession or ownership of property deeds constitutes a risk to the stability of the forest management projects, which could cause social conflicts through disagreements in terms of the management of property.	Undertake punctual monitoring of forest inventories by means of the Monitoring, Reporting and Verification (MRV) system. Apply the tracking mechanism to ensure safeguard compliance of all subprojects or activities included in REDD+.
2. Reforestation in the REDD+ framework Associated OPs: Natural habitats (OP 4.04) Forests (4.36) Environmental Assessment (4.01) Physical and cultural resources (4.11) Involuntary Resettlement (4.12)	Establishment of forest and/or agroforest plantations at farms without tree cover, or with degraded tree cover, utilizing endemic and/or native species, in addition to promoting natural regeneration involving the direct sowing of seeds, or the planting of trees in a reproduced nursery environment.	Badly planned reforestation could lead to an increase in the risk of forest fires if not accompanied by suitable forest fire prevention measures, especially if the planted species are not very diverse or tend to favour monocultures. Species selection criteria must be clear, as well as being based on ecological and socioeconomic aspects. On the contrary, there is a risk of creating monocultures that, a priori, appear to be economically advantageous, but which do not favour the objective of conserving the water retention capacity of the basins, and thus preserving biodiversity. Lack of maintenance of restored areas could result in high levels of mortality, signifying that initial investments could ultimately result in losses. The implementation of reforestation programs, without ensuring the parallel	Develop management plans and territorial regulations that, as part of the natural forest management process, take into account all activities included in the restoration programme. Design and execute a control and monitoring system for the basins, aimed at ensuring that individuals are in full compliance with the management plans. Ensure implementation of an integrated national strategy (REDD+ Strategy) that includes the restoration program among its principal measures. Ensure that planted native species are diverse, as far as is possible, in addition to adhering to minimum impact criteria in the area to be reforested or restored, to reduce the risk of anthropogenic damage and the contamination of surface water.

Types of activities	Specific activities	Possible social and environmental impacts and risks	Mitigation measures
		support for improvements in reducing degradation and forest degradation agents, can result in reduced sustainability over time and additional reversion factors. A reforestation process using inadequate species could negatively influence the hydrological cycle of the ecosystem, especially during the first years after plantation¹³⁸. This could potentially exacerbate problems in areas that suffer from water shortages. The movement of people and machinery in natural forests could cause disturbances to the ecosystem, including the propagation of non-desired species in this particular area. Non-specific forest plantations could have adverse effects on biodiversity. Restoration of the water basin could result in the replacement of agricultural crops for forested areas, making food security more vulnerable in spite of increasing forest cover and improving soil conservation. Implementation of strategies with little transparency and/or participation by local stakeholders in terms of the design of management plans could lead to limited	Choose species especially adapted for the restoration areas, principally in zones with water shortages, i.e. with trees of low water requirements being particularly recommended. Implement a diversified restoration plan, ensuring full establishment of the native forest, in addition to forest plantations and agroforestry systems for economic diversification and the furtherance of sustainable rural development. Apply RPF provisions. Describe the current uses of the areas to be reforested. Identify and evaluate the affectations Draw up an involuntary physical / economic displacement plan in conjunction with the affected populations.

¹³⁸ Cunningham, S. C., Mac Nally, R., Baker, P. J., Cavagnaro, T. R., Beringer, J., Thomson, J. R., & Thompson, R. M. (2015). Balancing the environmental benefits of reforestation in agricultural regions. *Perspectives in Plant Ecology, Evolution and Systematics*, 17(4), 301-317.

Types of activities	Specific activities	Possible social and environmental impacts and risks	Mitigation measures
		and/or unequal access to benefits on the part of local communities, leading to potential sources of conflict. Risk of affected people due to economic displacement if current uses are not considered.	
3. Agroforestry systems Associated OPs: Natural habitats (OP 4.04) Forests (4.36) Environmental Assessment (4.01) Involuntary Resettlement (OP 4.12)	Furtherance of Agroforestry, promoting the use of native and endemic species for the purposes of generating increases in economic and social benefits for all producers involved, while also maintaining forest cover and other ecosystems, including carbon (CO₂) capture. Activities such as beekeeping, coffee production and shade-grown cocoa, among others. Monitoring and tracking: forest, carbon, biodiversity and water monitoring activities.	When chemical or synthetic pesticides and fertilizers are used in an inadequate manner, this can cause soil contamination and negative impacts to health. Loss of biodiversity due to the use of hybrid seeds in place of native seeds, thereby encouraging both cultivated and wild diversity, while also conserving herbs and insects in the area. Destruction of habitats (nesting and night perching areas, burrows, sources of food, shelters, habitats, etc.) causing the displacement of individuals, plus affectation of pollinating and seed spreading animals which, in turn, could have an impact on biodiversity. If the program is not implemented according to certain criteria or protocols of action, consistent with the needs of the land, programmed measures run the risk of being ineffective, with subsequent actions causing greater land degradation (e.g. by	Programs and projects applied to keep natural vegetation intact in areas where such removal is not necessary for the carrying out of productive activities. Establishment of mixed plantations using leguminous plants as a temporary or permanent mixture, due to the multiple range of benefits such as nitrogen fixation, for example. Selection and cultivation of native seeds within a culturally diverse framework. Implementation of soil preparation practices that protect natural resources while improving productivity and reducing production costs at the same time. (Minimum or zero tillage) Promote the use of natural control systems. In instances of agrochemical use, existing standards shall be applied for their correct usage and management.

Types of activities	Specific activities	Possible social and environmental impacts and risks	Mitigation measures
		implementing agroforestry practices in a very focused way and with no overall perspective). Using a measure that is solely focused on revegetation through native species, runs the risk of shortages of native seeds with optimum characteristics. Reforestation with inadequate species could increase the likelihood of evapotranspiration in a specific area, including reductions in yield of surface and subterranean water, especially during the first years immediately after planting¹³⁹. This could potentially exacerbate problems in areas that suffer from water shortages. The use of chemical or synthetic fertilizers in agroforestry systems could contaminate surrounding bodies of surface or subterranean water. Without adequate management of the soil, agricultural diversification could demand more nutrients from soil, which isn't able to provide such nutrients in return, resulting in its gradual impoverishment. The movement of people and machinery in natural forest areas could cause disturbances	Plant species that could serve as food for fauna. Undertake biodiversity protection measures, while minimizing the elimination of already established flora during cleaning processes. Develop the plan in accordance with territorial regulation, utilizing agroforestry activities as part of the natural forest management process. Design and execute a control and monitoring system in buffer zones pertaining to protected areas, to ensure that individuals remain in full compliance with agreed management plans. Ensure that planted native species are diverse, as much as is possible, in addition to adhering to minimum impact criteria in the area to be reforested or restored, to reduce the risk of anthropogenic damage and the contamination of surface water In areas in which water shortages are a concern, it is recommended that native flora species are planted which are suitably adapted to low water

¹³⁹ Cunningham, S. C., Mac Nally, R., Baker, P. J., Cavagnaro, T. R., Beringer, J., Thomson, J. R., & Thompson, R. M. (2015). Balancing the environmental benefits of reforestation in agricultural regions. *Perspectives in Plant Ecology, Evolution and Systematics*, 17(4), 301-317.

Types of activities	Specific activities	Possible social and environmental impacts and risks	Mitigation measures
		to the ecosystem, including the creation of trails, which is more likely to spread unwanted species from one area to another. The transfer of technology or the exclusive favouring of this program in a particular region could result in a lack of subsistence alternatives for the local stakeholders due to changes in forest management. If this measure is not publicized and communicated with transparency in relation to products, especially in relation to the communities that could potentially be more interested and/or benefitted by such a measure, this runs the risk of being ineffective due to a lack of impact on the land.	requirements, in addition to avoiding the planting of trees that could affect shallow aquifers.
4. Silvopastoral systems Associated OPs: Natural Habitats (OP 4.04) Forests (4.36) Environmental Assessment (4.01)	Conversion of livestock farms to raising animals associated with trees and shrubs, which provide some kind of preferably native and/or endemic forage and offer shade, food and other uses concurrent with carbon capture (CO₂). Monitoring and supervision: forestry, carbon and biodiversity monitoring activities.	When pesticides and chemical or synthetic fertilizers are used inappropriately, it can cause soil pollution and health problems. The protocols for vegetation removal and disposal must be clear to avoid the accumulation of these materials at sites that can cause fires, pests or pollution episodes. If this measure is not publicized and communicated transparently, especially with the communities that may potentially be worst affected or that may be more responsible for the occurrence of forest fires or high agricultural and livestock activity generating	Establishment of hedges in pastures using species for livestock, fruit trees, timber trees and forage trees for consumption and shade. Development of programs to promote livestock activities in areas with natural pastures and avoid land-use change that generates conflicts (land use planning). Complying with established rules for animal health, stressing the appropriate management of manure. Conservation of natural resources, recovery of degraded soils and

Types of activities	Specific activities	Possible social and environmental impacts and risks	Mitigation measures
		waste, there is a risk of the measure being ineffective as it fails to have an impact on the ground. The accumulation of unused waste can result in the obstruction of water courses when not adequately managed. If this waste reaches water courses, it can result in water pollution episodes. The material removed or forestry waste that is not used and ends up accumulating without supervision can become a refuge for pests or sources of pathogens, especially if it is of agricultural and livestock origin.	improvement of animal productivity to tackle and mitigate the effects of climate change. Development of studies at sites for the design and implementation of silvopastoral system types or arrangements, including: hedges, trees and shrubs dispersed in pastures, protein banks, intensive silvopastoral systems; pastures on timber or fruit tree plantations; wind-break barriers or curtains and trees in alleys. Promoting the use of natural control systems. When using agrochemicals, medicines and pesticides, the existing regulations for correct use and handling must be applied. The catalogue of permitted pesticides published by plant health, animal health and the WHO must also be consulted. In parallel, creation of support programs to maintain agriculture and livestock productivity to avoid conflicts resulting in a significant reduction in productivity.
5. Natural regeneration in degraded zones	Recovery of degraded land through natural regeneration of the area under sustainable forest management for either conservation or production purposes.	Reforestation can lead to an increase in the risk of forest fires if it is not accompanied by prevention measures, especially if the species planted are not very diverse and favour monocultures.	Update production and landscape conservation zoning and propose this to the Expanded Technical Committee in order to reintroduce this as part of the REDD+ agreements.

Types of activities	Specific activities	Possible social and environmental impacts and risks	Mitigation measures
Associated OPs Natural Habitats (OP 4.04) Forests (4.36) Environmental Assessment (4.01) Involuntary Resettlement (4.12)	Monitoring and supervision: forestry, carbon and biodiversity monitoring activities.	The prioritization criteria must be clear and based on ecological and socioeconomic aspects. On the contrary, the risk arises of creating monocultures (for example, forest plantations) that may appear more economically advantageous at the outset, but which do not favour the objective of conserving the water retention capacity of river basins and preserving biodiversity. Restored areas without adequate maintenance can suffer high mortality rates, in which case initial investments can be lost. The implementation of strategies with a lack of transparency and/or participation of local stakeholders in the design of management plans can lead to limited and/or unequal access to benefits by local communities, generating conflicts. The implementation of regeneration programs without ensuring the parallel support of improvements in the reduction of DFD agents (for example, the unsustainable management of forest, livestock or agricultural land) means that the source of the problem is not eliminated and therefore the potential positive impact of this measure is limited.	Apply degraded natural area regeneration programs. Deforestation-degradation: Establish a program for training and raising awareness of environmental management and sustainable forest management. Design and apply sustainable forest management programs and projects. Apply the national program for restoring water basins backed by the Ministry of the Environment and Natural Resources and other government institutions. Generate technical capabilities and technological infrastructure to comprehensively monitor forest management. Apply RPF provisions. Describe the current uses of the areas to be reforested. Identify and evaluate the affectations Draw up an involuntary physical / economic displacement plan in conjunction with the affected populations.

Types of activities	Specific activities	Possible social and environmental impacts and risks	Mitigation measures
		Risk of affected people due to economic displacement if current uses are not considered.	
6. Fuelwood plantations Associated OPs: Natural habitats (OP 4.04) Forests (4.36) Environmental Assessment (4.01) Involuntary Resettlement (4.12)	Establishment of tree plantations for bioenergy production (firewood, charcoal and biomass) in identified production zones.	Social pressure for the use of natural resources, especially the use of land for agriculture and livestock purposes. Extraction of wood, posts, firewood and charcoal. Risk of affected people due to economic displacement if current uses are not considered.	Establishment of dendro-energy plantations. Develop studies to establish the scientific characterization of natural flora species (endemic and native) for dendro-energy purposes. Formulate and implement sustainable production actions in production zones identified for bioenergy production (firewood, charcoal and biomass). Diversify income generation by local users, while reducing dependency on resource use inside protected areas. Apply RPF provisions. Describe the current uses of the areas to be reforested. Identify and evaluate the affectations Draw up an involuntary physical / economic displacement plan in conjunction with the affected populations.
7. Forests conservation activities in priority protected areas along with social stakeholders	Land uses aimed at maintaining forest mass, biodiversity and ecosystems within protected areas are designed and applied with the participation of the stakeholders involved who	The implementation of strategies with a lack of transparency and/or participation of local stakeholders in the design of management plans can lead to limited and/or unequal	Ensure the implementation of a comprehensive national strategy (REDD+ Strategy) that includes the restoration program among its principal measures.

Types of activities	Specific activities	Possible social and environmental impacts and risks	Mitigation measures
Associated OPs Natural Habitats (OP 4.04) Forests (4.36) Environmental Assessment (4.01) Involuntary Resettlement (OP 4.12)	live inside natural protected areas or in buffer zones., Harmonize forest conservation and livelihoods, according the Law and regulation related to protected areas, complying with law principles related to users' rights. They include fire control, comprehensive pest management and other activities compatible with the management plans.	access to benefits by local communities, which act as the source of conflicts. Potential involuntary displacement, as well as limited access to the natural resources of protected areas.	To develop and implement plans for managing priority protected areas in conjunction with social players. According to RPF provisions. Conduct a census of the population within the core zone of priority natural protected areas Develop management plans and land-use plans, which take into account the activities included in restoration programs and the activities contemplated within them as part of the management of natural forests. Design and execute a control and monitoring system in natural forests to ensure that owners are complying with protected area management plans. Strengthen the institutional skills of technical and administrative staff of natural protected areas in the areas of protection, surveillance, community participation in the development of management plans, conflict management and the application of penalties. Design and implement participative mitigation plans to tackle the possible effects of restrictions on access to resources in areas protected by law.



Types of activities	Specific activities	Possible social and environmental impacts and risks	Mitigation measures
			Strengthen the legal criteria regarding land ownership and tenure rights within natural protected areas. Establish and mark out the boundaries of the priority national protected areas.

14.2. Institutional arrangements for the implementation of the ESMF

The NS REDD+ is led by the Ministry of the Environment and Natural Resources, through the Climate Change Directorate (DCC) and the Technical Management Unit (UTG). The latter was created for the purpose of carrying out the preparation phase.

The institutional arrangements proposed in the ESMF are in line with the institutional arrangements established for the implementation of the NS REDD+ and the ERP. These are based on the consultation and participation processes carried out in the Preparation phase, which created the foundations for supporting the REDD+ Programme in the Dominican Republic or assisting the implementation of projects and programmes of government and non-government institutions in the country.

For the follow-up and implementation of the NS REDD+, the country foresees the creation of a **REDD+ Coordinating Office (RCO)** within the Ministry of the Environment and Natural Resources. This office will draft and manage interinstitutional agreements, provide technical advice on REDD+ to implementation entities, and will be responsible for drafting data capture processes for projects/programs in order to meet REDD+ goals. Therefore, the leader institution responsible for supervision and coordination for the implementation of the ESMF within the framework of the NS REDD+ will be the Ministry of the Environment and Natural Resources through the REDD+ Coordinating Office.

The RCO is composed of a multidisciplinary team with technical and financial coordination/consulting capabilities to support the **Project/Program Implementation Entities** that will be responsible for implementing the activities of the ESMF and ESMPs, and therefore for reporting on the compliance with the safeguards, both of those of the UNFCCC and the operational policies of the WB, and compliance with the mitigation of possible environmental and social risks through the safeguards instruments and procedures designed in the ESMF and the ESMPs.

The **Project/Program Implementation Entities** are the units responsible for steering and implementing the programs and projects that will take part in REDD+. In the case of programs corresponding to hierarchical units within the structure of government institutions and for projects, their Technical Implementation Units will be directly responsible. Finally, there are the Governing Boards of the Association of Forestry Producers that are developing sustainable forest management actions. The Ministry of the Environment and Natural Resources, through the REDD+ Coordinating Office, has made contact and conducted negotiations in order to establish the foundations for signing a future interinstitutional agreement for formalizing the participation of these Implementation Entities in the Emissions Reduction Program.

The technical and decision-making personnel connected to the existing selected projects and programmes and those in preparation will be the people responsible for launching tools for safeguards, distribution of profits and arrangements on carbon rights at project level.

Table 14.2.1 Implementation entities responsible for projects and programmes

Implementation entities responsible for projects and programmes	
Project/programme	Implementation entity responsible
Agroforestry Project	1. Technical Implementation Unit, belonging to the Sub-Ministry of Production and Community Development of the Administrative Ministry of the Presidency.
Green Quisqueya programme	2. Quisqueya Verde Reforestation Program belonging to the

Implementation entities responsible for projects and programmes	
	Reforestation and Forest Promotion Directorate , of the Sub-Ministry of Forestry Resources
Sustainable Forest Management	3. San Ramón Cooperative La Celestina Project 4. Association for Sustainable Forestry Development under Restoration (ASODEFOREST) Restoration Project
Payment for Environmental Services in the Yaque del Norte River Basin Project (PES)	5. Payment for Environmental Services Program of the Sub-Ministry of Forestry Resources
Agroforestry Systems with Shade-grown Cocoa.	6. Cocoa Department of the Ministry of Agriculture
Agroforestry Systems with Shade-grown Coffee.	7. Dominican Coffee Institute (INDOCAFE), attached to the Ministry of Agriculture
Silvopastoral systems and forest conservation on livestock farms	8. General Directorate for Livestock (DIGEGA) and 9. National Council for the Regulation and Promotion of the Milk Industry (CONALECHE), attached to the Ministry of Agriculture
Protected Areas (SINAP)	10. Sub-Ministry of Protected Areas and Biodiversity of the Ministry of the Environment and Natural Resources.
Resilient agriculture and integrated management of water resources (RAIWRM; IBRD).	11. Board on Water Coordination, Ministry of Economy, Planning and Development (MEPYD)

14.2.1. Institutional arrangements for the implementation of the ESMF

As part of the implementation of the safeguards integrated into the ESMF and the ESMPs, Six application stages were established throughout the REDD+ Activities Cycle.

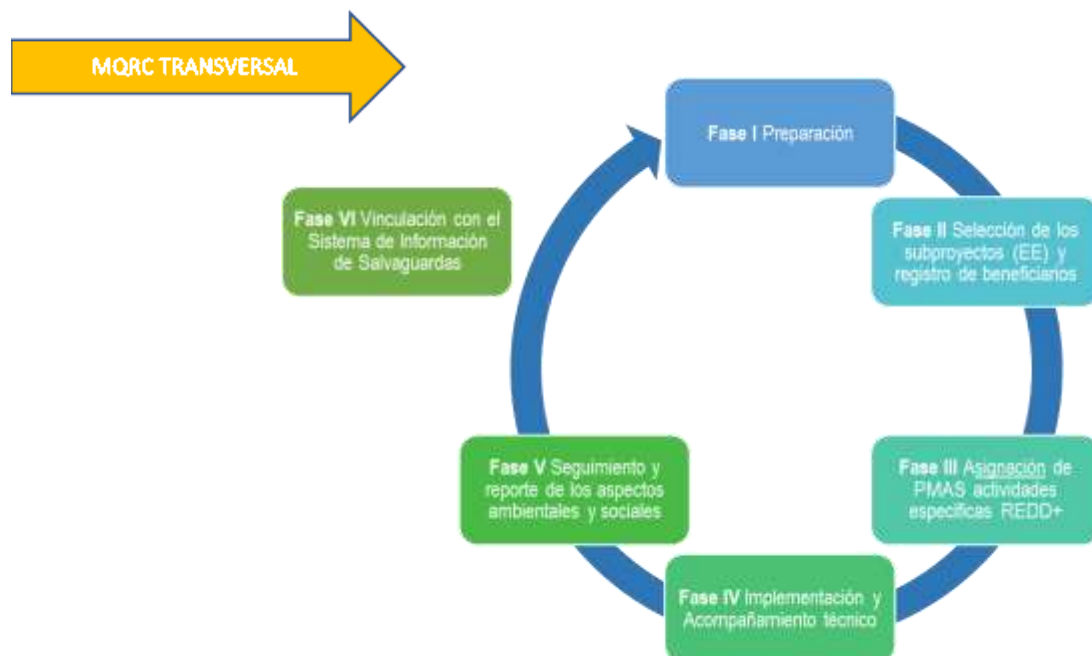


Figure 14.2-1 Application of safeguards within the REDD+ Activities Cycle

- a. **First stage: Preparation:** During this phase, the project will be socialized among the Implementing Entities, their Associates, technical assistance personnel and beneficiaries, through training sessions on safeguards in the different priority areas, and the pertinent information will be sent to the organizations through OCR and will be included in inter-institutional agreements between IE's and the REDD + Coordination Office (OCR).
- b. **The second: Selection of subprojects by the Implementing Entities and registry of beneficiaries:** To receive support, potential beneficiaries must fill out the Support Request, which will be reviewed by the responsible body in each Implementing Entity, where the documentation required in the application submitted by the potential beneficiaries will be verified. In this opinion process, it is evaluated if the requests comply with all the requirements, including the data and location of the subproject, the physical conditions of the property, verification and legitimization of each type of land tenure, as well as the conditions defined by each IE .
- c. **The third stage: Environmental and Social Management Plans (PMAS) of specific REDD + activities in compliance with environmental and social safeguards:** PMAS have been prepared for each of the priority areas, considering the plans, systems, programs and national projects that are currently executed in each of them, and based on the types of activities selected for which environmental impacts have been identified potential and have been assigned the corresponding mitigation measures. For this phase, once the subprojects have been approved, and in accordance with the environmental and social characterization presented in the PMAS corresponding to the REDD + Activity Type, the IEs with the support of their technical agents will specify the current situation of

the environmental and social components in the territory where the activity or subproject in question will be executed and the most sensitive elements of the geographical, ecological, social and temporal context will be established, which will adapt the PMAS to be implemented and presented to the OCR and CTA for its validation and registration in the ERP.

- d. **The fourth stage. Implementation and technical support:** The institutional arrangements that the Ministry of Environment and Natural Resources will establish with the Implementing Entities should clarify the role, functions and attributions that these will have in relation to the implementation of the safeguard instruments and World Bank Operational Policies, based on the ESMF, the SIS and the timely application of the MQRC mechanism, in such a way that the IEs are the main sources of information for the way in which they are being applied, reporting and addressing these safeguards. **A Guide for the application and follow-up of safeguards** was designed for REDD + activities in which all the mitigation measures and good environmental and social practices for each activity are captured, both the beneficiaries of the subprojects (supports) and the technical agents that will accompany the development of the same must observe to comply with the applicable safeguards to the project and thus avoid, reduce or mitigate the possible impacts derived from the realization of the same. These Guidelines are part of the PMAS corresponding to each type of activity.

The guides that will be developed are the basis for the monitoring and reporting of safeguards, these are an important part of each PMAS and will be linked to the Safeguard Information System (SIS), once the pilot that will work through electronic records is developed. they will feed the database that will be used for the respective report.

- e. **Fifth stage: Monitoring and reporting of environmental and social aspects.** *The monitoring of the mitigation measures will be carried out by the IE through the technical agents assigned to the activity during the execution of the same, and will allow obtaining information on fundamental environmental and social aspects of the activity or the subproject, especially on its fulfillment. To carry out the monitoring the technical agent will use the same guide that has been used by the beneficiary to comply with the mitigation measures, which will corroborate not only the quarterly compliance, but to determine how reliable is the information that has been reported the beneficiary and correct anomalies or provide technical support to strengthen their capacities, since the guide is designed to automatically generate the qualification of each component of the specific activity and the global qualification of the beneficiary's performance presenting said qualifications in a summary table.*
- f. **Sixth stage: Linkage with the Safeguard Information System.** *The files that will collect information from the different executing entities, will be compiled by the OCR, the environmental and social monitoring of the safeguards carried out by each IE, will be linked to the Safeguards Information System (SIS). This link will be reflected through the files that will be opened for each Implementing Entity and for the type of plan, system, program or project that implements actions in the prioritized areas.*

It is important to stress that the design of these instruments will be linked to the needs and requirements requested for the certification of forestry plantations, such that compliance with them has added value for beneficiaries.

Another aspect of note is that the actions and measurements related to compliance with the safeguards and the co-beneficiaries of the program on environmental and social issues (agrobiodiversity, conservation agriculture, social inclusion, gender equality, etc.) will be included both in the training processes aimed at the participants at the central, regional, Implementation Entity and beneficiary levels, as well as within the

dissemination and communication strategy that the MEDIO AMBIENTE is drafting, which is an aspect that will reinforce environmental awareness among the participants.

The main milestones for the environmental and social selection process for activities to be implemented in the context of REDD+ are as follows:

1. Exclusion list.
2. General selection criteria.
3. Specific selection criteria or national legal requirements that each activity must satisfy.
4. Procedures to ensure compliance with the environmental and social safeguards during the implementation of REDD+ *specific activities*.
5. Environmental and Social Management Plans (ESMPs) of the REDD+ *specific activities* for compliance with and supervision of environmental and social aspects.

This information will be documented in accordance with the interinstitutional agreement between the IE of the specific REDD+ activity and the REDD+ Coordinating Office (RCO).

Exclusion list

The following activities are considered environmentally or socially high risk or contravene the Operational Policies of the WB and cannot be selected as part of the REDD+ Strategy.

List of excluded activities	
1	Activities that require the large-scale acquisition of land or subsequent land-use change that produces losses or irreversible damage to the assets or income of local residents.
2	Activities that significantly affect ¹⁴⁰ vulnerable populations, or where populations have not given their support.
3	Activities that irreversibly affect archaeological or historical sites (including sites with archaeological, paleontological, historical, religious or unique natural values)
4	Activities that cause irreversible degradation, unsustainable exploitation of natural resources or place a large quantity of scarce resources at risk.
5	Conversion, deforestation or degradation or any other alteration of natural forests or habitats.
6	Activities related to illegal logging and unauthorized extraction of non-timber products for their sale.
7	Acquisition of agrochemical product formulations that belong to categories Ia (extremely hazardous) and Ib (highly hazardous) of the World Health Organization or product formulations

¹⁴⁰ Situations considered to have significant negative impacts on vulnerable populations and therefore considered “non-eligible”, including the following: a) significant cultural disruptions that seriously affect practices and ways of life, such as physical displacement of these vulnerable populations without their free, prior and informed consent and without them benefiting in a fair and equitable way from the sub-project; b) impacts on common-use land and traditionally used natural resources irreversibly affecting the livelihoods of vulnerable populations; and c) severe and/or irreversible effects on cultural resources or practices.

List of excluded activities	
	from Category II (moderately hazardous), if it is likely that they will be used by inexperienced personnel, farmers or other people without training, or without the equipment and installations for handling, storing and applying these products correctly ¹⁴¹ , as well as those established in the Forestry Health catalogue ¹⁴²
8	Funding elections or electoral campaigns
9	Construction and/or restoration of religious buildings.
10	Activities and crops implemented and/or cultivated with the general purpose of producing and/or selling alcohol and/or tobacco.
11	Purchasing tobacco, alcoholic beverages and other drugs.
12	Purchasing arms or munitions.
13	Those that do not comply with the established documentation in the legal framework for each eligible activity.

The Implementation Entities must apply the list of excluded activities as the first filter. Any *specific activity* that includes one or several of the listed activities will be rejected from selection as activities eligible for REDD+.

General selection criteria

The specific activities must prove that they are in keeping with the selected *REDD+ activity types*¹⁴³, and that they promote some of the criteria set out here:

- Improving the livelihoods of the local population.
- Enhancing the participation of local communities in the management of the forest landscape.
- Tackling climate change mitigation and adaptation.
- Offering environmental benefits in addition to ERs, such as biodiversity and hydrological services.
- Avoiding deforestation and forest degradation through sustainable forest management.
- Protecting environmental services.
- Increasing carbon stocks in the forest landscape.
- Promoting activities with a low environmental impact that propose sustainable and agroforestry use of timber and non-timber products.
- Incorporation of low carbon production systems in agriculture.
- Strengthening of community forestry companies.

¹⁴¹ http://apps.who.int/iris/bitstream/handle/10665/44271/9789241547963_eng.pdf?sequence=1&isAllowed=y

¹⁴² http://www.reddccadgiz.org/documentos/doc_1417514524.pdf

¹⁴³ Sustainable forest management, reforestation, agroforestry systems, silvopastoral systems, assisted natural regeneration of degraded areas, dendro-energy plantations, management plans in priority protected areas



- They are in keeping with the central objectives of the National Program or Project and with the NS REDD+.
- Their social, environmental and economic feasibility and sustainability are justified.
- Exchanges of experiences between men and women, and youngsters; between different production systems. They give visibility to different groups.

Specific selection criteria or national legal requirements that each activity must satisfy.

The environmental and social management plans will identify which of the main environmental and social codes and regulations in national legislation that each of the selected activities must satisfy. (In progress.) Table 14.2.2 below presents the main specific requirements by REDD+ activity type.

1. Sustainable Forest Management (SFM)

As a prerequisite, these operations must comply with the national regulations in force on forestry management plans and land registry regulations.

Letter from the rightsholder declaring under oath that the proposed activities are considered in the Sustainable Forest Management Plan

Present MEDIO AMBIENTE Authorization of the Sustainable Forest Management Plan

Environmental Permit (Category B). Requires an Environmental Impact Statement to be drafted when performed on area of over 200 hectares.

Environmental Certificate (Category C). Only requires compliance with the environmental regulations in force when performed on area of up to 200 hectares.

Copy of the letter of authorization or, if applicable, authorization of the amendments to the Sustainable Forest Management Plan in print and digital PDF format

Authorized and valid electronic file of the Sustainable Forest Management Plan

Letter of submission and electronic file of the execution, development and compliance report of the Sustainable Forest Management Plan corresponding to the immediately previous year exercised (ONLY FOR PROJECTS IN OPERATION).

2. Reforestation in the context of REDD+:

Approval from the Ministry of Environment through the Sub-Ministry of Forestry Resources to carry out reforestation actions and recovery of green natural areas.

The reforestation units or zones operate under the administration and responsibility of the Ministry of the Environment and Natural Resources through the Provincial Directorates of the Environment and Natural Resources, responsible for operational work.

Present diagnosis of the land tenure status in the proposed area including declaration of the activities or occupants that are registered, if applicable.

Demonstration of the origin of the pest-free seeds or seedlings.

Present a reforestation plan that contains: Aims, methods of seedling production, sowing, establishment and maintenance of the plantation and pest control methods, fire control and the necessary safety equipment for the activities, waste management, among others.

3. Agroforestry systems: (SAF Coffee, Cocoa):

Certification of Plantation with Right to Harvest (for New Projects) issued by MEDIO AMBIENTE. Permit for Harvest, Shade Control and Exploitation of Trees (for Existing Projects) issued by MEDIO AMBIENTE.

Environmental Certificates issued by MEDIO AMBIENTE for projects categorized by Law 64-00 (Category C).

Present an agroforestry systems establishment plan including aims, methods of seedling production, sowing, establishment and maintenance of the system and pest control methods, fire control and the necessary safety equipment for the activities, waste management, among others.

The proposal includes best practices such as activities with minimum tillage and not using slash-and-burn practices, good waste and pesticide handling and the establishment of forestry tree species in the same area.

4. Silvopastoral systems:

	Certification of Plantation with Right to Harvest (for New Projects) issued by MEDIO AMBIENTE. Permit for Harvest, Shade Control and Exploitation of Trees (for Existing Projects) issued by MEDIO AMBIENTE. Environmental Certificates issued by MEDIO AMBIENTE for projects categorized by Law 64-00 (Category C).
	Present a silvopastoral system establishment plan including aims, methods of seedling production, sowing, establishment and maintenance of the system and pest control methods, fire control and the necessary safety equipment for the activities, waste management, among others.
	The proposal includes best practices such as activities with minimum tillage and not using slash-and-burn practices, good waste and pesticide handling and the establishment of forestry tree species in the same area.
5. Natural regeneration in degraded zones	
	Approval from MEDIO AMBIENTE through the Sub-Ministry of Forestry Resources to carry out reforestation actions and recovery of green natural areas.
	Demonstration of the origin of the pest-free seeds or seedlings.
	Present diagnosis of the land tenure status in the proposed area including declaration of the activities or occupants that are registered, if applicable
	Present a reforestation plan that contains: Aims, methods of seedling production, sowing, establishment and maintenance of the plantation and pest control methods, fire control and the necessary safety equipment for the activity, waste management, among others.
6. Dendro-energy plantations (arboreal species plantations for fire and charcoal purposes).	
	Approval from MEDIO AMBIENTE through the Sub-Ministry of Forestry Resources to carry out reforestation actions and recovery of green natural areas. Certificate of Plantation with Multiple Use Right to Harvest (Corresponding to Environmental Certificates, Category C). Authorization for Forestry Plantation Management (Certificate of Minimum Impact)
	Demonstration of the origin of the pest-free seeds or seedlings.
	Present diagnosis of the land tenure status in the proposed area including declaration of the activities or occupants that are registered, if applicable.
	Present a reforestation plan that contains: Aims, methods of seedling production, sowing, establishment and maintenance of the plantation and pest control methods, fire control and the necessary safety equipment for the activity, waste management, among others.
	For the energy production process, a concession is required from the National Energy Commission, which initially grants a provisional concession followed by a definitive concession, and if production continues, an energy use agreement is established.
7. Forests conservation activities in priority protected areas along with social stakeholders	
	Present a certificate issued by the director of the SINAP confirming that the activities to be performed in the Natural Protected Area are on the list of permitted activities established in the Management Program in effect based on its zoning.
	Present certificate of land tenure or land registry regulation.

	Present diagnosis of the land tenure status inside the protected area together with a management plan for land tenure, if applicable.
	Present an action plan with the requirements of the NS REDD+ Resettlement Policies Framework, drafted in a participatory fashion with the agreement of the social stakeholders present in the natural protected area.

Table 14.2.2 **Main specific requirements by REDD+ Activity type**

Once the Implementation Entities can demonstrate compliance with the specific criteria contemplated in the national legal framework, the activities may be selected for integration into the ERP and compliance with the environmental and social safeguards of the WB must be demonstrated during their implementation in order to qualify for the benefit distribution system.

Procedures to ensure compliance with the environmental and social safeguards during the implementation of REDD+ *specific activities* (application of the ESMF and the ESMPs at the level of *specific activities*).

As the Implementation Entities are responsible for the implementation of REDD+ activities, before the ERPA they will sign an interinstitutional agreement with the REDD+ Coordinating Office (RCO) specifying the specific activities that will be implemented by the Implementation Entity, as well as the obligations related to the implementation and monitoring of the safeguards.

The interinstitutional agreement will contain all of the key aspects about the specific activities to be implemented, their connection with the REDD+ options and actions, their location, timeline, potential impacts and mitigation measures, among other key aspects that define the project or program within the framework of the REDD+ Strategy. According to the environmental and social characterization presented in it, the IEs must describe the current situation of the environmental and social components in the territory where the specific activity will be performed. This includes a description of the most sensitive items in the geographic, ecological, social and temporal context.¹⁴⁴

The REDD+ Coordinating Office will accompany the implementation entities to supervise subsequent compliance through the SIS.

14.2.2. Environmental and Social Management Plans:

For each of the priority intervention areas and based on the 7 types of action an **Environmental and Social Management Plan** (ESMP) have been developed, which includes, in addition to the description of the activity, the environmental and social characterization of the area, the identification of the potential environmental and social impacts, as well as the management measures and support tools, such as manuals, protocols and best practices so that these can be implemented permanently and in compliance with the operational policies of the Bank and the safeguards of the Convention. All of this information have been systematized in an instrument that is practical and simple to manage and that supports the “verification list” instrumentation (weighted according to risk), as well as the monitoring and supervision of compliance that is linked to the SIS.

The structure of the ESMP is based on the information required by OP 4.01 (Annex C of the ESMF). It must include¹⁴⁵:

¹⁴⁴ Annex B, OP 4.01, paragraph c

¹⁴⁵ OP 401 Annex C, p2

- a) **Impact identification and Mitigation measures** to avoid, mitigate, revert and/or compensate for the risks and adverse impacts identified, and according to OP 4.01 it is stated that these must:
- Identify viable measures and effective costs that can reduce the significant negative impacts to acceptable levels;
 - Identify and summarize the main significant social and environmental negative impacts of the specific activity;
 - Describe each mitigation measure with technical details, including the type of impact to which each one refers and the conditions in which they are made necessary, together with the design, description of the team and the operational procedures.
 - Establish a link with any required mitigation plans.
- b) **Supervision of mitigation measures.** During the execution of the project or program, supervision will allow information to be obtained on fundamental environmental and social aspects of the project or program, especially on its impact on the environment and the effectiveness of the mitigation measures and it will be directly linked to the SIS.

Evaluation and environmental and social monitoring process

The environmental and social assessment and surveillance process can be summarized as shown in Figure 14.2-2.

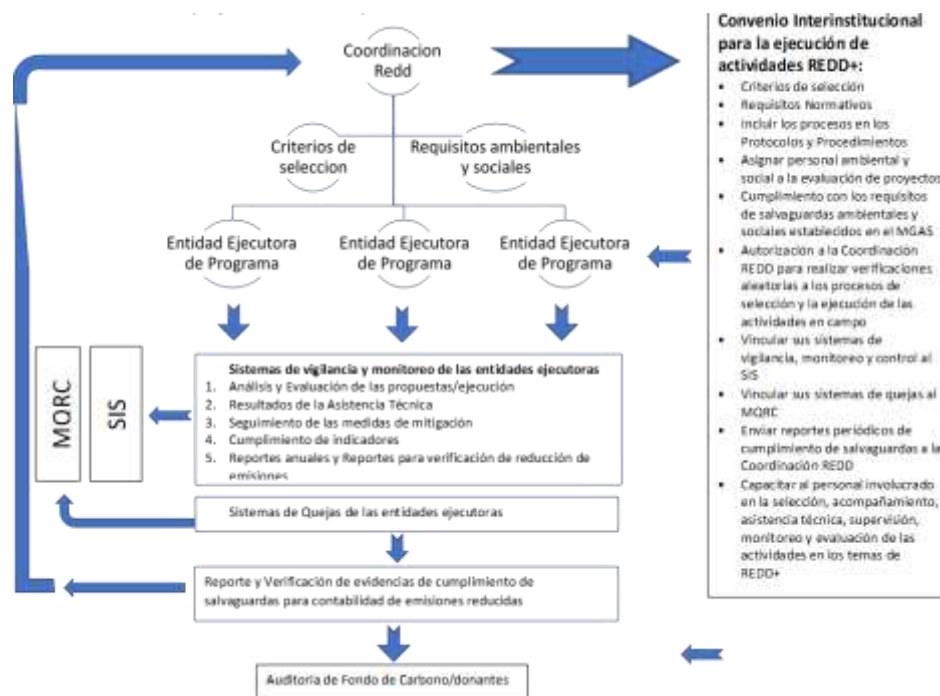


Figure 14.2-2 Environmental assessment and surveillance process

14.2.3. Development and strengthening of institutional capacities

Institutional capacity-building related to NS REDD+ has been under development since the REDD+ readiness phase through activities to raise awareness and involve institutions and key stakeholders, meetings and workshops covering general topics on REDD+, Safeguards and Carbon Rights.

This capacity-building process will continue during the implementation phase, and therefore training modules in keeping with the activities performed by the Implementation Entities that manage the programs

supported by the ERP are scheduled to be taught, notably:

- Courses on Forest Management and Restoration of Forest Landscapes
- Courses on Management of Protected Areas in the context of Climate Change
- Courses on Livestock Techniques adapted to climate change
- Training of the facilitating team for giving training sessions on REDD+ to Relevant Stakeholders and multipliers on issues related to the implementation of REDD+ activities
- The training modules will cover issues relating to: Ecosystems, Environmental Services, Climate Change, Sustainable Forest Management, Best Environmental and Social Practices, Involuntary Resettlements, Protected Areas, International Commitments, Monitoring Safeguards, Legal Framework, Guaranteeing Rights, Participation and Governance, Compliance and Conflict Management, Results-Based Payment and Benefits, Feedback and Grievance Redress Mechanisms, SIS, etc.

The preparation of staff from the RCO, Technical Advisory Committee (TAC) and Working Groups on Governance for REDD+ will be strengthened through meetings and reinforcement of the communication flow, as well as through the preparation of relevant summary information for governance bodies, meetings with local organizations with a major impact on REDD+ work, etc. Likewise, training on safeguards and REDD+ will be provided to personnel from the Sub-Ministry of Protected Areas, Livestock and Agriculture.

The final version of the ERP in May 2019 will present the analysis of the capacities of the Implementation Entities to tackle and ensure compliance with the UNFCCC safeguards and the operational policies of the WB (currently in progress), which will form the basis for the preparation of the Training Program for REDD+, with the aim of strengthening the institutions involved to successfully comply with the responsibilities assumed for the implementation of REDD+ and specifically in the matters required to put the social and environmental impact mitigation measures into practice. The final version of the ESMF contain the general guidelines of the program and a budget for its implementation will be ready in May 2019.

It is important to mention that the training program will be updated and adjusted in order to meet the training needs detected in the implementation, monitoring and supervision phase.

14.3. Description of arrangements to establish the Safeguards Information System and provide information during the implementation of the ERP

The development of a **Safeguards Information System (SIS)** is one of the three requirements listed with the safeguards described in the United Nations Framework Convention on Climate Change (UNFCCC) and is linked to the delivery of results-based payments¹⁴⁶. In addition, it must provide information on compliance with the World Bank's Operational Policies (Op's) applicable to the country.

The SIS was validated in a National Consultation and with the Technical Advisory Group Workshops, the final version of the ERP to be delivered in May 2019 include it.

The SIS contain information associated with compliance with the UNFCCC Safeguards and the WB's operational policies for the country, with the Environmental and Social Management Framework (ESMF), with the Involuntary Resettlement Framework (IRPF), with the Environmental and Social Management Plans (ESMPs), with the Feedback and Grievance Redress Mechanism (FGRM) and other information.

Although there are no official directives on how countries should establish a system for providing

¹⁴⁶Decision 1/CP.16, paragraph 71(d)

information on how to approach and respect safeguards (commonly known as a Safeguards Information System or SIS) Parties to the UNFCCC have provided general guidelines on the matter. Namely the SIS must¹⁴⁷: provide transparent and consistent information that is accessible to all parties involved and updated periodically; be transparent and flexible in order to enable improvements over time; provide information on how all of the safeguards referred to in Appendix I to Decision 1 / CP.16 are being approached and respected; be led by the government and implemented at a national level; and build on existing systems, as appropriate.

The best practices of other countries highlight that the SIS is more than a technological information platform (for example, a web page), but rather the role of that web page is to serve as a tool for the dissemination of information to the relevant interested parties.

Its scope will be national and its development will be gradual, progressively improving over time. The development of the SIS involves a process of examination, evaluation and adaptation of existing information systems and sources to satisfy the various requirements for notification of the country's safeguards.

The design of the SIS seeks to satisfy the following criteria and indicators of the Methodological Framework of the Carbon Fund:

- **Criterion 25:** information is provided on how the ERP complies with the World Bank's social and environmental safeguards and approaches and respects the UNFCCC safeguards relating to REDD+ during the implementation of the ERP.
- **Indicator 25.1:** The safeguard plans include the monitoring arrangements appropriate for the safeguards.
- **Indicator 25.2:** During the implementation of the ERP, information about the implementation of the Safeguard Plans is included in an annex to each ER monitoring report and intermediate progress report. This information is divulged to the public, and the ERP is encouraged to make this information available to the relevant interested parties. This information is also available as a contribution to national systems to provide information on how the safeguards required by the UNFCCC guide relating to REDD+ are being approached and respected, as applicable.

Objectives.

According to the requirements of the UNFCCC, the objectives of the SIS in the Dominican Republic are detailed below.

- To respond to the requirements of the UNFCCC to report on the approach to and compliance with the Cancun Safeguards and other sources of cooperation, during the implementation of REDD+, and to provide inputs for a summary of information.
- To provide information on REDD+ in a transparent, accessible, understandable and culturally appropriate manner for the different stakeholders.
- To integrate the results being obtained by the Feedback and Grievance Redress Mechanism, the benefit distribution system and other mechanisms or systems defined in the context of the safeguards and national legislation applicable to NS REDD+.

¹⁴⁷UNFCCC Decision 12/CP.17, paragraph 2

- To strengthen the implementation of the national strategy in the context of REDD+, with information and inputs on improving the provision of possible benefits and the mitigation of potential risks associated with the implementation of REDD+ PAMs.
- To provide information/key data for implementation of development aspects of the forestry sector, governance, outlining REDD+ priority activities and the aspects related to technical assistance, capacity building, operations and the consultation processes required during the REDD+ National Strategy preparation phase and in the implementation of results-based payment.
- To contribute to the national objectives on sustainable development, climate change, forestry governance, transparency, anti-corruption and human rights through the collection, analysis, management and dissemination of information on social and environmental aspects of REDD+ and the corresponding legal and institutional framework.
- To have a group of indicators that allow decisions to be made in a timely manner on risks that need to be dealt with.

Requirements and sources of information of the SIS

A participative consultation process with the Safeguards Working Group expanded by the participation of certain members of the Technical Advisory Committee (TAC) defined the type of information that will be required in order to demonstrate whether the UNFCCC safeguards are being addressed and respected in the Dominican Republic.

Likewise, in order to have a better idea of the existing relevant information systems and sources for the SIS, a specific analysis was carried out focusing on each of the institutions involved in the generation of information relevant to the safeguards.

Functions and Institutional Arrangements of the SIS

The UNFCCC does not offer any guidelines on the specific functions that the SIS must fulfil beyond the need to “provide transparent and consistent information” on how the convention's Safeguards are addressed and respected, “accessible to all relevant interested parties and regularly updated”.

The functions of the SIS are closely related to the institutional arrangements, as the functions can be carried out by just one or multiple agencies/institutions.

The following institutional arrangements have been proposed in the Dominican Republic (see Figure 14.3-2 and Figure 14.3-3. These were validated in April 2019, through validation workshop with representatives of organizations and institutions who participated in the SESA consultation regional workshop and the other Workshop with the Technical Advisory Group in order to approve and ratify the results of the National Workshop.

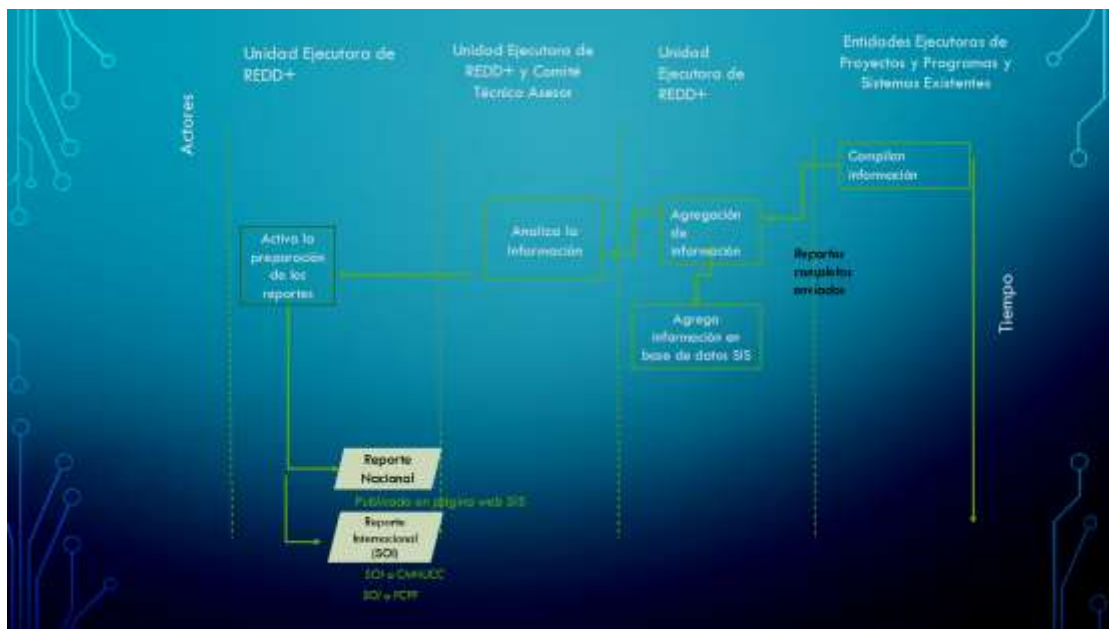


Figure 14.3-1 Institutional arrangements for the SIS

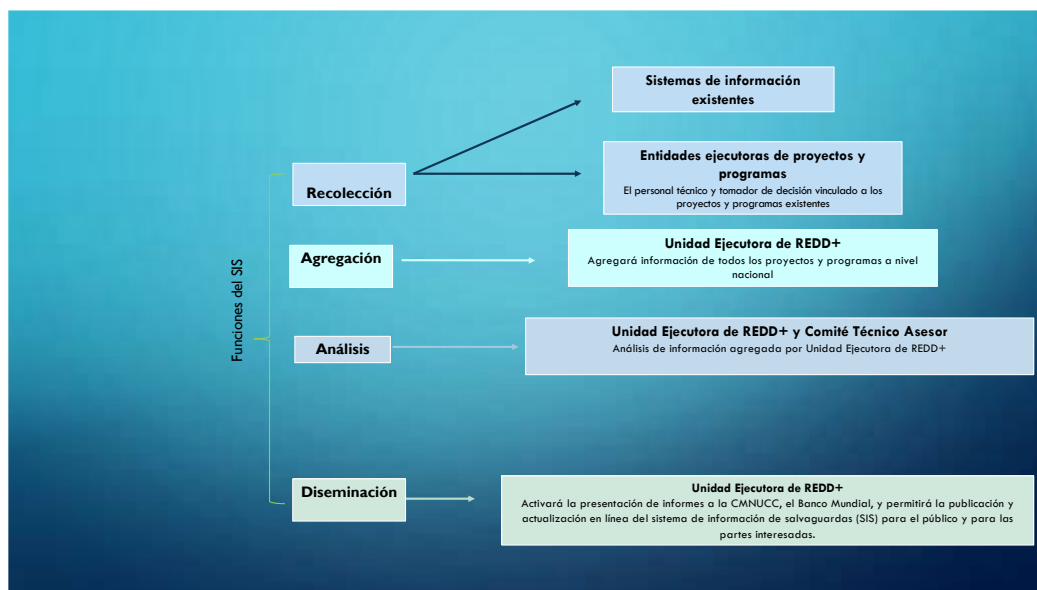


Figure 14.3-2 Functions of the SIS

The basic functions of the SIS considered by the Dominican Republic are:

Function 1: Collection of the information

As shown in Figure 14.3-2 and Figure 14.3-3, this information compilation function will be carried out through existing information systems by MEDIO AMBIENTE and by the Implementation Entities of projects and programs. In order to compile the necessary information for the purposes of the SIS, the implementation entities of projects and programmes will use reports with specific templates.

Function 2: Aggregation of the information

As shown in Figure 14.3-2 and Figure 14.3-3, this information aggregation function will be carried out in a database managed by the REDD+ Coordinating Office, who may request additional information if necessary, in order to supplement the reports by the Implementation Entities of projects and programs.

Function 3: Analysis of the information

The function of analysis of information includes the processing, analysis and synthesis of information in such a way that it serves to show how the programs and activities related to the ERP approach and respect the safeguards during the implementation. This function will be carried out by the REDD+ Coordinating Office, who will draft a preliminary report that will be presented with feedback to the Technical Advisory Committee.

Function 4: Dissemination of the information

This function of disseminating the information produced by the SIS will be carried out by the REDD+ Coordinating Office. The reports generated will be accessible to the public and will be distributed nationally and internationally through various media, such as the website, publications, meetings with relevant stakeholders, etc. The information and updates on the website will be provided frequently, and the national report will be published annually.

Information contained in the Safeguards Information System (SIS)

The SIS will contain information associated with compliance with the UNFCCC Safeguards and the WB's operational policies for the countries, with the Environmental and Social Management Framework (ESMF), with the Emissions Reduction Programme, with the Environmental and Social Management Plans (ESMP), with the Grievance Redress and Conflict Resolution Mechanism (MQRC) and other information that may be defined as necessary.

In relation to the safeguards of the convention, the type of information to be reported is:

Safeguards A

- Description of how the REDD+ programmes and projects are consistent with the objectives of the national forestry programmes.
- Description of how the REDD+ programmes and projects are consistent with the objectives of the various international agreements to which the Dominican Republic is party.

Safeguards B

Qualitative Information:

- Description of the activities carried out with regard to the disclosure of information, including requests for access to the information and how these were processed.
- Records of requests for information made by the public (including the description of the information requested).
- Description of improvements in the legal framework and processes related to access to information.
- Records of any accusations relating to REDD+ against public officials for corruption, investigations relating to corruption and/or proceedings on the part of authorities under mandate, as well as their results.
- Description of how the REDD+ funding has been spent (preparation, implementation and results).
- Description of complaints received in relation to REDD+, process followed to rule on them and results.
- Measures taken for the equitable distribution of profits, gender equality and tackling social discrepancies.
- Description/evidence of how existing rights of use of land have been recognized and protected during the implementation of REDD+.
- If applicable, description of any resettlement process (including the procedures followed and the compensation or mitigation measure established) for each area of intervention of REDD+.

Quantitative Information

- Number of requests for information received and number processed (percentage rejected and granted).
- Number of women significantly participating in the design/implementation of REDD+ PAMs, and number of women benefiting.
- Evidence of how REDD+ funding has been spent (preparation, implementation and results) (internal and external annual audits, projected budgets, audited expenditure reports).
- Number of requests received by authorities regarding to implementation (number accepted, number processed and number of complaints relating to REDD+ received, results, number of appeals).
- Number of holders of the different categories of land occupancy rights, including customary rights, in the area before and after the REDD+ interventions.
- Number of resettlements, including economic displacements and limitations of access to resources (if applicable and as applicable).
- Amount of compensation granted (if and as applicable).

Safeguards C

Qualitative Information

- Description of how communities and the vulnerable population were included (as applicable) in the design and implementation of REDD+ projects.

- Evidence that communities and the vulnerable population (as applicable) were included in the benefits of REDD+ or that they maintained or improved their quality of life and/or income.
- If applicable, description of how (if this is what was used) traditional knowledge contributed to the REDD+ projects carried out.

Quantitative Information

- Number of complaints claims and/or conflicts recorded and managed in the MQRC relating to the rights of communities and the vulnerable population.

Safeguard D

Qualitative Information

- Description of the general categories of interested parties involved in the development and implementation of REDD+ projects (documentation and mapping of the interested parties) and how they were involved (shared information, comments compiled, and in what format they were compiled)
- Description of the results of participation processes (for example, how the points of view of the relevant interested parties were considered)
- Description of any conflict relating to participation (or perceived exclusion) and the results
- Description of processes implemented to ensure the full and effective participation of women and young people

Quantitative Information

- Number of meetings held, number of participants (organized by sector, group, sex)
- Number of visits compiled (comment forms, interviews, votes, minutes recorded and distributed)
- Number of complaints made in relation to participation (cases accepted/rejected/resolved)
- Number of representatives of forests/community associations, local communities and other vulnerable groups participating in the REDD+ process in each area of intervention

Safeguard E

Qualitative Information

- Information about how the implementation of the REDD+ projects has had an impact on natural forests and/or biodiversity
- Description of how the implementation of each REDD+ project has not resulted in the conversion of natural forests
- Description of how the sociocultural, economic and environmental benefits of REDD+ programmes and projects were achieved
- Description of how the arrangements for the distribution of profits work in practice

Quantitative Information

- Information about the natural forest coverage of the country before and after the implementation of REDD+ (for example, inventory of forests, map showing change of coverage of areas where REDD+ projects are located, confirming, that there has been no conversion of natural forests to



plantations and other land uses)

- Statistics about jobs or businesses created, greater income, access to social services, etc.

Safeguards F & G

Qualitative Information

- Contingency plan for reducing the risk of reversions
- Contingency plan for reducing the risk of displacement

Quantitative Information

- Reduction of emissions reduced/captured by the implementation of REDD+ projects

The information relating to the Operational Policies of the World Bank will be reflected in the ESMPs.

Path of Implementation

The SIS will be hosted by the Ministry of the Environment and Natural Resources through its website. A program will be developed that allows the data and information to be managed. To do this, an analysis will be carried out of the compatibility of the information systems managed by the various implementation entities and the requirements with regard to the aggregation, analysis, interpretation and dissemination of the information, which will be the responsibility of the REDD+ Coordinating Office.

The interinstitutional agreement that will be signed with the implementation entities will establish the spatial, temporal and thematic institutional arrangement for the functioning of the SIS.

In addition to the internal consultations with implementation entities and the national Workshops with the various relevant stakeholders have been in April 2019, given that a large part of the data identified that will be reported are of a qualitative nature, a process will be carried out with the implementation entities to establish the quantitative parameters for facilitating greater information and understanding of compliance with regard to addressing and respecting the safeguards and operational policies for making decisions.

Supervision, Monitoring and Permanent Audit of SIS implementation: During the REDD+ implementation process, the functioning of the SIS will be permanently monitored and continually improved, with reinforcement of interinstitutional links with the bodies of the Implementation Entities related to REDD+ programs and projects.

Reinforcement of technical and technological capacities.

The Ministry of the Environment and Natural Resources and the various implementation entities rely on technical personnel who carry out functions relating to the collection, analysis and processing of various types of reports associated with the implementation and performance of programs, achievement of goals, etc. Once the SIS has been established, these personnel will be trained on the focus, principles, requirements, information management and functioning of the system.

During the REDD+ preparation phase, the units of the Ministry of the Environment and Natural Resources were reinforced with equipment and systems. In addition, the purchase of specific servers for information relating to REDD+ is planned for 2019.

14.4. Grievance Redress and Conflict Management Mechanism

The common focus of the FCPF promotes the establishment of a national level Feedback and Grievance Redress Mechanism. The Dominican Republic is in the process of designing the **“Grievance Redress and**

Conflict Management Mechanism” (MQRC), which will enable any complaints or conflicts deriving from the preparation and implementation of REDD+ activities to be managed clearly and effectively. This mechanism is not intended to complement the existing mechanisms of the judicial authorities or other forms of legal action existing in the country.

In accordance with directives/guidelines provided by the FCPF, the MQRC is based on the existing institutions, regulatory frameworks, mechanisms and capacities.¹⁴⁸ This required the identification and evaluation of the mechanisms responsible for resolving complaints already in existence in the country. The FGRM will be designed with a user-friendly form of access, and information about it will then be made public.¹⁴⁹

In the same way, the FGRM is being established based on an assessment of the potential risks for communities and vulnerable populations dependent on forests and other stakeholders in the REDD+ programs and activities. At the moment the MQRC proposal is being analysed and feedback provided with the units of the Ministry of the Environment and Natural Resources and the Implementation Entities. Once agreement has been reached, it will be presented to and approved by the various players involved. Validation have been performed in April 2019.

Assessment of the relevant existing mechanisms

Once the relevant existing mechanisms had been identified, an analysis was carried out. This evaluated the availability, credibility and capacity to respond to and follow up any potential complaints, claims and conflicts that could arise from the implementation of the activities within the framework of the REDD+ strategic options. The guiding principles behind the design of a Grievance Redress and Conflict Resolution Mechanism for REDD+ proposed by the FCPF and UNPD were used as a reference, namely that it should be: legitimate, accessible, predictable, equitable, transparent, compatible with rights, facilitating continuous learning, based on participation and dialogue, and having sufficient capacity and resources for it to function. In addition to an evaluation of how the existing mechanisms comply with these principles, there was an analysis of legal and institution support, the mechanisms’ technical and financial capacities, the sources of information that they use, the functioning procedure, and the problems and difficulties that they face.

Given that the implementation entities do not have formal feedback and grievance redress mechanisms, the decision has been taken to establish the FGRM on the basis of the existing grievances system of the Ministry of the Environment and Natural Resources, the “Green Hotline”, based on which the REDD+ FGRM will be established.

System for environmental complaints of the Ministry of the Environment and Natural Resources.

The Ministry of the Environment and Natural Resources has the Social Participation Directorate, the function of which is to receive complaints, provide assistance to those making them, make a record of them, forward those that are not within the competence of the Ministry of the Environment and Natural Resources to the relevant institutions, monitor and follow up the complaints and keep citizens informed of the progress and final decision on the complaints.

This institution manages the so-called **Green Hotline**: This is the communications channel that can be called in order to provide information relating to environmental crimes, forest fires and other situations endangering the environment and natural resources to the internal and/or external mechanisms

¹⁴⁸Indicator 26 FCPF methodological framework

¹⁴⁹Indicator 26.1 FCPF methodological framework

responsible for the particular areas affected, supplying an integrated computer system that enables appropriate and auditable supervision of responses both to complainants and to the Ministry's other internal control processes.

The **legal grounds** for the mechanism are provided by Law 64-00 of the Ministry of the Environment and Natural Resources, Section II, Chapter V, relating to the National Information System, Articles 49, 50, 51 and 52 of which refer to the establishment of the information system. It establishes that data will be freely accessible and disseminated. In section V on the areas of competence, responsibilities and sanctions, both administrative and legal, chapter I to chapter VI provide guidelines to the Legal Office for Environmental Affairs on how to channel complaints and process them in accordance with procedures to be established between both national authorities according to their areas of competence.

To access the mechanism there is a contact center with the direct lines 809-200-6400 (free from inside the country), while for WhatsApp the number 809-200-6400 has been set up.

To speak to someone, lines are open from 8.00 a.m. until 7.00 p.m. Monday to Friday.

Complaints are also received and processed through Social Media on the @Ambienterdr accounts (Twitter, Instagram y Facebook) and on the web at the portal <http://ambiente.gob.do/>. At a national level citizens can register complaints with the Provincial and Municipal Directorate, of which there were 43 in 2017, and at the central offices of the Ministry of the Environment and Natural Resources, through the Social Participation Directorate.

The population in general have the following link available: <http://ambiente.gob.do/denuncias-ambientales/>, to present complaints, as well as for consultations on authorizations and general consultations on the projects.

In addition to the provisions of the law, given its nature there will be the administrative and legal support offered by the "Regulation for Control, Vigilance and Environmental Inspection for the Application of Administrative Sanctions", as well as the procedure established in Law No. 107-13, which regulates people's Rights in their Relations with the Administration.



Specialist Legal Office for Protection of the Environment and Natural Resources

The Legal Office for Protection of the Environment and Natural Resources is created with the aim of overseeing and promoting compliance with environmental legislation, specifically in relation to infractions of a criminal nature, as well as promoting the active and direct participation of citizens in protecting the Environment and Natural Resources.

The Legal Office for Protection of the Environment and Natural Resources is a specialist branch of the General Legal Office of the Republic, as set out by Article 165 of Law 64-00. The constitution of the Republic. The criminal procedure code. (Law 76 of 2002 amended by Law 10 of 2015). Organic Law 133 of 2011 of the Public Prosecutor's Office and its implementing regulation. Law 64-00 and its complementary legislation, Law 202 of 2004, Law 287 of 2004, Law 307 of 2004, Law 42 of 2001, Law 123 of 1971, Law 333 of 2015.

The Legal Office for the environment receives complaints and accusations and carries out ex officio actions.

It follows up cases through powers of attorney formulated by auxiliary bodies that make up the state's criminal political system. By agreement with the National Environmental Protection Service of the Ministry of the Environment, complaints may be made by citizens through the Ministry of the Environment and the latter will refer to the Legal Office for Protection of the Environment and Natural Resources any persons or institutions in breach of Environmental Laws.

General objective of the FGRM

The MQRC, then, is aimed at managing Complaints, Claims and potential Conflicts arising as a consequence of the implementation of REDD+, registering them and providing complainants with appropriate answers, obtaining satisfactory solutions and, if necessary, redirecting claims to the appropriate institutions to be resolved according to their areas of competence.

Specific Objectives

The Specific Objectives¹⁵⁰ are those suggested by the FCPF and the UN/REDD Programme:

- *To identify and resolve problems of implementation appropriately and cost-effectively:* Like early-alert systems, the MQRC will need to function appropriately in order to help identify and tackle potential problems before they become more serious, avoiding costly and time-consuming disputes.
- *To identify systemic problems:* The information coming from MQRC cases can highlight recurring complaints, occurring ever more frequently or on a larger scale, which helps to identify underlying systemic problems related to the implementation capacity and processes that need to be tackled.
- *To improve the results of REDD+:* Through appropriate Management of subjects and problems, the MQRC will be able to contribute to the appropriate achievement of the objectives of REDD+.
- *To promote accountability in REDD+ countries:* The MQRC will have to promote greater accountability between the players involved, positively affecting the specific activities and general governance of REDD+.

¹⁵⁰ FCPF/UN-REDD Program, "Guidance note for establishing and strengthening grievance redress mechanisms," June 2015



Figure 14.4-1 **Specific FGRM objectives**

Scope:

The FGRM will be an administrative-type mechanism and will apply to the entire national territory and to all actions or activities carried out with the implementation of REDD+ in the Dominican Republic, with the aim of achieving appropriate management of grievances, complaints and conflicts generated in this process.

The MQRC will tackle potential complaints, claims and conflicts arising in relation to the implementation of the Options of the REDD+ Strategy (and REDD+ activities and actions in each territory).

The MQRC is not intended to replace the legal authorities or other forms of legal action existing in the country (including mechanisms for dealing with complaints at project level), but to complement them. Therefore, the affected parties will be able to make their complaints and use all existing and relevant mechanisms according to the competence of each one.

If it is linked directly to the REDD+ process, the complaint, claim or conflict will reach the system through the procedure defined in the *Green Line* of the Ministry of the Environment and Natural Resources for registering REDD+ complaints. Figure 14.8 shows the scope of the FGRM and its connection with the other existing mechanisms according to their areas of competence.

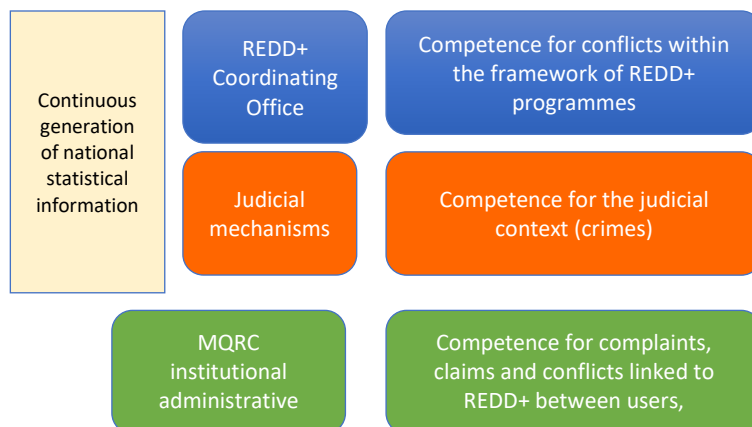


Figure 14.4-2 **Scope of the FGRM and other relevant national mechanisms.**

The types of grievances, complaints and conflicts that will be covered by the FGRM will be those related to the use of forest resources, as well as participation in the design and implementation of strategic actions, programs and projects of the REDD+ Strategy. Therefore, and by way of illustration or example, it is envisaged that the scope of the MQRC would be related to the following categories of complaints, claims and/or conflicts. Among others:

- **Participation and consultations:** it is considered that the MQRC will have to tackle grievances relating to differences and disputes that may arise in relation to the participation of the relevant players in the implementation and evaluation of the implementation of the Options of the REDD+ Strategy. The above includes aspects relating to the appropriate exchange of information about REDD+ and the awareness, participation and impact of the interested parties.
- **Use of forestry resources:** it is considered that the FGRM will have to tackle possible effects linked to the processes of exploiting forestry resources. Likewise, any conflicts that may arise in relation to access to and implementation of forest incentive programmes, and in response to the reinforcement of forest protection and control measures against activities involving illegal felling and the use of firewood. It should be noted that the subject of land tenure is not within the competence of the Technical Management Unit of the project or of the TECHNICAL ADVISORY COMMITTEE (TAC), but nevertheless the institutions or technicians of those bodies may provide some information or guidelines should any complaint or problem of this nature arise, as established in the FGRM.
- **Benefit distribution:** it is considered that the FGRM will have to tackle any potential grievances, complaints or conflicts relating to benefit distribution among the various users/owners of the forests, promoting gender equality. This includes situations in which there is inadequate recognition and economic valuation of environmental goods and services associated with forests (in particular carbon rights), and in which holders of rights (communities in particular) who were or are located in the zone before the declaration of protected areas are not recognized.

Structure:

The FGRM will have an administrative structure. The central axis for the implementation of this MQRC is the Social Participation Directorate of the Ministry of the Environment and Natural Resources, a directorate within whose jurisdiction lies the management of the Green Line, which will forward complaints and conflicts to the relevant place jointly with the REDD+ Implementation Unit.

For the Implementation Entities of REDD+ Programmes and Projects, institutional representatives will be designated who will be responsible for reporting, through the Green Line, any potential effects for key players involved in REDD+ projects. One control element for ensuring that these are reported will be the coordination and monitoring provided by the REDD+ Coordinating Office and the TECHNICAL ADVISORY COMMITTEE (TAC).

The institutions incorporated into the structure of this MQRC are:

At a national level the Ministry of the Environment and Natural Resources has:

- Sub-Ministries on subjects, who along with the REDD+ Implementation Unit and the TECHNICAL ADVISORY COMMITTEE (TAC) will be responsible for the monitoring, evaluation and control of grievances and conflicts generated.
- The REDD+ Programmes and Projects will be supported by the Provincial and Municipal Directorates of each implementation entity, who will be responsible for enforcing on the ground the decisions agreed at the relevant levels.

This statistical information, generated by the Directorate of Social Participation, shall be delivered to the REDD+ Executive Unit for purposes of reporting and integration into the Safeguards Integration System (SIS). In general, the structure for channelling and managing the resolution of complaints establishes the following:

Table 14.4.1 Structure of the Mechanism for the Receipt of Complaints, Claims and Conflict Management (MQRC)

Procedure used within the Structure	Person Responsible	Operational process / institutional framework
WHAT CHANNELLING STRUCTURES?	All access structures currently available in the REDD+ entities.	The REDD+ coordinating bodies have more than one option available for channelling potential impacts. On the one hand, the Ministry of the Environment and Natural Resources relies on the Green Line Regulation, in accordance with the procedure described in the process for channelling and managing the resolution of complaints vis multiple access structures: local, face-to-face, digital. The Green Hotline platform will include a link or variable to link the grievance, complaint or conflict to the REDD+ programs. In this manner, the REDD+ Implementation Unit and the TECHNICAL ADVISORY COMMITTEE (TAC) will be able to monitor compliance with the agreement to be established between the parties.
WHO RECEIVES, RECORDS, CLASSIFIES AND	The MINISTRY OF THE ENVIRONMENT through the Provincial and Municipal	The Ministry of the Environment and Natural Resources relies on the Green Line Regulation , in accordance with the aforementioned procedure.

Procedure used within the Structure	Person Responsible	Operational process / institutional framework
PROCESSES IT? (assignment of the complaint)	Environmental Directorates and other relevant REDD+ institutions.	Personnel working at this unit shall receive, classify, process and transmit the complaint to the corresponding institution. In turn, Green Hotline personnel shall share any information received referring to REDD+ Programs and Projects with the REDD+ Coordinating Office for the purposes of monitoring full compliance with all agreements between the parties.
WHO INVESTIGATES AND MANAGES THE SOLUTION?	Thematic Vice Ministries of the Environment, plus other REDD+ institutions.	The Directorate of Social Participation, through the Environmental Complaints Unit, shall assess and process the solution in conjunction with corresponding Vice Ministries, or coordinating bodies with jurisdiction in such matters. To do this, in instances of REDD+ projects, the REDD+ Coordinating Office shall receive information from the Directorate of Social Participation for subsequent monitoring of agreements between the parties.
WHO RESPONDS TO THE END USER?	Directorate of Social Participation and the government body designated by other REDD+ institutions	The Directorate of Social Participation of the Ministry of the Environment is the mechanism responsible for the Green Line Regulation . This unit shall issue statistical information on matters concerning grievances related to REDD+ programmes, for the purposes of responding to the end user. The role of the REDD+ Coordinating Office is to use the follow-up mechanism to respond to users, prepare reports and input data into the SIS.
WHO MONITORS SERVICE QUALITY?	REDD+ Coordinating Office	In relation to REDD+ programmes, the REDD+ Executive Unit shall be the mechanism used for monitoring service quality.

The amount of time after a complaint is received, up until a decision is made concerning this dispute, shall not exceed 21 working days. A systematic process consisting of 11 steps shall be followed (with the necessary amount of time for each step being detailed in Figure 14.3-4: i) Receipt and registration; ii) Research; iii) Selection of approach; iv) Assessment and response; v) Monitoring.

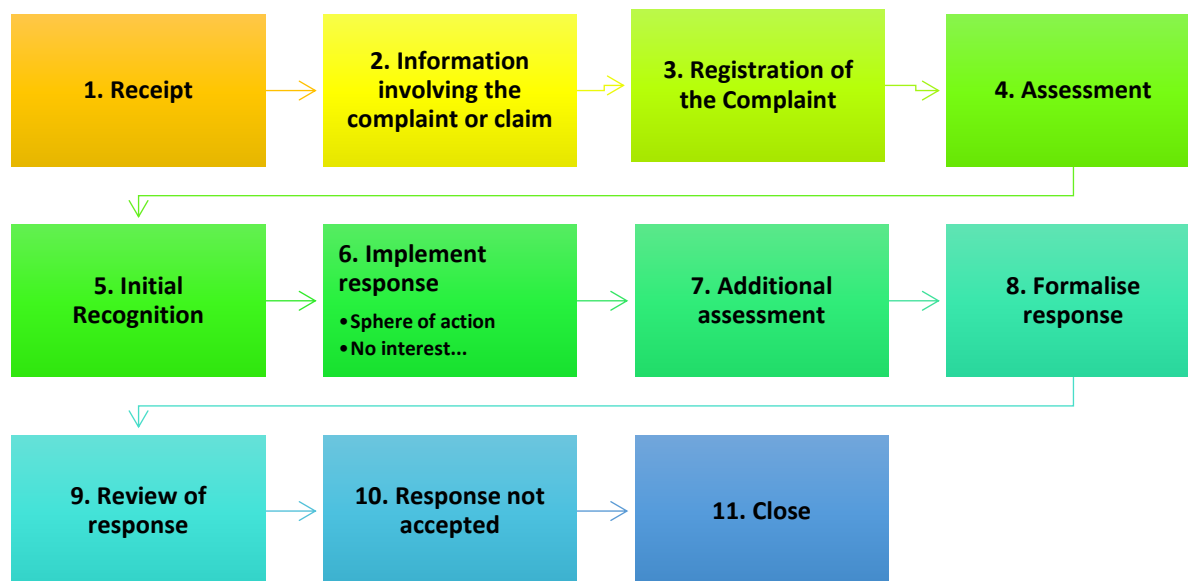


Figure 14.4-3 FGRM procedure

Complaints, Collective Conflicts and/or Communities, Complaints regarding land tenure

In the event of multiple complaints on a single topic and within a defined area, public hearings shall be held in the regions in question in order to respond to any and all such concerns. Via the analysis and assessment of complaints and/or claims, decisions shall then be made by simple majority vote of all representatives of the Working Group for Complaints, Claims and the Management of Conflicts of the TAC. The additional opinion of experts may be requested as an optional addition to the judgement issued by this Committee.

In instances of losses of damages affecting the rights or assets of people belonging to the local populations, this procedure shall seek to provide appropriate conditions to arrive at a solution negotiated under the terms of the Resettlement Policy Framework, currently part of the Environment and Social Management Framework of the REDD+ National Strategy. In the event of it not being possible to arrive at a satisfactory solution, the case shall be routed to the Federal Environmental Attorney, or an appropriate administrative organisation or entity.

Conflicts that may arise in relation to registered or formal property rights will be addressed in real estate judicial instances, complying with the procedure established by Law No.108-05 of the Real State Registry.

Regarding conflicts and disputes related to informal occupants, the FGRM will address the resolution of these disputes through the verification of the documentary requirements that guarantee the “de facto” possession. The requirements to determine the legitimacy of informal possession, under the scheme of acquisitive prescription, will allow a reduction of risks related to possible conflicts. FGRM is designing to used up any efforts to reduce land conflicts through negotiations, arbitration, etc. If necessary, the resolution of these cases would be channelled to the corresponding entities.

Public Dissemination

The Ministry of the Environment and Natural Resources is responsible for disseminating information about the manner in which complaints and conflicts are handled.¹⁵¹ Activities shall be developed for the disclosure and dissemination of the Mechanism for the Receipt of Complaints, Claims and Conflict Management at national level, and in the specified REDD+ intervention areas. Furthermore, posters and pamphlets shall be strategically placed in all territorial offices of executing entities in relation to how the Receipt of Complaints, Claims and Conflict Management functions and works.

The procedure shall be published on the website of the Ministry of the Environment and Natural Resources and those of the implementation entities.

The dissemination activities are included in the Communication Plan of the NS REDD+ and the ERP, due to their vital importance as part of the population’s right to be informed and regarding transparency and accountability. This is also a way of disseminating knowledge about the mechanism’s existence, and how it works so that it may be used.

Path of Implementation

Presented below are some of the general elements that will be integrated into the capacity-building plan to be drafted based on the analysis of the institutional capacities of the implementing entities in order to implement a FGRM, while at the same time having general budget lines for their operation. This will be presented in the April 2019 version.

¹⁵¹Except in instances that require certain degrees of confidentiality, declared in accordance with the law.

Technical capabilities: The Ministry of the Environment and Natural Resources relies on personnel with all of the necessary human and technical capabilities to work on the execution of the Receipt of Complaints, Claims and Conflict Management. Personnel working for executing entities, or linked to the Green Line Regulation, shall be suitably equipped and trained to reinforce the RCCCM framework and its principles, including the current complaints receipt mechanism through the Green Line Regulation. In addition to all matters concerning citizen support, the handling of conflicts, and mediation.

Technical capacity-building: In terms of RCCCM implementation, teams made available through the REDD+ project shall be available in each of the Provincial Divisions, in addition to some of the Municipal Divisions. These teams are still not fully functional in all instances due to Internet access difficulties from certain offices. A status inventory shall be available for every office, with coordination being carried between the Provincial Offices Division, the Technology Division and the Technical Management Unit in order to find a solution.

Permanent audit of FGRM implementation: Permanent monitoring of the functional duties of the RCCCM shall take place during the REDD+ implementation process, while maintaining and strengthening inter-institutional links with all instances of executing entities related to REDD+ programmes and projects, in terms of the receipt and subsequent management of complaints and conflicts.

15. BENEFIT-SHARING ARRANGEMENTS

15.1. Description of benefit-sharing arrangements

Principles for benefit sharing

The Dominican Republic is in the process of finalizing a Benefit Sharing Plan that will accommodate the Emission Reduction Program's approach to achieving mitigation results, the country's legal framework and its institutional and technical capacities, including on Measurement, Reporting and Verification (MRV), and that, at the same time, will incorporate the following principles:

- **Fairness and equity:** the BDP will reward beneficiaries according to their contribution to the achievement of mitigation results, while at the same time incentivizing an increasing participation of women and youth in REDD+ activities. It will also establish decision bodies with an equitable participation of all relevant stakeholders at all relevant levels of benefit distribution to ensure a fair decision-making process.
- **Transparency:** the BDP will contain provisions to ensure that its operation is transparent, mandating the publication of all the information regarding how decisions on the allocation of benefits have been made, as well as on the transference of resources across beneficiaries and on all the benefits generated by the ER Program. Likewise, the benefit distribution arrangements will be simple and easily understandable by all stakeholders.
- **Cost-effectiveness:** the BDP will build upon existing institutions and capacities in order to minimize its operational costs and thus maximize the amount of benefits that will reach the developers of REDD+ activities.
- **Solidarity:** the BDP will explicitly recognize that the obtention of results-based payments depends on the joint responsibility of all actors involved, and will therefore contain measures to ensure the

adequate performance from all of them and to provide solidary incentives to those whose performance may have been negatively affected by catastrophic events such as fires, pests, hurricanes, floods, etc.

Continuous improvement: the BDP will be periodically reviewed and revised as necessary to improve the distribution of benefits considering e.g. improvements to the MRV system and to the capacities of IEs to collect and process data and lessons learned from the implementation of the Plan.

Processes, criteria and timelines for the distribution of benefits

As explained in detail in section 4 of this ER-PD, the Dominican Republic's ER Program will seek to reduce emissions and enhance forest carbon stocks by continuing, broadening and strengthening existing initiatives (mainly IEs, hereinafter referred to as Implementing Entities (IEs)) that promote sustainable forest management and sustainable rural development practices in general.¹⁵² The scope of the ER Program is national, and due to the current technical capacities and data availability, emission reductions and carbon stock enhancements will only be estimated at the national level.

Consequently, the government of the Dominican Republic has decided that the IEs that will be used to achieve mitigation results will also serve as the channels to allocate the resources obtained from results-based payments to the beneficiaries. In order to do so, these entities will need to comply with the guidelines that the Benefit Distribution Plan will establish with the objective of defining minimum standards on key aspects to ensure consistency across IEs and compliance with the principles mentioned above. Requirements to be contained in the guidelines will include, among others:

- Establishment and operation of a IE-level Benefit Sharing Decision-Making Body;
- Participation in the national-level Benefit Sharing Decision-Making Body;
- Provision of information on the ER Program and the BSP to potential beneficiaries;
- Common criteria for the selection of beneficiaries;
- Minimum requirements for contracts between the IEs and the beneficiaries;
- Compliance with relevant criteria from the Methodological Framework, including on accessibility and inclusiveness;
- Provision of information for the REDD+ Registry;
- Compliance with the benefit distribution requirements contained in the BSP;
- Review of the reports by beneficiaries, both regarding the implementation of REDD+ activities and the distribution of benefits and the generation of priority of non-carbon benefits;
- Monitoring requirements, both regarding the implementation of REDD+ activities and the distribution of benefits and the generation of priority of non-carbon benefits;
- Reporting requirements, both regarding the implementation of REDD+ activities and the distribution of benefits and the generation of priority of non-carbon benefits;
- Use of the ER Program Feedback and Grievance Redress Mechanism (FGRM); and
- Transparency.

The government of the Dominican Republic is currently assessing options, which entity may be the most adequate to receive and transfer the results-based payments from the Carbon Fund to the IEs. The main

¹⁵² Information on the plans and budget to carry out REDD+ activities through these IEs within the context of the ER Program may be found in sections 4 and 6 of this document.

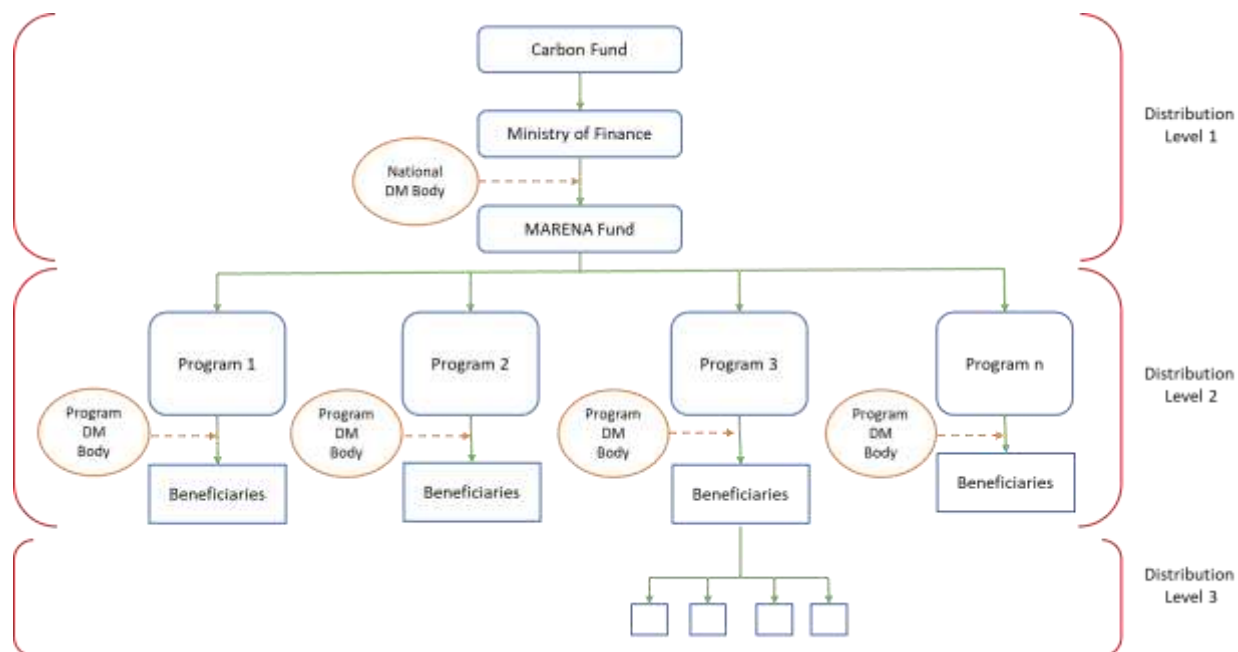
alternative being considered is for the Ministry of Finance to receive such resources from the Carbon Fund and to channel them to the National Fund for the Environment and Natural Resources (MARENA), which would in turn distribute them to the IEs. The MARENA fund is a financial instrument of the Dominican Estate to promote an efficient environmental management. It was created by Law no. 64-00 as an entity attached to the Environment, with legal personality, own administration, independent patrimony and jurisdiction over the whole national territory. The fund's mandate allows it to promote public and private investment for the development and funding of plans, programs and projects related to the protection, conservation, research, education, restoration and sustainable use of natural resources, as well as for institutional strengthening and capacity building. In order to channel the proceeds received from the Carbon Fund to the IEs, MARENA will establish an account for the ER Program that will include sub accounts for each of the IE. In turn, the IEs will distribute the ER Program proceeds among the final beneficiaries in a variety of ways that will be decided among the beneficiaries, the authorities of the IEs and the government of DR through an established decision body (see below on the governance of the Benefit Distribution Plan).

Additionally, a limited portion of the results-based payments might be used to cover the incremental costs ensuing from the implementation of the ER-Program, including those arising from enhanced reporting and monitoring by beneficiaries, IEs and the government, as well as those resulting from receiving, managing and allocating such resources. The size of this share will be decided by the national-level decision-making body. However, the preferred alternative of the government of the Dominican Republic is, whenever possible, to reduce such costs to the minimum by effectively using the current capacities or to find ex ante resources for strengthening the IEs and/or to cover them, at least partially. Moreover, if agreed by the IE-level bodies, a part of the received results-based payments could be devoted by the IEs to widen their reach.

Thus, benefit distribution is expected to happen at two, and sometimes three levels (see Figure 1, where the green arrows represent flows of resources) and benefits:

1. Level 1: From MARENA or other designated entity to the IEs;
2. Level 2: From the IEs and funds to the beneficiary groups (communities and associations);
3. Level 3: Among beneficiaries (e.g. within communities and associations).

Figure 15.1-1 Options being considered regarding the benefit distribution mechanism



While at Level 1 the arrangements will be formalized as part of a wider agreement between the IEs and the Environment covering all aspects of their participation in the ER Program, at Level 2 contracts will be signed between the beneficiary groups and the IEs. These contracts will vary depending on the specific characteristics of the contracts that each currently uses, but all will have a set of common mandatory requirements, including: i) the need for beneficiaries or beneficiary groups to grant their carbon rights to the State when needed; ii) the explicit consent of the beneficiary or beneficiary group to take part in the ER Program (including in the Benefit Sharing Plan) and of allowing their data to be included in the REDD+ Registry; and iii) the requirement to submit periodic reports type of activity, state of the activity implemented, non-carbon benefits and safeguards) following the templates and requirements to be established to such end. In order to facilitate the participation of potential beneficiaries or groups in situations of conflictive, untitled or customary land and forest rights, the Environment has been implementing customary legal mechanisms to recognize and give legitimacy to the right of possession to ensure the participation of potential beneficiaries who have an informal possession of the land. This practice will also be applied in the context of the ER Program (see section 17.2 below), and therefore it is expected that one of the non-carbon benefits will be a clearer land tenure regime.

The application and oversight of the benefit distribution arrangements will be governed by decision-making bodies at Levels 1 and 2 (see also Figure 1, where DM means “Decision Making”, and the orange arrows represent the implementation of decisions taken by the relevant bodies). The first one will have a national scope, and will be composed by representatives of the government, the IEs and their beneficiary groups. Level 2 bodies will be established in each IE and will include representatives from the government, the authorities of the IE and representatives of the beneficiary groups that take part in REDD+ activities. While constituting these bodies, gender and inter-generational considerations, as well as the participation of any other vulnerable minorities, will be taken into account. The national-level body will oversee the implementation of the Benefit Sharing Plan, decide the share of benefits going to each IE at each benefit distribution event based on the agreed formulas, assess the performance of the BSP, identify potential improvements and modify it accordingly, as necessary. The IE-level bodies will have similar functions but

at the individual IE level, having as an additional task the definition of the benefits to be distributed at each benefit distribution event. The composition and rules and procedures of these two governing bodies will be designed to ensure the equitable participation of all types of beneficiaries so as to avoid unequal decision power and elite capture of the benefits.

The benefit distribution arrangements currently being considered take the number of hectares and type of activity of REDD+ that have been implemented during the results period, as the basis for the allocation of the payments among the IEs. While these arrangements will be applied at level 1 the IE-level bodies may agree on different arrangement for level 2 distribution, that in turn would need to be approved by the national-level body. The distribution at Level 3, where needed, will follow the rules and procedures agreed among beneficiaries at the local level (e.g. by *Asambleas* in communities). Nevertheless, the general distribution principles defined at levels 1 and 2 will need to be followed, and the IEs will monitor how benefits have been distributed at these levels.

The arrangements will be in line with the Dominican Republic's legal framework, including with regards to environmental services, carbon rights and to the prescribed use of the benefits arising from the payment for environmental services in natural protected areas, national forests and other areas suitable for forest production (see section 15.3 below), and will include provisions for "solidary contributions" among IEs to provide incentives to those of them whose performance may have been negatively affected by catastrophic events during the results period. Likewise, the benefit sharing arrangements will contain measures to cope with non-compliance by the IEs under normal circumstances.

Timelines

The government of the Dominican Republic is considering the possibility of carrying out two emission reduction verification events during the 2020-2024 period. Currently it is not possible to determine the timelines for the distribution of benefits, as the final structure of the distribution mechanism is being discussed. However, it is expected that the national decision-making body will determine a time limit for the distribution of benefits from the moment they are received from the Carbon Fund to when they reach the final beneficiaries taking into account the established procedures of each intermediary as well as their capacities.

The specific dates for the adoption and implementation of the Benefit Sharing Plan have not been decided yet; however, the activities leading to this objective have already been identified and tentative dates have been proposed:

1. Establishment of a dialogue between MEDIO AMBIENTE and the IEs involved in the ER Program aimed at the adoption of the guidelines for their participation (carried out in February of 2019);
2. Preparation of the public consultation based on the draft of the Benefit Distribution Plan (April – June 2019);
3. The public consultation (July – August 2019);
4. Elaboration of the final BSP (September – October 2019);
5. Development of a legal instrument for the formalization of the BSP (November - January 2020);
6. Development and formalization of the legal documents associated to the BSP (January - February 2020);
7. Establishment of the national and IE-level decision making bodies (February-March 2020);
8. Development and formalization of the rules and procedures for the decision-making bodies (March-April 2020); and

9. Implementation of the BSP.

Benefits and beneficiaries

Benefits

In general, it is expected that the resources obtained from the Carbon Fund will not be provided as individual monetary payments (i.e. a payment for tCO₂e mitigated or for hectare under REDD+ activities) by the IEs to their beneficiaries, but rather as additional support for continuing and enhancing the activities previously funded by such IEs. The rationale for this is that, considering that most individual contributions are likely to be small (as individual land owners do not possess large areas), individual monetary payments corresponding to mitigation contributions are also likely to be very small and therefore insufficient to trigger new investments in REDD+ activities. Therefore, it is considered preferable to, whenever possible, use the benefits received by an IE as a whole to facilitate actions and investments that will be of use to all the beneficiaries of such entity that contributed to reducing emissions during the results period. If this is not possible, or if the beneficiaries do not agree to this within the framework of the IE-level benefit sharing committee, then some individual monetary benefits could be provided instead.

Non-monetary benefits will be mostly made up by the types of support usually offered by the IEs (these benefits are described by IE in Table 1, together with the participation requirements of each of them). It must be noted that, although the benefits provided by the IEs are mostly of non-monetary nature, some of them do provide monetary benefits, as in the case of the Environmental Services Program of MEDIO AMBIENTE, and the Agroforestry Project of the presidency, which as part of its support offers similar payments to those groups of producers that refrain from planting leguminous plants. Nevertheless, the decision on how the proceeds obtained from the Carbon Fund will be used by the final beneficiaries will be made by the IE-level decision making body, taking into account among other things, the capacities and objectives of the IE, the amount of the proceeds received by it and the number, needs and interests of the beneficiaries, as well as a list of prohibited activities and investments to be issued by MEDIO AMBIENTE to avoid allowing the use of such proceeds to promote practices or investments that are considered not sustainable or as going against the national development objectives. In any case, for both types of benefits the IEs will take measures to allow the beneficiaries to distinguish the benefits arising from the results-based payments from those normally provided by such IEs, so that beneficiaries become more conscious about the incentives they are receiving for carrying out REDD+ activities under the ER Program.

Beneficiaries

The identified IEs reach a wide variety of types of beneficiaries, which together are expected¹⁵³ to represent the main beneficiaries of the ER Program (also shown in Table 15.1.1). A list of the number and type of beneficiaries will be made by each program. This information will be generated and will be available no later than June 30, 2019. An initial categorization of beneficiaries and beneficiary groups are proposed below:

- Communities;
- Private landowners;

¹⁵³ It must be noted, however, that the “traditional” beneficiaries of the IEs may change due to the additional selection criteria to be established under the ER Program.

- Associations of cattle ranchers, cocoa and coffee producers, etc., and
- The Dominican Republic government (including the IEs, MARENA, and MEDIO AMBIENTE), as a potential recipient of a limited share of the proceeds that will be used to cover the operational costs of the ER Program (including those related to the implementation of the Benefit Sharing Plan).

Additionally, the selection of beneficiaries will consider if they are located in areas with mitigation potential considering the REDD+ activities supported by the IE (for instance, an area with clear risk of deforestation). Potential beneficiaries will be able to choose between the different IEs available in the region where they are located, and their participation in the ER Program will always be voluntary. In order to be eligible to receive benefits, beneficiaries will need to engage with an IE through a contract, to successfully implement the activities agreed upon with the IE during the results period for which results-based payments are received, and to comply with the requirements set out in such contracts. Contracts will include both requirements specific to each IE and general requirements applicable to all such IEs participating in the ER Program, including.¹⁵⁴

- A clause, where applicable,¹⁵⁵ through which the beneficiaries or beneficiary groups will agree to transfer their carbon rights to the Dominican Republic government as a condition to receive the benefits arising from the results-based payments provided by the Carbon Fund;
- The express consent of beneficiaries or beneficiary groups to participate in the ER Program and to allow the inclusion of their data in the REDD+ Registry;
- The commitment to elaborate and submit the reports required by the BDP with the frequency and templates established to this end by the National Decision-Making Body.

As previously mentioned, MEDIO AMBIENTE will implement, where needed, customary legal mechanisms to recognize and give legitimacy to the right of to facilitate the participation of potential beneficiaries or beneficiary groups who have an informal possession of the land (this is further elaborated in section 4.4, together with explanations on how it will be operationalized, including in Natural Protected Areas). Equal participation of all potential beneficiaries and beneficiary groups will be ensured, regardless of their types of land tenure (formal or informal), or citizenship.

¹⁵⁴ It is important to note that MEDIO AMBIENTE is currently exploring options to establish similar requirements for contracts and agreements between communities and associations with individual landowners in ways that allow to maintain transaction costs low and taking into account the associations' and communities' capacities.

¹⁵⁵ The transfer of carbon rights to the State will not be necessary in areas where, by law, such rights already belong to the State.

Table 15.1.1 **Benefits and beneficiaries of some of the Programs/Beneficiary groups**

Implementing Entity	Supported activities	Beneficiaries	Benefits	Eligibility requirements
ASODEFOREST	Conservation and natural resources management Reforestation Wood industrialization Research Plague and disease control	Producers (partners and not partners) with land to promote forest plantations Priority beneficiaries: low income partners and partners with reduced mobility or disabled persons	Capacity building, technical support, donation of seedlings and of school supplies for the children of the beneficiaries.	Must have a planted area Management plan or sawmill Forest suitable terrains or natural forest terrains Comply with the ethical procedures manual
Consejo Nacional para la Reglamentación y Fomento de la Industria Lechera (CONALECHE)	Strengthening institutional leadership in associations Improving finance and investment conditions in the sector Developing the market Improving the quality, profitability and efficiency of the milk chain (all of the above through loans)	Any milk producer: individuals, associated in federations, associations and cooperatives.	Capacity building, facilities, technology transfer and small loans for investment and promotion. Livestock producers Benefit from CONALECHE's programs as well as from the loan portfolio for the development and technology of the milk industry.	Be Dominican of legal age and milk producer (individuals or federations)
Departamento de cacao	Cocoa production	Dominican cocoa producers	Capacity building (latest developments in cacao production, improved productivity, awareness raising on the importance of cocoa for producer households, etc.) Acquisition of seedlings at production costs Bait for plague control	Possess an available and suitable terrain for cocoa production Keeping the plantations in good conditions
Instituto Dominicano del Café (INDOCAFE)	Management of plagues and diseases associated to the cultivation of coffee Research Rehabilitation of roads in coffee production areas Project planning and management Capacity building and extensión Coffee certification	Coffee producers	Capacity building Advisory services Research Extension Technology transfer Microcredits through the special fund of the Presidency Purchase of specialized equipment	Any Dominican coffee producer. Small and medium producers are priority beneficiaries.
Pago por Servicios Ambientales – Cuenca Yaque del Norte	Conservation and regulation of hydrological basins River flow control Reduction of sedimentation in the Tavera and Bao dams Remediation of organic and chemical pollution in the basin's rivers	Owners or holders of forest areas, agroforestry systems (particularly, shade coffee) of the communities los Dajaos, Manabao, La Ciénaga, Mata de Café, Los Marranitos and the municipalities of Jarabacoa and Constanza. Priority areas: terrains in water harvesting areas, areas of influence of river sources and protection strips, terrains in areas with slope over 60% vulnerable to erosion,	A staggered fee approach based on the number of hectares is applied.	The owner must be a citizen or a legal permanent resident in the Dominican Republic The owner must commit to comply with the conservation measures defined in the "conservation project", such as fire prevention and waste disposal. Land property or possession document
Quisqueya Verde	Social forestry (reforestation with communal participation)	Representatives of households or families in the communities where the activities will be	Job creation (payment of day's wage to brigades)	Dentro de estas grandes zonas, se toman en cuenta los siguientes criterios:

Implementing Entity	Supported activities	Beneficiaries	Benefits	Eligibility requirements
	- Establishment of multiple use forests - Recovery of national and municipal natural areas - Environmental education - Improvement of housing and communal service infrastructures - Reforestation of hydrological basins	carried out, women, people with recognized ethics and good reputation.	- Forest management certificates - Tax exemptions on the exploitation of the established forests - Environmental education - Improvement of housing and communal service infrastructures - Reforestation of hydrological basins	- Poverty and migration - Degree of natural resource deterioration - Nature and value of the infrastructure to be protected - Degree of organization of the community - Experience of the organizations in the execution of programs and projects - Degree of organization of private companies - Market needs - Environmental services needs - Human resources availability
Unidad Técnica Ejecutora de Proyectos de Desarrollo Agroforestal (UTEPDA)		Main beneficiaries are producers, field technicians and inhabitants of the impact areas of the projects	A monthly payment for 3 years, plus in situ training and capacity building	Intervention areas are those facing socioeconomic and environmental problems characterized by high poverty indexes, a continuous degradation process and deterioration of natural resources, erosion, forest fires, soil productivity loss, lack of quality jobs, pollution and deterioration of roads
Asociación de Silvicultores San Ramón, INC. La Celestina	- Production of seedlings; - Forest exploitation, - Forest industries - Conservation - Hydrological basin regulation - Ecotourism - Hiking	Families members of the association, including second generations. Priority beneficiaries: old people and disable persons.	- Job creation - Empowerment of the association's members - Improved life conditions of the members - Wood industrialization for national sale - Training of the families involved in the project	- Live within the area of influence of the project - Work within the area of the project - Respect the statutes - Be part of the Celestina family
Proyecto Sabana Clara	- Conservation and regulation of hydrological basins - Promotion of species with high commercial value	Communities within the Restauración and Pedro Santana municipalities. Priority beneficiaries: non specialized staff (work inclusion)	Minimum wage for public employees, temporary and permanent workers	Limited to the high part of the Artibonito river

Monitoring and reporting provisions

The Benefit Distribution Plan will be regularly monitored and reviewed. The national decision-making body will be in charge of carrying out these tasks after each benefit distribution event in order to identify weaknesses and problems during the implementation of the plan, as well as areas for improvement. To this end, this national body will assess if the benefits were distributed according to the provisions set out in the plan, as well as any complaints from beneficiaries or beneficiary groups and if and how they were solved by the corresponding authorities. The basis for this assessment will be the reports that will be elaborated by the IE-level bodies and by MARENA (or the chosen fund) after a distribution event (following monitoring and reporting guidelines to be issued by the national-level body) and information from a Feedback and Grievance Redress Mechanism (FGRM) in charge of addressing any issues related to the distribution of benefits and from the safeguards information system. With all this information, the national body will prepare a monitoring report for each distribution event and subsequently discuss measures to address problems and shortcomings and to improve the benefit distribution plan and its implementation. Moreover, the national body will share its report with the ER Program's Executive Committee for its consideration.

15.2. Summary of the process of designing the benefit-sharing arrangements

As previously stated, the benefit sharing arrangements are currently being finalized and will be subject to consultations in the coming months. Nevertheless, the current draft reflects the points of view expressed both during the SESA workshops and in meetings with the IEs. One of the main products of these consultation processes are the principles for the distribution of benefits presented in section 15.1. In February 2019 an additional consultation was carried out with the IEs to discuss the proposed benefit sharing arrangements, including the proposed guidelines for the participation of IEs in the BSP, and to analyze their implications on the IE's operation and costs. This consultation set the basis, among other things, for the involvement of the IEs in a strategy to inform and consult with the potential beneficiaries about the benefit sharing arrangements being proposed, and more generally, about the objective and functioning of the ER Program.

15.3. Description of the legal context of the benefit-sharing arrangements

Currently, the legal framework of the Dominican Republic does not include an explicit regulation on forest carbon rights that is legally binding and generally applicable. Nevertheless, the scheme established by the Law No.44-18 that establishes the payment for environmental services and the application of the provisions set out in Article 64 of the Law no.64-00 stating that "The State recognizes the environmental services provided by different natural resources and will establish a procedure to include the established values in the national accounts" confirm that carbon sequestration achieved through forest conservation is considered as a "service" aimed at avoiding CO₂ emissions (see also section 17.2).

Additionally, the legal framework in place contains a number of provisions regulating the property of environmental services linked to forests and the use of any payments received for them:

- The General Law on Environment and Natural Resources (Law no. 64-00 of the 18th of August 2000), in its Article 64 states that when environmental services arise from resources property of the

Nation, the ensuing benefits shall be reinvested in improving the quality of the environment and in reducing the vulnerability of the territory where they have been generated. Furthermore, its Article 63 establishes that the value of such environmental services shall be used to ensure their quality and quantity through measures promoting their conservation and sustainable use.

- The Sectoral Law on Natural Protected Areas (Law no. 202-04 of the 30th of July 2004) establishes, regarding environmental services that the income generated by the National Protected Areas System will be distributed according to a special regulation, prioritizing the maintenance of the system and the needs of the peripheral communities and of the provinces where such areas are found (Article 29.I). Additionally, its Article 9 determines that the carbon rights in forests property of the State contained in the Protected Areas System belong to the State.
- The Regulation on Co-management of Natural Protected Areas states that the Co-management Council will establish fees on the right to carry out commercial activities within the public use areas designated to this end within protected areas. The net benefit must be used for the conservation of the protected area. This interpretation may be applied by analogy to the benefits generated by REDD+ results-based payments.
- Article 6 of the Environmental Services Law (Law No 44/18) states that the payment received from those who use of favor from the environmental services will benefit the legal or legitimate owners and users of the terrains where such services were generated, according to the tariffs and procedures established in this law and its general regulations.
- Article 7 of the Environmental Services Law (Law No 44/18) establishes that the legal or legitimate owners or users, both public and private, of the terrains where the recognized environmental services were generated will have the right to access the system for payment and compensation for such services following the procedures and requirements established in the general regulations of the law. The Ministry of the Environment and Natural Resources will establish each year the list of environmental services that will be subject of payments or compensation and their amount by province or hydrographic basin, according to the priorities identified by the Consultative Committee on Environmental Services created by this law.
- These legal considerations are integrated into the Benefit Distribution Plan, which will require IEs to apply them while allocating benefits.

These legal considerations are integrated into the Benefit Distribution Plan, which will require IEs to apply them while allocating benefits. It is important to note that the Environmental Services Law (Law No 44/18) touches upon various other elements relevant to the Benefit Sharing Plan (besides Articles 6 and 7 mentioned above), such as the identification of the mechanisms to define the national priorities on investments in retribution for environmental services (Article 5, paragraph 4), or the establishment of a Consultative Counsel on the Payment and Compensation for Environmental or Ecosystem Services that will define the policy for the annual investment for the payment and compensation for environmental services (Article 12), to name but a few (for more details, please refer to section 17.2 below). Even though the proposed benefit sharing arrangements take into account the provisions of this law in their design, at present it is not possible to link both further, as the development of the regulations to operationalize the law are just starting and it is not possible to clearly know when such regulations will be adopted. However, it is expected that the design of the BSP and the experiences obtained during its implementation may be useful - and to some extent, serve as the basis - for the development of the law's regulations.

16. NON-CARBON BENEFITS

16.1 Outline of potential Non-Carbon Benefits and identification of Priority Non-Carbon Benefits

The ER Program is made up by initiatives explicitly established to promote the sustainable development at the local level, and are therefore bound to produce benefits beyond GHG mitigation. Being embodied within national policies, the IEs will be culturally appropriate, and gender and inter-generationally inclusive, and will strengthen governance. Thus, the activities promoted by the IEs will create a variety of socioeconomic and environmental benefits through the implementation of rural sustainable development practices. Among the key non-carbon benefits expected to arise from the implementation of the ER Program are the following:

Social:

- Improved productivity and restoration of degraded lands through climate-smart agriculture such as agroforestry (as in the case of cacao and coffee growers);
- Improved agricultural productivity thanks to the protection and enhancement of forests in water producing areas;
- Increased profitability of livestock production;
- Increased forestry local culture with commercial purposes;
- Improved household economies as a result of improved forest management and conservation and sustainable agriculture and livestock production practices;
- Job creation through, for instance, the establishment of communal brigades to carry out reforestation activities and manage forests once they have been established (as in the Quisqueya Verde program);
- Land titling, given that some of the proposed IEs include components directed to address this issue (such as the Agroforestry Project of the Presidency) and that MEDIO AMBIENTE plans to implement customary legal mechanisms to recognize and give legitimacy to the right of possession to ensure the participation of potential beneficiaries who have an informal possession of the land;¹⁵⁶
- Poverty reduction as a consequence of the above; and
- Improved governance and institutional strengthening.

Environmental:

- Conservation of biodiversity (including highly endemic species) and ecosystem services, including the regulation of the water cycle, as a result of strengthening the Natural Protected Areas System and of sustainable rural development practices reducing deforestation and forest degradation and increasing forest restoration;
- Rehabilitation of degraded lands; and
- Conservation of soils through climate-smart agricultural practices.

Priority non-carbon benefits have been preliminarily identified and validated by key stakeholders during workshops, including by the Technical Advisory Committee, as being biodiversity, water and green jobs. This proposal was presented to the participating IEs in recent (February 2019) consultations, and will be

¹⁵⁶ See the second paragraph of the subsection “Impact of Land Ownership on the Implementation of the Emissions Reduction Program”, Chapter 4.4 of this ER-PD.

further discussed with other actors in the coming months as part of the consultation process of the Benefit Distribution Plan.

16.2 Approach for providing information on Priority Non-Carbon Benefits

Once identified, the priority non-carbon benefits will be monitored as part of the reporting processes at the IE and national levels explained in section 15.1. Both beneficiaries and IEs will be required to track such benefits based on a series of indicators to be developed and agreed by the national decision-making body on benefit distribution. This information will be complemented as needed with data from the Safeguards Information System and the Feedback and Grievance Redress Mechanism.

17. TITLE TO EMISSION REDUCTIONS

17.1. Authorization of the ER Program

Name of body	Ministerio Hacienda
Main contact person	Sr. Donald Guerrero
Title	Minister of Finance
Address	Address: Calle México # 45, between calle Pedro A. Lluberes and calle Federico H. Carvajal, Gascue, Santo Domingo, Dominican Republic
Telephone	+1 809 687-5131.
E-mail	info@hacienda.gob.do
Website	www.hacienda.gob.do
Reference to the decree, law or other type of decision that identified this entity as the national authority on REDD+ that can approve ER Programs	Law 494-06 designates the Secretary of State of Finance (currently the Minister of Finance) as the governing entity of national public finances, whose current role is to prepare and propose the fiscal policies of the government to the Executive Power, consisting of income, expenditure and the financing of the public sector, in addition to conducting suitable execution and assessment of such policies, thus ensuring fiscal sustainability over the short, medium and long-term, all under the framework of the government's economic policy and the strategic guidelines approved by the National Development Council. Article 3 of the aforementioned law defines the attributions and specific functions linked to the following task of transferring emission reduction certificates and credits: a) Coordinate and negotiate international agreements related to fiscal policy and its management, in addition to participating in the preparation of foreign trade policies of the Dominican Republic; b) Regulate and conduct authorisation processes, negotiations and matters involving the contracting of loans or the issue and placement

	<u>of securities</u>, in addition to steering and supervising public debt service; c) Register and safeguard financial securities and public funds, in addition to issuing and safeguarding fiscal stamps, and managing received sureties and bank guarantees; d) Design and propose the taxation policy. e) Propose policies and issue an opinion on the approval of fees, patents, contributions and all other relevant types of public revenue. f) Ensure compliance with all national tax laws and standards, in full cooperation with the Directorate General of Internal Taxes and the Directorate General of Customs. g) Participate in State negotiations and conventions in all matters concerning taxations and tariffs, under the framework of integration agreements and other professional commerce schemes. h) Propose guidelines and directives in relation to tax exemptions. i) Analyse and resolve tax exemption requests that, in accordance with legal standards, are within its jurisdiction, while ensuring to establish full transparency and appropriate supervision. j) Issue opinion on the preparation of legislative drafts and proposed laws that involve the possible granting of tax exemptions. k) Establish/participate in the governing body of the public credit system for the purposes of aiding the government in finance related decisions concerning debt/borrowing expenditure.
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The Ministry of Finance, designated as the authority empowered to enter into the Emissions Reduction Purchase Agreement (ERPA), hereby authorises by means of a letter of non-objection, the Ministry of Environment and Natural Resources as the designated official entity in charge of transferring the emission reduction certificates to the FCPF on behalf of the Dominican State.

17.2. Transfer of Title of ERs

Carbon Property and/or Reduced Emissions System

Currently the Dominican Republic does not have any specific legal provisions on the system of property and transfer of forestry carbon and emission reductions, but provision do exist that could provide clarity for determining this right, applying by analogy the principles and concepts of our traditional property rights system and the instruments and legal provisions recognized by the different environmental services offered by different natural resources at the national level. Taking all legal aspects into account plus the current system for recognition of the right to titled property and customary rights, as set out in Chapter 4.4, the legal provisions that permit the acknowledgement and association of the formal and informal land tenure system with a carbon property and/or emission reductions system in the Dominican Republic are set out below.

To tackle the ability of the country to transfer titles to emission reductions, the application of common law provisions relating to formal ownership and the forms of recognizing informal tenure adopted by customary law are considered. In this regard, a scheme of rights to carbon or emission reductions based on the generation of an environmental service (carbon capture) is established, instead of linking it to formal tenure rights, thereby allowing the majority of small farmers and informal landholders to also access benefit distribution and participate in the Emissions Reduction Program.

Due to the non-existence of a specific standard in the Dominican Republic that recognizes or assigns ownership of forest carbon to the State, a common standard can be applied, granting by analogy the sequestered carbon to the owner of the land or the informal holder where the forest is located. In this respect, the provisions contained in the Dominican Civil Code and Constitution allow for the following options to be established:

1. **The rights of carbon susceptible to private appropriation.** Due to the lack of specific regulations, the provisions related to carbon as specified in the Civil Code article 546 may be applied by analogy, establishing that *“The ownership of an asset, item of furniture, or real estate, has dominion over everything that it produces, including what is added incidentally, whether natural or artificially. This right is known as accession.”* In this respect it can be interpreted that the owner of the land is also the owner of the forest and the carbon stored within;
2. **Carbon rights in the public domain.** It is possible to interpret the situation by means of an interpretation by analogy contained in articles 538 and 539 of the Civil Code, which establishes all portions of Dominican territory, and all vacant assets that do not have ownership, as those *“that are non-susceptible to private ownership”*.
3. **Carbon ownership rights of the State.** Additionally, by operation of the accession principle in instances in which reduced emissions are generated on lands owned by the State, and by forests that comprise the corresponding forestry heritage (Sectoral Law of Protected Areas, Article. 9), or interpreted under the provisions of Article 14 of the Dominican Constitution, the following is stipulated: *“Non-renewable natural resources found on territories and in maritime areas under national jurisdiction are classified as being the patrimony of the Nation, including genetic resources, biodiversity and the radioelectric spectrum”*. Pursuant to this mandate it can be established, in a preliminary manner, that the air and its carbon component, situated across all national territory, comprises common-use elements of the social collective and all living beings present. This carbon fraction belongs to the public domain and is part of the national radioelectric spectrum, and

representative of one of the nation's patrimonial assets. To this effect, preservation of the environment and the national conservation, development and exploration of natural resources correspond to the State; it can enter into contracts for the rational exploitation of these resources, as deemed necessary in terms of national interests, under transparent and public processes. Within this constitutional system, the State shall have control of natural resources over and above the interests of individuals, while establishing limits and regulations in terms of its management and use, in full accordance with special laws.

4. **Obligations of assigning carbon rights to the Dominican state:** based on the assumption of Payment for Environmental Services, as established by recently enacted Law No. 44-18, which establishes Payment for Environmental Services and the application of the provisions established in Article 64 of Law No. 64-00, which specifies that *"The State recognises environmental services which offer specific natural resources, and shall establish a procedure for the inclusion of these values in the national Dominican accounts"*, thereby confirming that carbon capture, through the conservation of forests, shall be classified in the Dominican legal framework as a "service" aimed at avoiding the emission of carbon dioxide into the atmosphere, thus constituting one of the objectives proposed in the Emissions Reduction Programme.

Based on the above, it is possible to establish that the forest is not only associated with ownership of the land or soil, thus unifying the rights of land owners or informal holders in relation to forestry resources, and also to the resulting environmental services and accessories that the forest generates. For this, the country has legal provisions that recognize the environmental services provided by ecosystems through natural resources as property of the State, the collective or the public domain. Taking a broad interpretation of the legal provisions related to environmental services, we can say the rights of forest carbon and emission reductions resulting from avoided degradation and deforestation could adopt a similar legal system.

In this respect and specifically, reproduced below are the legal provisions of Law No. 64-00 - General Law on the Environment and Natural Resources, Law No.44-18 establishing Payment for Environmental Services and Law No. 57-18 Forestry Sector of the Dominican Republic:

General law No. 64-00 on Environment and Natural Resources.

Article 15 - The following are particular objectives of this law:

1. The prevention, regulation and control of all causes or activities that cause deterioration to the environment, including contamination of ecosystems, and the degradation, changed and destruction of natural and cultural patrimony;
2. Establish methods, formats and opportunities for the conservation and sustainable use of natural resources, by recognising their real value, including the environmental services supported by these resources, within a national planning system founded on sustainable development, including equity and social justice;

Article 35 - The objectives in terms of establishing protected areas are as follows:

3. Promote and encourage the conservation, recovery and sustainable use of natural resources;

4. Ensure implementation of **environmental services** that stem from protected areas, **such as carbon sequestration**, reductions in the greenhouse gas effect, contributing to stabilising the climate, and the sustainable use of energy;

Article 63 - **The State recognizes the environmental services offered by the various natural resources and will establish a procedure for including all established values into the national accounts.**

Sole paragraph. **In instances of natural resources owned by the nation, the value of the environmental services that they offer shall be used to ensure their quality and quantity through conservation and sustainable usage measures.**

Article 64.- **The Environment and Natural Resources Secretary of State shall create all necessary mechanisms, in addition to issuing standards for appropriate recognition of environmental services.** When these services originate from the heritage resources belonging to the nation, generated benefits should be reinvested in improving the quality of the environment and reducing the vulnerability of the territories from which they originate.

Law No.44-18 establishing Payment for Environmental Services.

Article 1 - Purpose. The purpose of this law is the conservation, preservation, restoration and sustainable use of ecosystems, in order to guarantee the environmental services or ecosystems that these provide, through a general framework of compensation and payment for environmental services.

Article 3 - Definitions. For the purposes of this law, the following terms are understood as follows:

3. **Beneficiaries or Users:** Public or private individuals or legal entities that use or benefit from the ecosystem services, for sustaining life or economic exploitation.

25. **Payment for Environmental Services:** This is a flexible environmental management instrument that can be adapted to different conditions that points to a financial payment to a person to ensure land use that guarantees the maintenance or provision of one or more environmental services recognized by this law and its general implementing regulation.

37. **Environmental Services or Ecosystems:** Those benefits society receives through the use of different elements of nature, which may be composed of wildlife ecosystems and whose effects on quality of life are tangible and intangible. They include, but are not limited to, soil fertility and creation, pollination, growth and reproduction of edible species, storm mitigation, waste assimilation, climate regulation and the control of pests and phytopathogenic elements.

38. **National Payment and Compensation System for Environmental or Ecosystem Services:** Set of interrelated regulations, standards, principles, procedures and institutional arrangements destined to contribute to the conservation, preservation, restoration and sustainable use of ecosystems in order to guarantee the environmental services or



ecosystems of the natural resources so as to guarantee the sustainability of the interaction between the natural environment and human activities.

Article 4 - Environmental or Ecosystem Services. The main environmental services considered for the purposes of this law are: 1. Water regulation, protection and conservation of water sources. 2. Conservation of ecosystems and wildlife habitats. 3. Soil conservation. 4. Capture of carbon and other greenhouse gases. 5. Scenic beauty or landscape.

Article 5 - Criteria of Environmental Services. The following criteria must be taken into account by the Ministry of the Environment and Natural Resources in the definition of a national system of environmental services: 1. Inclusion of the different types and modalities of environmental services identified. 2. Determination of the mechanisms for the definition of policies, plans and national strategies on the matter of environmental services. 3. Development of the technical and zoning criteria for assessment and payment. 4. Identification of the mechanisms for defining national priorities for investment in payment for environmental services; and 5. Determination of the monitoring, control and audit mechanisms for the verification of the adequate use of ecosystems and natural resources.

Article 6 - Economic Beneficiaries of the Service. Any activity, company or institution, whether public or private, that uses or benefits economically from the environmental services recognized in this law has the obligation to pay a rate to ensure the provision of said services. The payment received from those who use or benefit from environmental services shall benefit the owners and legal or legitimate usufructuaries of the land where such services have been generated, in accordance with the rates and procedures established in this law and in its general implementing regulation.

Article 7 - Beneficiaries of the Payments. The owners and legal or legitimate usufructuaries, whether public or private, of lands where the recognized environmental services are generated shall have the right to access the payment and compensation processing system of said services in accordance with the procedures and requirements established in the general implementing regulation of this law.

Law No. 44-18 of Payment for Environmental Services only recognizes the different types and modalities of environmental services at the national level. In this sense, Article 7 establishes the right to access the system of payment and compensation process of the recognized services that owners and legal or legitimate usufructuaries have of the land where they are generated. This recognition is assumed by the PSA-CYN Pilot Project for payment to beneficiaries. It should also be noted that Law 44-18 does not contradict or limit the principles under which transfers of reduction titles will be made.

Law No. 57-18 Forestry Sector.

Article 2 - Specific purposes. The legal bases of this law are:

2) Ensuring the zoning, conservation, and sustainable management of forests to obtain the multiple goods and services that these ecosystems provide, including the regulation of the water system, protection of biodiversity, soil conservation, carbon adaptation and sequestration, energy production, among others.

5) To value and compensate the environmental services that forests and forestry plantations provide, as an incentive for their conservation and improvement.

Article 4 - Definitions. For the purposes of this law and its regulation, the following terms shall be understood as follows:

15) **Environmental services:** Those provided by natural forest, forestry plantations and other ecosystems that directly affect the protection and improvement of the environment and the quality of life of society in general. They are as follows: Soil protection, regulation of the water system, protection of biodiversity, maintenance of the landscape and mitigation of greenhouse gas emissions.

Article 13 - Duties. It is the responsibility of the Ministry of the Environment and Natural Resources, without prejudice to the powers assigned to it by the law creating the Secretary of State for the Environment and Natural Resources and other forestry management instruments emanating from the Executive Office, in terms of forestry administration:

11) To regulate and promote compensation and payment mechanisms for the environmental services of forestry ecosystems.

Taking into account the provisions of the methodological framework, especially criteria 28 and 36 – 36.1, 36.2 and 36.3, which set out the title and capacity to transfer the Title of ERs, this will be formalized in the following different ways:

- (i) with reference to a legal and regulatory framework in effect that permits and acknowledges both formal tenure and informal tenure (see Chapter 4.4);
- (ii) the sub-agreements with potential land and resource tenure rightsholders (including legal and customary rightsholders, identified in the assessment carried out as part of criterion 28). To this effect, the signing of sub-agreements will be performed subsequent to the recognition and verification of customary ownership for cases of informal tenure;
- (iii) the benefit distribution agreements set out in the Benefit Distribution Plan (Chapter 15).

In light of the fact that the Dominican Republic does not have a specific regulatory framework that addresses the legal regulation of emission reductions, it is understood that the existing framework may be extensively, effectively and favourably interpreted for the purposes of applying the legal concept of environmental services by analogy.

At a national level, carbon rights will be regulated as an activity, recognizing them as the "right to reduced emissions or carbon captured in forests" (ER), linked to the obligation to preserve carbon stored in forests during the agreed term implementation of activities that protect, restore or increase forest areas, either under the responsibility of formal owners or under the responsibility of duly recognized de facto holders.



This legal-institutional alternative will be sufficient to grant legal certainty to transactions with the Carbon Fund, being at the same time simpler to establish from the political and procedural point of view than creating a new right, such as establishing ownership over carbon, and thus avoid linking carbon rights to the right to land tenure, since sanitation at the country level will require a lot of time and resources.

The ownership of the rights to ERs will be linked to effective participation in the provision of said environmental service and good faith land tenure, based on the fulfilment of certain necessary requirements to be recognized and legitimized as a beneficiary. These requirements could be linked to being an informal holder or good faith land owner, having an approved management plan, signing a commitment agreement, the assignment of incentives and transfer of rights to ERs, among others. Effectively, the ability to access “rights to emission reductions or carbon captures within forests” will be closely associated with the effective participation in the activities that generate the specific ERs, avoiding any link to formal land titles.

A National Data Management and Transaction Registry System will be designed and implemented (Chapter 18), where those who hold title to the ERs will register the location of the land where the emission reductions occur, the right on which tenure is based (use, formal ownership or de facto possession, leasing) and the certificate of transfer of the rights to the ERs to the Dominican Republic. This will provide certainty and legitimacy to rights to ERs, avoid double accounting and will facilitate the permanence of these ERs. This registry will also permit the transmission of said assets and rights to a third party, in this case the Carbon Fund of the Forest Carbon Partnership Facility (FCPF), and shall constitute a requirement for accessing the results-based payments originating from the aforementioned fund.

Finally, no additional action is required to identify or recognize titles to emission reductions and to permit the competent entity of the Emissions Reduction Program to transfer these titles.

However, work will be carried out to prepare and approve a legal framework in the form of a Presidential Decree that that allows establishing the conditions for:

- Formulate and implement new programs and projects, providing clarity on the recognition of emission reductions as an environmental service.
- Recognize the right to compensation for reducing emissions within the framework of REDD +.
- **Clarify the title to carbon rights**
- Issue a mandate to develop procedures to formalize initiatives and programs to reduce emissions, increase the carbon stock, conservation and sustainable use of forests.

The aspects that the proposed legal instrument will regulate include:

- a) Establishing technical registration procedures for any program or project that plans to transfer titles to ER and formulating the legal and regulatory system for validation, verification, issuance, creation and transfer of these titles to ERs;

- b) Establishing the obligations to register the program or project in the national database as a condition to transfer rights to ERs or for participating in a Benefit Distribution Mechanism or other legally applicable mechanisms;
- c) Establishing the applicable tax treatment of transactions related to ERs, for the purposes of avoiding raising transaction costs within the Benefit Distribution Mechanism;

The specific contracts will be established between each of the implementing entities and all the beneficiaries and beneficiary groups. Each IE will sign a contract with the Program entity. These contracts will determine the obligations and responsibilities of all the parties involved that guarantee and regulate the right to transfer the title of de ERs between the parties that stipulates the sale/assignment conditions. The contracts will include both requirements specific to each IE and general requirements applicable to all IEs participating in the ER Program, including:

- A clause, where applicable, through which the beneficiaries or beneficiary groups will agree to transfer their carbon rights to the Dominican Republic government as a condition to receive the benefits arising from the results-based payments provided by the Carbon Fund;
- The express consent of beneficiaries or beneficiary groups to participate in the ER Program and to allow the inclusion of their data in the REDD+ Registry;
- The commitment to elaborate and submit the reports required by the BDP with the frequency and templates established to this end by the National Decision-Making Body.

Workshops are being held with the IEs and beneficiary groups to define the process and timeline that is required to design, consult and develop the contracts and the implications for each participant. These workshops will be developed in close harmony with the workshops on BDP (chapter 15). Each IE will develop its own strategy that allows them to have all beneficiaries and beneficiary groups to sign a written statement (contract) stipulating the conditions to participate in the ER program.

The type of information and the specifics behind each aspect, will depend on the level to which the beneficiary belongs within the Benefit Sharing Plan. That is, if it is an Executing Entity, Association or individual producer. In this sense, the contracts for the purchase of emission reductions to the programs involved and subsequent transfer to the FCPF, will be implemented based on the General Conditions applicable to the FCPA's ERPA.

In addition, the conditions for each sale or assignment of the ER rights in favor of the designated implementing ER Program authority, will be established, guaranteeing the transfer in favor of the Dominican Republic State and consequently to the FCPF. This will also make it possible to avoid double counting, ensuring that a new business involving the same emission reductions will not hold onto the aforementioned rights and lands, (ex. the beneficiary or beneficiary group is not allowed to establish a contract with third parties to market the ERs again, this to avoid double sale or counting of ERs). Likewise, this helps to determine whether the sequestration and storage is under the control of the State, and therefore the nation's patrimony, or it represents a right to a beneficiary of beneficiary group to the ERs as a result from an activity that reduces emissions from avoided forest degradation and deforestation



In this sense, the contracts for the purchase of emission reductions to the programs involved and subsequent transfer to the FCPF will be implemented based on the General Conditions applicable to the FCPA's ERPA.

Specifically, they will address the following aspects:

- Application of the General Conditions and Definitions.
- Description of the Emissions Reduction Program.
- Conditions to obtain Benefits
- Conditions of Rescission.
- Volume, Price, Transfer and Payment of the ERs.
- Guarantees and Compliance Conditions.

The type of information and the specifics behind each aspect, will depend on the level to which the beneficiary belongs within the Benefit Sharing Plan. That is, if it is an Executing Entity, Association or individual producer. In this sense, the contracts for the purchase of emission reductions to the programs involved and subsequent transfer to the FCPF, will be implemented based on the General Conditions applicable to the FCPA's ERPA.

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Institutional competence to carry out transactions and transfer emissions reduction credits.

A mixed competence is proposed between the Ministry of Environment and Natural Resources and the Ministry of Finance in order to carry out transactions and transfer emissions reduction credits. The Ministry of Environment and Natural Resources will have the specific function of conducting technical assessments, as well as determining benefits and legal usufructaries as part of the Benefit Distribution Mechanism. It will also be the body in charge of transferring emissions reduction credits to the FCPF. Meanwhile, the Ministry of Finance will have the authority to develop the Emissions Reduction Purchase Agreement (ERPA), as well as allocate monetary resources to distribution funds or designated trust accounts. To demonstrate the ability of these bodies to carry out transactions and transfer Emissions Reduction (ER) credits to the Forest Carbon Partnership Facility (FCPF), below is a review of the relevant national legislation, which determines the competent bodies of the Dominican State according to their institutional functions and attributions.

Firstly, the **Ministry of Environment and Natural Resources** is appointed as the entity responsible for technical aspects relating to the implementation of policies for the sustainable use of forest resources for conservation, exploitation, production, industrialisation and sale purposes; as well as determining legal benefits and usufructuaries within the benefit distribution scheme or mechanism. It carries out these actions pursuant to the powers granted to it in Article 18 of Law No. 64-00 on the Environment and Natural Resources, including the following actions:

- a) Developing the national policy on the environment and natural resources;
- b) Implementing and overseeing national policies on the environment and natural resources;
- c) Promoting and ensuring the conservation and sustainable use of forest resources and ensuring the application of the State's forest policy and the rules that govern its use;
- d) Directing, encouraging and promoting preservation, restoration, conservation and the sustainable use of the environment as well as the protection of natural resources within private institutions, community-based and non-governmental organisations, adapting their activities to the policies, objectives and goals relating to the environment and natural resources.

Secondly, the Ministry of Finance is appointed as the entity responsible for entering into the Emissions Reduction Purchase Agreement (ERPA), given that the Ministry has the specific legal prerogative for the distribution and exchange of financial resources, income, expenditure or funding; as well as safeguarding and administering public funds, credits and financial assets (in this case, the ER credits). Article 3 of Law No. 494-06 on the **Organization of the State Secretariat of Finance (Currently Ministry of Finance)**, provides the following attributions and functions that are related to the task of transferring emissions reduction credits:

- a) **Coordinate and negotiate international agreements** related to fiscal policy and its management, and participate in the **preparation of the foreign trade policies** of the Dominican Republic;
- b) Regulate and conduct authorization processes, negotiations and matters involving the contracting of loans or the issuance and placement of securities, in addition to steering and supervising public debt servicing;
- c) Register and **safeguard financial securities** and public funds, in addition to issuing and safeguarding fiscal stamps, and **managing received sureties and guarantees**.

Hence, the Ministry of Finance will officially contract the Emissions Reductions Payment Agreement (ERPA). In accordance with Laws No. 494-06 and No. 6-06, this Ministry, through the General Directorate of Public Credit, has the competency of receiving and managing the FCPF funds through the Single Treasury Account.

The institutions involved in the governance of the ERPD and Benefit-Sharing Plan (Ministry of the Environment, Ministry, Ministry of Economy, Planning and Development and Ministry of Finance) will sign an inter-institutional agreement that reaffirms the competence of the Ministry of Finance for the signing of the ERPA, establish a delegation and an authorization to the Ministry of Environment and Natural



Resources to transfer ER Titles to the FCPF. In addition, the fiduciary entity (MARENA Fund) will be designated to distribute results-based payments to the beneficiaries. It is intended to sign this agreement in August 2019.

With regard to the competencies listed above, reference is made to the experiences in transactions on international markets and the local market, which permit confirmation of the duties and prerogatives of the Ministry of Finance to carry out transactions for issuing negotiable securities. Below the links to the General Directorate of Public Credit Website of the Ministry of Finance are reproduced, where the experiences and references relating to the placement of securities or bonds are listed:

Issuance of “Sovereign Bonds” on international markets

- https://www.creditopublico.gov.do/emisiones-de-titulos/emision_titulos_externa.htm
- https://www.creditopublico.gov.do/emisiones-de-titulos/emision_titulos_externa.htm

Issuance of negotiable securities on the local market

- https://www.creditopublico.gov.do/emisiones-de-titulos/emision_titulos_externa.htm
- https://www.creditopublico.gov.do/subastas/resultados_subasta.htm

In relation to the steering of the processes of authorization, negotiation and contracting of loans or the issuance and placement of bonds and securities, the Ministry of Finance, through the General Directorate of Public Credit, administers and manages the Public Credit system, in accordance with Law 6-06 on Public Credit. In this regard, all public credit transactions are authorized, negotiated and managed by the Ministry of Finance, through the Directorate General of Public Credit, based on the Medium-Term Debt Management Strategy. Law 6-06 grants the Directorate General of Public Credit a scope which extends to the Public Non-Financial sector, i.e. the Central Government, City Councils and decentralized autonomous institutions.

The servicing of public debt contracted by the Central Government is managed by the Directorate General of Public Credit through a process that involves different departments of the Integrated System of State Financial Administration. For more details, see the link below to Law 6-06: https://www.creditopublico.gov.do/marco_legal/2008/ley_de_credito_publico_6-06.pdf

For the registration and safeguarding of financial securities and public funds, issuance and safeguarding of fiscal stamps, as well as the administration of finances and guarantees received, the Directorate General of Public Credit runs a registry system developed by the United Nations Conference on Trade and Development (UNCTAD) called the Debt Management and Financial Analysis System (DMFAS). This system contains modules that permit the registration of the balance and debt servicing of the Public Non-Financial Sector. Specifically, in terms of the safeguarding and issuance of securities, all bonds issued by the Ministry of Finance are dematerialized. On the local market, the Ministry of Finance, as a differentiated issuer (as established in Law 249-17 on the Stock Market), conducts issuances that are registered with the Securities Market Regulator. As for their safeguarding, they are registered by book-entry with a local Securities Custodian (CEVALDOM) that also functions as the settlement and payment agent. When it comes to international issuances, these are performed on a REG-S and 144^A form and they are registered on DTC and on the Luxemburg Stock Exchange, with the Bank of New York Mellon acting as the trustee.



18. DATA MANAGEMENT AND REGISTRY SYSTEMS

18.1. Participation under other GHG initiatives

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. Below is a map of the location of El Zorzal Private Reserve.

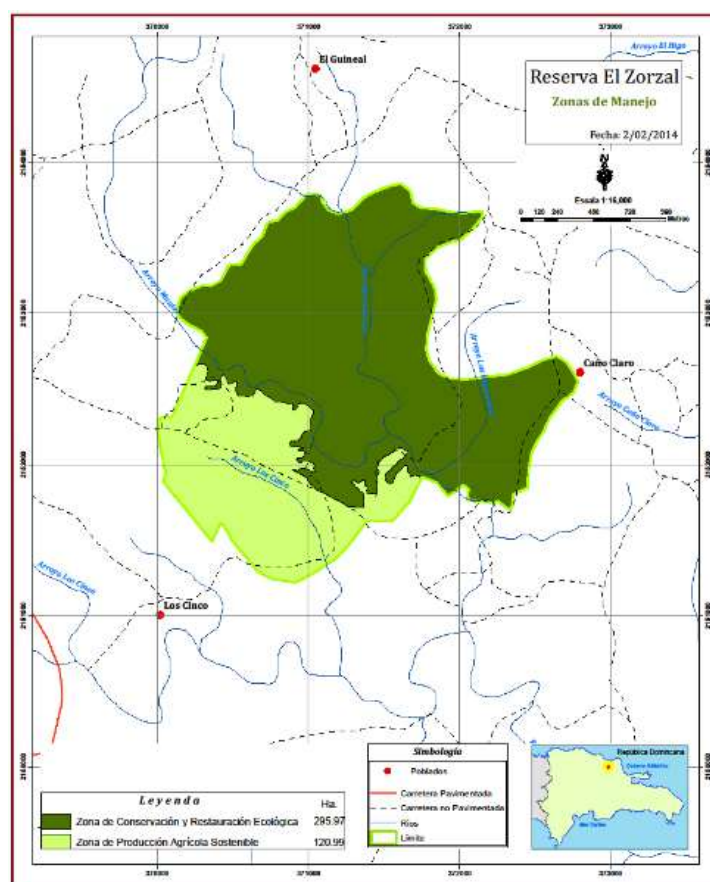


Figure 18.1-1 Map of El Zorzal private reserve¹⁵⁷

This forest carbon mitigation initiative is within the accounting area, as the ERP accounting area is the national territory. However, as this initiative has an easily identifiable extent and location, it will not cause problems to include it in the system. In the event that a sale occurs of carbon bonds originating from the aforementioned initiative of the *Plan Vivo Standard*, they will be excluded from the accounting of ERs to be submitted to the Cooperative Fund for Forest Carbon. 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 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.

18.2. Data management and Registry systems to avoid multiple claims to ERs

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

¹⁵⁷ <https://studylib.es/doc/5173453/plan-de-manejo-reserva-privada-el-zorzal--2015-2020>



any entity for sale, public relations, compliance or any other purpose. For this purpose, the Dominican Republic has made a decision to implement and maintain its own comprehensive national REDD+ Program and Projects Data Management System, and has currently Terms of Reference for the development of a specialist consultancy firm to design a Data Management System (DMS) in the short term (a Registry System of REDD+ initiatives at national level).

The DMS will be a database with the following attributes or minimum requirements regarding information on REDD+ initiatives, programs or projects:

- i) The entities that holds title of ERs;
- ii) The date of registration;
- iii) Life Period for the initiative;
- iv) Geographic boundaries of the initiatives, programs or projects, including names and geographic location of communities, organizations or other beneficiaries that will benefit from the ERP, to avoid that they claim benefits from more than one source.
- v) Details of REDD+ activities and carbon sinks included;
- vi) The reference level used;
- vii) Expected ER volume generated (ex-ante estimation).

Other information that is expected to be collected and managed is related to the volumes of ERs reported and verified, the status, class and type of ER and the ERs titles emitted and transferred in each monitoring event for each REDD+ initiative. The information of the System will be made publicly available on the internet (in Spanish), on a platform that will be managed by MEDIO AMBIENTE. The Consultancy in charge of the design of this system will prepare a document defining administrative procedures for the registry of the REDD+ initiatives. The operations will be audited periodically by an independent third party. The DMS will be used to inform emission reductions generated under the REDD+ National Strategy framework of the Dominican Republic, focused in this particular case on the Emissions Reduction Program that is linked to the FCPF Carbon Fund and all the REDD+ initiatives at national level.

The DMS will guarantee transparency and appropriate documentation of the emission reductions generated by the projects and programs, providing support to the system in order to avoid double accounting and double selling issues, and to show the public, in a transparent manner, that environmental benefits in relation to emission reductions or greenhouse gas absorptions are generated and not being claimed more than once.

For the proper functioning of the DMS, solutions appropriate to the national circumstances will be analysed and developed, taking into consideration the principles and regulations associated with ER ownership, the specific nature of the ERs for each REDD+ activity, the relationship with the strategic REDD+ options and actions identified at a national level, and the link between the ERP and any REDD+ or forestry projects that have voluntary market standard certifications (VCS, MDL and Plan Vivo, among others).

The DMS will be established in a server or data center that will allow access and use in a functional and secure way and includes different user categories and profiles with access rules that are agreed upon with the stakeholders. A public access profile will be created with access to information in Spanish. The minimum

requirements of the system will be determined with the objective of complying with all the requirements, conditions, practices and regulations associated with the system.

The DMS will guarantee online access at any time and from any place. As such, the following conditions will be taken into consideration:

- i) Security measures, including the necessary rules that ensure differentiated access according to user profiles;
- ii) Information security for the data of national interest;
- iii) Implementation of the system in a data center or on a server with backup power; and
- iv) Redundant Array of Independent Disks (RAID) support and regular incremental data backup protocols.

The spatial and alphanumeric data that has been and will be generated in the framework of REDD+ will be consolidated and standardized in the DMS. This will serve to:

- i) Propose and generate protocols for standardization and homogenization of databases and information generated or in development. The proposal and protocols will be described in a detailed manual with the proposed methodology and how the system will be implemented;
- ii) Design and implement applications that will enable the system to be connected with other systems that are developed now and in the future within the REDD+ framework, as well as other information generated in the ERP implementation stage for resource optimization, such as SIS, MRV, NFI, etc.;
- iii) Standardize the information according to the steps described in the manual, based on standards defined by MEDIO AMBIENTE and/or by the Ministry of Agriculture;
- iv) Define a methodology to perform quality control of the procedures;
- v) Establish quality control measures, scheduling and reports; and
- vi) Store and back up standardized information on devices or systems suitable for this objective.

For the ERs transaction registry in response to indicator 38.1, the Dominican Republic has taken the decision to use the Centralized Transaction Registry System being developed by the World Bank. This centralized system will track all the transactions under the FCPF ER Program. This centralized system is in the implementation phase and will be operational in October 2019, following the principles of the MF of FCPF CF, the guidelines for establishing and managing risk mitigation mechanisms (buffer accounts) and will be flexible enough to adjust to the articles of the future ERPA. The system will be audited periodically. As of today, there is a BRD (Business Requirements Document, WB, Feb. 2019) that clarifies the roles, responsibilities, functions and operations of the Registry System, currently called CATS.

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 Centralized Transaction System of the World Bank (in the event that there are matching REDD + initiatives in space / time with the FCPF CF ERP).

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Annex 1. Multitemporal visual assessment protocol for obtaining reference data for estimation of activity data uncertainty.

The following reference classification protocol is established in order to reduce classification uncertainty, with special attention to: a) The bias associated with spatial recording of the reference location; b) Interpreter bias or error in the assignment of the reference class of the spatial unit; and c) Interpreter variability, which is a difference between the reference class assigned to the same spatial unit by different interpreters (i.e., interpreter variability is the complement to inter-interpreter agreement). The methodological aspects and approval of the photo interpretation criteria were produced by means of a workshop with personnel from the Directorate of Information on the Environment and Natural Resources (DIARENA) and the Forestry Monitoring Unit. The participants in the workshop were the following specialists: Mariana Pérez Ceballos, Tomas Montilla, Santiago Hernández, Rafael Rivera, Alba Cadete, Cristina Moreno and Benedito Faña.

1. Coordinates system:

The coordinates system used in the MVA is the following: **EPSG 32619 -WGS84-UTM zone 19N**, although **EPSG 4326, WGS84** will be used for working in Collect Earth Desktop.

2. Reference systematic grid:

MVA will be performed on a 5x5 km grid with 1,942 points, which can be accessed via the following link:

<https://www.dropbox.com/sh/vx4avu28ikzodsg/AABOkeWUdF4aZEQC0yprfjJa?dl=0>.

This grid covers the entire national territory, including a 200 m buffer in case of coastline changes.

3. REDD+ activity data analysis type¹⁵⁸:

MVA is restricted to an analysis of land use. When evaluating canopy cover, the analysis performed is on cover.

4. Spatial and temporal resolution of reference images.

a. Temporal resolution of reference sources:

- **2005 Assessment:** To define the cover in 2005, only images whose acquisition date was between January 2003 and December 2007 will be used, prioritizing the use of 2005 images.

¹⁵⁸ **Land cover:** cover of biotic and abiotic elements present at a site (for example, trees, shrubs, water, paving, roofs, etc.). It does not require context analysis or environment inference, and there is no minimum area associated with it.

Land use: corresponds to the functional use of a site (biophysical and cultural elements). Its inference requires a human perspective and the interpretation of activities performed on land cover at a specific site; it is associated with a minimum area.

- 2015 Assessment: To define the cover in 2015, only images whose acquisition date was between January 2013 and December 2017 will be used, prioritizing the use of 2016 images.

b. Spatial resolution of reference sources:

2005 Assessment: To define cover in 2005, high resolution images are available from Google Earth (2001-2018). For cases where there is no high-resolution coverage, a 2005 Landsat mosaic is used with a resolution of 30x30 m, mainly cloud-free, generated in Google Earth Engine. This provides information on all of the points on the 5x5 km grid.

2015 Assessment: To define cover in 2015, high resolution images are available from Google Earth (2001-2018). For cases where there is no high-resolution coverage, a 2015 Landsat mosaic is used with a resolution of 30x30 m, mainly cloud-free, generated in Google Earth Engine. This provides information on all of the points on the 5x5 km grid.

c. Auxiliary information sources:

To define land use in 2005 and 2015, there is significant coverage of high-resolution images (at least 5x5 m). For cases where there are no high-resolution images, the classification will be performed with low-resolution Landsat images (30x30 m). To reduce the risk of interpreter bias, the photo interpretation process will be supported by the following auxiliary information sources: Crop maps from the Agrifood Competitive Transition Support Project (PATCA, 2008); Zones under Irrigation Map (2003, 2012), Wetland Zones and Mangrove Forest Zones (2012), Map of the Pineapple, Mango and Naseberry Producers Association; Plantations Map (Plan Sierra) and the Map of Natural and Planted Forest Management Plan Areas.

5. Operational definition of land cover categories

The land-use categories that will be used in MVA are set out in Table A-1. The majority of these classes are consistent with those established in the National Forest Inventory. The deviations correspond to adjustments in the capacity to discriminate between categories (e.g. cloud forest or semi-moist forest).

6. Steps to follow for the interpretation of land cover

To reduce bias in photo interpretation, a decision tree was constructed for the visual assessment of high- and low-resolution images (Figure A-1). In these procedures, it is clearly indicated how and in what order the classification must be performed.

7. Recording change in cover

Recording change in cover is performed once the visual assessment is performed for all points in 2005 and 2015. Table 8.3.1 sets out the list of changes in cover categories to be recorded. These categories are consistent with the change in use matrix.

8. Proposed software:

Collect Earth desktop is used to access high resolution images on GE and BING, and auxiliary Landsat and Sentinel images from Google Earth Engine. MVA is performed directly on the Landsat mosaics deployed on ArcGIS, using the same grid and points within the plot generated

by Collect Earth on Google Earth. Recoding of the information is performed directly on an Excel record template.

9. Record template

An Excel spreadsheet was prepared with the MVA record template¹⁵⁹ with the following variables:

- idCE: Identifier of the central point of the plot on the intensified NFI grid.
- Fotointerpretador: Name of the photo interpreter.
- YCoordinat: North coordinate of the central point of the plot on the intensified NFI grid.
- XCoordinat: East coordinate of the central point of the plot on the intensified NFI grid.
- Cobertura2005: Cover category in 2005 according to Table 20.
- Puntos_Arboles05: Number of points of the plot that match tree crowns in 2005.
- Certeza05: Certainty level of 2005 photo interpretation.
- Imagen2005: Source or sensor of the image used in 2005 photo interpretation.
- Fecha2005: Capture date of the image used in 2005 photo interpretation.
- Resolucion05: Resolution of the image used in 2005 photo interpretation.
- Cobertura2015: Cover category in 2015 according to Table 20.
- Puntos_Arboles15: Number of points of the plot that match tree crowns in 2015.
- Certeza15: Certainty level of 2005 photo interpretation.
- Imagen2015: Source or sensor of the image used in 2015 photo interpretation.
- Fecha2015: Capture date of the image used in 2015 photo interpretation.
- Resolucion15: Resolution of the image used in 2015 photo interpretation.
- Shift between images: shift in meters between the 2005-2015 reference image.
- Observaciones: Relevant observations in the photo interpretation process.

10. Quality control and assurance

The assessment templates of each of the assessors are compiled by DIARENA. The final database and the inter-interpreter variability and quality control assessment results are published by DIARENA on the REDD program website.

Inter-interpreter variability: Cross-checking of the results between interpreters will be performed. A common sample of 30 points will be assessed by all assessors. With these inputs, any necessary adjustments will be made to the photo interpretation methodology and decision tree.

Location variability: When these types of discrepancies occur, the interpreter must note on the template that they have identified an image shift and estimate how much the maximum shift in meters is using the measurement tool available in the software.

Distribution of points by interpreter: The 5x5 km systematic grid will be divided into 3 subgroups using Collect Earth Desktop. This application performs a systematic selection of points for each subgroup. The sum total of the points of each subgroup is the same as the systematic NFI grid of 1,942 points.

¹⁵⁹ The recording template for visual assessment can be accessed via the following link:
https://www.dropbox.com/s/gndywkv4uiwmug/malla_sistematica_5k.xlsx?dl=0

Table A-1: Cover classes considered for the estimation of deforestation, degradation and regeneration of forests in the accounting area of the Forest Emissions Reduction System of the Dominican Republic.

Number	Category	Description
1	Broadleaf Forest (semi-moist, moist and cloud)	Generally evergreen, distributed from sea level up to 2,300 masl and on occasion up to 1,800 meters, with rainfall of between 1,000 and 4,000 mm and a temperature between 20 and 25 Celsius (FAO, 2015)
2	Dry forest	Dry forests are an ecosystem composed of semi-deciduous, medium-height trees that alternate between brief rainy seasons and prolonged dry climates. They grow in areas below 800 masl with an average temperature of 26 to 28 Celsius and average rainfall of 500 to 700 mm per year. This unit presents a tree density of over 60%, with species that can reach between 5 and 12 meters in height (FAO, 2015).
3	Coniferous Forest	Coniferous forests group together areas with a dominance of pine, in pure form or mixed with broad-leaved species. Pine trees are found at elevations between 800 and 3,085 meters, with annual rainfall of over 1,000 mm and a temperature ranging from 0 to 27 Celsius (FAO, 2015).
4	Mangrove	Permanently flooded brackish wetland forests. They develop along coastal zones. They develop along coastal zones and areas bordering river mouths and on the shores of lakes and coastal lagoons with saltwater intrusion. In this formation, the soil is not very consolidated due to the moisture. At elevations of between 0 and 20 masl, with average rainfall of 600 to 2,000 mm and an average temperature of 26 to 32°C. In these types of wetlands, the plants are adapted to flooded environments. The tree density of mangrove forests is greater than 80 percent and they include plant species specific to these special environments (FAO, 2015).
5	Perennial crops	This category of land use includes the following crops: Cocoa, coffee, avocado, mango, African oil palm, coconut and citrus.
6	Annual crops and cane	This category of land use includes the following crops: rice, vegetables, grains, cane and Musaceae.
7	Shrubland	This category groups together plant communities composed of shrubby species and tree species, which grow in areas in the process of natural regeneration resulting from forest clearing, or when the environmental conditions of the geological substrate limit their development. They reach a maximum height of 5 meters and can be found in a range of environments (dry and wet) (FAO, 2015).
8	Grassland	Areas devoted to raising livestock with or without the presence of isolated trees, including natural and managed grasses.
9	Bare land	Bare land, landslides, mining areas, degraded soils, dunes, river courses.
10	Urban area	Populated areas with significant construction. Includes dispersed houses in the countryside and all populated areas.

Number	Category	Description
11	Water bodies/wetlands	Water mirrors and herbaceous vegetation and grasses in flooded zones.
12	Shadow and clouds	This is not a cover category. It corresponds to the surface covered by clouds and shadows in the reference image.
13	No information	This is not a cover category. It corresponds to the surface without reference images available for the visual assessment of cover.

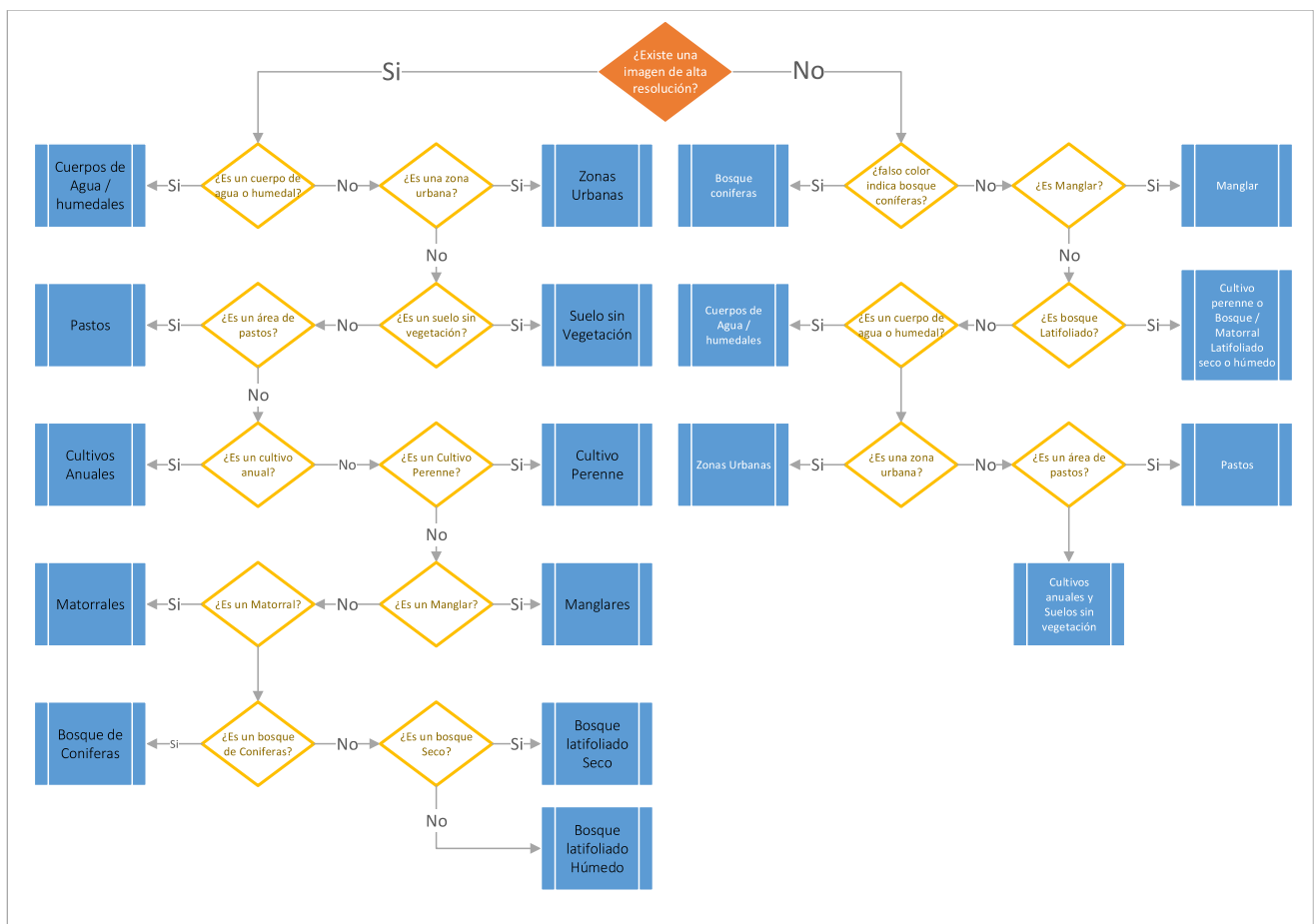
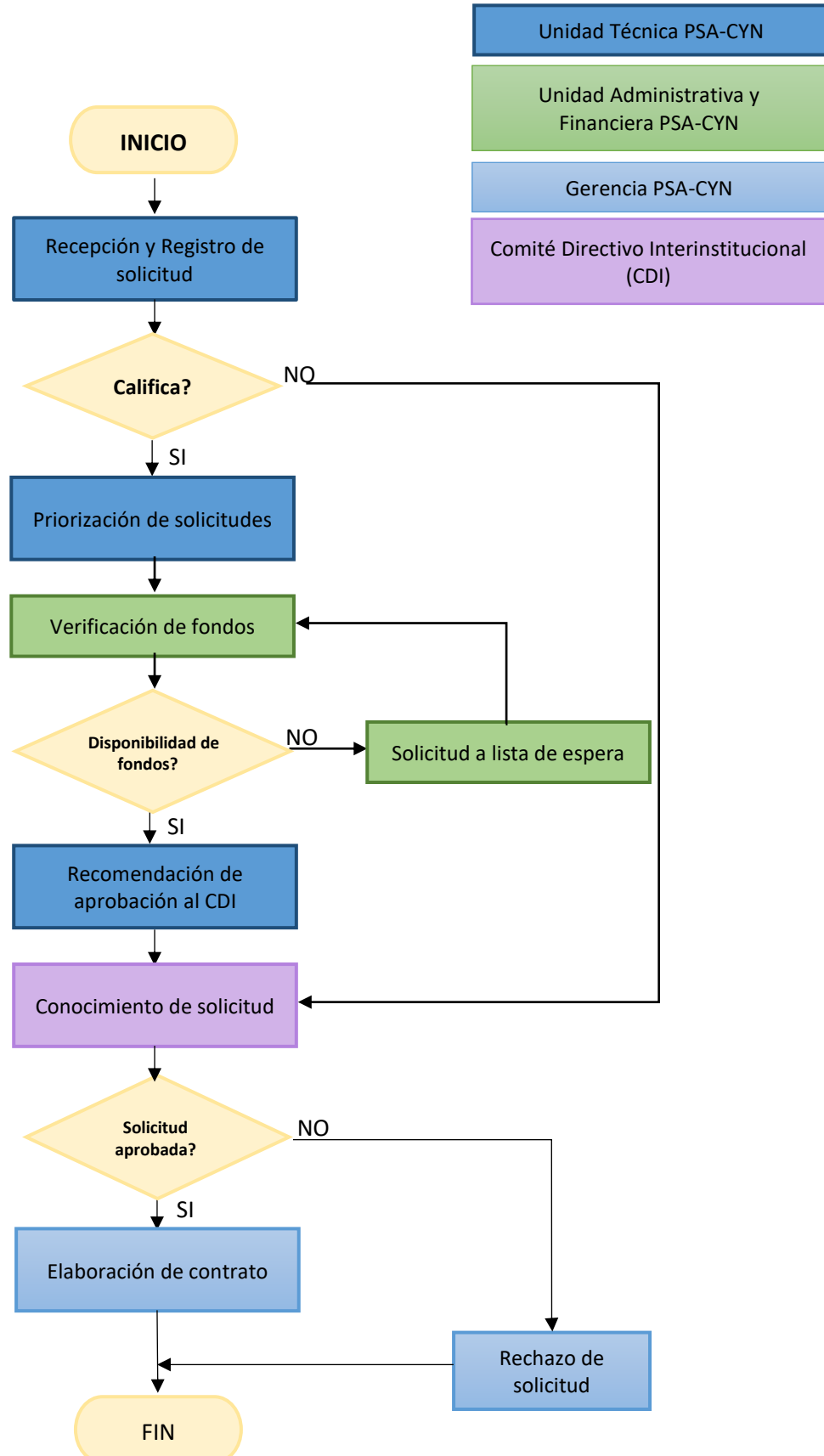


Figure A-1 Decision tree for photo interpretation of land cover in the accounting area with high- (Google Earth) and low-resolution (2005 and 2015 Landsat Mosaic) images

ANEXO 2. Flujoograma del Proceso de Solicitud PSA-CYN





ANEXO 3. Mecanismo de Quejas, Reclamos y Manejo de Conflictos en el Contexto REDD+ en República Dominicana

[LINK A DOCUMENTO](#)

ANEXO 4. Evaluación Estratégica Social y Ambiental de República Dominicana REDD+

[LINK A DOCUMENTO](#)

ANEXO 5. Sistema de Información de Salvaguardas en la República Dominicana

[LINK A DOCUMENTO](#)

ANEXO 6. Marco de Gestión Ambiental y Social

[LINK A DOCUMENTO](#)

ANEXO 7. Plan de Manejo Ambiental Área prioritaria 1

[LINK A DOCUMENTO](#)

ANEXO 8 Plan de Distribución de Beneficios

[LINK A DOCUMENTO](#)