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# DOMINICAN REPUBLIC FOREST NOTE

**Opportunities for  
Employment, Tourism, and Energy**

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Cover photo: Rey Perezoso

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NOVEMBER 28, 2020

## KEY COUNTRY AND FORESTRY STATISTICS

Population Statistics		Source
Non-marine area of country (km <sup>2</sup> )	48,511	1
Population 2015 (millions)	10.3	2
Urban population 2015 (%)	79%	2
Rural population 2015 (%)	21%	2
Urban population growth 2005-2015 (annual %)	2.82%	2
Rural population growth 2005-2015 (annual %)	-2.96%	2
<b>Economic Indicators (Average 2005-2015)</b>		
GDP growth (annual %)	5.7%	2
Industry, including construction (% GDP)	29.2%	2
Agriculture, forestry, and fishing (% GDP)	6.0%	2
Forest rent (% GDP)	0.04%	2
Tourism (% of GDP)	8.6%	3
Number of tourists (million/year)	4.4	3
Growth in number of tourists (annual %)	4.6%	3
<b>Poverty Indicators</b>		
General (monetary) poverty rate 2015 (%)	30.8%	4
Extreme poverty 2015 (%)	6.3%	4
Growth in general monetary poverty rate 2005-2015 (annual %)	-4.1%	4
Growth in extreme poverty rate 2005-2015 (annual %)	-7.4%	4
<b>Key Forest Statistics</b>		
Area in primary or mature forests 2015 (thousand ha )	483	5
Area in secondary or degraded forests 2015 (thousand ha)	1,591	5
Primary or mature forests of total land area 2015 (%)	10%	5
Secondary or degraded forests of total land area 2015 (%)	33%	5

		Source
Average losses of primary or mature forests 2005-2015 (thousand ha/year)	3.9	5
Average gains of primary or mature forests 2005-2015 (thousand ha/year)	4.6	5
Average losses of secondary or degraded forests 2005-2015 (thousand ha/year)	18.8	5
Average gains of secondary or degraded forests 2005-2015 (thousand ha/year)	42.5	5
Area with a Forest Management Plan 2000-2016 (thousand ha)	69.6	6
Area with logging permits 2011-2016 (thousands ha)	6.7	6
Volume with logging permits 2011-2016 (thousand m <sup>3</sup> )	147.0	6
Reforested area by the QVNP (2011-2016, thousand ha)	67.9	7
Number of trees planted by the QVNP (2011-2016, million plants)	62.7	7
Annual average of direct employment generated by the QVNP (2011-2016, jobs/year)	4,588	7
Annual average cost of the QVNP (2011-2016, million USD/year)	6.5	8

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Photo: Río Yuna



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## ACRONYMS

Acronym	Description
<b>AECID</b>	Agencia Española de Cooperación Internacional para el Desarrollo (Spanish Agency for International Development Cooperation)
<b>ASANUMI</b>	Asociación de Agricultores Nuevo Milenio (New Millennium Farmers Association)
<b>BCCC-SCRC</b>	Basel Convention Coordinating Centre - Stockholm Convention Regional Centre
<b>BID</b>	Banco Interamericano de Desarrollo (Inter-American Development Bank)
<b>CCC</b>	Civilian Conservation Corps
<b>CEA</b>	Consejo Estatal del Azúcar (State Sugar Council)
<b>CEDAF</b>	Center for the Development of Agriculture and Forestry
<b>CFD</b>	Cámara Forestal Dominicana (Dominican Forestry Chamber)
<b>CFN</b>	Country Forest Note
<b>CIDECA</b>	Comité Interinstitucional para el Desarrollo de las Cuentas del Agua (Inter-Agency Committee for the Development of Water Accounts)
<b>CITES</b>	Convention on International Trade in Endangered Species
<b>CLR</b>	Completion and Learning Report
<b>CMBDH</b>	Comisión Mixta Bilateral Dominico Haitiana (Dominican-Haitian Joint Commission)
<b>CNE</b>	Comisión Nacional de Energía (National Energy Commission)
<b>CPF</b>	Country Partnership Framework
<b>CPU</b>	Clean and Sustainable Production Unit
<b>CRESER</b>	Centro Regional de Estudios y Servicios (Regional Centre for Studies and Services)
<b>CRIES</b>	Coordinador Regional de Investigación Económica y Social (Regional Coordinator of Economic and Social Research)
<b>CTPPB</b>	Cluster de Turismo y Producción de la Provincia de Barahona (Tourism and Production Cluster of the Barahona Province)
<b>DBH</b>	Diameter at Breast Height
<b>DIRENA</b>	División de Inventario de Recursos Naturales del Ministerio de Agricultura (Natural Resources Inventory Division of the Ministry of Agriculture)
<b>DR</b>	Dominican Republic
<b>DRM</b>	Disaster Risk Management
<b>ECLAC</b>	United Nations - Economic Commission for Latin America and the Caribbean
<b>END</b>	Estrategia Nacional de Desarrollo (National Development Strategy)
<b>ERP</b>	Emissions Reduction Program
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>FCPC</b>	Forest Carbon Partnership Facility
<b>FONAFIFO</b>	Fondo Nacional de Financiamiento Forestal de Costa Rica (National Forestry Financing Fund of Costa Rica)
<b>FUNDEPROCUNIPA</b>	Foundation for the Development and Protection of the Nizaíto River Basin in Paraíso
<b>GCCA+</b>	Global Climate Change Alliance Plus
<b>GCF</b>	Green Climate Fund
<b>GCRI</b>	Global Climate Risk Index
<b>GDP</b>	Gross Domestic Product
<b>GEF</b>	Global Environment Facility
<b>GFW</b>	Global Forest Watch
<b>GHG</b>	Greenhouse Gases

<b>Acronym</b>	<b>Description</b>
<b>GSTA</b>	Global Alliance for Sustainable Tourism
<b>GTZ</b>	German Corporation for International Cooperation
<b>HLPF</b>	United Nations High Level Political Forum
<b>IAEA</b>	International Atomic Energy Agency
<b>IC</b>	International Cooperation
<b>IDB</b>	Inter-American Development Bank
<b>ISP</b>	Institutional Strategic Plan
<b>IUCN</b>	International Union for Conservation of Nature
<b>JICA</b>	Japan International Cooperation Agency
<b>LPG</b>	Liquefied Petroleum Gas
<b>MEPyD</b>	Ministerio de Economía, Planificación y Desarrollo (Ministry of Economy, Planning and Development)
<b>MIMARENA</b>	Ministerio de Medio Ambiente y Recursos Naturales (Ministry of Environment and Natural Resources)
<b>NDC</b>	Nationally Determined Contribution
<b>OAS</b>	Organization of American States
<b>ONE</b>	Oficina Nacional de Estadística (National Statistics Office)
<b>PES-CYN</b>	Payment for Environmental Services (Proyecto Cuenca del Río Yaque del Norte)
<b>PLANEG III</b>	Plan Nacional de Igualdad y Equidad de Género (National Gender Equality and Equity Plan)
<b>PRIME</b>	Productivity, Rights, Investments, Markets and Ecosystem Services
<b>PROFOR</b>	Forest-Smart Program
<b>PRONATURA</b>	Fondo Pro Naturaleza, Inc (Pro Natur Fund, Inc)
<b>PVDC</b>	Pueblo Viejo Dominican Corporation (Corporación Dominicana Pueblo Viejo)
<b>QVNP</b>	Quisqueya Verde National Plan (Plan Nacional Quisqueya Verde)
<b>REDD+</b>	Reducing Emissions from Deforestation and Forest Degradation
<b>SADP</b>	Sustainable Agroforestry Development Program
<b>SCD</b>	Systematic Country Diagnostic
<b>SDG</b>	Sustainable Development Goals
<b>SEMARENA</b>	Secretaría de Estado de Medio Ambiente y Recursos Naturales (Secretary of State for the Environment and Natural Resources)
<b>SENPA</b>	Servicio Nacional de Protección Ambiental (National Environmental Protection Service)
<b>SIEN</b>	Sistema de Información Energética Nacional (National Energy Information System)
<b>SINAP</b>	Sistema Nacional de Áreas Protegidas (National System of Protected Areas)
<b>TNC</b>	The Nature Conservancy
<b>TOE</b>	Tons of Oil Equivalent
<b>UN</b>	United Nations
<b>UNEP</b>	United Nations Environmental Programme
<b>UNICEF</b>	United Nations Children's Fund
<b>UNPD</b>	United Nations Development Programme
<b>USAID</b>	United States Agency for International Development
<b>WB</b>	World Bank
<b>WDI</b>	World Development Indicators
<b>WTTC</b>	World Travel and Tourism Council

## EXECUTIVE SUMMARY



Photo: Karen

**The objectives of this Country Forest Note (CFN) are to identify and determine how to address key opportunities and challenges for sustainable forestry and forest-smart interventions in the Dominican Republic.**

Essential questions addressed by the CFN are the importance of forests and how the forestry sector can achieve its full potential. The responses are framed by two perspectives: the importance of forests in boosting economic development in the Dominican Republic, reducing poverty, and facilitating the sustainability of such development and the role of forestry in the context of global issues, such as greenhouse gas (GHG) emission mitigation, nationally determined contribution (NDC) objectives, global poverty reduction, and the services provided by global ecosystems.

**The Dominican Republic's forests provide a range of services from water for agriculture and human consumption, to food and scenic beauty, and resilience to climate change and extreme climatic events; they also provide income and employment opportunities.**

Forests regulate water supply for agriculture, drinking water, and hydroelectric electricity generation, and serve as a source of scenic beauty while conserving biodiversity. They also help reduce the high inherent vulnerability of the Dominican Republic to climate change and extreme weather events caused by its geographical location and topography. Economically, forest-related activities contribute to income and employment generation through agroforestry, reforestation programs, wood harvests, and direct or indirect contributions to food production.

**The country's forest cover has been historically dynamic. In the middle of the 20th century forest cover was reduced to less than 12% of the country's territory due to the expansion of the agricultural frontier,** but beginning in the 1980s, an intense but sometimes contradictory legislative and regulatory process that established logging prohibitions and incentives for forest production and reforestation resulted in forest recovery. By 2015, forests covered 46% of the



country's territory but were mostly secondary or degraded forests.

**The net increase of forest cover during the last two decades differentiates the Dominican Republic from most countries in the region where continuing forest loss is common. This increase, however, has not been homogeneous,** since secondary or degraded forests have tended to increase at the expense of primary or mature forests, with consequent impacts on forest quality, biodiversity, and carbon stocks.

**The Dominican Republic's comprehensive environmental and forest legal and institutional framework has contributed to the forest recovery observed and provides the basis for expanding the potential of forests in the future.** Currently there are several objectives and lines of action related to forests in the country's most important long-term planning instrument, the National Development Strategy 2030 - END 2030. The Strategy aims for a net forest growth rate of 0.2% per year on average for the period 2020-2030 and a reduction of 25% of GHG emissions by 2030, relative to the 2010 baseline (3.6 tCO<sub>2</sub>e per capita), equivalent to a reduction on the order of 25 million tons of carbon dioxide equivalent (tCO<sub>2</sub>e) across all sectors. Despite this overlying legal and institutional architecture, problems of institutional coordination and capacity reduce the effectiveness of laws, regulations, and institutions as well as the potential of future opportunities for forest use and management.

**One example is the National System of Protected Areas (SINAP). Since its creation, the SINAP has played a key role in the conservation of protected areas, with concomitant reductions of pressure on natural forests,** with the result that the Dominican Republic now has significant areas of the national territory in protected areas oriented towards the conservation of biodiversity. The SINAP's legal framework and wide territorial coverage can serve as the base for the potential expansion of nature-

based tourism whose potential is increasing, driven mainly by domestic tourists interested in landscape scenic beauty. Nature tourism based on forest landscapes provides a great opportunity for diversifying the Republic's traditional sun and beach tourism, which has been the main engine of growth in the country over the last 30 years, at the same time that it helps increase the income and reduce poverty of rural populations while promoting the conservation of biodiversity, forests, and ecosystem services. However, overlapping responsibilities of environmental authorities and the Armed Forces, especially in the management of the National Environmental Protection Service (SENPA), has implications for the effectiveness of surveillance and control of protected areas and forests in general, as well as for overall coordination and communication. These problems are compounded by the large territorial extent and complex challenges of managing protected areas, combined with the limited institutional capacities and resources of the Ministry of Environment and Natural Resources (MIMARENA).

**Another example is the government's reforestation policies and programs that have contributed to forest recovery.**

Reforestation of almost 200,000 hectares, mainly through the Quisqueya Verde National Plan (QVNP), has been successful in generating employment for local rural populations through the implementation of reforestation brigades. Expansion of such activities, as well as forest restoration programs in protected areas and watersheds, could play an important role in generating unskilled employment that would counteract COVID-19's strong negative impacts on employment in the tourism sector. However, the effectiveness of reforestation in increasing forest cover is in question due to inadequate incentives, control, and monitoring needed to assure survival of reforested areas into the future.

**Similarly, reforestation could be expanded to include the production of firewood, which is the main source of energy for rural households, and wood biomass for energy generation, which is an important part of**



**a more sustainable energy matrix.** These activities have the potential to contribute to greater use of renewable energies, lower emissions of greenhouse gases, and a decrease in the country's dependence on imported fossil fuels for energy generation. However, firewood and wood biomass production are unorganized, unregulated, unsupervised, oftentimes illegal, and operate far below their potential due to insufficient information on potential supply and demand, productive processes, and channels for commercialization. Beside greater institutional coordination, monitoring, information generation, and enforcement, public policies are also needed to encourage private investment in this area.

**More generally, the fulfillment of the potential of forests to provide ecosystem services, biodiversity, income generation, and employment creation depends on overcoming the economic and institutional barriers to forest management and conservation that result in under-valuation of the forests and their conversion to other uses.** The greatest direct threat to the conservation of natural and planted forests is the expansion of the agricultural frontier, especially in forested hillside areas, and informal or illegal activities such as firewood harvesting as well as charcoal production and smuggling in areas bordering Haiti. The expansion of the agricultural frontier and illegal activities based on deforestation and forest degradation is caused by structural economic factors including: the limited awareness and knowledge about the economic potential of forests for providing marketable goods or ecosystem services, market limitations for ecosystem services, the lack of secure land tenure and property rights, poverty, and unemployment. These economic factors act in concert with institutional weaknesses such as limited capacity to enforce existing regulations, ineffective territorial planning and control, and low management capacity of forest and protected areas.

**With the support of the World Bank, the Dominican Republic is addressing some of these issues, via a program to reduce emissions from deforestation and forest degradation (REDD+) that aims to reduce 5 million tCO<sub>2</sub>e.** This program aims at strengthening the system of protected areas, increasing the area reforested by the QVNP by 64,000 hectares in 5 years; and developing agroforestry, silvopastoral and resilient agriculture systems on another 54,000 hectares. The program will not only seek to reduce greenhouse gas (GHG) emissions but will also strengthen the legal and institutional framework, establish policies to contain the expansion of the agricultural frontier into forested areas, and promote conservation practices and the sustainable use of forests.<sup>1</sup> These measures will also contribute to the achievement of the goals established in the National Development Strategy for 2030, several of the Sustainable Development Goals (SDGs), as well as some international commitments in the area of biodiversity. The program is supported by the World Bank, the Inter-American Development Bank (IDB) and other international cooperation entities whose actions are focused mainly on developing projects aimed at terrestrial ecosystems and forests, and to a lesser extent at institutional capacity-building and issues related to marine ecosystems. Priorities for institutional strengthening include management of the QVNP and the National Protected Areas System and a system for monitoring and evaluating forest management, conservation, and reforestation as well as for the effective implementation of agroforestry, silvopastoral, and resilient agriculture systems.

**The total cost of the REDD+ program is estimated to be USD 153.8 million and should be financed both by the Dominican Republic government, contributions from international cooperation, as well as investments from the private sector.** Resources in the MIMARENA's current budget, and existing funding for the President's

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<sup>1</sup> MIMARENA & FCPF (2019)



Sustainable Agroforestry Development Program (SADP) can cover a high percentage of the costs of REDD+ if these investments are used more effectively than at present.

**The environmental component of the World Bank's fiscal year 2015-2018 partnership strategy with the Dominican Republic focused on disaster risk management and REDD+ project preparation.** The environmental component of the new

partnership strategy based on a Systematic Country Diagnostic (SCD) carried out in 2018 will focus on the improvement of natural resource management and the enhancement of resistance to disasters and climate risks, especially a multi-sectoral and integrated spatial approach applied to resilient agriculture and integrated water resource management.



Photo: Li Tsing Soon



## COUNTRY AND FORESTRY SECTOR OVERVIEW



Photo: World Bank Photo Collection

**Since the recession of 1990, the Dominican Republic (DR) has experienced rapid economic growth and poverty reduction, principally as a result of growth of tourism and the service sector.** Between 1995 and 2015 the DR economy grew at an average annual rate of 5.2%. Within this context, the service sector grew from 50% of the Gross Domestic Product (GDP) in 1995 to 59% in 2015 and within the service sector travel and tourism grew from 15% to 17% in the same period.<sup>2</sup> In contrast, the contribution of the manufacturing sector (including construction) to GDP decreased from 32% to 29% and the agriculture, forestry, and fishing sector went from 10% to 6% of GDP.

**This rapid economic growth is reflected in a significant decrease in poverty.** Compared

to the crisis of 2003 and 2004, when 60% of the rural population was affected by monetary poverty and 12% by extreme poverty (Box 1, Annex 1), rural poverty in 2015 was reduced to 38% and extreme poverty to 5%.

**This economic growth occurred despite the economic impacts of extreme climate events to which the DR, due to its geographic location and mountainous topography, is highly vulnerable.** In the past 40 years, disasters caused average annual losses amounting to 0.7 percent of GDP per year, and catastrophic events can potentially destroy a greater share of assets in the DR than in the average of Central American and Caribbean countries<sup>3</sup>. According to the Global Climate Risk Index (GCRI),<sup>4</sup> the Dominican Republic (DR) was ranked in the top third (55<sup>th</sup> place) in

<sup>2</sup> World Bank World Development Indicators - WDI (2020).

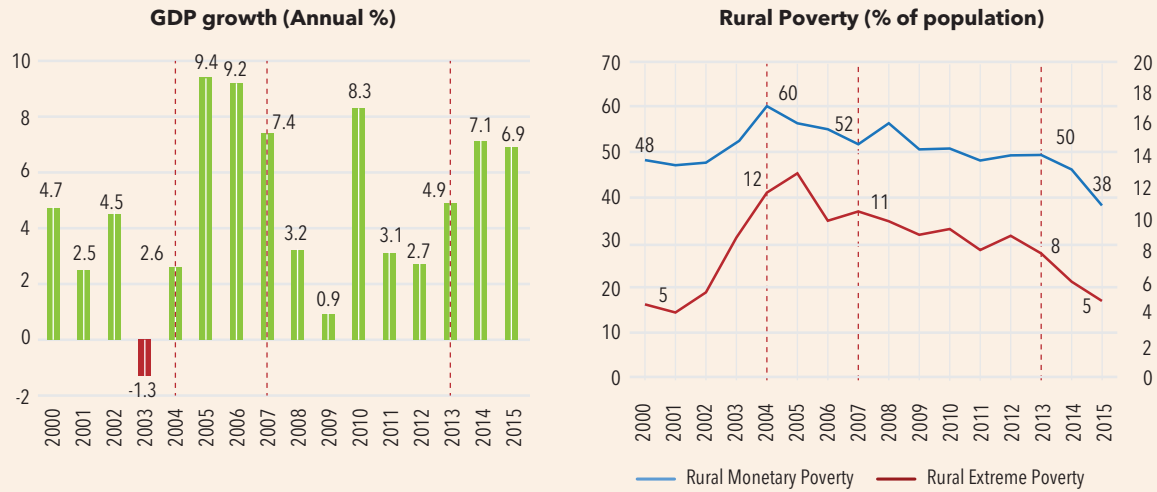
<sup>3</sup> World Bank (2018a).

<sup>4</sup> The GCRI analyzes extent to which countries and regions have been affected by impacts of weather-related loss events such as storms, floods, and heat waves (Germanwatch, 2019).

**BOX 1** ECONOMIC GROWTH AND POVERTY REDUCTION (2000-2015)

Historically, economic growth in the Dominican Republic has had a strong impact on poverty reduction. A study of the 1986-1998 period (World Bank, 2001) and more recent data show that economic growth and rural poverty

are inversely related (Annex 1). This relationship between economic growth and poverty is useful when designing forestry policies and actions compatible with poverty reduction.



Source: The World Bank World Development Indicators - WDI (2020); MEPyD and ONE (2016).

climate risk among more than 180 countries for the period 1997-2018. It is expected that in the future the frequency and severity of hydro-meteorological risks (floods, landslides, droughts, and fires), as well as the rise in sea levels<sup>5</sup> will increase due to climate change.

Within this panorama, the contribution of the forestry sector to the national economy is relatively limited, but high potential exists for forest ecosystems to sustainably produce

forest goods as well as ecosystem services that can contribute to reducing poverty, reducing climate-related vulnerability, and increasing national well-being, especially taking into account potential synergies between the forest and the dynamic tourism and associated services sectors.



Photo: Issai Campos

<sup>5</sup> World Bank (2018a) and USAID (2013).

## LEGAL AND INSTITUTIONAL FRAMEWORKS, INTERNATIONAL COMMITMENTS AND SUPPORT



Photo: Right To Health

### LEGAL AND INSTITUTIONAL FRAMEWORK

**The Dominican Republic's legal and institutional framework for forestry, natural resources, and the environment, its international commitments, and international support, including its engagement with the World Bank, is useful for understanding the current status and dynamics of its forests and provides the basis for potential actions in the future.**

**The Dominican Republic has a relatively complete legal and institutional framework for issues related to environmental protection and forest management** (see Annex 2). The 2010 Constitution of the Dominican Republic established reforestation, conservation, and forest regeneration as national priorities. Subsequently, forests were included in the National Development

Strategy formulated in 2011, which contains specific objectives and actions aimed at adapting to climate change; protecting and sustainably using ecosystem goods and services, biodiversity, and natural heritage; and improving the productivity, competitiveness, and environmental and financial sustainability of agricultural and forestry production chains.

**The forestry legal framework reflects the tensions between a prohibitionist and control approach to forest conservation and an incentive approach for traditional forest production based on sustainable forest management (Annex 2).** The General Law on the Environment and Natural Resources (Law 64-00), the major milestone in natural resource legislation issued in 2000, seeks to reconcile these two approaches and establishes the forestry institutions, rules, and their relationship with the environment. In the last 20 years, several other important laws have been enacted



that relate directly or indirectly to forests, such as protected areas (Law 202-04), renewable energies (Law 51-07), biodiversity (Law 333-15), payment for environmental services (Law 44-18), and the Forestry Law (Law 57-18). The latter seeks to regulate and promote the sustainable management of forests, as well as the protection of forest ecosystems to maintain biodiversity and the capacity for regeneration. It promotes conservation but also allows for the use, production, industrialization, and marketing of forest products.

**Current long-term planning in the Dominican Republic includes several objectives related to the forestry sector along with their respective lines of action.**

The goals of the National Development Strategy 2030 (END 2030) include three objectives that explicitly refer to the forestry sector:

- Increase the productivity, competitiveness, environmental, and financial sustainability of agricultural production chains via: institutional reforms; research, innovation and technological development; access to information systems and market intelligence; development of financial services; provision of infrastructure, services, and production inputs; reorganization of marketing chains; and development of an export support system.
- Promote the protection and sustainable use of ecosystem goods and services, biodiversity, and natural heritage through the sustainable management of forest resources and the promotion of reforestation with endemic and native species in territories suitable for forestry.
- Contribute to adaptation to climate change and the mitigation of its causes through the development and transfer of technologies that contribute to the adaptation of forest and agricultural species to the effects of climate change.

This Strategy targets a net forest growth rate of 0.2% per year on average for the period 2020-2030. To fulfill this mandate, the MIMARENA includes several lines of forestry action in its Institutional Strategic Plan 2020-2023 as well as its annual forestry plans.

However, most forest objectives are weak in setting specific targets, making it difficult to monitor compliance.

**The National Gender Equality and Equity Plan 2020-2030 (PLANEG III) also establishes specific guidelines and actions for the forestry sector including<sup>6</sup>:**


- Implementing forest management, integrated water resource management, and soil conservation plans specifically for women in depressed areas.
- Strengthening and expanding reforestation plans for the most important river basins, integrating rural women's groups in their implementation.
- Establishing a rotating fund of financial assistance for women in the form of credit for their agroforestry activities in areas affected by deforestation and drought.

**With the support of the IUCN, the Presidency of the Republic and MIMAREANA have also developed a Gender and Climate Change Action Plan for the Dominican Republic that considers the guidelines of PLANEG**

**III.** In particular, this Plan highlights training for female supervisors who lead the reforestation brigades of the QVNP; specific guidelines for incorporating a gender perspective and women's participation in forest management and other REDD+ and forest management activities; and promoting equity between men and women in this context.<sup>7</sup> Currently, a new study to ensure gender mainstreaming in the design and implementation of REDD+ and the Emissions Reduction Program (ERP) in the Dominican Republic is in progress with the goal of granting equitable benefits to women, girls, men, and boys.

<sup>6</sup> Ministerio de la Mujer (2011).

<sup>7</sup> Presidencia de la República, MIMARENA & IUCN (2018).



**Despite this broad and comprehensive legal framework, application of these laws and regulations has suffered from limited institutional coordination and capacity**

and the absence of local zoning regulations for land-use. The result is inadequate law enforcement, extensive informality, and the development of illegal uncontrolled activities, such as the cutting and burning of forests and smuggling of charcoal.

**Institutional responsibilities for the environment and forests overlap among the MIMAREMA, the National Environmental Protection Service (SENPA) of the Ministry of Defense, and the Environmental and Natural Resources Defense Attorney (PRODEMAREN) of the Ministry of the Interior.**

The need for coordination in areas such as environmental law enforcement, promotion of agricultural and forestry production, and climate change policies is evident, since the MIMARENA is in charge of regulations, environmental monitoring, and administrative sanctions; the PRODEMAREN represents the State in judicial processes related to the environment and investigates, prosecutes, and judges environmental offenders; and the SENPA carries out operations to monitor, detect, prevent, and control environmental crimes. In the area of agroforestry, MIMARENA's agroforestry activities must be coordinated with the office of the President of the Republic and the Ministry of Agriculture through the application of the President's Sustainable Agroforestry Development Program (SADP). Similarly, coordination of climate change mitigation and adaptation strategies, policies, and implementation includes the MIMARENA's Climate Change Directorate and the multi-ministerial National Council for Climate Change and Clean Development Mechanism.

**Within the MIMARENA, multiple departments and two vice-ministries are directly responsible for forestry, the Forestry Resources Vice-Ministry and the**

Protected Areas and Biodiversity Vice-Ministry. The Forestry Resources Vice-Ministry's functions range from forest protection to the implementation of reforestation projects, the management of extensive personnel associated with the reforestation brigades of the Quisqueya Verde National Plan (QVNP), the administration of the production of planting material, and the National Ranger Service.<sup>8</sup> The Vice-Ministry of Protected Areas and Biodiversity administers the SINAP and supervises matters related to ecotourism, wildlife regulation, and programs related to biodiversity protection.

**These arrangements sometimes hamper communication channels and create difficulties for policy implementation<sup>9</sup>. Moreover, institutional functions often emphasize regulation and control, at the expense of implementation.**

There are also difficulties in the management of the reforestation programs and in the administration of the protected areas due to its large geographic area and quantities of personnel involved. The implementation of the Forest Law (Law 57-18) also constitutes a challenge for the Vice-Ministry of Forest Resources, which must improve coordination and synergies related to the conservation and promotion of forests outside protected areas, as well as fostering dialogue and inter-sectoral collaboration.

**To address these issues, the MIMARENA Institutional Strategic Plan (ISP) 2020-2023 includes an institutional strengthening**

**pillar.** Among many other actions, it foresees the use of information and communication technologies to improve better decision making through the implementation and consolidation of various information systems such as the National Environmental Information System; an information system for the application of a cross-cutting policy on environmental sustainability; a national information system for disaster monitoring, evaluation, early warning, and response; a financial and

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<sup>8</sup> MIMARENA & FCPF (2019).

<sup>9</sup> MIMARENA (2019a)

administrative information and operations system; an information system for strategic environmental assessment; an information system for the economic and ecosystem valuation of environmental services; and a system of performance indicators. Also planned is the implementation of an organizational structure matrix and the development of inter-institutional coordination mechanisms, especially for compliance with international cooperation agreements, as well as the mobilization of international technical and financial assistance (MIMARENA, 2019a). Other action lines of the ISP are also compatible with the National Development Strategy (END) (See Annex 2).

## INTERNATIONAL COMMITMENTS

The main international commitment involving the Dominican Republic's forestry sector is the Nationally Determined Contribution (NDC), whereby the government proposes to reduce national GHG emissions by 25% by 2030 relative to the 2010 baseline (3.6 tCO<sub>2</sub>e per capita), a reduction on the order of 25 million tCO<sub>2</sub>e.

With the support of the World Bank and the Forest Carbon Partnership Facility (FCPC), the Dominican Republic has designed a program to reduce 5 million tCO<sub>2</sub>e of emissions from deforestation and forest degradation (REDD+), through a set of strategies and actions. Among these are the strengthening of the system of protected areas; an increase during 5 years of 64,000 hectares in the area reforested by QVNP; and the development of agroforestry, silvopastoral and resilient agriculture systems on another 54,000 hectares. The Emission Reductions Program Document (ERPD) indicates that total cost of the REDD+ government actions is approximately USD 153.8 million (MIMARENA & FCPF, 2019). Box 2 contains more details about the Emission Reductions Program.

**Successful implementation of the REDD+ ERP is estimated to require public expenditures of about USD 9.6 million per year for five years for the QVNP and between USD 19 million and USD 34 million annually for all government REDD+ actions (Box 2).** Expenditures could be justified by forest economic benefits and co-benefits related to reduced climate vulnerability and indirect effects on other sectors and poverty reduction.

**The Program's estimates of emissions reductions, hence future payments, are based on the assumption that reforested areas survive and grow in the future.** For this to occur, the MIMARENA must improve its efficiency to guarantee the continued survival of reforested areas, since the correlation to date between the areas reforested by the QVNP and the increase in forest cover is weak.<sup>10</sup> An overall strategy for guaranteeing that reforestation efforts translate into healthy and permanent forests, as well as greater monitoring and control of forested areas, are needed.

**The implementation of agroforestry, silvopastoral, and resilient agriculture systems under REDD+ also face financial challenges. To meet REDD+ ERP goals** these programs need to be implemented on about 9,000 hectares per year. This would require private sector investments of at least USD 94.6 million during the first five years. It is expected that part of these investments will be facilitated by commercial loans at favorable rates from the government *Banco Agrícola* and the Interamerican Development Bank (IDB) for agroforestry and silvopastoral systems. However, eventual additional resources could be required to cover shortfalls, which could be provided by the World Bank.

**Besides helping fulfill international commitments related to the NDCs, REDD+**

<sup>10</sup> This result is based on estimates by Ben de Jong (2020) using a Pearson correlation coefficient. Spatial information on forest additions at the province level between 2012-2018 was obtained from the Terrapulse platform (<https://www.terrapulse.com/terraView/>). These data were correlated with the areas reforested by QVNP in those provinces during 2010-2014. The result obtained is a correlation of 0.31 and the hypothesis' test indicates that this result is not significantly different from zero.



**BOX 2**
**EMISSIONS REDUCTION PROGRAM (ERP)**

In accordance with the NDC commitment, the country has designed a REDD+ Emissions Reduction Program, with support from the Forest Carbon Partnership Facility (FCPF) financed by the World Bank. The main objective of the ERP is to significantly reduce GHG emissions due to deforestation and forest degradation and to substantially increase carbon sequestration via regeneration in degraded areas and the establishment of coffee and cocoa agroforestry systems, as well as silvopastoral systems. The REDD+ program incorporates three strategies:

- **Strengthening the legal and institutional framework to preserve the country's natural heritage and promote the sustainable use of natural resources.** It includes actions for the implementation of the Forest Law and the Payment for Environmental Services Law; the preparation of standards for sustainable forestry; governance structures for nature conservation; land tenure mechanisms; institutional strengthening; and the development of monitoring and supervision mechanisms for the trade in forest products.
- **Establishing, strengthening, and applying public policies to limit and/or contain the expansion**

**of agricultural, livestock, and infrastructure in forested areas.** It includes actions to improve inter-institutional coordination mechanisms; the establishment of new areas for reforestation, forest management, and conservation; zoning programs for crops, livestock, and infrastructure; and strengthening ecological management and restoration programs.

- **Promoting management models for natural resources that contribute to the conservation and sustainable use of forests and an increase in forest cover.** It includes the strengthening of the QVNP and the President's SADP programs, promotion of agroforestry systems, the strengthening of the conservation of protected areas through community involvement, monitoring system for forest management, promotion of natural regeneration, the introducing of financial incentives, the updating of the forest fire control strategy, and the strengthening the phytosanitary protection program.

Implementation of the ERP is expected to reduce 5,267,868 tCO<sub>2</sub>e of emissions. The ERP's costs are presented in the Table below:

**Proposed Public Financing of the Emissions Reduction 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	-
Total contributions of the Dominican Republic Government	25,471	31,861	34,361	25,084	19,025	-
Total income from the sale of Emissions Reductions (ii)	-	-	<b>11,319</b>	-	-	<b>19,916</b>
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

Source: MIMARENA & FCPF (2019).

**actions will also help meet important national targets and other international commitments, such as** the National Development Strategy 2030 (END 2030), as well as several of the Sustainable Development Goals (SDGs).

**Regarding the Sustainable Development Goals (SDGs), in July 2018** the United

Nations High Level Political Forum (HLPF)<sup>11</sup> found that that the National Development Strategy is well-aligned with climate action under SDG 13 (climate action), but that progress on the SDG indicator of "number of deaths, people missing, and affected by disasters, per 100,000 inhabitants" deteriorated between 2015 and 2017 from

<sup>11</sup> Comisión ODS, República Dominicana (2019).

315 per 100,000 in 2015 to 1,192 per 100,000 in 2017. Information and resources are also needed to monitor and meet SDG 15 (life on land);<sup>12</sup> there is uncertainty about the future of new forest areas since only a fraction of the forest area is under sustainable management and more effective protection is needed. The quality of new forest areas is also uncertain, which generates uncertainty regarding their ability to provide environmental services. The SDG Commission also mentions that 38% of plant species are at risk and that invasive species are the third most important cause of biodiversity loss. In 2016, only 40% of the key sites for terrestrial biological biodiversity were being conserved and the value of ecosystem services was estimated to be between 2.2% and 7.6% of GDP. It should be noted that due to fiscal constraints, public expenditures on environmental management during 2000-2016 were low.

**Other formal international commitments include biodiversity.** The Dominican Republic has been a member of the Convention on Biological Diversity since 1997 and has established 20 goals, a National Strategy for the Conservation and Sustainable Use of Biodiversity, and a Biodiversity Action Plan. In 2015, Law 333 was issued, establishing that the strategy should be updated every 10 years and identified 15 possible uses of biodiversity, including agro-biodiversity, forestry development, as well as eco-parks and other tourism activities. Other international commitments of the DR related to biodiversity include the Stockholm Convention on Persistent Organic Pollutants, the RAMSAR Convention on Wetlands of International Importance, and the Convention on International Trade in Endangered Species of Wild Fauna and Flora Wildlife (CITES). Although the Dominican Republic has participated in international high-level round tables on the Bonn Challenge, it has

not established specific commitments on this topic.

## INTERNATIONAL COOPERATION

**The Dominican Republic has received constant support from international actors for the development and fulfillment of its environmental and climate agendas and commitments.** Table 1 shows the projects with international cooperation active as of March 2019; some of these projects are aimed at fulfilling various international commitments and in general at complying with the action plan of the END 2030 and SDGs. Multilateral cooperation agencies are the main source of international funding, especially the Global Environment Facility (GEF), which as of March 2019 has executed nine projects valued at USD 117 million. Annex 3 gives more details. Most international funding is directed towards sustainable ecosystem system management, especially ecosystem goods and services (Table 2).

## THE WORLD BANK'S ENGAGEMENT IN THE DOMINICAN REPUBLIC

**The World Bank's country partnership framework (CPF) with the Dominican Republic, between fiscal years 2015 and 2018, had five strategic areas,<sup>13</sup>** which was subsequently reorganized into three pillars: (i) strengthening conditions for equitable growth; (ii) improving service delivery for the poor, and (iii) building resilience. The forestry sector played an important role especially in the second and third pillars in protecting water sources and regulating water flows. FCPF Financing for REDD+ was also important for building resilience to climate risks. The Performance Review and the Completion and Learning Report (CLR) rated this CPF as Moderately Satisfactory.<sup>14</sup>

<sup>12</sup> Comisión ODS, República Dominicana (2020).

<sup>13</sup> The strategic result areas were: 1. improving the investment climate and fostering private sector development; 2. improving access to efficient and reliable electrical distribution networks, information and communication technologies (ICT), and other infrastructure; 3. supporting the government in building resilience to external shocks; 4. promoting equitable, efficient, transparent, and sustainable management of public resources; and 5. strengthening social service delivery (World Bank, 2014)

<sup>14</sup> World Bank (2017).



**TABLE 1** INTERNATIONAL COOPERATION PROJECTS BY DONOR, 2015-2019

Country or Agency	Number of projects in execution as of 03/20/2019	Total projects budget (USD million)	Agency % contribution
Germany	5	7.73	70%
Italy	1	0.35	100%
<b>Multilateral</b>	<b>15</b>	<b>130.86</b>	<b>41%</b>
Food and Agriculture Organization (FAO) and Interamerican Institute for Agricultural Cooperation	1	0.32	100%
Forest Carbon Partnership Fund (FCPF) / The World Bank (WB)	1	6.00	100%
Global Climate Change Alliance Plus (GCCA+) financed by the European Union	1	4.46	100%
Green Climate Fund /United Nations Environment Program	1	2.11	100%
International Atomic Energy Agency (IAEA)	2	0.49	59%
Global Environment Facility (GEF)	9	117.47	34%
<b>General Total</b>	<b>21</b>	<b>138.94</b>	<b>42%</b>

Note: Projects in execution as of 03/20/2019 are included. Some projects without budget information are excluded.

Source: Vice-Ministry of International Cooperation, the MIMARENA

**TABLE 2** INTERNATIONAL COOPERATION BY TOPIC AND END 2030 GOAL (USD MILLION)

Objective of National Development Strategy (END 2030)	Project Topic				Total International Contribution
	Institutional Capacity	Land Ecosystems	Marine Ecosystems	Other	
4.1 Sustainable environmental management	10.00	28.45	12.70	-	51.15
4.1.1 Sustainably protect and use the goods and services of the nation's ecosystems	9.88	28.45	12.70	-	51.03
4.1.2 Promoting sustainable production and consumption	0.12	-	-	-	0.12
4.2. Effective risk management	-	4.02	-	4.46	8.48
4.3. Adequate adaptation to climate change	2.79	-	-	-	2.79
<b>Total general</b>	<b>12.78</b>	<b>32.47</b>	<b>12.70</b>	<b>4.46</b>	<b>62.42</b>
Contribution of International Cooperation (%)					
4.1 Sustainable environmental management	100%	28%	81%		40%
4.1.1 Sustainably protect and use the goods and services of the nation's ecosystems	100%	28%	81%		40%
4.1.2 Promoting sustainable production and consumption	100%				100%
4.2. Effective risk management		64%		100%	79%
4.3. Adequate adaptation to climate change	98%				98%
<b>Total general</b>	<b>99%</b>	<b>30%</b>	<b>81%</b>	<b>100%</b>	<b>44%</b>

Source: Vice-Ministry of International Cooperation the MIMARENA.





**A Systematic Country Diagnostic (SCD) completed in 2018 identified six priority areas:**<sup>15</sup> (a) improving the fiscal balance, (b) enhancing the accumulation of human capital, (c) promoting a level playing field and a better business environment, (d) improving the management of natural resources, (e) improving resilience to disasters and climate-related risks, and (f) increasing transparency and accountability in the policymaking process.

**The new Country Partnership Framework (CPF FY20-FY24) seeks to be consistent with both the results of the SCD and the government's priorities in the National Development Strategy.**<sup>16</sup> Its components include:

- Strengthening conditions for inclusive and equitable growth
- Building human capital
- Promoting environmental sustainability and resilience, including improved natural resource management and strengthened resilience to natural disasters

**The World Bank's program to improve natural resource management focuses on a multi-sectoral and integrated spatial approach.** It includes:

- the development and protection of the assets of the blue economy,
- the Resilient Agriculture and Integrated Water Resource Management Project, including a follow-up operation in Maguaca Dam (USD 80 million). This project seeks to improve sustainable landscape management and combines measures to support sustainable productive intensification of the more fertile dry land and irrigated land through increased access to sanitation and capacity building.
- the adoption of climate-smart practices for major crops, for example, by promoting improvements in rice production. More intensive agriculture will increase the

productivity of each hectare of land suitable for cultivation, reducing the pressure on the agricultural frontier and therefore on the forests.

- support for the government's REDD+ efforts to achieve the NDC commitments via the strengthening of the legal and institutional framework for nature conservation and the sustainable use of natural resources; the establishment, strengthening, and implementation of public policies to limit and/or contain the expansion of the agricultural, livestock, and infrastructure frontier in forested areas; and the promotion of natural resource management models and practices that contribute to the conservation and sustainable use of forests and the increase of forest cover.<sup>17</sup> As a result of the preparation for REDD+, financed with USD 6 million dollars during five years (2015-2020) channeled through the FCPF, the program is expected to generate results-based payments for emission reductions of around USD 25 million during 2020-2025.
- the World Bank is also considering the strengthening of the development of business models for sustainable value chains, such as cocoa and shaded coffee agroforestry systems. These actions would be coordinated with the private sector to promote low-carbon sustainable development in the Dominican Republic and are included in the design of the REDD+ program.

**It is expected that the Dominican Republic will continue to receive a great deal of support from international cooperation for its environmental projects and programs,** especially those relating to forestry and institutional strengthening. This will allow it to move forward with the most urgent actions but in the medium and long-term MIMARENA's budget should be increased to ensure the sustainability of these efforts.

<sup>15</sup> World Bank (2018a).

<sup>16</sup> World Bank, (2019).

<sup>17</sup> MIMARENA & FCPF (2019).

# FORESTS AND THEIR CONTRIBUTION TO SUSTAINABLE DEVELOPMENT



Photo: Issai Campos

## FOREST COVER

**In 2015, the most recent year for which data are available, the forests of the Dominican Republic covered 46% (2.1 million hectares) of the country's territory.** Most of

these forests, about 1.6 million hectares, are secondary or degraded forests, since only a quarter of the forest area, just over 500,000 million hectares is classified as primary or mature forest. Broadleaf and dense pine forests each account for about 40% of primary or mature forests, while dry forests (15% of the total area) and mangrove forests (6% of the total area) account for the remainder. On the other hand, two-thirds of the area of secondary or degraded forests correspond to broadleaf forests, 27% to degraded dry forests,<sup>18</sup> and 6% to sparse pine forests (see Box 3, Figures 1 and 2, and section on forest dynamics). Forests exist in a landscape containing 1.49 million

hectares of pastures and shrubland (35% of the national territory) and 1.02 million hectares (22% of the national territory) of crops (Figure 1). The latter are dominated by transitory and semi-permanent crops, such as rice, sugar cane, and other small-scale crops located mainly in hillside areas.<sup>19</sup>

**Primary forests are concentrated mainly in the central and south western mountains and the southeastern tip of the country; many are associated with the National Protected Area System (SINAP)** that covers close to a quarter of the country's land (Figures 1 and 2).<sup>20</sup> In contrast, secondary forests are scattered throughout the country (Figures 1 and 2).

Both the primary and secondary forests in the Dominican Republic exhibit wide diversity with a predominance of native species. The

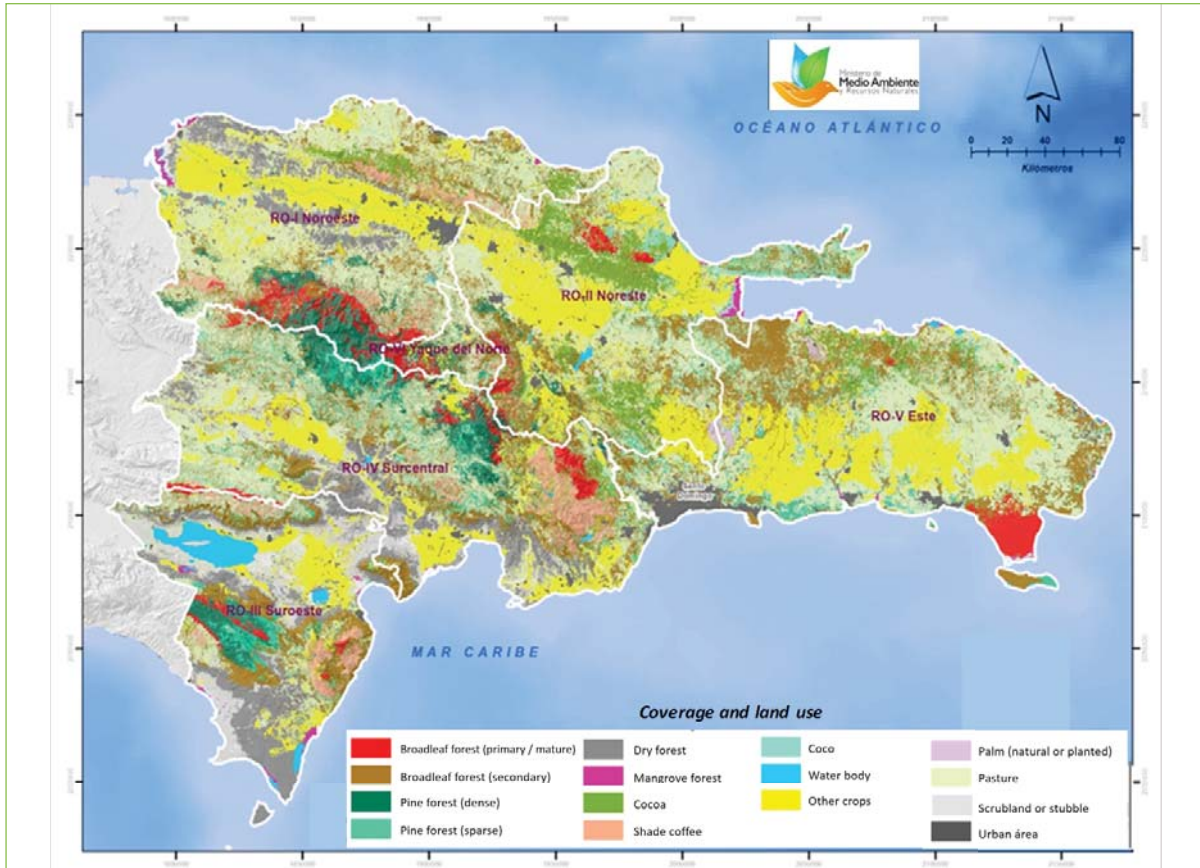
<sup>18</sup> Estimation of the degradation of dry forests was made by forestry technicians, consulted for this work.

<sup>19</sup> Ministerio de Agricultura (2020).

<sup>20</sup> See Annex 5 and the SINAP (2019a).



**FIGURE 1** LAND USE IN THE DOMINICAN REPUBLIC, 2015



Source: Sud-Austral & CRESER (2019).

**FIGURE 2** LOCATION OF PRIMARY AND SECONDARY FORESTS AND CHANGES IN FOREST COVER



Note: This map shows the primary forest (2001), secondary forest (2010), forest area losses (2005 to 2015), and forest gains (2001 to 2012). Secondary forest includes not only regenerated forests, but also timber plantations, agroforestry coffee and cocoa crops, as well as fruit tree plantations.

Source: Global Forest Watch (GFW, 2020)



**BOX 3**
**FOREST COVER IN THE DOMINICAN REPUBLIC, 2015**

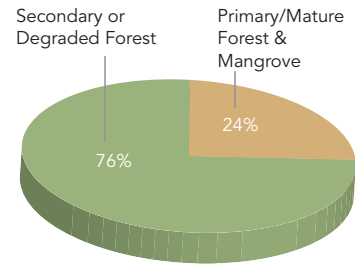
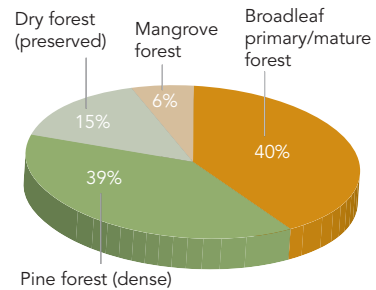
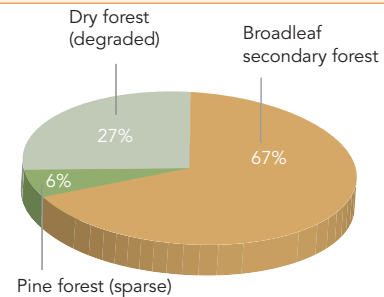
Total Forest	Forest Area	
	km <sup>2</sup>	%
Primary/Mature Forest & Mangrove	56,125	24%
Secondary or Degraded Forest	15,911	76%
<b>Total</b>	<b>21,036</b>	<b>100%</b>

Primary/Mature Forest & Mangrove	Forest Area	
	km <sup>2</sup>	%
Broadleaf primary/mature forest	2,048	40%
Pine forest (dense)	2,023	39%
Dry forest (preserved)	759	15%
Mangrove forest	296	6%
<b>Total</b>	<b>5,125</b>	<b>100%</b>

Secondary or Degraded Forest	Forest Area	
	km <sup>2</sup>	%
Broadleaf secondary forest	10,065	67%
Pine forest (sparse)	1,006	6%
Dry forest (degraded)	4,300	27%
<b>Total</b>	<b>15,911</b>	<b>100%</b>

**Dominican Republic: Total Forest Area (2015)**

**Dominican Republic: Primary/Mature Forest & Mangrove (2015)**

**Dominican Republic: Secondary or Degraded Forest (2015)**


Sources: Based on Obando (2018) [cited by (MIMARENA & FCPF, 2019)], Sud-Austral & Forest Finest (2018), and Sud-Austral & CRESER (2019).

main species found in each type of forest are mentioned below (Sud-Austral & CRESER, 2019).

- Humid broadleaf forests** (in areas of high rainfall) are comprised principally jacaranda (*Licaria triandra*) and, to a lesser extent, aguacatillo blanco (*Ocotea coriácea*) and aguacatillo amarillo (*Ocotea floribunda*).
- Semi-humid broadleaf forests** (in areas of lower rainfall) contain creole mahogany (*Swietenia mahagoni*), a wood of high commercial value and high demand in European markets; and chachá (*Albizia lebeck*), a species indicative of this type of forests.
- Broadleaf cloud forests** are dominated by the manacla or manacla palm (*Calyptronoma plumeriana*).
- Pine forests** (both primary and secondary forests) contain principally the native creole pine (*Pinus occidentalis*). Palo de cotorra (*Brunellia comocladifolia*) and grayumbo macho (*Cecropia peltatasin*), the latter an indicator of recently regenerating forests, are found to a lesser extent, and in secondary forests, the non-native Caribbean pine (*Pinus caribaea*) is common.
- Dry forests** found in areas of very low rainfall contain aroma or aromilla (*Acacia farnesiana*), which is used as charcoal in Haitian and Dominican local markets; cambrón or bayahonda (*Acacia macracantha*), and to a lesser extent, candelón (*Acacia scleroxyla*), also predominate. On the other hand, the so-called guaconejo or guaconejillo (*Amyris*

**FIGURE 3** NATIONAL SYSTEM OF PROTECTED AREAS (SINAP) OF THE DOMINICAN REPUBLIC

Source: National System of Protected Areas (SINAP, 2019).

*diatrypa*), whose resins are mainly destined to Haiti for the manufacture of fragrances, is also present.

- Mangrove forests (marine-coastal areas) contain a wide variety of species, but the so-called black mangrove (*Avicennia germinans*) and the button mangrove (*Conocarpus erectus*) comprise the majority

## FORESTS' CONTRIBUTION TO ECONOMIC GROWTH AND EMPLOYMENT

### Wood Products

**Forest production in the DR makes up a relatively small share of the Gross Domestic Product (GDP).** According to the World Bank's World Development Indicators<sup>21</sup> the participation of the forest sector in the GDP

during 2005-2015 was, on average, 0.5%, which is 7 - 10 times lower than that of small Caribbean countries and the regional or world averages (Figure 4, Box 4).

**In general, the primary wood extraction and processing industry is not highly developed (Box 5),** although the Dominican Republic's wood industry has historically shown competitive advantages in the production of certain types of wood for construction. Compared to imported wood, national producers produce a lower quality product due to relative deficiencies in the cutting and drying processes.<sup>22</sup> Despite the vision of the forest sector mentioned in Box 5, a sectoral viability analysis is needed to determine if there are competitive advantages in supplying domestic demand for wood products, such as wood pulp for paper, which represents more than a quarter of wood imports.

<sup>21</sup> The DR's National Accounts does not differentiate the participation of forestry within the agriculture, livestock, fishing, and forestry sector.

<sup>22</sup> UTEPDA (2020).

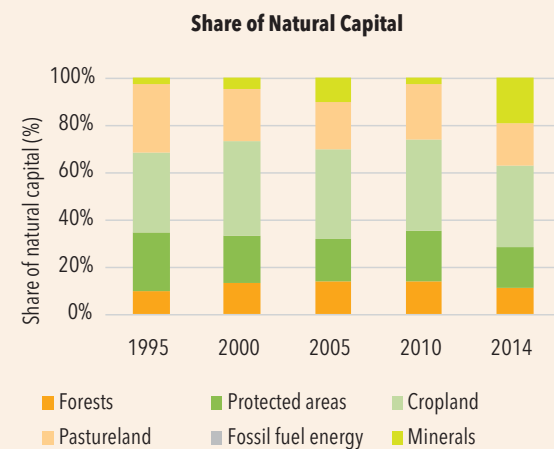
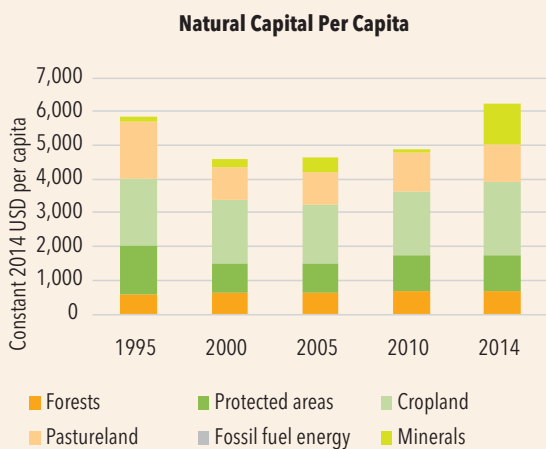
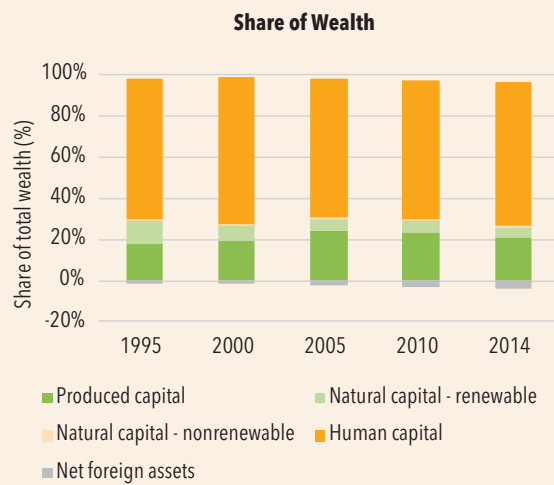
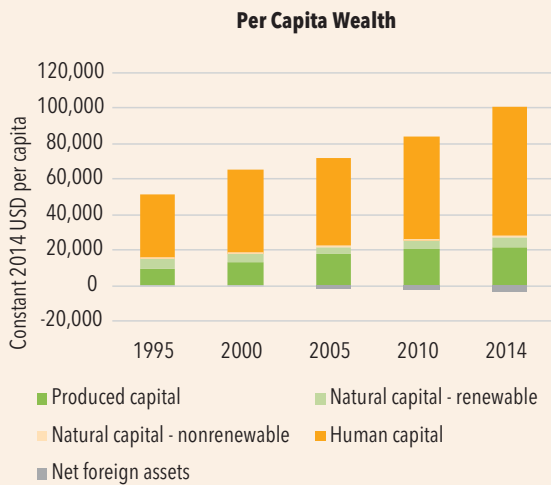
**BOX 4**

**WEALTH AND NATURAL CAPITAL: THE WORLD BANK METHODOLOGY**

Countries regularly use Gross Domestic Product (GDP) as an indicator of their economic progress; however, this is not a measure of wealth. An alternative, developed by the World Bank, is to construct an indicator of countries' wealth, as: Total wealth = Natural capital (renewable and non-renewable resources) + Produced capital + Human capital + Net foreign assets. The value of each asset is calculated as the present value (discounted) of the future income from that asset, over its useful life or until it is depleted. Renewable resources include forest resources (wood and non-wood), agricultural land (crops and livestock), and protected areas. Non-renewables include fossil energy, minerals, and metals. For wood resources, the income from round wood production is estimated over the lifetime of the resource. For non-wood resources, three services are considered: (i) recreation, hunting, and fishing; (ii) non-wood forest

products; and (iii) watershed protection. Mean values are estimated using a regression analysis using information from multiple countries and are applied to each country according to its specific conditions. Protected areas provide a wide range of services to the country (e.g. income from international tourism or savings in the cost of water supply and treatment through flow regulation and control of pollutants generated by forests and wetlands). However, given the difficulty of valuing these services globally, the World Bank uses a simplified approach: it values these areas based on opportunity costs, expressed as the value that would have been obtained if these areas had been dedicated to agricultural or livestock activities.

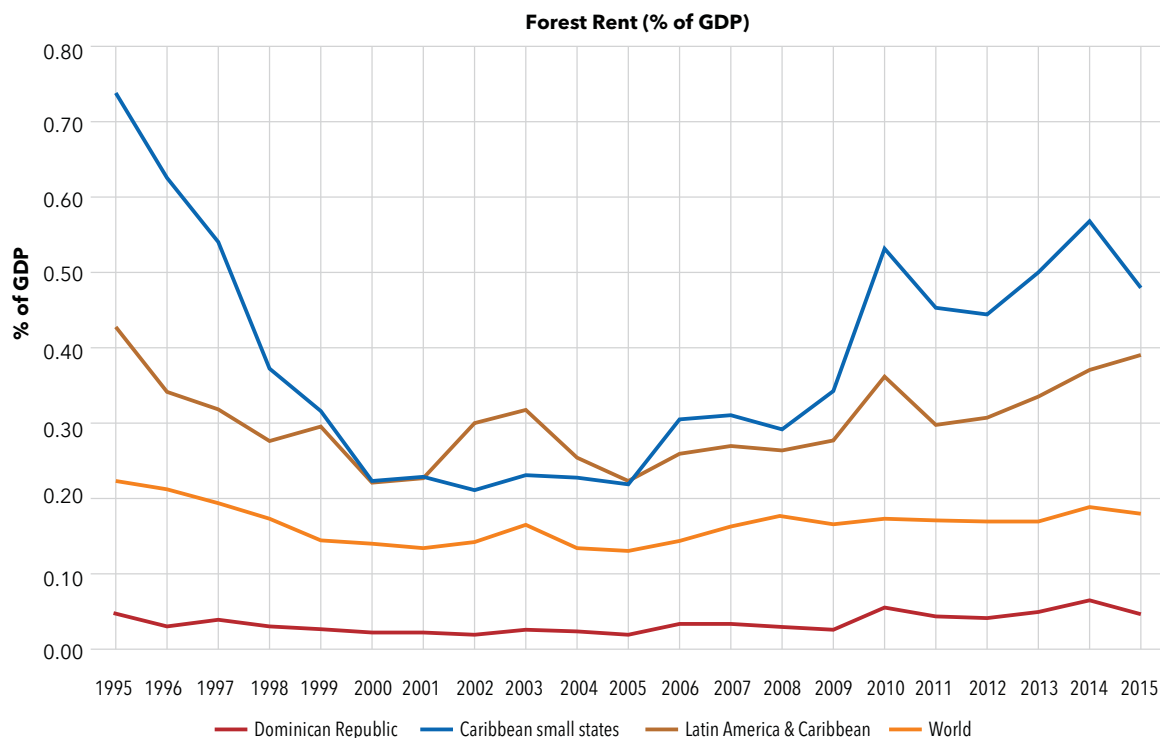
**Dominican Republic. Components of Wealth and Natural Capital (1995-2014)**



According to this methodology, in 2014 the Dominican Republic's natural capital represented about 5% of the country's total wealth. Of the total natural capital, forests contributed about 11% and protected areas another 17%. Although these values are similar to that of pastures (18% of natural capital), they are far below the share of the natural capital contributed by cropland (35% of natural capital).

Source: The World Bank (2018b, c).



**FIGURE 4** CONTRIBUTION OF THE FORESTRY SECTOR TO NATIONAL GDP (1995-2020)

Source: World Bank - World Development Indicators (2020).

### BOX 5 THE FOREST INDUSTRY IN THE DOMINICAN REPUBLIC

The private forestry sector is represented by the Dominican Forestry Chamber. It has around 450 members with 3,500 affiliates and 38 producer associations. There are more than 100,000 hectares planted with forests with the capacity to produce more than 800,000 m<sup>3</sup> of wood per year. They correspond to about 6,500 small and medium sized farms with more than 800 natural forest management plans registered with the MIMARENA and located in the productive forest areas of San José de las Matas, Restauración, Jarabacoa and Santiago Rodríguez, Monte Plata, and Cotuí. In addition, they group 65,000 hectares of 217 small primary processing industries with the capacity to process 250,000 m<sup>3</sup> of wood per year. Planted forests managed and conserved by Dominican Forestry Chamber's members capture 540,000 tCO<sub>2</sub>e.


The wood production sector's vision of the Dominican forestry sector according to the *Cámara Forestal Dominicana* (Dominican Forestry Chamber) include the following elements:

- To actively participate in consultation with civil society for generating trust and transparency in the processes of forest management.
- To produce wood and derivatives to replace current imports, especially wood for construction and precious wood for the craft and furniture industry.

- To produce and export processed products with added value, such as furniture and moldings.
- To produce wood for energy through the production of chips to supply power generation companies.
- To produce charcoal for export.
- Installation of efficient lumber industries that produce large volumes of quality wood, with appropriate dimensions and drying, that can compete with imported wood.
- Manufacture columns and beams of laminated wood.
- Sale of environmental services generated through soil and water conservation and carbon sequestration.

Disagreements exist between the private forestry sector and others regarding the potential for forest development in the country versus the risks of sustaining forest growth based on introduced exotic species that can generate harmful effects on the environment. However, both sides agree on the need to work together in the adaptation of introduced species that cause the least possible damage to society and to native forest species.

Source: Interviews with members of the Dominican Forestry Chamber.



**Civil society organizations and the private sector participate actively in the development of the forestry sector** with entities and programs, such as Plan Sierra, ENDA-dominicana, Fundación Sur Futuro, and Cámara Forestal Dominicana. These organizations represent different views on the relationship between forest conservation and productive forest development. These organizations have played a decisive role in a discussion on the challenges and opportunities in the forestry sector with special emphasis on the complementarity of commercial forest plantations with the conservation of natural ecosystems and the environmental services associated with this interaction. An example of private sector and civil society initiatives for promoting this sector can be seen in the Caribbean Symposium on *Acacia mangium* held in Boca Chica, Dominican Republic in 2014.<sup>23</sup> This symposium was organized under the leadership of Enda-Dominicana and was supported by the MIMARENA, the FAO Regional Office for the Caribbean based in Barbados, the Pueblo Viejo Dominican Corporation (PVDC - Barrick Pueblo Viejo) mining company, the Dominican Forestry Chamber), and national and foreign companies, universities, and science and technical institutes. There were disagreements between the private sector and other speakers regarding the potential for forest development in the country versus the risks of sustaining forest growth based on introduced exotic species that can generate harmful effects on the environment. Both parties agreed on the need to work together in the adaptation of introduced species that cause the least possible damage to society and to native forest species.

## Firewood and Charcoal

**Firewood and charcoal production in the Dominican Republic are important. Firewood is the main source of energy for rural households in the Dominican Republic, but is used inefficiently (Box 6). Domestic consumption of charcoal has decreased over the last 20 years due to the substitution of liquified petroleum gas for charcoal,<sup>24</sup> but there is significant demand from Haiti that has generated informal trade responsible for the degradation of forests in the provinces near the bi-national borders (Box 7).<sup>25</sup> This trade generates annually about USD 2.5 million and 83,431 days of employment.**

## Reforestation

**Commercial forest plantations are present in some regions of the country in conjunction with private forest conservation initiatives, but have limited coverage and contribute little to traditional forestry production.**

Although almost 200,000 hectares have been reforested from 1983 to date - about 10,000 hectares in the 1980s; 20,000 hectares in the 1990s; 65,000 hectares in the 2000s; and more than 100,000 hectares in the last decade, between 2000-2016, the MIMARENA reported that there were only 69,600 hectares with Forest Management Plans and 6,700 hectares with forest exploitation permits for an authorized extraction of 147,000 cubic meters of wood during six years. It is likely that many of the reforested trees have been lost or are aimed at conservation rather than production.

**Despite low levels of production of forest products, reforestation has generated significant employment.** Between 2011 and 2016, the average annual reforestation of 11,300 hectares (10.4 million trees/year)<sup>26</sup> generated an average of 4,588 direct jobs per year through reforestation brigades funded by public resources from the central government,

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<sup>23</sup> ENDA-Dominicana (2014).

<sup>24</sup> CNE (2018).

<sup>25</sup> Checo (2009).

<sup>26</sup> These data are based on the plants provided by the nurseries to the reforestation brigades, without any subsequent measurements to verify the survival of the plants. Some specialists estimate that plant mortality could be between 20% and 30%, in which case the areas of surviving plantations could be significantly lower.

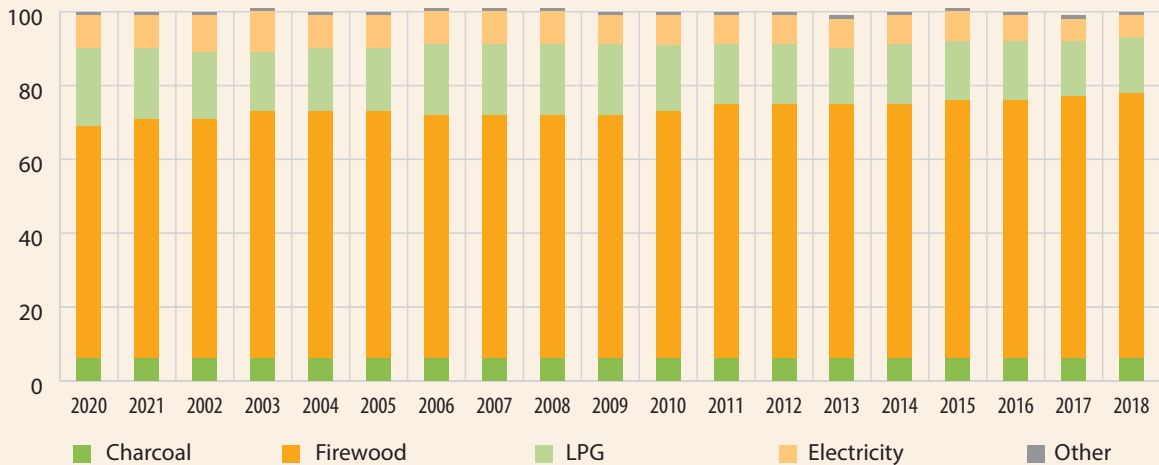
**BOX 6**

**HOUSEHOLD FIREWOOD AND CHARCOAL CONSUMPTION**

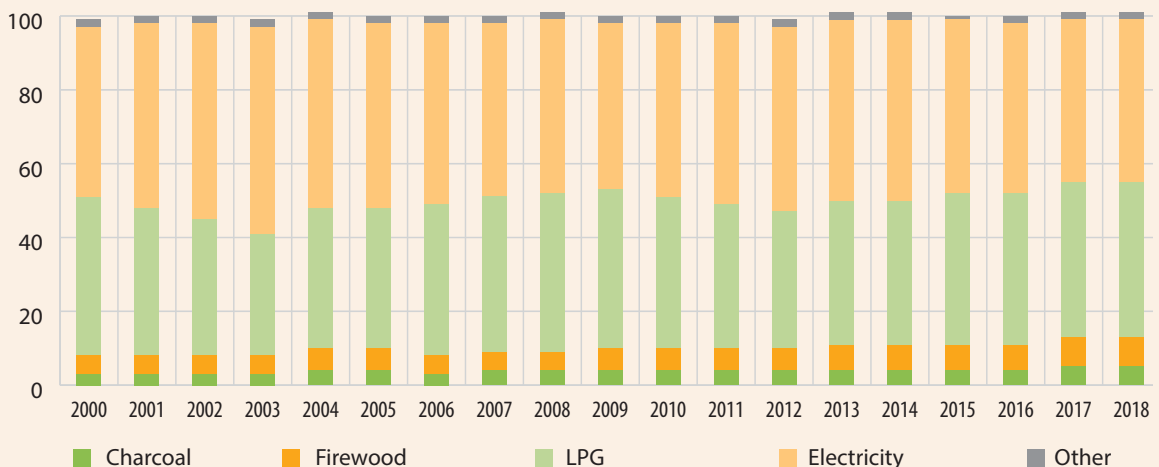
Forests represent the main source of energy for rural households in the Dominican Republic. In 2015, firewood was the main source of energy for these households, representing, along with a small share of charcoal, 76% of the total energy consumption, followed in importance by liquefied petroleum gas (LPG) (16%) and electrical energy with 8% of total energy consumption. In contrast, in the same year urban households were mainly dependent on electricity (47% of total energy consumption) and LPG (41% of energy consumption), but only 11% of energy consumption was derived from wood and charcoal.

Rural consumption of firewood and coal for energy is highly inefficient. In 2015, rural populations represented 21% of the country's total population but consumed 31% of the country's residential energy, consuming 0.24 energy units (tons of oil equivalent - TOE - per person), compared to an annual consumption of 0.11 TOE per person by urban populations. However, LPG and electricity used by urban populations is highly dependent on foreign sources. Indeed, according to the National Energy Commission, in 2015 90% of the country's electricity generation came from imported natural gas and coal, 6% from hydropower, and the remaining 4% from solar and wind power.

**DR - Rural Households:  
Composition of energy consumption by sources**



**DR - Urban Households:  
Composition of energy consumption by sources**



Source: CNE-SIEN (2020).



**BOX 7****ILLEGAL CHARCOAL PRODUCTION IN THE DOMINICAN REPUBLIC**

The illegal production of charcoal in the provinces of Independencia and Bahoruco has had a significant social, environmental, and economic impact on both sides of the Dominican-Haitian border. This traditional commercial activity produces annually 27,300 tons, DOP 89.3 million (USD 2.5 million) in revenue for the Dominican Republic, 83,431 days of employment,

mainly of Haitian citizens, supports a supply chain that extends to the streets of Port-au-Prince where the price of charcoal more than triples, and solves the energy problems of thousands of poverty-stricken households in Haiti on a daily basis. The map below shows charcoal production areas in the DR.



Source: Checo (2009)

a ratio of one job/2.5 hectares reforested (see Box 8).<sup>27</sup> In addition to reforestation, these brigades also develop complementary social work in local communities. On the other hand, the President's Agroforestry Projects, which constitute 48,000 hectares, have been slated to generate 15,000 productive micro-enterprises, resulting in one job/3.2 hectares.<sup>28</sup>

**Forestry programs, such as the QVNP, have a high potential to contribute to employment generation in the time of crisis.** Commercial reforestation, as well as that of protected area and watershed restoration

programs, could play a determining role in the generation of unskilled employment and could help absorb the unemployed from sectors such as tourism whose activities are greatly reduced by COVID-19. An example of this potential is outlined in Box 9, which describes the role of reforestation programs in the United States during the Great Depression of the 1930s.

### Wood Biomass for Energy

**Reforested areas could serve as a basis for the production of biomass for energy. According to a study contracted by the**

<sup>27</sup> To date (year 2020), the QVNP reports that about 2,500 reforestation brigade members are actively engaged in forestry and agricultural activities.

<sup>28</sup> Information provided by the Vice-Ministry of Forest Resources of the MIMARENA.

**BOX 8 EMPLOYMENT GENERATION BY THE QUISQUEYA VERDE NATIONAL PLAN**

The QVNP's actions and the employment they generate, is widely and equitably distributed throughout the country. During 2011-2016, six of the country's 10 regions each accounted for 9%-13% of total employment associated with the reforestation Program, one region accounted for 19% of total employment, three others accounted for less than 6% each of total employment.

**QVNP - Reforested area and employment generated (Annual average 2011-2016)**

Region	ha/year	Employment/year	
		#	%
I. Northern Cibao	725	294	6%
II. Southern Cibao	1,212	492	11%
III. Cibao Northwest	2,146	870	19%
IV. Northeast Cibao	1,045	424	9%
V. Valdesia	1,524	618	13%
VI. Enriquillo	1,407	571	12%
VII. El Valle	1,370	556	12%
VIII. Yuma	214	87	2%
IX. Higuamo	1,274	517	11%
X. Ozama / Metropolitan Area	393	159	3%
<b>Total</b>	<b>11,311</b>	<b>4,588</b>	<b>100%</b>

Source: The MIMARENA. Office of the Quisqueya Verde National Plan

**National Energy Commission (CNE)**<sup>29</sup>, 14 formal biomass producers or processors generated an average supply of 992 metric tons per day, mostly from *Acacia mangium* plantations<sup>30</sup>. This production supplied the daily biomass demand of 969 metric tons

from thirteen companies, three from the textile sector, which concentrated 64% of this demand, and 10 other companies in the plastics, distillery, food, laundry, hotel, and power generation sectors.<sup>31</sup> The study also found that existing biomass producing companies could expand their plantations to 13,700 hectares in the short and medium-term on land they already owned, to produce 159,000 tons of biomass per year, based on a moderate yield of 11.6 tons per hectare, thus generating a gross annual income of USD 5.7 million and a net annual profit of USD 795,000. In addition, it estimated that this production would generate about 22,000 direct and full-time jobs.<sup>32</sup>

**The study also identified the potential for expansion of biomass energy in the long-term.** Results suggest that there are 447,000 hectares suitable for *Acacia mangium* energy biomass plantations. Assuming annual yields of 18 tons of biomass per hectare, these plantations would generate USD 290 million in gross revenues at a cost of USD 98 million per year and would generate 760,000 direct jobs. This production would generate 5,454 Gigawatt hours (GWh) per year of renewable energy, which is less polluting and more sustainable for the country's economy than energy generated with imported fossil fuels.

**Based on this first approximation, the CNE estimates that the production of biomass for energy generation has high potential within a more sustainable energy matrix,** without competing with natural forests, protected areas, or areas prioritized by the authorities in the agricultural sector. This initiative would favor the generation of renewable energies, mitigate greenhouse gas emissions, and reduce dependence on imported fossil fuels. However,

<sup>29</sup> CNE (2018).

<sup>30</sup> The study assumed a price of USD 36 per ton of processed biomass. Estimated costs totaled USD 4.9 million per year, equivalent to USD 31 per ton: USD 12 for the tree stands; USD 9 for cutting, bucking, and extraction; and USD 10 for chipping.

<sup>31</sup> In addition, another electricity generation company has been identified that consumes an average of 1,250 tons of biomass per day, but this is not from forestry but from sugar cane bagasse that comes from a sugar mill. On the other hand, the study does not include companies that produce energy biomass and consume it themselves, such as some sugar mills and distilleries.

<sup>32</sup> However, the study concludes that in a scenario of low average yield (5.8 tons per hectare per year), production would be financially unsustainable and would result in losses for the forest producers.

  
**BOX 9****REFORESTATION AND EMPLOYMENT: ROOSEVELT'S TREE ARMY IN THE USA**

During the Great Depression of the 1930s, the unemployment rate in USA was estimated at 25%, coinciding with an environmental crisis caused by a severe drought and agricultural practices that generated a great deal of soil erosion. In this scenario, when Franklin D. Roosevelt accepted the Democratic nomination to the presidency in 1932, he proclaimed: "We know that a very hopeful and immediate means of relief, both for the unemployed and for agriculture, will come from a vast plan to convert many millions of acres of marginal and unused land into timberland through reforestation." Fulfilling this promise, within days of becoming President, he created the Civilian Conservation Corps (CCC), known as Roosevelt's Tree Army, one of the first and most popular programs of the New Deal. Its goal was conserving natural resources, providing relief to the poor by generating employment, and fostering economic recovery.

This program was initially designed to hire 250,000 men between 18 and 23 years. But by 1935 it had 505,782 workers in more than 2,650 camps located in all of the existing states and in Hawaii, Alaska, Puerto Rico, and the Virgin Islands. Along with officers, supervisors, educational advisers, and administrators, it grew to employ more than 600,000 people. Young men in the camps were paid USD 30 per month: USD 25 a month was sent home to help their families and they could keep the rest for their own spending. With this support for workers' families, the economic impact spread

throughout the country and, in addition, local purchases near the CCC camps prevented many small businesses from going bankrupt.

Reforestation and nature and wildlife conservation projects were carried out in national parks, state parks, and on private land. Skilled loggers were employed to provide employment to local workers and to mentor inexperienced youth. This program helped make national and state parks more attractive to tourists. In 1935, the National Park Service oversaw the activities of 600 CCC camps, building ranger stations, tourist cabins, small dams, picnic areas, fireplaces, entrance stations, signage, and trails and paths. In addition, they established nursery and seed collection programs for revegetation. All of this was critical for the current system of national and state parks. To prevent further soil erosion and for flood control, dams and other improvements, such as drainage systems, canals, and water storage projects were built. In addition, CCC workers responded when unexpected disasters occurred, fighting forest fires, assisting with blizzards, and assisting with flood control. Between 1933 and 1942, CCC erected 3,470 fire watch towers, built 97,000 miles of fire barriers, stopped erosion on more than 20 million acres, and planted more than 3 billion trees all of which generated more than 3 million jobs during those 10 years.

Sources: CCC Legacy (2018). DPLA (2020).

for this potential to become effective, policy measures are needed to encourage private investments in this sector:

There are legal and institutional gaps that must be overcome to attract private investments. Regulations and incentives are needed to: establish clear and formal procedures for the operation of a free market; standardize the quality and types of biomass by applying a price system based on calorific value; and strengthen the administration, environmental protection, and legality of the supply chain actors involved.

Forest plantations with inadequate per hectare yields or low sales price (less than USD 36 per ton at the time of the study) present a high risk of financial unsustainability. This risk is due to the growing informal supply of biomass, which causes prices to fall below production costs of formal companies.

### **Forest Ecosystem Services - Water and Greenhouse Gas Sequestration**

**Beside traditional wood products, forests also provide ecosystem services, such as water availability and regulation, carbon sequestration, and habitat for biodiversity and have the potential to generate employment and income, especially in concert with the important tourism sector.**

However, these services are difficult to value (Box 4).

In the Dominican Republic, water used for agriculture, energy generation, and human consumption originates in the upper watersheds of the central highlands where forests play a key role in regulating the flow of water for flood and drought control and numerous multipurpose reservoirs, while maintaining its physical and chemical quality. The Water Accounts of the Dominican Republic estimated that in 2005 about half of water



resources were destined for hydroelectric plants and other subsequent downstream uses.<sup>33</sup> With regards to water consumption, 88.5% was used in agriculture and livestock, 5.2% in households, 5% in hotels, and 1% in the manufacturing industry. This high dependence of agricultural activities on surface water presents a major challenge to this sector since the conversion of forests to pastures or other agricultural or non-agricultural activities, especially in upper watersheds, has downstream effects on farms in the lower portions of the watersheds.

**Within this context, primary forests located in national parks and forest reserves, play a significant role in the regulation of water flow.** Most of the primary natural forests are in four national parks and one forest reserve: Armando Bermúdez, José del Carmen Ramírez, Nalga de Maco, and Sierra Neiba National Parks, and the Alto Mao Forest Reserve.<sup>34</sup> These are followed in importance by the primary forests located in two other national parks in the Sierra de Bahoruco in the southwest of the country. The main sources of the rivers that drain four of the six main watersheds and regulate two-thirds of the country's surface water are in the same protected areas. They are the Yaque del Sur and Ozama-Nizao basins, which provide 20% and 19% of the total surface water respectively, and the Yuna-Camú and Yaque del Norte basins that provide 15% and 12% of the total water respectively.<sup>35</sup>

Since rainfall and runoff are expected to be reduced significantly in the next 100 years,<sup>36</sup> the conservation of forests in upper watersheds is a high priority in order to maintain water availability and aquifer recharge.

#### **Forests also help retain greenhouse gases.**

The National Forest Inventory of the Dominican Republic<sup>37</sup> estimates that 2,103 million hectares of forest in 2015 retained 2,066.8

million tCO<sub>2</sub>.<sup>38</sup> According to the estimates of the Emission Reductions Program (ERP) for the Dominican Republic, implementing the REDD+ program between 2020 and 2025 could reduce the equivalent of 5 million tCO<sub>2</sub>e emissions, further contributing to the Nationally Determined Contribution (NDC) goals.<sup>39</sup>

## **Synergies of Forests with Tourism**

**Natural capital represents a small proportion of the country's total wealth, due to the relatively low importance of agriculture, mining, petroleum, and the characteristics of traditional tourism, which is mainly based on marine and coastal natural resources (Box 4).** Tourism is dominated by sun and beach tourism that promotes the use of large hotel infrastructure and conventional recreational services while there is a relatively low demand for nature tourism except in coastal marine areas.

**Tourism in the Dominican Republic has the highest growth rate in the Caribbean and is mainly associated with sun and beach tourism.** According to Alvarado et al (2017) 4.8 million international tourists entered the country in 2015, mainly (66%) through the Punta Cana airport in the Eastern region; 18.8% of international tourists entered through the Las Americas airport, which serves Santo Domingo and is main entrance point for business-related visits. In 2015, the main tourist epicenters were: 1) the Eastern region, with 3.3 million visitors; 2) Santo Domingo, with 1.3 million visitors; 3) the North-Northwest region, with 385,000 visitors; 4) the Central region, with 535,000 visitors; 5) the Northwest region, with 60,000 visitors; and 6) the Southwest coast, with no recorded number of visits due to the heterogeneity of access routes and the informality of reception points.

<sup>33</sup> CIDECA - Comité Interinstitucional para el Desarrollo de las Cuentas de Agua (2016).

<sup>34</sup> In Figure 3 (*Location of the National System of Protected Areas - SINAP*) presented above, these protected areas can be identified respectively with codes II.A.1, II.A.2, II.A.3, II.A.10, and V.A.2.

<sup>35</sup> CIDECA (2016).

<sup>36</sup> SEMARENA - Secretaría de Estado de Medio Ambiente y Recursos Naturales (2004), cited by the World Bank (2018a).

<sup>37</sup> Sud-Austral & CRESER (2019).

<sup>38</sup> This data, associated with a sampling error of 5.1%, yields a stock of between 1,961.0 and 2,172.7 million tCO<sub>2</sub>e.

<sup>39</sup> MIMARENA & FCPF (2019).



Of these six poles, four offer some form of nature tourism:

- North-Northwest region: visits to the natural monuments of Isabel de Torres and Saltos de la Damajagua.
- Central region: mountain destinations and adventure, mountain, and nature-based tourism, in particular around Pico Duarte, the highest elevation in the Caribbean.
- Northeast region: nature-based tourism in the Los Haitises National Park and whale watching in the Samaná Bay and the Banco de la Plata.
- Southwest coast: the province of Pedernales has an enormous potential for nature-based tourism in the Bahía de las Águilas, Jaragua National Park, Lake Enriquillo, Bahoruco Mountain and, in general, the entire Biosphere Reserve.

**At present, the Southwest coast is an incipient tourist destination**, receiving between 3,000 to 4,000 visitors per month, mainly (70%) by national tourists<sup>40</sup>. It is estimated that more than 50% of these tourists visited the main attractions of the area, the beaches and national parks, in one or two-day excursions offered by national operators. Local public administrations have expressed interest in the development of nature-based tourism<sup>41</sup> to help generate jobs for the community through new businesses, associations, and cooperatives.

**Another emerging segment for the internal tourism market is suburban landscape tourism based on rural lodging or houses in the countryside.** Although it represents a risk to forests should construction expand too greatly, this trend could be channeled and organized to develop an ecologically friendly ecotourism culture supportive of biodiversity, mangrove and mountain forest conservation. Developments that involve the local population

in providing services to visitors, such as ecotourism guides, accommodation, and transport, should be prioritized. Similarly, the multiplier effects of ecotourism on other sectors of the local economy, such as food production and handicrafts, should be exploited.

**The SINAP and its wide territorial coverage, as well as the country's experience in tourism management, represent opportunities for ecotourism activities that could increase the incomes of the rural population and encourage the conservation of biodiversity, forests, and ecosystem services (Box 10).** Implementing ecotourism through community-based tourism can increase the incomes of the rural population, promote their sustainable development, and encourage the conservation of culture and the environment, functioning as a tool for fighting poverty. However, despite the high potential available for promoting ecotourism, its development has been slow, in contrast to the accelerated growth of traditional sun and beach tourism. Between 2006 and 2011, the Global Alliance for Sustainable Tourism (GSTA) with support from the United States Agency for International Development (USAID), an attempt was made to promote, implement, and support sustainable tourism compatible with biodiversity conservation<sup>42</sup>, but difficulties in monitoring and evaluating the effects of tourism promotion on biodiversity made evaluation of the fulfillment of the program's objectives difficult. Limitations to ecotourism include the absence of a legal framework that allows for the development of this type of tourism on a large scale<sup>43</sup>, as well as the institutional weaknesses of the MIMARENA and the Ministry of Tourism, which are responsible for ecotourism promotion.

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<sup>40</sup> Reference cited by Alvarado et al. (2017).

<sup>41</sup> Alvarado et al. (2017).

<sup>42</sup> USAID and GSTA (2014).

<sup>43</sup> Orgaz (2014).



## BOX 10

## POTENTIAL OF PROTECTED AREAS FOR ECOTOURISM

The following list shows how many of the national parks in the Dominican Republic have a high potential for the development of nature-based tourism, especially related to forest conservation.

**ARMANDO BERMÚDEZ NATIONAL PARK.** Largest mountain system in the Dominican Republic; presence of Pino Criollo; main tributaries of the country; valleys with pajonales; low temperatures. *Tourist activities:* Visit to Pico Duarte, main ecological tourism destination in the country; mule rides; camping; picnics; hiking; bird watching; and accommodation in ecological lodges.

**JOSÉ DEL CARMEN RAMÍREZ NATIONAL PARK.** Largest mountain system in the country; presence of Pino Criollo; main tributaries in the country; valleys with grasslands; low temperatures. *Tourist activities:* Mule rides; camping; picnics; hiking; and bird watching.

**JUAN B PEREZ RANCIER NATIONAL PARK-VALLE NUEVO.** Presence of conically formed hills; rocks of volcanic origin; birth of important tributaries (Yuna and Nizao rivers); presence of pine forests, manacles, and broadleaf forests. *Tourist activities:* Hiking; bird watching; four-wheel drive vehicle tours; picnic; camping; photography; and crossing the Cordillera Central.

**LAKE ENRIQUILLO NATIONAL PARK.** Largest lake in the Antilles; high degree of salinity; surface 40 meters below sea level; habitat of iguanas and the American crocodile; most arid region in the country. *Tourist activities:* Visit to Isla Cabritos; boat trip on Lake Enriquillo; iguana and crocodile

watching; bird watching; hiking; and swimming in sulfuric waters.

**LOS HAITISES NATIONAL PARK.** Most important karstic region of the Antilles; presence of haystacks; mangrove forests; rock art; bird diversity. *Tourist activities:* Observation of karstic formations; tour of mangroves; birdwatching; visit to caves with rock art; and boat tours.

**LOS HAITISES NATIONAL PARK-LAGUNA CRISTAL.** Panoramic view of the Bay of Samaná; largest mangrove reserve in the country; scenic beauty and landscape; natural lagoon. *Tourist activities:* Boat trips; horseback riding; hiking; cultural activities; and visit to the mangrove area.

**NATIONAL PARK OF THE EAST.** White sand beaches; coral reefs; largest semi-wet forest in the Caribbean; mangrove forests; caves with rock art. *Tourist activities:* Visit to Saona Island; diving and snorkeling; cave walks; horseback riding; boat tours; and camping.

**SIERRA DE BAHORUCO NATIONAL PARK.** Area of greater floristic wealth of the island; great variety of forests; ornithological wealth (27 endemic species); seat of indigenous culture. *Tourist activities:* Walks and tours of the trails inside the Park; bird watching; hiking to the lookout point; and tours in an all-terrain vehicle.

Sources: The MIMARENA (<https://ambiente.gob.do>).



Photo: EU Civil Protection and Humanitarian Aid



## FOREST DYNAMICS AND THREATS

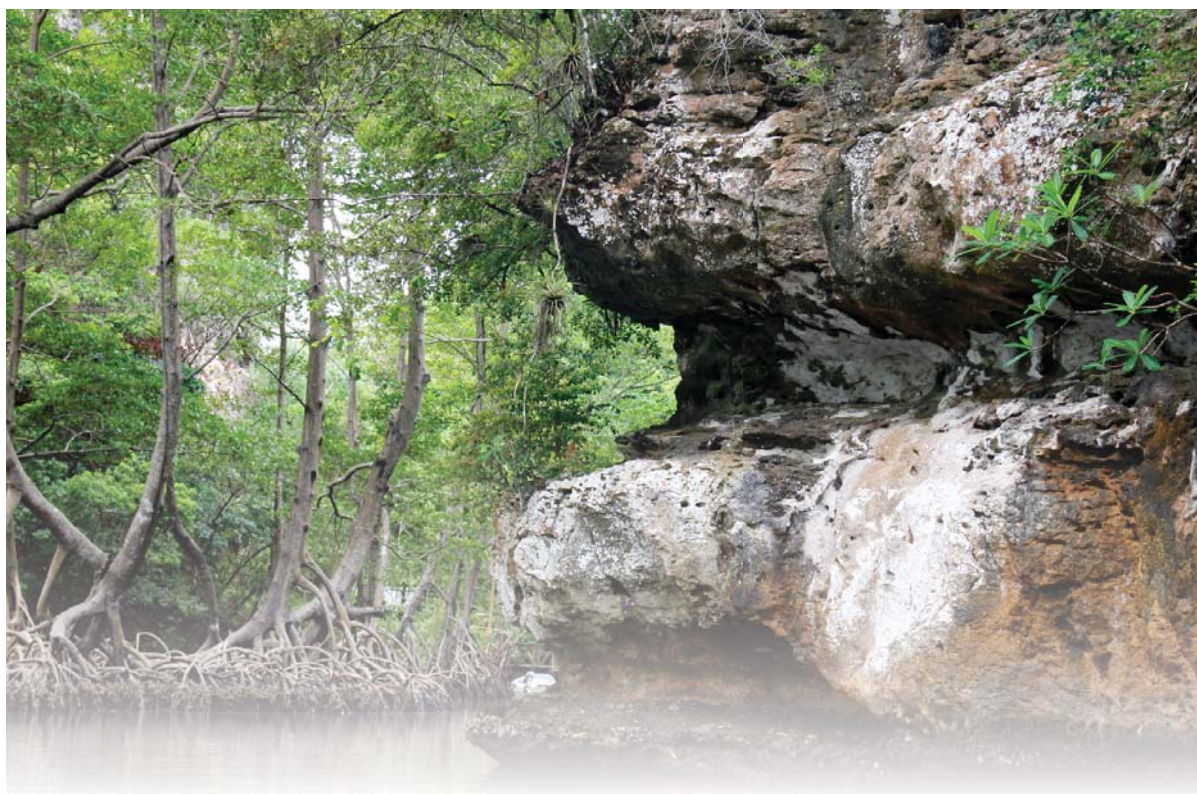


Photo: USAID U.S. Agency for International Development

### FOREST DYNAMICS

**The Dominican Republic's forests have been very dynamic.** Degradation of forested hillsides began in the 1930s, mainly through the exploitation of forests by logging companies through forest concessions granted by the government. Timber companies built primary and secondary roads in forested areas, generating access to remote lands for small farmers. In the late 1960s, after high amounts of forest degradation and deforestation, the government enacted a forest law that prohibited logging operations and created the first national park. In many cases, logging companies converted forest concession rights into land ownership rights, displacing small farmers to higher watershed areas. Degraded lowland forests were converted to farms over the years. Workers in logging companies became unemployed and became small

farmers who ended up occupying hillside land.<sup>44</sup> By the late 1960s, after high amounts of forest degradation and deforestation, the government enacted a forest law that prohibited logging operations and created the first national park. In many cases, logging companies converted forest concession rights into land ownership rights, resulting in the conversion of degraded lowland forests to farms and the displacement of small farmers to higher watershed areas.<sup>45</sup> As a result of this process of agricultural expansion, by the mid-1960s forests covered less than 12% of the country (see Box 11).

**Since then forest cover has increased to almost 44% of land cover, despite continued high rates of deforestation and forest degradation, with the result that young areas of forest have expanded at the expense of primary or mature forest.**

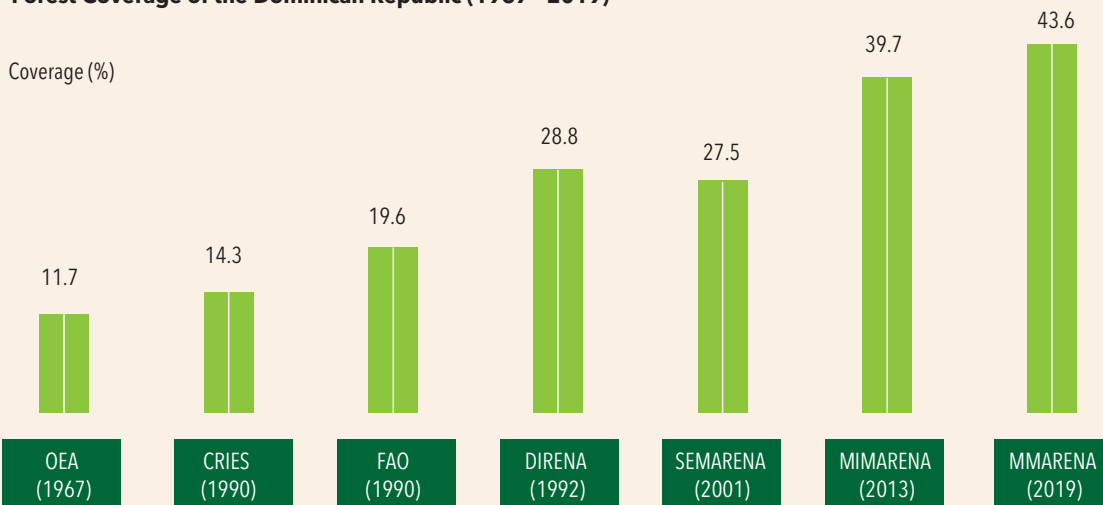
<sup>44</sup> BID (2017).

<sup>45</sup> BID - Banco Interamericano de Desarrollo (2017).

**BOX 11****DYNAMICS OF FOREST COVER IN THE DOMINICAN REPUBLIC**

In recent decades, available information on forest cover in the Dominican Republic shows an increase in forest cover. Although the estimates shown in the Figure below are based on different studies using different forest definitions and different methods for measuring

forest cover and hence are not strictly comparable, they suggest that forest cover has increased during the last few decades.

**Forest Coverage of the Dominican Republic (1967 - 2019)**

Sources: CMBDH - Comisión Mixta Bilateral Dominico Haitiano (n.a). MIMARENA (2019a).

During 2005-2015, there was a net increase in forest cover of 244,000 hectares, equivalent to a net growth of 13%, despite significant deforestation. This net increase in forest cover differentiates the Dominican Republic from most countries in the region where forest loss continues.

**This net increase in forest cover was associated with a gross increase of 471,000 hectares (425,000 hectares of secondary forest - a 31% increase - mainly from fallows and pastures, and an increase of 46,000 hectares of primary or mature quality forests, mainly from secondary forests and fallows) (Box 12).** On the other hand, 227,000 hectares of forest were lost between 2005 and 2015 (188,000 hectares of secondary forests and 39,000 hectares of primary forests), a gross annual deforestation rate of 1.24% (Box 12).

**The net increase of forest cover was a result of a combination of the following factors:**

- Enforcement of restrictions on timber harvests from natural forests, first by the national Armed Forces and presently by the National Environmental Protection Service (SENPA), a body that operates under the direct authority of the Ministry of Defense<sup>46</sup> in coordination with the Ministry of Environment and Natural Resources (MIMARENA).
- The establishment of a system of protected areas and the National Directorate of Parks in 1974.<sup>47</sup> The National System of Protected Areas (SINAP) currently covers 1.2 million hectares of land, representing 25% of the country's non-marine territory.
- The initiation of government sponsored reforestation programs with landowners in the early 1980s and their subsequent

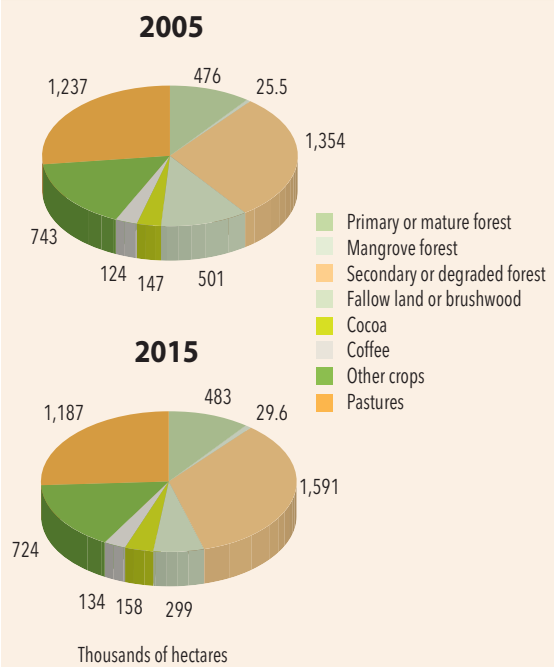
<sup>46</sup> Organic Law of the Armed Forces of the Dominican Republic (Law 139-13 of 2013).

<sup>47</sup> This law has been replaced by Law 64-00 issued in 2000, which created the MIMARENA; and by Law 202-04 of 2004, which created the National System of Protected Areas - SINAP.



**BOX 12** CHANGES IN LAND USE COVER, 2005 - 2015 (1,000 HECTARES)

Coverage of vegetal use		2015								Total 2005
		Primary or mature forest	Mangrove forest	Secondary or degraded forest	Fallow land or brushwood	Cocoa	Coffee	Other crops	Pastures	
2005	Primary or mature forest	437	-	26	6.8	-	-	1.5	5.2	<b>476</b>
	Mangrove forest	-	23.9	-	1.1	-	-	0.2	0.2	<b>25.5</b>
	Secondary or degraded forest	18	-	1,166	60	-	-	16	93	<b>1,354</b>
	Fallow land or brushwood	19	4.8	227	128	-	-	37	85	<b>501</b>
	Cocoa	-	-	-	-	147	0.1	0.4	-	<b>147</b>
	Coffee	-	-	-	-	0.6	124	0.0	-	<b>124</b>
	Other crops	1.8	0.2	21	49	3.1	0.8	645	22	<b>743</b>
	Pastures	7.7	0.8	151	54	8.1	9.2	24	981	<b>1,237</b>
<b>Total 2015</b>		<b>483</b>	<b>29.6</b>	<b>1,591</b>	<b>299</b>	<b>158</b>	<b>134</b>	<b>724</b>	<b>1,187</b>	<b>4,607</b>



This matrix compares land-use and land cover in 2005 (last column, right) with cover in 2015 (last row, bottom). The highlighted diagonal cells show the amount of area in each category that did not change between 2005 and 2015. The other data within the matrix are the change between land-use and land cover categories in the 10-year period. For example, in 2005 there were 476,000 hectares in “primary or mature forests,” of which 437,000 hectares remained under this category in 2015. Of the 39,000 hectares that were lost, 26,000 were converted to “secondary or degraded forests,” 6,800 to “fallow land or brushwood”, 1,500 to “other crops,” and 5,200 to “pasture.” On the other hand, in 2015 there were 483,000 hectares of “primary or mature forests,” corresponding to the 437,000 hectares that were not lost in the period, plus 46,900 hectares that were added to this category between 2005 and 2015. These additions correspond to 18,000 hectares of “secondary or degraded forests” that reached mature forest status, plus 19,000 hectares of “fallow land or brushwood,” 1,800 hectares of “other crops,” and 7,700 hectares of “pastures” that were also converted to mature forests. In summary, the net change based on these gains and losses was a net increase in forest cover from 476,000 hectares in 2005 to 483,000 hectares in 2015. (The pie charts present the different coverage in 2005 and 2015 to illustrate the changes during the period).

Notes: 1) The categories of “primary or mature forests” and “secondary or degraded forests” correspond to the groupings of different forest types presented in Box 4. 2) The difference between the total area referred to in this matrix (4.607 million ha) and the total non-marine area of the country (4.851 million ha) corresponds to urban areas, water bodies, areas without vegetation, and areas without consistent information.

Sources: Based on Obando, 2018 cited by MIMARENA & FCPF (2019). Sud-Austral & CRESER (2019).

formalization in 1997 by the Quisqueya Verde National Plan (QVNP) (Box 5). These programs continue to operate today.<sup>48</sup> Since 1983 almost 200,000 hectares have been reforested or regenerated (Box 13). Some private forest plantations have also been established by private sector actors, but play a minor role in the increase of forest

cover due mainly to the lack of a clear policy that allows combining commercial forest production with the conservation of natural forests.

- Natural regeneration of “slash and burn” agricultural plots, driven partly by: the loss of soil productivity caused by extremely intensive land use, especially by small-scale

<sup>48</sup> These programs were later formalized, in 1997, under the Quisqueya Verde National Plan - QVNP.





hillside farmers; the decrease of 105,000 ha of state-owned sugar cane between 1999 and 2014-2018<sup>49</sup>; and decreased pressure on land, resulting from accelerated rural to urban migration associated with the shift from a primary production to a service economy. According to national censuses, between 2002 and 2010 the rural population decreased from 3.1 million (36% of the total population) to 2.4 million (26% of the total population).<sup>50</sup>

Forest recovery is most frequent in the area of the sierra that stretches from Restauración (Dajabón Province) to Constanza (La Vega Province); the extensive plantations in the region that stretches through La Vega, Monseñor Nouel, Sánchez Ramírez, and Monte Plata; and, more recently, San Pedro de Macorís and La Romana. There are also blocks of plantations in Duarte province and others lesser ones in different areas, including recently established Agroforestry Projects of

**BOX 13****REFORESTATION BY GOVERNMENTAL PROGRAMS AND THE QVNP, 1983-2018**

Reforestation in the Dominican Republic began in 1981 with the USAID-supported Natural Resources Management Project (MARENA). A land use inventory carried out by MARENA showed that large areas of land suitable only for forest production or natural cover were dedicated to pastures or crops, resulting in severe erosion and sedimentation and damaged irrigation and hydroelectric generation infrastructure. In response, the potential of natural resources in geographical regions was assessed, regional development strategies were formulated, and large-scale multi-sectoral investment projects were identified. Between 1983-1996 an average of around 1,500 hectares were reforested annually.

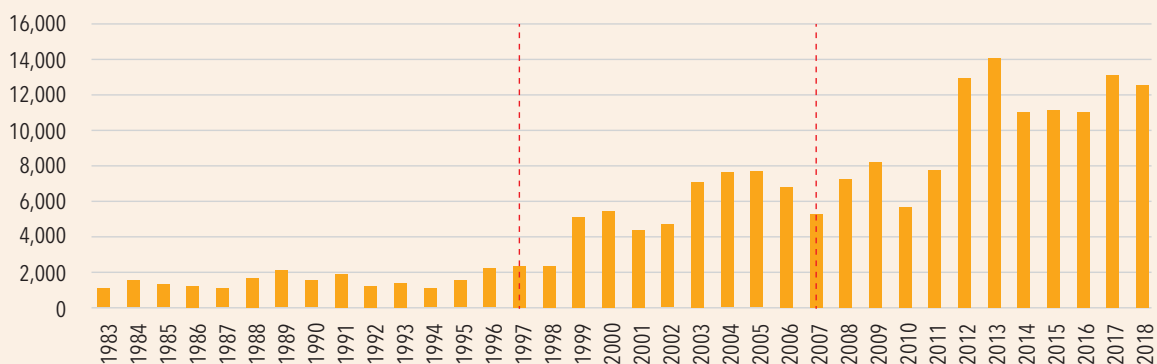
These initial reforestation efforts led to the creation of the Quisqueya Verde National Plan (QVNP) in 1997. The QVNP was conceived to develop massive reforestation actions at the national level, fighting poverty and migration by generating jobs in rural areas, protecting watersheds and water infrastructure, and integrating the private sector into national forest production; these objectives were later expanded.<sup>51</sup> Between 1997-2007,

the QVNP planted an average of 5,000 hectares per year, Central and Northern Cordillera watersheds.

In 2007 the QVNP Office was created in the MIMARENA, strengthening its operations and reach. With a director reporting to the Minister but working hand in hand with the Vice-Ministry of Forest Resources,<sup>52</sup> the Office reforested an annual average of around 10,000 hectares between 2008-2018.

At present, the QVNP uses more than 70 species, both native and exotic, for reforestation and plantations. Species used at low (less than 1,000 masl) elevations include: Caribbean pine (*Pinus caribaea*), acacia (*Acacia mangium*), Spanish cedar (*Cedrela odorata*), African mahogany (*Khaya senegalensis*), teak (*Tectona grandis*), oak (*Catalpa longissima*), mahogany (*Swietenia macrophylla*), and Juan primero (*Simarouba glauca*). At higher elevations (greater than 1,000 masl), creole pine (*Pinus occidentalis*), Australian oak (*Grevilea robusta*), and juniper (*Juniperus gracilior*) are used. All the seedlings used are produced in the MIMARENA's nurseries.<sup>53</sup>

**Reforested area by governmental Programs and QVNP (ha)**



Sources: OAS - Organización de Estados Americanos (2014); CMBDH (n.a) and information from the QVNP Office.

<sup>49</sup> FAO (2020).

<sup>50</sup> ONE - Oficina Nacional de Estadísticas (2004) and (2012).

<sup>51</sup> PRONATURA (2010).

<sup>52</sup> CMBDH (n.a).

<sup>53</sup> For example, according to information provided by the MIMARENA, more than 7,600 hectares were planted in 2011, with 59% of the trees being pine, 14% mahogany, and 10% cedar.



the Presidency of the Republic in the Southern region.<sup>54</sup> However, only about 69,000 hectares have management plans, which creates doubt about the status of the remaining plantations. Monitoring programs are needed to follow up and evaluate the contribution of these efforts to the goals of the country's forest policy.<sup>55</sup>

## DIRECT DRIVERS OF FOREST LOSS

**With regard to forest loss, 54% of deforestation was associated with the conversion of forest to pastures, 37% to fallows, and 9% to transitory crops (Box 12).**

The conversion of hillside forests to pastures for livestock or crops<sup>56</sup> has been difficult to control, despite Environmental Law 64-00 of 2000 which contains provisions on the use of soil and sustainable production and for the development and application of norms and parameters for land zoning and management.

**Other causes of deforestation such as the impact of sun and beach tourism on mangroves, recent suburbanization of rural landscapes** mainly on the northern side of the Central Cordillera, such as Jarabacoa, Constanza, and San José de las Matas, illegal exploitation of wood and charcoal, forest fires, and mining, are minor.

**Forest conversion to other uses is explained by the low opportunity costs of forests** associated with the sub-valuation of ecosystem services resulting from market failures, and barriers and limited opportunities for generating sustainable income from timber and non-timber forest products (NTFPs) that would encourage sustainable forest management.

**Forest degradation is important and is reflected in low average timber volumes of 90.1 m<sup>3</sup>/ha for trees larger than 10 cm in diameter at breast height (DBH).**<sup>57</sup> The fate of degraded or secondary forests leads in some

cases to deforestation and in others to the recovery of a mature forest. Of the 188,000 hectares of secondary or degraded forests present in 2005 that changed their land use category by 2015, 169,000 hectares were transformed into shrubland, crops, or pastures and 18,000 hectares regenerated into mature forests (Box 12).

**The main cause of degradation is the trade in firewood and charcoal (Box 7), as well as grazing and subsistence agriculture.**<sup>58</sup> **Domestic consumption of charcoal has decreased over the last 20 years due to the substitution of liquified petroleum gas for charcoal,**<sup>59</sup> but significant demand from Haiti has generated informal trade responsible for the degradation of forests in the provinces near the bi-national border (Box 7).<sup>60</sup>

**Despite impressive net increases in forest cover, continuing deforestation and forest degradation represent important challenges,** since the tendency towards younger forests caused by these processes has implications for the conservation of biological diversity and provision of ecosystem services, such as carbon sequestration. Forest loss occurs throughout the country (Figure 2), but tends to be concentrated in areas of special interest for biodiversity conservation. These areas, especially in the southwestern region of the country, contain a high proportion of primary forests, protected natural areas, and high poverty rates (see Figures 2, 3, and 5).

**Designing and implementing policies for these protected areas illustrates the challenges present when poverty, forests, protected areas, and deforestation coincide.** These areas are geographically extensive, present numerous conflicts related to land tenure and possession, have different levels of restrictions, and are attended by institutions with overlapping responsibilities

<sup>54</sup> Information obtained through interviews with private forestry experts and public entity officials.

<sup>55</sup> Information provided by the Vice-Ministry of Forest Resources of the MIMARENA.

<sup>56</sup> MIMARENA & FCPF (2019).

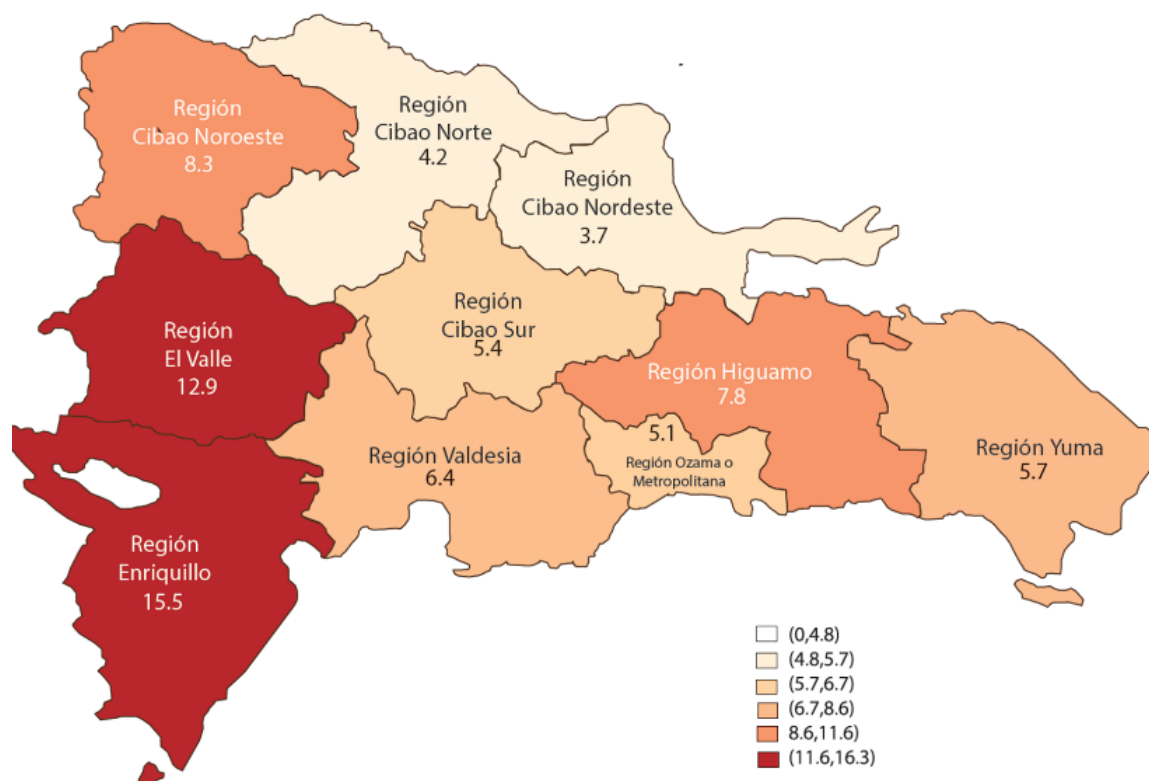
<sup>57</sup> Sud-Austral & CRESER (2019).

<sup>58</sup> Sud-Austral & CRESER (2019).

<sup>59</sup> CNE (2018).

<sup>60</sup> Checo (2009).



**FIGURE 5** PERCENTAGE OF POPULATION LIVING IN EXTREME POVERTY, BY REGION, 2016

Source: MEPyD & ONE. *Incidence of Poverty by Development Region (2016)*

and limited capacities. Efforts are needed to find an appropriate balance between positive incentives for the different stakeholders to commit to the conservation of protected areas on the one hand, and the necessary actions to sanction those who do not comply with the established legal mandates on the other. At the same time, these cases represent an opportunity for designing proactive policies based on economic incentives for the conservation and sustainable use of forests that could combine forest and biodiversity conservation and ecosystem maintenance with poverty reduction and sustainable development. Examples of such forest use are ecotourism or the combination of agricultural production and the sustainable extraction of timber and non-timber forest products.

## INDIRECT DRIVERS OF FOREST LOSS

**Indirect causes of deforestation and forest degradation are varied and include low public awareness, undefined land rights and tenure, limited institutional capacities, coordination, and information for decision making, limited financial resources**

**There is little awareness and knowledge about the economic potential of forests.**

This is true for small forest owners, as well as for local and national authorities. According to the perception of private forest entrepreneurs, policy makers have an exaggerated bias towards forest conservation and little interest in the commercial exploitation of forest plantations. These entrepreneurs consider that it is possible and desirable to implement a policy of conservation and sustainable use of the forests, including the development of commercial forest plantations. However,



**BOX 14****LAND TENURE LIMITATIONS IN THE DOMINICAN REPUBLIC**

A study by the United Nations Economic Commission for Latin American and the Caribbean (ECLAC) and the German Corporation for International Cooperation (GTZ) on the land market in the Dominican Republic found that the country's cadastral system, understood as an inventory of continuously updated land information, is not operational. They attribute this mainly to the weakness in the application of laws and the dispersion of institutional responsibilities that generate negative effects on the legal security of land tenure. Land market barriers include:

- Long and complicated land and registration procedures.
- Costs of land appraisals that generally exceed the economic capacity of small and medium owners.

- The large concentration of unregistered land in the smallholder sector.
- Lack of land titles limits access to formal credit and hinders agricultural development.
- Unregistered rights ostensibly limit the market for rural land.
- Agrarian reform legislation also limits the rural land market since it prohibits the sale of the plots assigned to farmer beneficiaries.

The study found no accessible sources of empirical information on assets and participants in the rural land market.

Source: Tejada & Peralta (2000).

there is a lack of sufficiently detailed studies of whether a developing forest sector would be able to compete with imports.<sup>61</sup>

**Forest conversion is also favored by undefined and unenforced land tenure and property rights, as a result of low institutional capacities and the dispersion of institutional responsibilities (Box 14).<sup>62</sup>**

Precarious land ownership, especially among small farmers, acts as a disincentive to investments in sustainable activities, restricts access to credit needed for improving sustainable productivity, and ultimately reduces rural employment. In addition to strengthening the processes of land titling, short-term mechanisms must be developed that permit landholders with ambiguous titles to access public goods.

**Weak institutional capacity causes the lack of enforcement of existing land-use regulations, inadequate territorial planning and local zoning, and a low capacity to manage forest and protected area management plans and thus contributions to expansion of the agricultural frontier.**

Although an extensive system of protected areas has been established, insufficient personnel prevents adequate monitoring,

control, and accompaniment of communities in the development of forest and ecosystem friendly economic activities.

**Institutional coordination among different entities responsible for conservation and forest development, as well as internally within MIMARENA, is weak** in comparison to the diversity of functions it must perform.

**Information for institutional decision making is also inadequate.** Information technologies needs to be updated, data bases need to be consolidated, and monitoring needs to be improved. To face this challenge, the MIMARENA has included the development of an ambitious set of computer tools in its Institutional Strategic Plan, which allows a matrix type organizational structure to facilitate coordination. The REDD+ strategy also includes actions related to the implementation of information and monitoring systems for institutional strengthening.

**There is a lack of incentives to promote the participation of local people or changes in their behavior, especially in regards to forest and biodiversity conservation. As a result,** it will be necessary to combine these activities with others that generate income or

<sup>61</sup> Sud-Austral & Forest Finest (2018).

<sup>62</sup> Sud-Austral & Forest Finest (2018).

employment such as ecotourism, community businesses, and the development of small-scale, environmentally friendly agricultural production systems such as agroforestry, silvopastoral systems, and forest management programs. Protected areas face two closely related challenges: strengthening the management capacity of the National System of Protected Areas and involving the local population in the conservation efforts and sustainable management of these areas.

**One of the Dominican Republic's main forestry challenges is obtaining resources for implementing its Emission Reductions Program through REDD+ actions.** The MIMARENA has a relatively low budget for developing these wide-ranging institutional and field-level actions but there is an opportunity to improve the effectiveness of its current activities and international forest cooperation by consolidating them around the REDD+ program.



Photo: Rui Freitas Rego





## FOREST CHALLENGES AND OPPORTUNITIES



Photo: World Resources Institute

The Dominican Republic presents a number of conditions and tendencies favorable for improving forest conservation, use, and management to maintain ecosystem services, improve income and employment, increase resilience to climate change, and assure the well-being of the country's inhabitants.

- Although deforestation and forest degradation continue, forest cover is increasing due to demographic trends as well as government reforestation and agroforestry programs.
- Scope exists for broadening the country's extensive experience with tourism to include nature tourism based on the system of protected natural areas or suburban landscape tourism, especially in areas threatened by deforestation and poverty. These activities would increase the incomes of communities, improve environmental awareness and sustainability of economic activities, and enhance the role of rural women in promoting a culture of legality and environmental sustainability.
- Potential also exists for biomass energy generation based on the country's long history of reforestation and its efforts to position itself within a more sustainable energy matrix that would include renewable energies, the mitigation of greenhouse gas emissions, and the reduction of the dependence on imported fossil fuels.
- There are also significant opportunities for agriculture and forestry sectoral development and reduced deforestation through agroforestry, silvopastoral, and resilient farming systems.
- There is a growing recognition of the importance of forests for the maintenance of critical ecosystem services such as the regulation of water flow and quality and for reducing the country's vulnerability to climate changes and extreme climate events.
- The relationship of forests and water with multiple components of economic activity and services provides an opportunity for promoting a system of compensation for forest conservation based on payments for forest conservation by downstream water users and the agricultural sector. Recent initiatives Yaque del Norte River Basin



demonstrating the viability of this scheme could be consolidated and expanded.

- International cooperation in support of these efforts has been significant and is expected to continue in the future.

On the other hand, a number of economic/productive/market; land tenure and property rights, institutional, and financial barriers exist, many of which are structural in nature (Table 3).

**TABLE 3** SUMMARY OF CHALLENGES FOR FOREST MANAGEMENT AND CONSERVATION BASED ON PROFOR PRIME RESULTS<sup>63</sup>

Challenge	Description
Economic / Productivity / Market	Forests contribute little to the GDP.
	Low opportunity costs of forests due to low productivity and under-valuation of services favors their conversion to agriculture and livestock or their unsustainable use.
	High poverty, inadequate land use, and conflicts over land tenure are disincentives for forest management and incentivize their conversion to subsistence agriculture and livestock.
	The latent demand for charcoal in Haiti has generated contraband and informal markets both in Haiti and the Dominican Republic. Illegal exploitation of wood and charcoal has been the main cause of forest degradation and has reduced the profitability of possible sustainable uses.
	The ability of domestic wood suppliers to compete with imported products is uncertain, since domestic quality is often sub-standard.
	In terms of social capital, incentives for community participation or behavior change of producers are lacking. More work is needed with forest-dependent communities to promote associativity, participation in decision-making, and gender equity. It is highlighted that the QVNP has stimulated teamwork through reforestation brigades but this program should be more effectively located and monitored.
Land Rights & Tenure	Land tenure is largely undefined, especially for rural smallholders.
	Land titling costs are high and responsibilities are dispersed among institutions.
	The lack of land titles limits the land market and the access to credit, thus affecting agricultural productivity and sustainability.
Institutions	Overlap and duplication of some institutional functions among entities exists, especially for the control of illegal activities.
	Weak institutional capacity causes the lack of enforcement of existing land-use regulations, inadequate territorial planning and local zoning, and a low capacity to manage forest and protected areas and thus contributions to expansion of the agricultural frontier.
	Institutional coordination among different entities responsible for conservation and forest development, as well as internally within MIMARENA, is weak
	Better technologies and information management are needed in the MIMARENA and monitoring of the management of protected areas and the QVNP needs to be improved.
Investments	The MIMARENA's budget represents on average about 1.1% of the central government's budget (see Annex 4). The budget of the Vice-Ministry of Forestry Resources is 15.8% of the MIMARENA's total budget and reforestation is around 60% of the MIMARENA budget. The reforestation budget must be effectively invested to ensure that reforestation efforts result in an expansion of coverage, with permanence over time.
	The MIMARENA has a relatively low budget for developing the wide-ranging institutional and field-level actions of REDD+.
	Significant private sector investment in sustainable production systems is required, but credit availability under suitable terms is uncertain.
Ecosystems	Currently available estimates of the value of natural capital indicate that it represents a very small proportion of the country's wealth. Natural capital is undervalued due to market failures and methodological limitations in valuing non-marketable ecosystem services (water supply, biodiversity, etc.).
	It is necessary to consolidate and broaden experiences with the application of the Payment for Environmental Services Law <sup>64</sup> .
	The relationship among water, forests, and critical economic activities and services could be linked through the use of water fees to support forest conservation.

Source: Own development based on previous sections and the PRIME framework.

<sup>63</sup> PROFOR PRIME is a framework that looks at the nexus between forests and economic development and the role of forests as pathways out of poverty

<sup>64</sup> Law 44-18, establishing the Payments for Environmental Services.

## CONCLUSIONS AND RECOMMENDATIONS



Photo: Feed the Future

- **The adequate and timely implementation of the REDD+ program is a key factor for the future of forests in the Dominican Republic.** The main aspects that must be developed to improve forest management, avoid deforestation and degradation, build better institutional capacities, and thus enhance the contribution of forests to the country's development, have been analyzed, diagnosed, and addressed in the design of the Emission Reduction Program as part of the REDD+ strategy. Within the Emissions Reduction Program, special priority should be given to actions related to the implementation of the Forest Sector Law, Protected Areas Sector Law, and Payment for Environmental Services Law,<sup>65</sup> as well as actions to formalize property and land tenure rights.
- **The REDD+ program has a significant cost that must be financed.** The resources in MIMARENA's current budget, and existing funding resources the President's SADP, can cover a high percentage of REDD+ costs if such public investments are used more effectively than at present. However, in the medium and long term it will be necessary to allocate greater budget resources to the MIMARENA.
- **Institutional management of environmental sector programs needs to be strengthened.** There is a need to establish a system for evaluating and monitoring forest management, both for reforestation, such as the QVFN, and conservation initiatives, such as the National Protected Area System, as well as the effective implementation of agroforestry, silvopastoral, and resilient agriculture systems. Considering the challenges of institutional strengthening, an in-depth evaluation of the current organizational

<sup>65</sup> Laws 57-18 of 2018; 202-04 of 2004; and 44-18 of 2018, respectively.

architecture in the country's environmental sector is required. This evaluation should include an analysis of the impact of previous initiatives for strengthening the sector with the aim of reorienting the international support provided to the country to obtain more effective results.

- Support for the National System of Protected Areas needs to include positive incentives for the protection of forests and biodiversity beyond the current approach of strict enforcement and compliance.** It is recommended that government agencies and development organizations provide technical and institutional support for the development and strengthening of novel positive incentive systems for biodiversity conservation and for forest conservation, such as payment for ecosystem services. Supporting nature-based tourism managed by local communities, as well as sustainable agriculture and forestry systems in the buffer zones of protected areas and involving local communities in protection activities (e.g. fire control and control of illegal logging) is also recommended as an alternative to employment and income generation in remote areas.
  - To meet the challenge of combining forest and conservation policies with efforts at overcoming poverty and contributing to employment generation, sustainable agricultural system initiatives for smallholders, the development of nature-based tourism initiatives with community participation, and reforestation in areas of high forest degradation and deforestation should be fostered.** The engagement of the World Bank and other development partners in these initiatives should take into consideration their impact on employment and economic recovery after COVID-19 since forestry and conservation activities often permit a higher level of individual work and greater social distancing. In this way, efforts aimed at generating value from forest ecosystem services could be combined with
- the generation of employment in a time of crisis.
- The development of the country's capacity to consolidate nature-based tourism in forest areas should be promoted** to materialize ecosystem values, such as scenic beauty with special emphasis on the use of: i) participatory inventories with local communities to identify nature tourism attractions and prioritization of areas, ii) protocols based on carrying capacity to make biodiversity conservation and the use of forests by tourists compatible, iii) plans for infrastructure development, including access to sites and tourist accommodation, iv) training for local communities to develop their knowledge of local biodiversity and to build capacity for tourism management, and v) public-private partnerships with the current tourism sector to design complementary projects and take advantage of existing business capacity and assets.
  - Work with the energy sector to expand the participation of forest biomass in a more sustainable energy matrix,** while combining actions with the environmental, agricultural, industry, and commerce sectors, and with micro, small, and medium enterprises. To achieve this objective, the following actions may be implemented: i) studies of costs and demands at the provincial level to identify areas of the country with the greatest potential for development of these energies and markets; ii) research and technological development of forest-based energy generation; and iii) support for associative schemes of small and medium producers to improve their negotiating capacity and their articulation with the formal sector to improve their competitiveness. Some of these actions could be led by the World Bank through existing operations or by other development partners involved in renewable energy assistance.
  - It is important that the implementation of plans and programs in the forestry sector incorporates a gender approach that not**





**only seeks to avoid gender gaps but also involves rural women as a decisive factor in education about sustainability and the promotion of a culture of legality.**

Government and development partner programs/projects working in the forestry sector should verify that the following actions are included: i) identify and prioritize key gender gaps (i.e. any disproportionate difference or disparity between the sexes) related to the initiatives; ii) design activities/actions/interventions that address those gaps; and iii) develop indicators that will measure progress towards closing the identified gender gaps. In addition, the active participation of women in training and technical assistance interventions, as well as respect for their rights within land title legalization programs, should be promoted. This, in turn, will serve to incorporate rural women into programs promoting a culture of legality and sustainable forest production.

## **SPECIFIC RECOMMENDATIONS**

- **Institutional strengthening may also benefit from structuring and/or strengthening a system for assessing and monitoring public policy and forest**

**management within an integrated environmental, social, and economic geo-referenced information system.** The system should consider various indicators for assessing impacts on forests, employment generation, indirect or co-benefits, such as reduction of vulnerability and adaptation to climate change, as well as multiplier effects on other sectors and possible reductions in poverty indicators. The potential operation of this system by a third party to avoid increasing the functions of State institutions could be evaluated; the World Bank could potentially support this through existing program and pipeline operations.

- **A study of forestry sector competitiveness, together with the Forestry Chamber and other civil society organizations, is recommended.** There are insufficient detailed studies to reach substantive conclusions regarding the competitiveness and capacity of the national forestry sector to compete with imports in local markets. Conducting studies in this area would make it possible to analyze the sector's advantages for supplying domestic demand, as well as for supplying external markets with added value products.



Photo: Feed the Future



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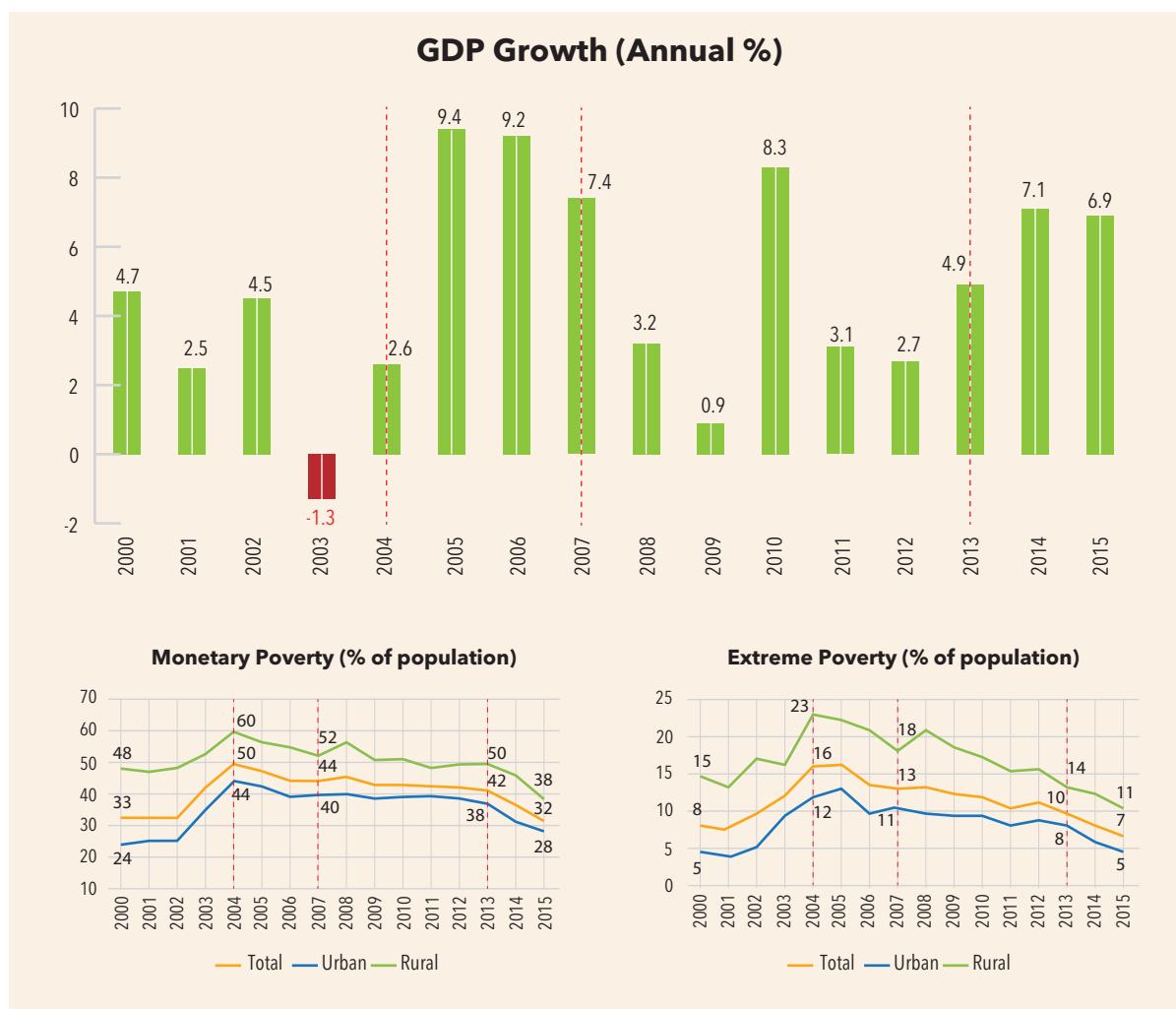
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# ANNEX 1. DOMINICAN REPUBLIC ECONOMIC GROWTH AND POVERTY



Sources: World Bank - WDI (2020). MEPyD & ONE (2016).

## ANNEX 2. LEGAL AND INSTITUTIONAL FRAMEWORKS

### LEGAL FRAMEWORK

**The Dominican Republic has an adequate environmental and forestry legal framework.** The 2010 Constitution establishes environmental protection as duty of the State and the right of individuals (Articles 67 and 75). It also mandates the formulation and implementation of management plans for the sustainable use of resources and establishes adaptation to climate change as a State priority (Article 194). Similarly, reforestation, forest conservation, and the renewal of forest resources are also declared national priorities and of social interest (Article 17.2). The Constitution also mandates the formulation of a development strategy that defines the nation's long-term vision and governs the planning and public investment process.

**The National Development Strategy 2030 (END 2030) law was approved in 2012 to achieve this mandate.<sup>66</sup> Under this law, the country's long-term planning includes various objectives and lines of action that relate specifically to the forestry sector.** These objectives include: 1) the increase of productivity, competitiveness, and environmental and financial sustainability of agricultural and forestry production chains, including institutional reforms; research, innovation and technological development; access to information systems and market intelligence; development of financial services; provisions for infrastructure, services and productive inputs; reorganization of marketing chains; and the development of an export support system; 2) the protection and sustainable use of ecosystem goods and services, biodiversity, and natural heritage, including the sustainable management of forest resources and the promotion of reforestation with endemic and native species in territories

suitable for forestry;<sup>67</sup> and 3) the adaptation to climate change and the contribution to the mitigation of its causes, via the development and transfer of technologies that contribute to the adaptation of forest and agricultural species to the effects of climate change.<sup>68</sup>

**Prior to the formulation of the current Constitution and the END 2030, the General Environment Law (Law 64-00)** created the State Secretariat for the Environment and Natural Resources (SEMARENA), which was later transformed to the Ministry of the Environment and Natural Resources (MIMARENA), and established the regulations for the conservation, protection, improvement, and restoration of the environment and its resources to ensure their sustainable use.

**Other important laws directly or indirectly related to forests have been issued in the last 20 years (see Box A2.1).** These laws include themes such as protected areas, renewable energy, biodiversity, and payments for environmental services. In 2018, the Forestry Law (Law 57-18) was approved. This law regulates and promotes sustainable forest management and the protection of forest ecosystems to maintain biodiversity and the capacity for regeneration. It also promotes forest conservation while allowing the use, production, industrialization, and commercialization of forest products.

**Despite this broad and comprehensive legal framework, enforcement and compliance with these laws has been difficult due to limited institutional coordination and capacities.** Inadequate enforcement results in slash-and-burn forest clearing and the production and smuggling of illegal charcoal. Addressing these problems at the local level has been very difficult, due to institutional

<sup>66</sup> Ley No. 1-12 del 2011, Art. 28.

<sup>67</sup> Specific goal 4.1.1.

<sup>68</sup> Specific goal 4.3.1

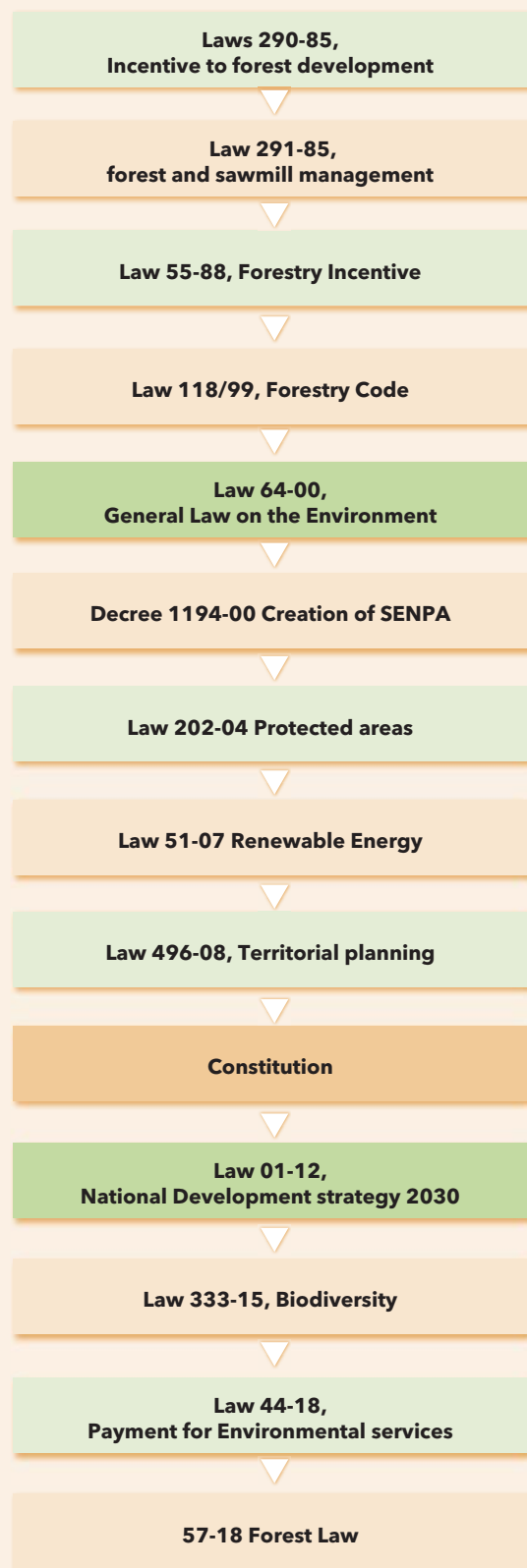


**BOX A2.1****HISTORY OF ENVIRONMENTAL LEGISLATION**

There is broad legal support for forest policies. Since the end of the 20th century, legal norms have been formulated that support forest conservation while others have established incentives for the sustainable forest exploitation. For example, Law 632-77 prohibited the cutting and felling of trees at a time when forest cover was drastically reduced. Eight years after, Law 290-85 incentivized forest investments via the establishment of exemptions for 90% of forestry taxes, while Law 291-85 regulated the management of sawmills. Law 55-88 increased tax exemptions from 90% to 100% until Article 394 of the Tax Code (111-92) eliminated those exemptions. Law 118-99 (Forestry Code) created the National Institute of Forest Resources (INAREF) and established new incentives for forestry, such as the Negotiable Tax Compensation Certificate.

The major natural resource legislation milestone is Law 64-00, which established environmental institutions and regulations.

There are also laws and incentives that can result in deforestation and forest degradation. For example, Law No. 28-01 creates fiscal incentives for industrial, agricultural, and livestock projects in border areas; Law 158-01 promotes tourism development; and Law 51-07 promotes the use of sugar cane as a renewable energy, although it also stimulates the establishment of forests for sustainable energy use.



Source: Several Laws and Sud-Austral Consulting and SpA-Forest Finest (2018).

overlap and the lack of coordination and the absence of zoning regulations for land use.

## INSTITUTIONAL FRAMEWORK

**The lead institution for the environment and forestry sectors is the Ministry of Environment and Natural Resources (MIMARENA).** The MIMARENA was created by Law 64-00 (see Box A2.2). Through this law, several government agencies whose main objectives were the protection and conservation of the environment and natural resources were transferred to the Ministry.<sup>69</sup> Currently, the MIMARENA has multiple functions and responsibilities including administration, regulation, supervision, promotion, and implementation. Among these functions, there is a greater emphasis on regulation and supervision at the expense of the other areas.

**Within the Ministry, the Vice-Ministry of Protected Areas and Biodiversity is responsible for the SINAP, nature-based tourism, the regulation of wildlife, and programs related to the protection of biodiversity. On the other hand, forest-related themes are the responsibility of the Vice-Ministry of Forestry Resources.**

**The Vice-Ministry of Forestry Resources has multiple functions,** ranging from forest protection, to the execution of reforestation projects which entails managing an extensive payroll associated with the QVNP brigades and the administration of plant production (Box A2.2). The approval of the Forestry Law (Law 57-18) increased the Vice-Ministry's responsibilities since it added a wide range of functions to those already existing under Law 64-00. The Forestry Law also assigned a broad set of responsibilities for environmental protection to local communities. The Vice Ministry is responsible for coordinating and supervising these responsibilities via the reinforced National Forest Ranger Service and the volunteer forest supervision brigades.

**In addition to the MIMARENA and its affiliated entities, other institutional sectors are also involved in environmental protection.** Since the military dictatorship of 1930-1963, forest protection has been linked to national security and the Environmental Law (Law 64-00) includes the Armed Forces in the implementation of the State's environmental and natural resources policy (Article 191). The National Environmental Protection Service (SENPA) was created during the same year and is attached to the environmental sector but under the command of the military. The Organic Law of the Armed Forces of the Dominican Republic (Law No. 139-13) ascribes the SENPA to the Ministry of Defense, removing its subordination to the MIMARENA and generating overlap in functions. The Environmental Defense Attorney's Office (PRODEMAREN) of the Interior Ministry, which represents the State in judicial processes, also investigates, prosecutes, and tries environmental offenders.

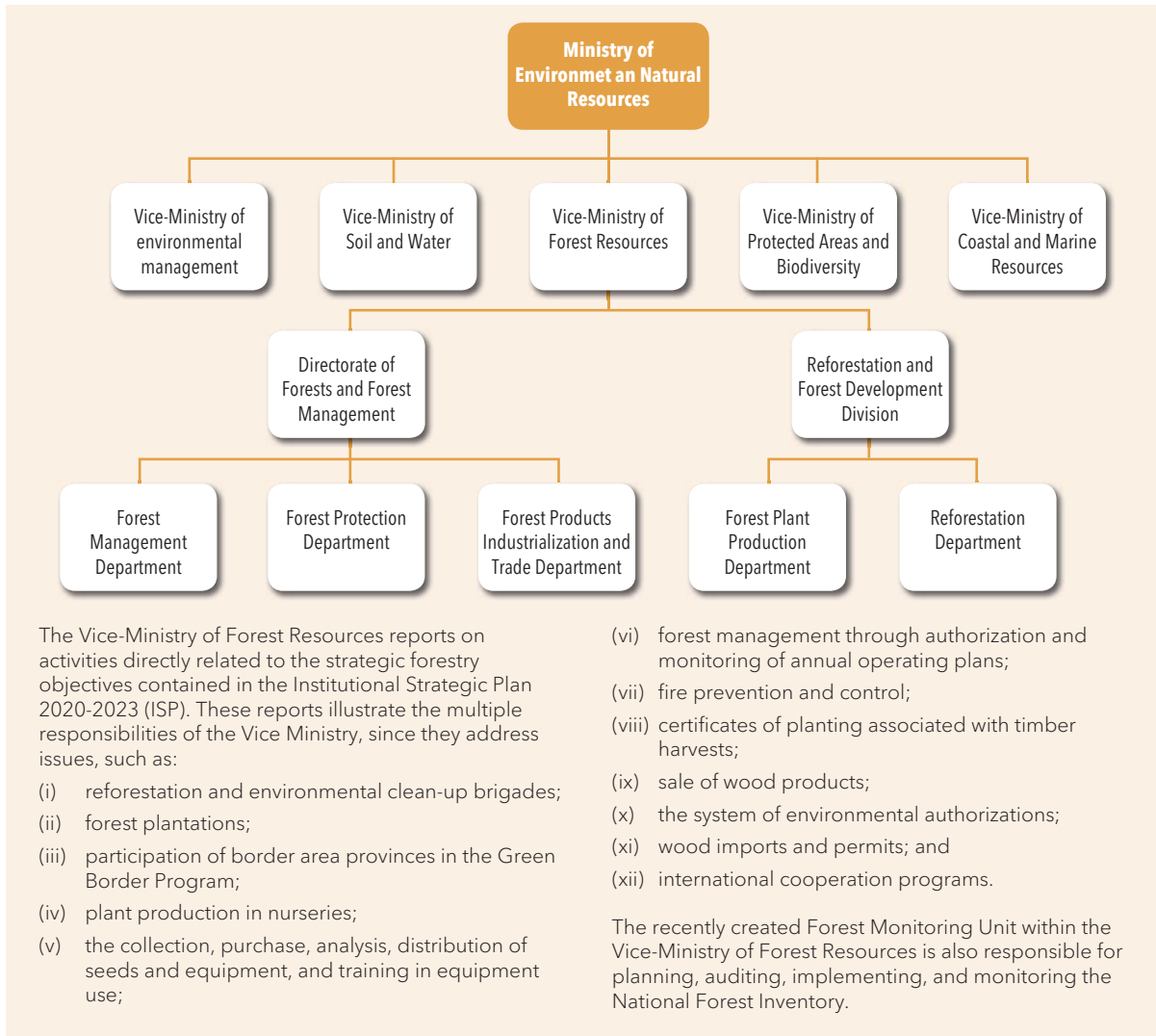
**In addition to the defense sector, other institutional arrangements that affect forest policy implementation include:** the President's Office and the Ministry of Agriculture for the implementation of the President's Sustainable Agroforestry Development Program (SADP); the MIMARENA Climate Change Directorate and the National Climate Change Commission; the management of land management and institutional plans, projects with international support by the Ministry of Economy, Planning and Development; and the management of international commitments and agreements by the Ministry of Foreign Affairs. The MIMARENA also coordinates the application of environmental regulations in other sectors with corresponding sectoral institutions, such as the Ministry of Tourism and the Ministry of Industry.

**This institutional framework thus requires a high degree of coordination for developing and executing policies for agroforestry, reforestation, conservation,**

<sup>69</sup> In addition, the National Zoo, the Botanical Garden, the National Aquarium, the National Museum of Natural History, and the National Institute of Hydraulic Resources were also assigned.

**BOX A2.2**

**ORGANIZATION AND ACTIVITIES OF THE VICE-MINISTRY OF FORESTRY RESOURCES**



Source: MIMARENA (2019).

environmental services, biodiversity protection, as well as forest use and industrialization. However, overlapping responsibilities among institutional entities make communication, information sharing, and policy coordination and implementation difficult. Moreover, there are difficulties in managing the reforestation program and in the administration of the protected areas due to inadequate quantities of human resources.

**GOALS AND RESULTS OF FOREST POLICY**

**The forestry sector is most directly aligned with the END 2030 via objectives 4.1.1 and 4.3.1 of component 4** of the END 2030, "Society with a culture of sustainable production and consumption, which manages risks and the protection of the environment and natural resources with equity and efficiency and promotes adequate adaptation to climate change". The objectives 2.4.2 and 3.5.3 of END 2030 are also related to forest policy. These objectives and their corresponding action lines related to forestry are shown in Table A2.1.



**TABLE A2.1** THE END'S OBJECTIVES AND ACTION LINES RELATED TO FORESTRY

Objective	Action lines
2.4.2 Reducing urban-rural and inter-regional disparities in access to services and economic opportunities by promoting orderly and inclusive territorial development	2.4.2.3 Promoting non-agricultural productive activities in rural areas that complement and diversify family income sources, such as those linked to agro-nature-based tourism, payment systems for environmental services, and infrastructure maintenance.
3.5.3 Increase productivity, competitiveness, and environmental and financial sustainability of agricultural production chains to contribute to food security, take advantage of the export potential, and generate employment and incomes for the rural population	<p>3.5.3.1 Reform the institutions of the agricultural and forestry sector with a systemic vision to promote productive transformation and insertion in local and external markets.</p> <p>3.5.3.2 Implement crop zoning according to the characteristics of agri-productive resources and environmental and risk conditions.</p> <p>3.5.3.3 Promote and strengthen practices for the sustainable management of natural resources, degraded lands, and lands in the process of desertification through training and extension programs and the promotion of productive species that allow adaptation to climate change, respect biodiversity, and meet risk management criteria.</p> <p>3.5.3.4 Promote research, innovation, and technological development, including biotechnology to improve the production, processing, and marketing processes of agricultural and forestry products, and widely disseminate their results through an efficient agricultural extension system.</p> <p>3.5.3.5 Strengthen and facilitate access to information systems and market intelligence for agricultural and forestry products through the use of ICTs and their appropriate dissemination among producers and agricultural organizations.</p> <p>3.5.3.6 Develop and strengthen associative structures and national and global public-private partnerships which, on the basis of participatory planning by all stakeholders in the agricultural sector, including small-scale producers, contribute to the creation of social capital and the exploitation of synergies that result in improved productivity and profitability.</p> <p>3.5.3.7 Develop financial services that facilitate the capitalization, technification, and risk management of agricultural and forestry production units with regulations and mechanisms that respond to the needs of the sector and ensure access, individually or collectively, by small and medium producers.</p> <p>3.5.3.8 Develop an integrated, modern, and efficient agrifood health and safety system with a strong training component, involving all actors in the production chain to preserve consumer health and increase competitiveness.</p> <p>3.5.3.9 Promote efficient forms of provision of infrastructure, services, and inputs that raise the quality and productivity of agrifood and forestry production and distribution processes.</p> <p>3.5.3.10 Promote the creation of a business facilitation system that will make it possible to reorganize both national and international marketing chains for agroforestry products to generate fairer and more stable terms for agroforestry producers.</p> <p>3.5.3.11 Develop a system of support for exports of agricultural and forestry products in the main destination markets, providing information and training on their requirements, and offering protection against bad practices.</p> <p>3.5.3.12 Encourage the expansion of crops and species with profitability and market potential, including the carbon market.</p> <p>3.5.3.13 Establish a functional system of property registration and titling that guarantees the legal security of property in the rural environment.</p> <p>3.5.3.14 Provide land tenure opportunities for youth and women and speed up the land titling process for the beneficiaries of agrarian reforms to facilitate access to credit and the investments needed for sustainable production.</p>



Objective	Action lines
	<p>3.5.3.15 Promote, through the dissemination of best farming practices, an increase in productivity and supply in the agricultural sector that contributes most to food security and adequate nutrition for the Dominican population.</p> <p>3.5.3.16 Encourage the creation of local agro-industries to add value to primary production.</p>
<p>4.1.1 Protect and sustainably use ecosystem goods and services, biodiversity, and the nation's natural heritage, including marine resources</p>	<p>4.1.1.1 Strengthen at the national, regional, and local levels the institutional framework, regulatory framework, and penalization mechanisms to guarantee the protection of the environment in accordance with the principles of sustainable development.</p> <p>4.1.1.2 Strengthen the participation of local governments in the management of the environment and natural resources and promote their implementation within the geographical scope of the Territorial Management Plan.</p> <p>4.1.1.3 Promote an Integrated Coastal Zone Management system, assigning priority to unprotected areas.</p> <p>4.1.1.4 Establish priorities for public investments in the Major Strategic Development Planning Regions based on the environmental sustainability of each of them.</p> <p>4.1.1.5 Strengthen professional capacities and technological resources for environmental management and sustainable development based on the potential of the Major Strategic Development Planning Regions.</p> <p>4.1.1.6 Develop systems for monitoring, evaluating, and assessing the state of the environment and natural resources at the national, regional, and local levels based on the consolidation of an Environmental Information System that includes the assessment of natural resources in the national accounts.</p> <p>4.1.1.7 Conduct research and create systematic information and analysis systems on the impact of environmental degradation on the living conditions of the population, particularly on women and vulnerable groups.</p> <p>4.1.1.8 Restore and preserve the services provided by ecosystems with emphasis on river basins and design and implement mechanisms for the payment of environmental services to communities and productive units that protect them.</p> <p>4.1.1.9 Manage forest resources in a sustainable manner and promote the reforestation of forested territories with endemic and native species.</p> <p>4.1.1.10 Encourage the sustainable use of natural resources through the application of economic and market instruments, including Clean Development Mechanisms.</p> <p>4.1.1.11 Promote environmental education and the involvement of the population in the valuation, protection, and defense of the environment and the sustainable management of natural resources, including education on the causes and consequences of climate change.</p> <p>4.1.1.12 Establish and strengthen mechanisms for social monitoring of compliance with national environmental legislations, international environmental agreements, and the application of environmental justice criteria.</p> <p>4.1.1.13 Protect the environment of the island of Santo Domingo in cooperation with Haiti.</p> <p>4.1.1.14 Strengthen the National System of Protected Areas as a means of conserving natural heritage and empowering communities to receive its benefits.</p>
<p>4.3.1 Reduce vulnerability, advance adaptation to the effects of climate change, and contribute to the mitigation of its causes</p>	<p>4.3.1.2 Strengthen, in coordination with local governments, the system for the prevention, reduction, and control of anthropic impacts that increase the vulnerability of ecosystems to the effects of climate change.</p> <p>4.3.1.3 Promote the development and transfer of technology that contributes to the adaptation of forest and agricultural species to the effects of climate change.</p>
<p>Source: MPEyD (2019).</p>	



These ambitious and comprehensive lines of action cover most of the interventions in the agricultural and forestry sectors that are needed to ensure the dynamic, relevant, and sustainable development of land use. However, priorities are not assigned to the action lines and only four indicators are monitored (Box

A2.3): a) carbon dioxide emissions (4.1); b) national protected areas (4.2); c) average annual deforestation rate (4.3); and d) efficiency in the use of water in distribution systems and networks and its final application in irrigation systems (4.4).

**BOX A2-3****ENVIRONMENTAL GOALS AND RESULTS OF END 2030****Targets for END 2030 environmental axis indicators**

Indicators	Unit / Measure	Baseline		Five-year Goals			
		Year	Value	2015	2020	2025	2030
4.1 Carbon dioxide emissions	Metric tons per capita	2010	3.6	3.4	3.2	3.0	2.8
4.2 National Protected Areas	Percentage of total territorial area	2009	24.4	24.4	24.4	24.4	24.4
4.3 Average annual deforestation rate	Percentage of total forest area (*)	2005	0.1	-0.1	-0.2	-0.2	-0.2
4.4 Efficiency in the use of water in water distribution systems and networks and their final application in irrigation systems	Percentage of distributed water that was used	2010	28.0	36.5	45.0	45.0	45.0

Note (\*): negative values indicate increases in the total forest area.

Source: Law 1 of 2012.

**The country's performance to date on meeting its environmental targets**

Indicator	Goal 2015	Achieved 2015	Updated Indicator 2018		Goal 2020	Inertial Projection	
			Year	Value		2019	2020
4.1 Carbon dioxide emissions (Metric tons per capita)	3.40	3.48	2018	-	3.20	3.13	3.08
4.2 National Protected Areas (Percentage of total territorial area)	24.40	24.40	2017	26.20	24.40	28.29	28.54
4.3 Average annual deforestation rate (Percentage of total forest area - negative values indicate increases in the total forest area)	-0.10	ND	2018	-	-0.20	-6.35	-8.54
4.4 Efficiency in the use of water in water distribution systems and networks and their final application in irrigation systems. (Percentage of distributed water that was used - Indirect measurement methodology)	36.50	34.91	2016	-	45.00	38.58	39.56

Source: Law 1 of 2012 and MEPyD (2019).



**Of these four indicators, latest available data indicate that the first three have been met or are on track to meet the targets set for 2020 (Box A2.3),** while the last indicator (4.4) on efficiency of water distribution shows moderate, but slow, progress towards the target. The goal for protected areas (indicator 4.2) was met in 2015 and has subsequently remained the same, which lessens the utility of this indicator as a management instrument. The deforestation goal (indicator 4.3) includes natural regeneration and therefore does not discriminate between reducing deforestation and increasing forest area through reforestation. The emission reduction target (indicator 4.1) was exceeded in 2019, which

suggests that a greater ambition is necessary.

**Actions for implementing environmental policies in the coming years are contained in the MIMARENA’s Institutional Strategic Plan (ISP) 2020-2023 (Box A2.4).** The ISP is a medium-term plan that expresses environmental policies, objectives and priorities at the sectoral and institutional levels. It establishes priorities, objectives, goals and resource requirements of MIMARENA for a period of four years, and must be consistent with the National Development Strategy, National Multi-annual Public Sector Plan, and Sectorial Plans (Art. 25 Law 498-06, Dec.493-07 Art. 44).

#### BOX A2.4 THE MIMARENA’S INSTITUTIONAL STRATEGIC PLAN (ISP) 2020-2023

The Institutional Strategic Plan (ISP) is a management instrument established by Article 25 of the Law 498-06 on Planning and Public Investment; the ISP complements the Sectoral Plan and the Regional Plan and is aligned with the National Multiannual Public Sector Plan and with the framework of the National Development Strategy 2010-2030. The ISP is disaggregated into annual operating plans, which are incorporated into each annual national budget. The MIMARENA ISP’s strategic pillars are:

- Institutional strengthening
- Development of instruments for the management of the environment and natural resources
- Preservation of the natural heritage of protected areas

- Sustainable use of natural resources, ecosystems, and biodiversity
- Environmental quality management of ecosystems and human settlements
- Management of risk, adaptation, and mitigation of climate change

The ISP action lines are aligned with the END’s objectives. Table A2.2 shows the correspondence of the ISP’s action lines with the END’s action lines for END objectives 4.1.1 and 4.3.1; END objectives 2.4.2 and 3.5.3 do not have action lines in the ISP.

TABLE A2.2 CORRESPONDENCE BETWEEN END ACTION LINES AND MAMARENA’S ISP ACTION LINES

END action line	ISP Action Line
4.1.1.1 Strengthen at the national, regional and local levels, the institutional framework, regulatory framework, and penalization mechanisms to guarantee the protection of the environment in accordance with the principles of sustainable development.	42 Create local community networks for protection and surveillance.
4.1.1.2 Strengthen the participation of local governments in the management of the environment and natural resources and promote their implementation within the geographical scope of the Territorial Management Plan.	58 Provide technical assistance and training to Municipal Environmental Management Units (UGAM) regarding the location and proper management of landfills.
4.1.1.3 Promote an Integrated Coastal Zone Management system, assigning priority to unprotected areas.	74 Develop integrated coastal zone management, with attention to unprotected areas.
4.1.1.4 Establish priorities for public investments in the Major Strategic Development Planning Regions based on the environmental sustainability of each.	37 Establish the National Cadaster of Protected Areas, which should update the plans and maps of the priority units of the SINAP with their topographic areas and boundaries and, their inventories of service infrastructure, including accommodation, trails, and signs.

END action line	ISP Action Line
4.1.1.6 Develop systems for monitoring, evaluating, and assessing the state of the environment and natural resources at the national, regional, and local levels based on the consolidation of an Environmental Information System that includes the assessment of natural resources in national accounts.	4 Develop and establish the use of economic and market instruments in the management of the environment and natural resources, aimed at the economic valuation of environmental goods and services offered by ecosystems.
	8 Implement the use of information and communication technologies for proper decision making, policy design, and management of administrative and financial processes.
	51 Develop a system for monitoring emissions and discharges from fixed sources.
	73 Strengthen the system of surveillance, monitoring, and control of ecosystems.
	101 Develop a monitoring and early warning system for the effects of climate change in the country.
4.1.1.7 Conduct research and create systematic information and analytical systems for measuring the impact of environmental degradation on the living conditions of the population, particularly women and vulnerable groups.	45 Promote basic and applied scientific research on ecosystems and natural resources in protected areas.
4.1.1.8 Restore and preserve the services provided by ecosystems with emphasis on river basins and design and implement mechanisms for the payment of environmental services to communities and productive units that protect them.	62 Protect and restore forest ecosystems in critical areas of priority basins with native, endemic, and appropriate species.
	77 Ensure the provision of technical assistance to the environmental clean-up of watersheds.
4.1.1.9 Manage forest resources in a sustainable manner and promote the reforestation of forested territories with endemic and native species.	62 Protect and restore forest ecosystems in critical areas of priority, watersheds with native, endemic, and appropriate species as appropriate.
	64 Promote the establishment and management of commercial forest plantations.
	65 Strengthen instruments and mechanisms for the sustainable management of native forests.
	67 Promote the improvement of the quality of forest species in forest ecosystems.
4.1.1.10 Encourage the sustainable use of natural resources through the application of economic and market instruments, including Clean Development Mechanisms.	4 Develop and establish the use of economic and market instruments for the economic valuation of ecosystem goods and services and the management of environment and natural resources.
	50 Promote the establishment of economic instruments for the implementation and compliance with water quality standards in priority sectors (agriculture, industry, and tourism).
4.1.1.11 Promote environmental education and the involvement of the population in the valuation, protection, and defense of the environment and the sustainable management of natural resources, including education related to the causes and consequences of climate change.	25 Include an environmental education component in the plans, programs, and projects carried out by the Ministry.
	13 Strengthen inter-institutional coordination for compliance with cooperation agreements on trade and the environment.
4.1.1.12 Establish and strengthen mechanisms for social monitoring of compliance with national environmental legislation, international environmental agreements, and the application of environmental justice criteria.	32 Encourage the participation of different sectors of society in the management and use of natural protected areas by concluding and implementing shared management agreements and establishing Private Protected Areas.
	99 Promote the conclusion of voluntary agreements for the implementation of sustainable production and consumption in the productive sectors.



END action line	ISP Action Line
4.1.1.13 Protect the environment of the island of Santo Domingo in cooperation with Haiti.	9 Strengthen the coordination mechanisms with international cooperation for its alignment with the policies, plans, and programs of the Ministry.
4.1.1.14 Strengthen the National System of Protected Areas as a means of conserving natural heritage and empowering communities to receive benefits.	29 Develop and update management and operating plans in the priority conservation units of the SINAP.
	30 Promote decentralized administration of the SINAP, delegating powers, functions, and resources to the managers or boards of directors of the units.
	33 Promote the economic sustainability of the SINAP through the diversification of its financing sources, including debt for conservation investments, the establishment of a Trust Fund, and payments for environmental services.
	37 Establish the National Cadastre of Protected Areas, which should update the plans and maps of the priority units of the SINAP with their areas and topographic boundaries and their inventory of service infrastructure, including accommodation, trails, and signs.
	38 Carry out the transfer on behalf of the MIMARENA of state-owned property titles of the SINAP to autonomous and semi-autonomous institutions and the municipalities.
4.3.1.2 Strengthen in coordination with local governments the system for the prevention, reduction, and control of anthropic impacts that increase the vulnerability of ecosystems to the effects of climate change.	39 Carry out the physical demarcation, georeferencing, and marking of the boundaries of the different SINAP conservation units.
	58 Provide technical assistance and training to Municipal Environmental Management Units (UGAM) regarding the location and proper management of landfills.
	59 Manage the sanitation of landfills with local governments.
4.3.1.3 Promote the development and transfer of technology that contributes to the adaptation of forest and agricultural species to the effects of climate change.	100 Promote the incorporation of a climate change adaptation perspective in public policies in priority sectors (agriculture, water, and tourism).
	63 Develop legal, technological, and coercive instruments and mechanisms to prevent illegal logging and the transfer of forest products.
	94 Improve the process of environmental impact assessment by incorporating the use of information and communication technology.
	97 Promote the use of technologies to optimize the use of natural resource management and reduce pollution.

Source: MIMARENA (2019a). MEPyD (2019).



## ANNEX 3. ENVIRONMENTAL PROJECTS FINANCED BY INTERNATIONAL COOPERATION

Name	Cooperating Agency or Organization	Implementing Institution	Country	Date of Execution	Date of Termination	Total Budget (USD)	Agency contribution (USD)	Topic	Component of END 2030	General Goal of END 2030	Specific Goal of END 2030	Development Goal (SDG)
Strengthening the Caribbean Biological Corridor	European Union (EU)	Dominican Republic headquarters of the Biological Corridor Secretariat/ UNEP-Panama/ Latin American and Caribbean Regional Office	Multilateral	13/07/21		3,124,800	3,124,800	Land Ecosystems	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.1 Sustainable environmental management	4.1.1 Sustainably protect and use the goods and services of the nation's ecosystems	GOAL 15: Life on Land
Elaboration of the Caribbean Marine Atlas (Phase II)	International Atomic Energy Agency (IAEA)	Ministry of the Environment and Natural Resources and the Institute of Marine and Coastal Research of Colombia	Multilateral	28/12/15	28/12/17	400,000	200,000	Marine Ecosystems	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.1 Sustainable environmental management	4.1.1 Sustainably protect and use the goods and services of the nation's ecosystems	GOAL 14: Life below water
Conserving Biodiversity in Coastal Areas Threatened by Rapid Tourism and Physical Infrastructure Development	Global Environment Facility (GEF)	Ministry of the Environment and Natural Resources	Multilateral	01/01/16	12/01/20	37,747,182	16,034,799	Land Ecosystems	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.1 Sustainable environmental management	4.1.1 Sustainably protect and use the goods and services of the nation's ecosystems	GOAL 15: Life on Land
CLME+: Catalyzing the implementation of the Strategic Action Program for the sustainable management of shared Living Marine Resources in the Caribbean and North Brazil Shelf, Large Marine Ecosystems	Global Environment Facility (GEF)	United Nations Development Program (UNDP)	Multilateral	ND	ND	15,344,948	12,500,000	Marine Ecosystems	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.1 Sustainable environmental management	4.1.1 Sustainably protect and use the goods and services of the nation's ecosystems	GOAL 14: Life below water
The development of the initial evaluation of the Minamata Convention in Latin America and the Caribbean	Global Environment Facility (GEF)	Basel Convention Coordinating Centre and Stockholm Convention Regional Centre for Latin America and the Caribbean (BCCC-SCRC)	Multilateral	01/06/16	01/12/17	119,000	119,000	Institutional capacity	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.1 Sustainable environmental management	4.1.2 Promoting sustainable production and consumption	GOAL 12: Responsible Consumption and Production
Integration of water, soil, and management of ecosystems in the Higuamo River Basin (A)	Global Environment Facility (GEF)	United Nations Environment Program (UNEP)	Multilateral	04/02/17	04/02/21	3,930,646	1,430,646	Land Ecosystems	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.1 Sustainable environmental management	4.1.1 Sustainably protect and use the goods and services of the nation's ecosystems	GOAL 15: Life on Land
Conservation of biodiversity in threatened productive mountain forest landscapes	Global Environment Facility (GEF)	United Nations Development Program (UNDP)	Multilateral	ND	ND	59,460,000	9,150,000	Land Ecosystems	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.1 Sustainable environmental management	4.1.1 Sustainably protect and use the goods and services of the nation's ecosystems	GOAL 15: Life on Land





Name	Cooperating Agency or Organization	Implementing Institution	Country	Date of Execution	Date of Termination	Total Budget (USD)	Agency contribution (USD)	Topic	Component of END 2030	General Goal of END 2030	Specific Goal of END 2030	Development Goal (SDG)
Strengthening Human Resources, Legal Frameworks and Institutional Capacities to Implement the Nagoya Protocol	Global Environment Facility (GEF)	Ministry of the Environment and Natural Resources	Multilateral	01/05/17	01/05/19	370,000	350,000	Institutional capacity	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.1 Sustainable environmental management	4.1.1 Sustainably protect and use the goods and services of the nation's ecosystems	GOAL 15: Life on Land
Implementation of conservation measures, ecological restoration, and sustainable production systems in the lower and middle basin of the Nizaïto River	KFW Development Bank (KFW)	Foundation for the Development and Protection of the Nizaïto River Basin in Paraíso (FUNDEPROCUNIPA)	Germany	01/10/12	15/06/18	240,070	141,499	Land Ecosystems	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.1 Sustainable environmental management	4.1.1 Sustainably protect and use the goods and services of the nation's ecosystems	GOAL 15: Life on Land
Strengthening the Provincial Directorates for Environment and Natural Resources (rehabilitate the Dajabón office; build provincial offices for Elías Piña and Bahoruco; and, equip the Bahoruco and Independencia Offices with office and measurement equipment)	KFW Development Bank (KFW)	Ministry of the Environment and Natural Resources /Vice-Ministry of Forest Resources	Germany	09/04/13	15/07/18	198,137	198,137	Land Ecosystems	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.1 Sustainable environmental management	4.1.1 Sustainably protect and use the goods and services of the nation's ecosystems	GOAL 15: Life on Land
Protection and surveillance actions in protected areas in border areas	KFW Development Bank (KFW)	Ministry of the Environment and Natural Resources / Vice-Ministry of Forest Resources	Germany	19/02/14	30/06/18	239,504	239,504	Land Ecosystems	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.1 Sustainable environmental management	4.1.1 Sustainably protect and use the goods and services of the nation's ecosystems	GOAL 15: Life on Land
Implementation of actions for the sustainable management of natural resources (build four nurseries; rehabilitate three nurseries; support for actions in the Biological Corridor; and acquisition of materials for seed collection and seedling production)	KFW Development Bank (KFW)	Ministry of the Environment and Natural Resources/ Vice-Ministry of Forest Resources	Germany	09/04/13	15/07/17	807,666	807,666	Land Ecosystems	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.1 Sustainable environmental management	4.1.1 Sustainably protect and use the goods and services of the nation's ecosystems	GOAL 15: Life on Land
Catalyzing a multi-sectoral program to support water and soil management in the face of the threat of climate change in the Dominican Republic	Food and Agriculture Organization (FAO) and Interamerican Institute for Agricultural Cooperation	Ministry of the Environment and Natural Resources / Vice-Ministry of Soil and Water	Multilateral	08/02/17	21/07/18	323,000.00	323,000.00	Institutional capacity	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.3-Adequate adaptation to climate change	4.3.1 Reducing vulnerability, advancing to adaptation, and contributing to mitigation	GOAL 13: Climate Action
Building resilience in a coastal-mountainous gradient through ecosystem-based approaches (EbA) and ecosystem-based disaster risk reduction (Eco-DRR) to increase adaptation/ Miches	Global Climate Change Alliance Plus (GCCA+) financed by the European Union	Ministry of the Environment and Natural Resources	Multilateral	19/01/19	01/01/24	4,464,000	4,464,000	Other	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.2.-Effective risk management	4.2.1 Develop an effective national comprehensive risk management system	GOAL 13: Climate Action

Name	Cooperating Agency or Organization	Implementing Institution	Country	Date of Execution	Date of Termination	Total Budget (USD)	Agency contribution (USD)	Topic	Component of END 2030	General Goal of END 2030	Specific Goal of END 2030	Development Goal (SDG)
Capacity development of actors involved in the use and change of land use in the Dominican Republic, SNIP 13760.	Forest Carbon Partnership Fund (FCPF) / World Bank (WB)	Ministry of the Environment and Natural Resources	Multilateral	01/06/16	01/06/19	3,437,091	3,437,091	Institutional capacity	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.1 Sustainable environmental management	4.1.1 Sustainably protect and use the goods and services of the nation's ecosystems	GOAL 13: Climate Action
Dominican Republic First Biennial Update Report (BUR)	Global Environment Facility (GEF)	Ministry of the Environment and Natural Resources / National Council for Climate Change	Multilateral	01/05/17	01/05/19	397,000	352,000	Institutional capacity	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.3-Adequate adaptation to climate change	4.3.1 Reducing vulnerability, advancing to adaptation, and contributing to mitigation	GOAL 13: Climate Action
A portable early warning service for disasters in every pocket of Santo Domingo	German Corporation for International Cooperation (GTZ)	Dominican Institute for Integral Development	Multilateral	01/10/17	01/07/18	7,050,000	150,000	Other	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.3-Adequate adaptation to climate change	4.3.1 Reducing vulnerability, advancing to adaptation, and contributing to mitigation	GOAL 13: Climate Action
Increasing climate resilience in the province of San Cristóbal, Dominican Republic - Program for Integrated Management of Water Resources and Rural Development	The Adaptation Fund	Ministry of the Environment and Natural Resources and National Institute of Drinking Water and Sewage	Multilateral	01/07/19	30/06/23	9,954,000	9,954,000	Other	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.3-Adequate adaptation to climate change	4.3.1 Reducing vulnerability, advancing to adaptation, and contributing to mitigation	GOAL 13: Climate Action
Institutional strengthening of the Ministry of Environment and Natural Resources of the Dominican Republic	Spanish Agency for International Development Cooperation (AECID)	Planning and Development Directorate	Spain	14/12/17	30/12/20	223,430	175,929	Institutional capacity	1. Democratic Social State of Law.	1.1. Efficient, transparent and results-oriented public administration.	1.1.1 Structure an efficient public administration	GOAL 16: Peace, justice and strong institutions
Building capacity to advance the National Adaptation Plan process in the Dominican Republic	Green Climate Fund /United Nations Environment Program	Ministry of the Environment and Natural Resources / Climate Change Directorate	Multilateral	30/04/17	30/04/20	2,112,239	2,112,239	Institutional capacity	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.3-Adequate adaptation to climate change	4.3.1 Reducing vulnerability, advancing to adaptation, and contributing to mitigation	GOAL 13: Climate Action
Development of an innovative financial mechanism for the conservation of coral reefs in the Dominican Republic	Regional Fund for Triangular Cooperation in Latin America and the Caribbean	German Corporation for International Cooperation in Costa Rica and the Dominican Republic	Multilateral	01/07/17	01/06/19	N.D.	N.D.	Marine Ecosystems	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.1 Sustainable environmental management	4.2.1 Develop an effective national comprehensive risk management system	GOAL 14: Life below water
Preparation of the Sixth National Biodiversity Report of the Convention on Biological Diversity (CBD), in compliance with Article VI of the CBD	Global Environment Facility (GEF)	Ministry of the Environment and Natural Resources / Department of Genetic Resources, Biodiversity Directorate	Multilateral	01/12/17	01/12/18	100,000	100,000	Land Ecosystems	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.1 Sustainable environmental management	4.1.1 Sustainably protect and use the goods and services of the nation's ecosystems	GOAL 15: Life on Land
Strengthening the institutional capacity of the Program for the integrated management of solid waste) (FOCIMIRS)	Japan International Cooperation Agency (JICA)	Ministry of the Environment and Natural Resources - Directorate of Solid Waste	Japan	30/05/17		1,041,236	943,527	Institutional capacity	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.1 Sustainable environmental management	4.1.3 Develop comprehensive management of waste, pollutants, and sources of contamination	GOAL 6: Clean Water and Sanitation



Name	Cooperating Agency or Organization	Implementing Institution	Country	Date of Execution	Date of Termination	Total Budget (USD)	Agency contribution (USD)	Topic	Component of END 2030	General Goal of END 2030	Specific Goal of END 2030	Development Goal (SDG)
Strengthening national capacities through the Program to Support Preparedness for Climate Change in the Dominican Republic (Readiness Support)	Green Climate Fund (GCF)	Ministry of the Environment and Natural Resources	Multilateral	01/04/17	30/04/19	300,000	300,000	Institutional capacity	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.3-Adequate adaptation to climate change	4.3.1 Reducing vulnerability, advancing to adaptation, and contributing to mitigation	GOAL 13: Climate Action
Operationalization of the special program to support institutional strengthening at the national level that promotes the application of the Basel and Rotterdam Conventions, the Minamata on Mercury, and the Strategic Approach for the Management of Chemicals at the international level in the Dominican Republic	Global Environment Facility (GEF)	Ministry of the Environment and Natural Resources	Multilateral	01/01/18	01/12/19	312,500	250,000	Institutional capacity	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.2-Effective risk management to minimize human, economic and environmental losses	4.2.1 Develop an effective national comprehensive risk management system	GOAL 6: Clean Water and Sanitation
Promotion of the economic potential of biodiversity in a fair and sustainable manner to implement the Nagoya Protocol in Central America and the Dominican Republic	German Corporation for International Cooperation (GIZ)	Ministry of the Environment and Natural Resources /Department of Genetic Resources, Biodiversity Directorate	Germany	11/01/15	11/01/17	4,490,784	4,464,000	Land Ecosystems	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.1 Sustainable environmental management	4.1.1 Sustainably protect and use the goods and services of the nation's ecosystems	GOAL 15: Life on Land
Promotion of development and industrial cooperation in developing countries and economies in transition for poverty reduction, globalization for all, and environmental sustainability	Government of Austria	Clean and Sustainable Production Unit (CPU), United Nations Industrial Development Organization (UNIDO)	Austria	01/01/14	01/01/20	669,885	669,885	Other	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.1 Sustainable environmental management	4.1.1 Sustainably protect and use the goods and services of the nation's ecosystems	GOAL 12: Responsible Consumption and Production
Pilot Project, Ecosystem management of biodiversity for sustainable development in the Caribbean. (RD Case: Montecristi-Puerto Plata)	Italian Ministry of Foreign Relations and its General Director for International Development and Cooperation	UNEP/Ministry of the Environment and Natural Resources	Italy	01/09/16	N.D.	350,000	350,000	Land Ecosystems	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.1 Sustainable environmental management	4.1.1 Sustainably protect and use the goods and services of the nation's ecosystems	GOAL 15: Life on Land
Transforming tourism value chains in developing countries and small island developing states (SIDS) to accelerate resilience, efficient use of resources, and lower the level of carbon emissions	The Federal Minister for the Environment, Nature Conservation, and Nuclear Safety (BMU)	United Nations Environmental Program (UNEP), Ministry of the Environment and Natural Resources	Germany	01/01/17	01/01/20	4,445,082	4,445,082	Other	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.3-Adequate adaptation to climate change	4.3.1 Reducing vulnerability, advancing to adaptation, and contributing to mitigation	GOAL 13: Climate Action
Support for the ratification of the Kigali amendment in the Dominican Republic	Multilateral Fund for the Implementation of the Montreal Protocol	Ministry of the Environment and Natural Resources	Multilateral	05/07/18	30/12/19	N.D.	N.D.	Institutional capacity	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.3-Adequate adaptation to climate change	4.3.1 Reducing vulnerability, advancing to adaptation, and contributing to mitigation	GOAL 12: Responsible Consumption and Production



Name	Cooperating Agency or Organization	Implementing Institution	Country	Date of Execution	Date of Termination	Total Budget (USD)	Agency contribution (USD)	Topic	Component of END 2030	General Goal of END 2030	Specific Goal of END 2030	Development Goal (SDG)
Management Plan for the elimination of the use of hydrochlorine fluorocarbons in the Dominican Republic (HPMP). Second stage.	Multilateral Fund for the Implementation of the Montreal Protocol	United Nations Development Program (UNDP)	Multilateral	01/03/17	01/03/20	1,279,558	N.D.	Other	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.3.-Adequate adaptation to climate change	4.3.1 Reducing vulnerability, advancing to adaptation, and contributing to mitigation	GOAL 12: Responsible Consumption and Production
Management Plan for the elimination of the use of hydrochlorine fluorocarbons in the Dominican Republic (HPMP). Second stage/ strengthening the legal and institutional sectors responsible for regulation related to the implementation of the Montreal Protocol	Multilateral Fund for the Implementation of the Montreal Protocol	Ministry of the Environment and Natural Resources	Multilateral	01/03/17	01/03/20	N.D.	195,000	Other	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.3.-Adequate adaptation to climate change	4.3.1 Reducing vulnerability, advancing to adaptation, and contributing to mitigation	GOAL 13: Climate Action
Strengthening the institutional capacity of the Ministry of the Environment and Natural Resources	Multilateral Fund for the Implementation of the Montreal Protocol	Ministry of the Environment and Natural Resources	Multilateral	01/09/17	01/03/20	171,946	171,946	Other	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.3.-Adequate adaptation to climate change	4.3.1 Reducing vulnerability, advancing to adaptation, and contributing to mitigation	GOAL 13: Climate Action
Increased restoration and adaptation capacity in biosphere reserves on the Dominican Republic and Haiti border (CAREBios)	German Corporation for International Cooperation (GIZ)	German Corporation for International Cooperation (GIZ)/ Ministry of the Environment and Natural Resources, Vice-Ministry of Protected Areas and Biodiversity	Germany	01/01/15	30/11/18	3,571,200	3,571,200	Land Ecosystems	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.1 Sustainable environmental management	4.1.1 Sustainably protect and use the goods and services of the nation's ecosystems	GOAL 15: Life on Land
Integrated management in the transboundary basin of the river Libón	German Corporation for International Cooperation (GIZ)	Ministry of the Environment and Natural Resources	Germany	01/01/12	31/12/17	6,249,600	4,017,600	Land Ecosystems	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.2.-Effective risk management	4.2.1 Develop an effective national comprehensive risk management system	GOAL 15: Life on Land
Land Degradation Neutrality (LDN)	Global Environment Facility (GEF)	Ministry of the Environment and Natural Resources	Multilateral	10/10/16	26/07/17	N.D.	N.D.	Institutional capacity	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.3.-Adequate adaptation to climate change	4.3.1 Reducing vulnerability, advancing to adaptation, and contributing to mitigation	GOAL 13: Climate Action
Preparation of the Sixth Country Report within the framework of the United Nations Convention to Combat Desertification and Drought (UNCCD)	Global Environment Facility (GEF)	Ministry of the Environment and Natural Resources	Multilateral	01/01/16	01/01/17	27,850	27,850	Institutional capacity	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.1 Sustainable environmental management	4.1.2 Promoting sustainable production and consumption	GOAL 15: Life on Land





Name	Cooperating Agency or Organization	Implementing Institution	Country	Date of Execution	Date of Termination	Total Budget (USD)	Agency contribution (USD)	Topic	Component of END 2030	General Goal of END 2030	Specific Goal of END 2030	Development Goal (SDG)
Establishment of the Caribbean Observation Network for ocean acidification and its effects on harmful algal outcrops, using nuclear research techniques / RLA-7020	International Atomic Energy Agency (IAEA)	Ministry of the Environment and Natural Resources	Multilateral	02/01/15	02/01/17	89,280	89,280	Institutional capacity	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.1 Sustainable environmental management	4.1.1 Sustainably protect and use the goods and services of the nation's ecosystems	GOAL 15: Life on Land
Water for the future	Private Donor	Center for Agricultural and Forestry Development (CEDAF), Plan Sierra Inc., PRONATURA, Asociación de Agricultores Nuevo Milenio (ASANUMI)	Private Donor	01/01/16	01/12/23	N.D.	N.D.	Other				GOAL 12: Responsible Consumption and Production
Water for the planet	Private Donor	Center for Agricultural and Forestry Development (CEDAF)	Private	01/09/18	01/12/23	N.D.	N.D.	Land Ecosystems				GOAL 15: Life on Land
Increasing climate resilience in San Cristobal, Dominican Republic, Comprehensive Water Resources Management, and Rural Development Program. 5 years	Adaptation Fund	Ministry of the Environment and Natural Resources	Multilateral	01/07/2019	30/06/2023	N.D.	N.D.	Land Ecosystems				
Reduction of Emissions by Deforestation and Degradation of Forests (REDD+)	Forest Carbon Partnership Facility (FCPF) / World Bank (WB)	Ministry of the Environment and Natural Resources	Multilateral	06/10/15	12 / 2020	N.D.	N.D.	Institutional capacity				
Promoting climate smart livestock in RD.	Global Environment Facility (GEF)	CONALECHE	Multilateral	01/07/18	30/06/21	N.D.	N.D.	Land Ecosystems	4. Environmentally Sustainable Production, Consumption, & Adaptation to Climate Change	4.1 Sustainable environmental management		GOAL 15: Life on Land
Strengthening institutional capacity for the integral management of solid waste at the national level in the Dominican Republic Phase 2	Japan International Cooperation Agency (JICA)	Ministry of the Environment and Sustainable Development	Japan	04 / 2020	04 / 2023	N.D.	N.D.	Institutional capacity				



## ANNEX 4. MIMARENA AND INTERNATIONAL COOPERATION FUNDING (2015-2019)

	USD million					
	2015	2016	2017	2018	2019	Total 2015-2019
<b>MIMARENA - Forestry</b>	<b>22.6</b>	<b>22.7</b>	<b>22.4</b>	<b>23.4</b>	<b>25.0</b>	<b>116.1</b>
Vice-Ministry of Protected Areas	5.3	5.7	5.7	6.1	6.8	29.5
Vice-Ministry of Forest Resources	13.7	13.4	14.5	15.0	15.3	71.9
Environmental Protection and Defense Program	3.6	3.6	2.3	2.3	2.9	14.7
<b>Total MIMARENA</b>	<b>119.7</b>	<b>117.8</b>	<b>142.1</b>	<b>134.7</b>	<b>219.3</b>	<b>733.6</b>
MIMARENA Forest Matters / Total MIMARENA (%)	18.9%	19.3%	15.8%	17.4%	11.4%	15.8%
<b>TOTAL CENTRAL GOVERNMENT BUDGET</b>	<b>11,521</b>	<b>12,220</b>	<b>13,153</b>	<b>13,865</b>	<b>14,950</b>	<b>65,709</b>
MIMARENA / Total Central Government Budget (%)	1.0%	1.0%	1.1%	1.0%	1.5%	1.1%
<b>International Cooperation (IC)</b>						<b>62.4</b>
IC Institutional Capacity						12.8
<b>IC Land Ecosystems</b>						<b>32.5</b>
IC Marine Ecosystems						12.7
IC Other						4.5
<b>A. Total MIMARENA + International Cooperation</b>						<b>799.1</b>
International Cooperation / (Total MIMARENA + International Cooperation) (%)						7.8%
<b>B. MIMARENA Forestry + IC Land Ecosystems</b>						<b>148.6</b>
IC Land Ecosystems / (MIMARENA Forestry + IC Land Ecosystems) (%)						21.9%

Sources: Ministry of Environment and Natural Resources (MIMARENA), Ministry of Finance and Central Bank of the Dominican Republic



## ANNEX 5. NATIONAL SYSTEM OF PROTECTED AREAS - SINAP, 2019

**The creation of the SINAP as a strategy for the conservation of biodiversity and ecosystem services serves to reduce pressures on natural forests.** These areas are especially important because they represent close to a quarter of the country's land.<sup>70</sup> By law, these areas are intended to guarantee the conservation and preservation of representative samples of the different ecosystems and the natural and cultural heritage of the country, ensuring the permanence and optimization of the environmental and economic services that these ecosystems offer or may offer to present and future generations. The law seeks to protect the services provided by primary or secondary forests, as well as natural and artificial water sources. In particular, the ecosystem services of carbon sequestration, water protection and generation, and the protection of biodiversity and scenic beauty are highlighted. In addition, the same law establishes the need to develop ecologically and environmentally appropriate activities that generate income for the maintenance of the SINAP and for improving the economic and social conditions of the communities neighboring the protected areas.<sup>71</sup> As shown in Figure 3 and Table 5A.1, protected areas, especially national parks and, to a lesser extent forest reserves, include within their territories a large part of primary or mature

forests, both broadleaf and pine. However, institutional capacity to effectively conserve protected areas is not always enough. This is primarily due to the MIMARENA's institutional weaknesses in attending to these protected areas, which cover a very extensive territory and face a great deal of complex challenges. In addition, the overlapping responsibilities between the environmental authorities and the Armed Forces, especially in the management of SENPA, has implications for the effectiveness of vigilance and control in these areas. It is not always possible to adequately balance actions to promote inclusive conservation on the one hand and punitive actions on the other, especially in a territory where there are multiple conflicts of land tenure and possession in areas where restrictions are established at different levels to carry out productive activities. In other words, efforts are needed to find an appropriate balance between positive incentives for the different stakeholders to commit to the conservation of protected areas on the one hand, and the necessary actions to sanction those who do not comply with the established legal mandates on the other. A large part of the loss of forest cover is concentrated in protected areas (see Figures 2 and 3) and highlights a challenges related to strengthening the country's capacity to prevent deforestation within national parks.

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<sup>70</sup> See Annex 2 and the SINAP (2019a).

<sup>71</sup> Dominican Republic, Sectoral Law on Protected Areas (Law 202-04 of 2004).

**TABLE 5A.1** PROTECTED NATURAL AREAS

Categories and Subcategories	Number of Protected Areas	Terrestrial Surface (Km <sup>2</sup> )	Marine Area (Km <sup>2</sup> )	Total Area (Km <sup>2</sup> )
<b>I. STRICT PROTECTION AREAS</b>	<b>12</b>	<b>406.68</b>	<b>32,900.46</b>	<b>33,307.15</b>
A. Scientific Reserves	8	216.62	-	216.62
B. Marine Mammal Sanctuaries	2	11.88	32,900.46	32,912.34
C. Biological Reserves	2	178.19	-	178.19
<b>II. NATIONAL PARKS</b>	<b>30</b>	<b>8,611.92</b>	<b>1,810.82</b>	<b>10,422.74</b>
A. National Parks	28	8,610.60	1,555.78	10,166.38
B. Underwater National Parks	2	1.33	255.04	256.37
<b>III. NATURAL MONUMENTS</b>	<b>31</b>	<b>664.55</b>	<b>23.70</b>	<b>688.25</b>
A. Natural Monuments	29	630.94	23.70	654.64
B. Wildlife Refuges	2	33.61	-	33.61
<b>IV. HABITAT/SPECIES MANAGEMENT AREAS</b>	<b>22</b>	<b>332.20</b>	<b>11,129.44</b>	<b>11,461.64</b>
A. Wildlife Refuges	19	326.17	317.73	643.91
B. Marine Sanctuaries	3	6.03	10,811.71	10,817.74
<b>V. NATURE RESERVES</b>	<b>15</b>	<b>1,641.83</b>	<b>-</b>	<b>1,641.83</b>
A. Forest Reserves	15	1,641.83	-	1,641.83
<b>VI. PROTECTED LANDSCAPES</b>	<b>17</b>	<b>414.08</b>	<b>48.96</b>	<b>463.04</b>
A. Via Panoramica	10	284.87	12.38	297.25
B. Natural Recreational Areas	4	108.41	36.58	144.99
C. Ecological Corridor	3	20.80	-	20.80
<b>Total Conservation Units</b>	<b>127</b>	<b>12,071.27</b>	<b>45,913.38</b>	<b>57,984.65</b>

Source: SINAP - National System of Protected Areas (2019a).





