Japan International Cooperation Agency (JICA)
National Council for Climate Change and Clean Development Mechanism (CNCCMDL)

The Study for the Promotion of CDM Projects in the Dominican Republic

THE DOMINICAN REPUBLIC NATIONAL ACTION PLAN FOR CDM PROJECT DEVELOPMENT

FINAL REPORT MAIN REPORT

December 2010

JAPAN INTERNATIONAL COOPERATION AGENCY
EX CORPORATION

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PREFACE

In response to a request from the Government of the Dominican Republic, the Government of Japan decided to conduct "The Study for the Promotion of CDM Projects in the Dominican Republic" and entrusted to the study to the Japan International Cooperation Agency (JICA).

JICA selected and dispatched a study team headed by Mr. Satoshi Sugimoto of EX Corporation from September 2008 to October 2010.

The Study, together with the Dominican Republic counterparts from the National CDM Office (ONMDL) of the National Council for Climate Change and Clean Development Mechanism (CNCCMDL), conducted a series of field surveys while providing capacity development assistance to the relevant stakeholders of CDM projects so that the country's overall capacity of CDM promotion can be further strengthened.

At this final stage, the Study Team prepared this final report including "The Dominican Republic National Action Plan for CDM Project Development" with various technical tools to support the project proponents in planning and implementing CDM projects.

I hope that this report will contribute to further development of CDM projects and further strengthening and sustaining of friendly relationship between our two countries.

Finally, I wish to express my sincere appreciation to our study counterparts as well as all other public and private stakeholders who provided us precious input and opinions and close cooperation all through the course of the Study.

December 2010

Izumi Takashima
Vice President
Japan International Cooperation Agency

Vice President
Japan International Cooperation Agency

LETTER OF TRANSMITTAL

We are pleased to inform the completion of "The Study for the Promotion of CDM Projects in the Dominican Republic" with submission of this final report.

The Study was conducted to investigate the potential areas/sectors of GHGs emission reduction that can be realized into CDM projects while identifying the issues and barriers to be addressed to further promote CDM projects in this country. The results of these activities are incorporated into "The National Action Plan for CDM Project Development in the Dominican Republic", which identifies the priority areas and sectors of CDM project development with the course of actions to be taken by public as well as private sectors to realize the potentials GHGs emission reduction.

The Study also conducted various capacity development activities to strengthen the knowledge and capabilities of the Dominican Republic stakeholders in CDM with production of technical tools to support project planning and documentation required for official registration to obtain carbon credit (Certified Emission Reduction: CER). The Study Team is confident enough to say that the knowledge, capacity and motivation of the Dominican Republic people in CDM project development has been well strengthened during the past few years.

We would like to express our sincere gratitude to the Japan International Cooperation, the Ministry of Foreign Affairs and the Ministry of Environment of Japan for giving us the opportunity to conduct this Study and technical cooperation. We would also like to extend our deep appreciation to the Government of the Dominican Republic, the National Council for Climate Change and Clean Development Mechanism, and JICA Dominican Republic Office for generous support to the Study. We could not successfully complete the Study without your assistance.

Finally, we hope that the output and results of the Study will be well utilized for CDM project development and contribute to sustainable development nationwide in the Dominican Republic.

December 2010

Satoshi Sugimoto
Team Leader
JICA Study Team

List of the Reports

Summary (Japanese)

Main Report (Japanese)

Summary (English)

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ANNEX I: Tools for CDM Project Development

ANNEX II: Seminars and Workshops

This is the Main Report (English)

The currency exchange rate used in this report is as follows.

U$1.00= JP¥91.10.

Dominican Republic

Source：MSN Encarta World Atlas

 Meeting with APORLI (Association of pig farmers)	 Meeting with FONAFIFO (Forest Association) in Costa Rica
 Meeting with INOLASA (Palm oil mill) in Costa Rica	 Meeting with Fuel Change CDM Project Owner in Peru
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Photo 1: Meetings with Key Stakeholders of CDM

Pig Farm of APORLI member

Wastewater treatment lagoon in pig farm

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Group session in CDM workshop


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Final Seminar

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Abbreviation	English	Spanish
A/R	Afforestation/Reforestation	Aforestación/Reforestación
ABA	Banks Association of Dominican Republic	Asociación de Bancos Comerciales de la República Dominicana
ADOZONA	Free Zone Dominican Association	Asociación Dominicana de Zonas Francas
APORLI	Association of Pig Farmers	Asociación de Porcicultores de Licey al Medio
ASONAHORES	National Association of Hotels and Restaurants	Asociación Nacional de Hoteles y Restaurantes, Incoporada
BCRD	Central Bank of the Dominican Republic	Banco Central de la República Dominicana
BOD	Biological Oxygen Demand	Demanda de Oxigeno Biológico
CDEEE	Dominican Corporation of State Electric Companies	Corporación Dominicana de Empresas Eléctricas Estatales
CDM	Clean Development Mechanism	Mecanismo de Desarrollo Limpio
CEA	State Sugar Council	Consejo Estatal del Azúcar
CEDAF	Agro-Forestry Development Centre	Centro para el Desarrollo Agropecuario y Forestal
CEDOPEX	Dominican Centre of Promotion and Export	Centro de Exportación e Inversión de República Dominicana
CER	Certified Emission Reduction	Reducción de Emisión Certificada
CME	Coordinating/Managing Entity	Entidad de Coordinación de Gestión
CNCCMDL	National Council for Climate Change and Clean Development Mechanism	Consejo Nacional para el Cambio Climático y Mecanismo de Desarrollo Limpio
CNE	National Energy Commission	Comisión Nacional de Energía
CNG	Compressed Natural Gas	Gas Natural Comprimido
CNTU	National Centre of United Carriers	Central Nacional de Transportistas Unificados
COD	Chemical Oxygen Demand	Demanda de Oxigeno Químico
CODOPYME	Dominican Confederation of Small and Medium Industries	Confederación Dominicana de la Pequeña y Mediana Empresa
COGO	Government Committee for Ozon	Comité Gubernamental de Ozono
CONATRA	National Confederation of Carriers	Confederación Nacional de Organizaciones de Transporte
CONEP	National Council of Private Enterprises	Consejo Nacional de la Empresa Privada
CONIAF	National Commission for the Agro-Forestry Investigation	Consejo Nacional de Investigaciones Agropecuarias y Forestales
CPA	CDM Project Activity	Actividad de Proyecto de MDL
CPI	Consumer Price Index	Índice de Precio al Consumidor

Abbreviation	English	Spanish
CREP	Public Corporation Reform Commission	Comisión de Reforma de la Empresa Pública
DGA	General Directorate of Customs	Dirección General de Aduanas
DGII	General Directorate of Tax	Dirección General de Impuestos Internos
DGTT	Main Directorate of Terrestrial Transit	Dirección General de Transito Terrestre
DIGENOR	General Directorate of Standards and Quality System	Dirección General de Normas y Sistemas de Calidad
DNA	Designated National Authority	Autoridad Nacional Designada
DNA-CDM	Designated National Authority of Clean Development Mechanism	Autoridad Nacional Designada del Mecanismo de Desarrollo Limpio
DR	Dominican Republic	República Dominicana
EDE	Energy Distribution Company	Empresa Distribuidora de Electricidad
EGEHID	Dominican Hydropower Generation Company	Empresa de Generación Hidroeléctrica Dominicana
EIA	Environment Impact Assessment	Evaluación de Impacto Ambiental
ETED	Dominican Electric Transmission Company	Empresa de Transmisión Eléctrica Dominicana
GDP	Gross Domestic Product	Producto Interno Bruto
GHG	Greenhouse Gas	Gas de Efecto Invernadero
GIS	Geographical Information System	Sistema de Información Geográfica
GJ	Gigajoule	Gigajoules
GNI	Gross National Income	Ingreso Nacional Bruto
GODR	The Government of Dominican Republic	El Gobierno de República Dominicana
GWh	Gigawatt-hour	Giga vatios hora
IEA	International Energy Agency	Agencia Internacional de Energía
IEC	Information, Education and Communication	Información, Educación y Comunicación
IIBI	Institute of Biotechnology and Industry Innovation	Instituto de Innovación en Biotecnología e Industria
INDRHI	Dominican Institute of Hydraulic Resources	Instituto Dominicano de Recursos Hidráulicos
INESPRE	Institute of Price Stabilization	Instituto de Estabilización de Precios
ITBIS	Tax on the Transfer of Industrialized Goods and Services	Impuestos de Transferencias de Bienes Industrializados y Servicios
JAD	Dominican Agro-Enterprise Board	Junta Agro empresarial Dominicana
JCE	The Central Election Board	Junta Central Electoral
JICA	Japan International Cooperation Agency	Agencia de Cooperación Internacional del Japón
JOFCA	Japan Overseas Forestry	Asociación de Consultores Forestales

Abbreviation	English	Spanish
	Consultants Association	de Ultramar del Japón
LPG	Liquefied Petroleum Gas	Gas Licuado de Petróleo
MEPyD	Ministry of Economy, Planning and Development	Ministerio de Economía, Planificación y Desarrollo
MH	Ministry of Treasury	Ministerio de Hacienda
MIA	Ministry of Agriculture	Misterio de Agricultura
MIC	Ministry of Industry and Commerce	Ministerio de Industria y Comercio
MIMARENA	Ministry of Environment and Natural Resources	Ministerio de Medio Ambiente y Recursos Naturales
MITUR	Ministry of Tourism	Ministerio de Turismo
MJ	Megajoule	Megajoules
MSP	Ministry of Public Health and Social Affairs	Ministerio de Salud Publica
MW	Megawatt	Megavatios
NCA	National Carbon Account	Cuenta Nacional de Carbono
NG	Natural Gas	Gas Natural Comprimido
NGO	Non Governmental Organization	Organización No Gubernamental
ONCC	National Climate Change Office	Oficina Nacional de Cambio Climático
ONE	National Bureau of Statistics	Oficina Nacional de Estadísticas
ONMDL	CDM National Office	Oficina Nacional de Mecanismo de Desarrollo Limpio
OPI	Investment Promotion Office	Oficinas de Promoción de Inversiones y Tecnología
OPRET	Office for Transport Reordering	Oficina para el Reordenamiento del Transito
OTEC	Ocean Thermal Energy Conversion	Conversión de Energía Térmica Oceánica
OTTT	Technical Office of Terrestrial Transport	Oficina Técnica de Transporte Terrestre
PDD	Project Design Document	Documento de Diseño de Proyecto
PIN	Project Idea Note	Nota de Idea de Proyecto
PLD	The Party of the Dominican Liberation	Partido de la Liberación Dominicana
PoA	Programme of Activities	Programa de Actividades
PPA	Power Purchasing Agreement	Acuerdo de Compra de Energía
PRD	The Dominican Revolutionary Party	Partido Revolucionario Dominicano
PRSC	Social Christian Reformist Party	Partido Reformista Social Cristiano
RENAEPA	National Network of Enterprises Support to Environmental Protection	Red Nacional de Apoyo Empresarial para la Protección Ambiental
SENI	Coordinating Organism of the Interconnected National Electrical System of the Dominican Republic	Organismo Coordinador del Sistema Eléctrico Nacional Interconectado

Abbreviation	English	Spanish
SIA	Social Impact Assessment	Evaluación de Impacto Social
SIE	Superintendence of Electricity	Superintendencia de Electricidad
SWM	Solid Waste Management	Gestión de Residuos Sólidos
TOC	Total Organic Carbon	Carbón Orgánico Total
UASD	Autonomous University of Santo Domingo	Universidad Autónoma de Santo Domingo
UNDP	United Nations Development Programme	Programa de las Naciones Unidas para el Desarrollo
UNFCCC	United Nations Framework Convention on Climate Change	Convención Marco de las Naciones Unidas sobre el Cambio Climático

1 INTRODUCTION

1.1 Background

The Dominican Republic is the archipelago country located at hurricane-prone region in the Caribbean. The People's concern for climate change is elevated due to its possible relevance to hurricane. To make immediate national response actions against climate change, the Government of Dominican Republic (GODR) ratified the Climate Convention (The United Nations Framework Convention on Climate Change) and Kyoto Protocol in 1998 and 2002 respectively while establishing the Office of National Climate Change (ONCC) and the Office of National CDM (ONMDL) under the Deputy State Secretary of SEMARENA (State Secretariat of Environment and Natural Resources) in 2004. Later in 2008, GODR established the National Council for Climate Change and Clean Development Mechanism (CNCCMDL) as the independent organization under the direct control of the Office of the President with the mandate of formulation and implementation of the national policies for climate change mitigation and adaptation. ONCC and ONMDL have been reorganized as the executive units of CNCCMDL. CNCCMDL is now working as the Designated National Authority of CDM with ONMDL as the executive unit.

Meanwhile, the Dominican Republic is currently facing the domestic issues in relation to "Stabilization of Domestic Energy Supply" and "Solid Waste Management", both of which become more critical with the rapid economic growth led by tourism sector.

The primary energy supply in the Dominican Republic largely depends on import of fossil fuels (especially oil); therefore its economy is vulnerable to the trend of international oil market. The development of alternative energy sources such as renewables (hydropower, biomass, etc.) and energy efficiency improvement is one of the national priority policy issues in the country.

Solid waste management is another critical issue in the country. With its high growth of economy and tourism development, the amount of waste generation is about to reach the level of metropolitan cities in the developed countries although the current solid waste management system (collection, haulage, treatment, and disposal) is very limited to properly handle this increased amount.

Under these circumstances, CDM (Clean Development Mechanism) is expected to serve as an effective policy instrument to address the above issues in the Dominican Republic. There are also a great number of CDM projects planned and recommended by various stakeholders.

This Study, in response to the official request by GODR, aims at maximizing the use of CDM to help solving the national issues of energy and solid waste management through capacity

development of CNCCMDL and other relevant public and private stakeholders, with respect to formulation, management, and implementation of CDM projects, whereby it also contributes to mitigation of climate change and sustainable development of the Dominican Republic.

1.2 Objectives of the Study

To develop the capacity of ONMDL/CNCCMDL and other relevant public and private stakeholders in promoting and managing CDM projects, the Study aimed at:

- Preparing "The Manual for CDM Project Formulation" for the use by potential CDM project stakeholders. It will include practical guidelines and know-how for preparation of PIN (Project Idea Note), and PDD (Project Design Document);
- Compiling the course of short-term actions (in 2 to 3 years) to be taken by the Government of Dominican Republic for promotion of CDM projects into "The Recommendation Paper on the Actions for CDM Promotion in the Dominican Republic"; and
- Promoting CDM project formulation and develop capacity of relevant stakeholders of CDM through the following activities in the course of the Study.
    - Holding of the seminars and workshops for capacity development of relevant stakeholders of CDM
    - Establishment of the national CDM website as the platform of CDM in the Dominican Republic
    - Technology transfer and capacity development of CDM project formulation and management to ONMDL/CNCCMDL through on-the-job training of PIN evaluation and preparation of model PDDs

1.3 Organizational Structure for Study Implementation

In accordance with the agreement made between CNCCMDL and JICA, the Study established the following organizations for smooth and efficient implementation of technical cooperation.

1.3.1 Steering Committee

CNCCMDL established the steering committee for the Study consisting of the representatives from the organizations shown below.

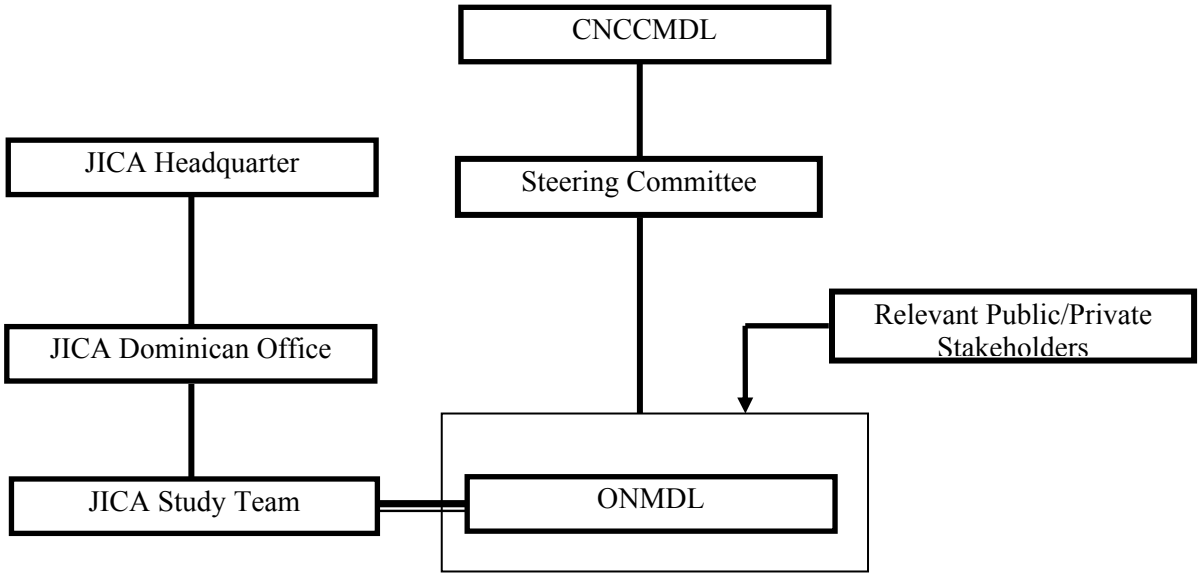
Country	Organization
Dominican Republic	♦ National Council for Climate Change and Clean Development Mechanism ♦ Ministry of Environment and Natural Resources ♦ Ministry of Treasury ♦ Ministry of Industry and Commerce

Country	Organization
	♦ Ministry of Agriculture ♦ National Energy Commission ♦ Super Intendancy of Electricity ♦ Coordination Body of Inter-connected National System of Electricity ♦ Ministry of Economy, Planning and Development ♦ Ministry of Public Works and Communication
Japan	♦ JICA Dominican Office

The Steering Committee played supervising and advisory roles in relation to implementation of the Study. The Steering committee meetings were held periodically to officially inform progress of the Study as well as to discuss the issues that need coordinated actions among the relevant government organizations.

1.3.2 Counterpart Team

The primary counterpart of the Study is ONMDL of CNCCMDL. It also invited participation from other public and private organizations in various activities to strengthen the institutional and human resource capacity of the potential stakeholders of CDM such as relevant government organizations, financial institutions, private enterprises, local governments, NGOs, and so forth.



1.4 Study Components

The Study mainly consists of the 5 (five) components mentioned below.

Component I	:	Preparation of PIN and Model PDDs
Component II	:	Formulation of National Action Plan for CDM Project Development
Component III	:	Capacity Development of the Relevant Stakeholders of CDM ♦ Seminars and Workshops ♦ Fact Finding Mission on CDM Projects in Neighboring Countries (Peru, Mexico, Costa Rica)
Component IV		Preparation of the Manual for CDM Project Formulation
Component V		Development of Supporting Tools for CDM Project Promotion ♦ National CDM Website ♦ National CDM Portfolio ♦ GIS-Based CDM Project Potential Map

1.4.1 Component I: Preparation of PINs and Model PDDs

Based on the analysis of CDM project potentials and a series of interviews and discussions with relevant public and private stakeholders of CDM projects, the Study produced various PINs and model PDDs to help potential project proponents in development of CDM project related document. Some of the public and private stakeholders also produced and submitted PINs by themselves in accordance with the discussions with the Study Team and ONMDL. The PINs and model PDDs produced in the Study are as follows.

Table 1-1 : PINs and model PDDs produced in the Study

Types of Project	PIN	Model PDD
Programmatic CDM of mini-hydro projects	○	○
Programmatic CDM of biomass power generation	○	○
Programmatic CDM of methane capture from animal manure management	○	○
Methane capture from final disposal landfill	○	–
Methane avoidance from organic waste by composting	○	–

The details of the selection process for determining the areas/sectors of PIN/model PDD preparation are discussed in Chapter 3 of this Report.

1.4.2 Component II: Formulation of Nation Action Plan for CDM Project Development

The Study prepared the National Action Plan for CDM Project Development in the Dominican Republic prepared for clarifying the course of actions to be taken for maximizing realization of CDM project development potentials to serve for sustainable socio-economic development of the country. The Action Plan identifies the priority sectors of CDM project development with

possible CDM project prototypes by sectors. Taking into the limited time up until the deadline of the 1st commitment period of the Kyoto Protocol, the Action Plan puts its priority on the sectors that have larger CDM project development potentials within the short-term. Such sectors include renewable energy, biomass, and waste management.

Subsequently, it also specifies the actions to be taken by public and private stakeholders of CDM to strengthen the capacity of CDM project development in this country. It includes the capacity development of the National Office of CDM (ONMDL), establishment of the National Carbon Fund, the strategies for collaborative actions among public and private sector stakeholders for CDM project development and so forth. The full text of the National Action Plan is on Chapter 2 of this Report.

1.4.3 Component III: Capacity Development of the Relevant Stakeholders of CDM

To strengthen capacity of CDM project development in this country, the Study periodically held dissemination seminars of CDM. With its focus on potential CDM project proponents as the target participants, the Study also held a CDM project documentation workshop to enhance their understanding on the keys of CDM project documentation.

In February 2010, the Study organized a fact find mission on CDM project development in the 3 (three) neighboring countries (Peru, Mexico, Costa Rica). The main purpose of this fact-finding mission for public sector participants is to investigate the current CDM project development in these countries and identify the keys of success in utilizing CDM for sustainable socio-economic development of the Dominican Republic. For the private sector participants, on the other hand, it aims at identifying the areas/sectors of the new business and investment opportunities that can be developed with the use of CDM (carbon credit) through visiting the sites of CDM project and intensive discussions with the CDM project developers, owners, and operators. To meet the purposes mentioned above, the mission includes the visits of various CDM project sites and opportunities of discussions with various key players of CDM projects including public and private sector organizations in each of the three countries. The results of this mission were also disseminated in the seminar held in June 2010.

All the seminar and workshop proceedings, mission reports, and materials are available in the ANNEXES to this Report.

1.4.4 Component IV: Preparation of the Manual for CDM Project Formulation

Based on the joint works between ONMDL and JICA Study Team, the Study prepared the Manual for CDM Project Formulation for the use by potential CDM project planners, developers, and owners. Its contents will be periodically revised and updated by ONMDL of CNCCMDL. The current version is available in the ANNEXES to this Report.

1.4.5 Component V: Development of Supporting Tools for CDM Project Development

The Study has developed the following supporting tools for CDM project development in the Dominican Republic:

- National CDM Website (National Information Platform for CDM);
- National CDM Portfolio; and
- GIS-based CDM Project Potential Map.

ONMDL of CNCCMDL will maintain and update these tools to provide potential CDM project stakeholders with the latest information on CDM and its development in this country.

Details on these tools are discussed in Chapter 3 while the latest version of each tool is available on ANNEXES to this Report.

2 CURRENT STATUS OF CDM PROJECT DEVELOPMENT IN THE DOMINICAN REPUBLIC

2.1 Country Profile of the Dominican Republic

2.1.1 Natural Conditions

a. Location

The Dominican Republic is located at 68º 19´ to 72º 01´ longitude west and 17º 36´ to 19º 58´ latitude north[1].

Dominican Republic shares with Haiti the island called La Hispaniola, which forms jointly with Cuba, Jamaica, and Puerto Rico the so called Great Antilles. La Hispaniola has an area of approximately 77,914 km^2, out of this area 48,442 km^2 corresponds to the Dominican Republic.

b. Topography

The Dominican Republic is diagonally divided from Southeast to Northwest by the Central Mountain Range; at the lowlands of this range the Vega Real Valley extends and it is limited by Septentrional Mountain Range which runs next to the coastline from Southeast to Northwest. The main heights are located precisely in the Central Range, e.g., Monte Gallo (2,500 meters), La Pelona (3,168 meters), and Pico Duarte (3,175 meters); these heights represent the highest points in the orographic features of the Antilles[2].

c. Climate

The Dominican Republic has a year round tropical maritime climate. Sea breezes refresh the insular territory, evening out temperatures to average 23°C in the early mornings to 32°C at noon time year round. The lowest temperatures occur in the mountain areas near Constanza, where temperatures have dropped to 0°C, and record highs have been registered at the frontier with Haiti, 39°C in the summer. May through November is regarded as the rainy season. The hurricane season lasts from June through November, with August-September being the peak months.[3]

[1] República Dominicana en Cifras 2007, ONE (Oficina Nacional de Estadística)
[2] República Dominicana en Cifras 2007, ONE (Oficina Nacional de Estadística)
[3] http://www.southtravels.com/america/dominicanrepublic/weather.html

In 100 years of hurricane events in the Dominican Republic, approximately 20 hurricanes have landed on the coasts of the country; the most important hurricanes in view of their effects and intensity include Lilis (1894), San Zenón (1930), Inés (1966), David (1979), George (1998)[4] and Noel y Orga (2007).

2.1.2 Administrative Division

The territory of the Dominican Republic is politically divided into 31 provinces and a national district. The national district, where the capital city of the country is located, is similar with other provinces in its basic administrative powers and roles while having its own characteristics.

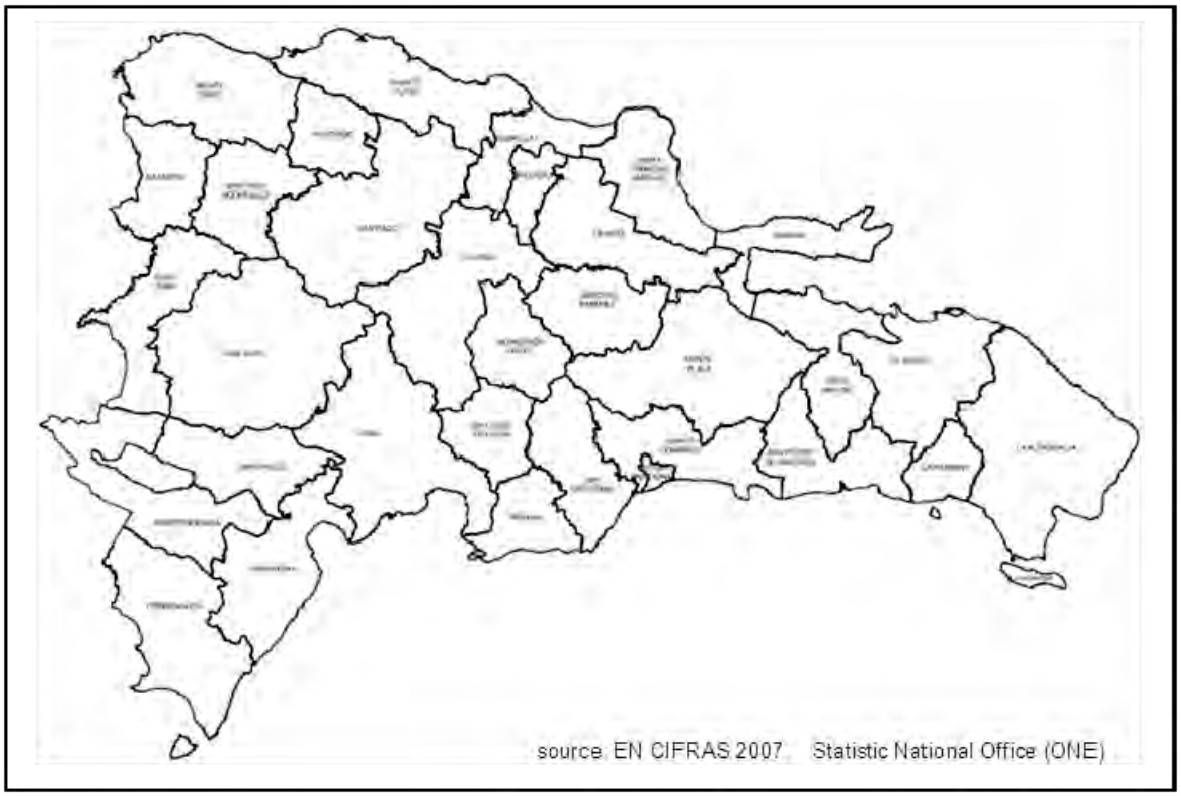


Figure 2-1: Administration Boundary of the Country

The provinces are political/administrative units that facilitate delegation of the authority of the central government at intermediate level. Every province has a civil governor appointed by the President, with an exception of the National District where the mayor is elected by popular vote. Each province has its own capital city with the main City Hall of the province. The regional offices of the central government are also usually located at capital cities of the provinces.

The administrative area of the National District covers 104.44 km^2, provided by the Law 163-01. The "Ayuntamiento del Distrito Nacional de Santo Domingo de Guzman" (The name of the City Hall) is in charge of its administration.

[4] Meteorological National Office of Dominican Republic

The Province of Santo Domingo and its municipalities, which are legally separated from the National District, are in fact closely linked to their capital city in terms of economy. The floating population daily moving into the National District, the associated increased service demand, and economic relationship with the other provinces makes the capital to be the center of the greater metropolitan region.

The government units established at local level in the Dominican Republic are the municipalities (city councils/halls), which have the power to approve local laws (resolutions) and to protect quality of the living environment in their jurisdictions.

2.1.3 Population

According to the latest population estimation and projection done by the National Bureau of Statistics (ONE in Spanish) in April 2010, the total population of the Dominican Republic in 2009 was 9,755,954. It is also estimated that it will increase up to 11,055,080 in 2020 with the annual average population growth rate of 1.14% during 2009-2020.

Table 2-1: Population Estimation and Projection in the Dominican Republic

Year	Population
2009	9,755,954
2010	9,884,371
2015	10,496,535 (estimated)
2020	11,055,080 (estimated)
Source: Población total estimadas y proyectadas por año calendario y sexo, según región y provincia, 13 de abril de 2010.	

The table below shows the population distribution among regions and provinces in the Dominican Republic. The National District and the provinces of Santo Domingo and Santiago are respectively occupied with the population of more than 1 million.

Table 2-2: Distribution of Population among Regions and Provinces (2009)

Region/Province	Population
Metropolitan Region	**3,257,003**
National District	1,097,218
Santo Domingo	2,159,785
North Cibao Region	**1,591,849**
Espaillat	235,384
Puerto Plata	325,018
Santiago	1,031,447
South Cibao	**773,092**

Region/Province	Population
La Vega	425,327
Sanchez Ramírez	155,766
Monseñor Nouel	191,999
Northeast Cibao Region	**639,314**
Duarte	297,433
María Trinidad Sánchez	140,952
Hermanas Mirabal	103,076
Sámana	97,853
Northwest Cibao Region	**428,849**
Dajabón	66,526
Monte Cristi	119,651
Santiago Rodríguez	54,980
Valverde	187,692
Valdesia Region	**1,154,751**
Azua	239,369
Peravia	199,265
San Cristóbal	647,003
San Jóse de Ocoa	69,114
Enriquillo Region	**391,879**
Baoruco	113,465
Barahona	198,914
Independencia	54,410
Pedernales	25,090
Del Valle Region	**317,116**
Elías Piña	71,447
San Juan	245,669
Yuma Region	**571,683**
El Seibo	104,687
La Altagracia	224,034
La Romana	242,962
Higuamo Region	**630,418**
San Pedro de Macorís	332,302
Monte Plata	207,835
Hato Mayor	90,281
TOTAL	**9,755,954**

Source: Población total estimadas y proyectadas por año calendario y sexo, según región y provincia, 13 de abril de 2010.

2.1.4 Government Administration

a. The System of Government

The Dominicans constitute a Nation organized as an independent state, by the name of the Dominican Republic (Republica Dominicana). (Art.1 Constitution of the Dominican Republic.)

The Dominican Republic adopts civil, republic, democratic and representative government system with separation of the three powers of legislation, administration and judicature. The Borderline Treaty of 1929 and its Revision Protocol of 1936 set terrestrial boundary of the country.

The Dominican Republic is politically/administratively divided into a National District, which includes capital city of the country, provinces, and municipalities, by law.

The Legislative power is exercised by the Congress of the Republic, consisting of a Senate and a House of Representatives (Camara de Diputados). The Senate consists of senators elected from each province and the National District (one senator per province and the national district). The full term of senators is 4 (four) years. (Exceptionally, the full term for the current period is set for 6 years)

The House of Representatives consists of the congress members elected by the people of the provinces and the National District (through direct vote) at the rate of one representative per fifty thousand (50,000) inhabitants or fraction exceeding twenty five thousand. The full term of congress members is also 4 (four) years. (Exceptionally, the full term for the current period is set for 6 years)

The Administrative (Executive) Power is exercised by the President of the Dominican Republic, who is elected every four years by direct vote. The President can be reelected for the second term, but not for the third term even for Vice-Presidency of the Republic.

The Judicial Power is exercised by the Supreme Court of Justice and the other tribunals of the judicial order created by the Constitution and laws. Judicial system holds its administrative and budgetary autonomy. The Supreme Court judges are appointed by the National Council of the Magistrates. The Prosecutor General represents the government in the Supreme Court of Justice.

b. Public Administration

The execution of Public Administration is dispatched to the State Secretariats respectively. There are 17 secretariats in the Dominican Republic: Agriculture; Education and Culture; Industry and Commerce; Armed Forces; Environment and Natural Resources; Public Works and Communications; Foreign Affairs; Public Health and Social Assistance; Tourism; Labor;

Internal Affairs and Policies; Finance; Higher Education, Science and Technology; Youth; Woman; Sports, Physical Education and Recreation; and Culture.

The President's Office has two secretariats i.e. the Administrative Secretariat and the Technical Secretariat. The juridical matters of the State are taken care of by the Office of the Prosecutor General of the Republic while the Comptroller General of the Republic is responsible for the use of public funds. To facilitate the performance of governmental activities, de-centralized specialized entities have been also created such as OPI (Investment Promotion Office), CEDOPEX (Dominican Center of Promotion and Export), INESPRE (Institute of Price Stabilization), IIBI (Institute of Biotechnology and Industry Innovation), INDRHI (Dominican Institute of Hydraulic Resources), and CREP (Public Corporation Reform Commission).

Monetary Policy and financial sector management is under the responsibility of the Central Bank of the Dominican Republic.

The Office of Civil Defense and the National Emergency Commission is in charge of disaster prevention and mitigation (Law 147-02).

c. Local Government

The National District government as well as each municipal government has its own city hall/council. The number of city councilors is determined by law in proportion to the number of inhabitants, but in no case being less than five. The city councilors are elected by direct vote of the people of respective national district or municipality every 4 years in the same manner as the case of national congress member election. Candidacy of city councilors may be made by political parties or regional, provincial, or municipal political groups.

Both the Mayors and city councils have their own executive power in accordance with the Constitution and laws that provide their attributions, powers and duties.

In formulating and executing its own budget, each city hall/council has the obligation to maintain its proper allocation and distribution to every need of the people and services required. Every city hall/council, with the approval by law, may establish its own taxes as long as they are not duplicated with national taxes or inter-municipal trade and export duties, or any other relevant laws and Constitution. (Political Constitution of the Dominican State Art. 82, 83 and 85)

According to the Law of Municipal Organization, every city council also has the following authorities such as:

- To establish municipal enterprises by the decision in the city council meetings;
- To contract out the public services to the private sector;
- To establish municipal/city regulations; and
- To establish necessary administrative structure.

d. Election System

The Central Election Board (Junta Central Electoral: JCE) is responsible for preparing and conducting the elections for the President and lawmakers at national as well as local levels of the country.

JCE consists of a chairman with his deputy and eight judges with their respective deputies.

Eligibility requirement for the chairman of JCE includes:

- To be a member of JCE;
- To be a Dominican by birth or origin;
- To be over 35 years old for full exercise of civil and political rights; and
- To have a bachelor or doctor degree of law with at least 12 years' experience of legal practice.

e. Political Parties

Political parties are of important relevance in the country's political history. The three main parties in the Dominican Republic are the Party of the Dominican Liberation (Partido de la Liberacion Dominicana: PLD), currently in power, the Dominican Revolutionary Party (Partido Revolucionario Dominicano: PRD) and the Social Christian Reformist Party (Partido Reformista Social Cristiano: PRSC).

Table 2-3: Election year and Winning Political Party

Election year	Winning political party
1962	Dominican Revolutionary Party
1966	Social Christian Reformist Party
1970	Social Christian Reformist Party
1974	Social Christian Reformist Party
1978	Dominican Revolutionary Party
1982	Dominican Revolutionary Party
1986	Social Christian Reformist Party
1990	Party of the Dominican Liberation
1994	Social Christian Reformist Party
1996	Party of the Dominican Liberation
2000	Dominican Revolutionary Party
2004	Party of the Dominican Liberation
2008	Party of the Dominican Liberation

2.1.5 Economic Situation

a. Overview of the Dominican Economy

A World Bank document, "World Bank List of Economies" (July 2010), classified the Dominican Republic, of which GNI per capita was US dollar 4,510 in 2009, as the upper

middle-income country[5] same as Panama, Mexico, and Costa Rica. It was pointed out that low income and middle-income economies together comprised the group of developing economies, with the remark that classification by income did not necessarily reflect development status. The value of the gross national income per capita reported by the World Bank was somewhat lower than the value of gross domestic product per capita reported by the Central Bank of the Dominican Republic in current RD$.

b. Sector Structure and Growth

According to the latest data of GDP in the Dominican Republic, the percentage distribution of GDP among economic sector are approximately 6% in the primary sector, 30% in the secondary sector, and the remaining 64% in the tertiary sector (Central Bank of the Dominican Republic 2009). The gross domestic product (GDP) at current price by economic sectors of the Dominican Republic over the period 2005-2009 is shown in the table below.

Table 2-4: Dominican Republic Gross Domestic Product 2005-2009

Unit: million RD$ at current price

Sector	2005	2006	2007	2008	2009
Agriculture	70,092.2	77,702.7	81,161.7	92,297.4	96,366.8
Industries	277,900.9	326,061.4	359,620.5	436,897.4	467,270.1
Mining	3,642.5	5,955.4	9,284.2	5,415.1	2,184.3
Local Manufacture	165,635.6	189,814.5	209,860.0	282,660.4	328,550.6
Free Trade Zone Manufacture	49,395.8	53,296.3	51,917.0	56,084.6	50,939.1
Construction	59,227.0	76,995.1	88,559.2	92,737.3	85,596.0
Services	592,347.2	697,135.5	794,305.1	933,739.0	987,082.6
Value Added	940,340.3	1,100,899.6	1,235,087.3	1,462,933.8	1,550,719.4
Taxes less Subsidies on Products	79,661.7	88,902.2	129,123.1	113,229.0	128,043.2
Gross Domestic Product	**1,020,002.0**	**1,189,801.9**	**1,364,210.3**	**1,576,162.8**	**1,678,762.6**

The table indicates that the average annual growth rates during 2005-2009 is high in the tertiary sector (13.7%), followed by the secondary sector (8.4%) while the growth in primary sector remains at 6.2%, representing the structural change of the Dominican Republic economy from agriculture-based to manufacturing and service based one with its priority upon export-intensive industry in free trade zones and tourism sector.

[5] The World Bank classified income categories on the basis of the 2009 per capita gross national income, into *low income:* less than US$935, *lower middle income:* US$936-3,705, *upper middle-income:* US$3,706-11,455, and *high income:* US$11,456 or more.

c. Trend of GDP Growth

The following table shows that the overall real GDP growth rate (at 1991 constant price) during 2000-2009 was 5.1% per year on average while the growth rate of per capita GDP in the same period was about 3.2% per year. Although the Dominican Republic economy experienced a serious economic and financial crisis during 2003-2004 caused by bankruptcy of mega banks and subsequent depreciation of RD$ currency and decrease of foreign currency reserves, when a minus economic growth was recorded in 2003 as shown in the table below, the implementation of economic reform programme of the current Fernandez Administration improved the national economy to achieve around 10% annual growth of real GDP during 2005-2007.

Table 2-5: Population and Gross Domestic Product per Capita 2000-2008

Per Capita Gross Domestic Product 2000-2009					
Years	Population	GDP Reference 1991		Current GDP	Current GDP
	(Thousands)	(Million RD$)	(Percapita RD$)	(Million US$)	(Percapita US$)
2000	8,263	220,359.0	26,669.3	23,799.3	2,880.3
2001	8,411	224,345.8	26,672.0	24,561.0	2,920.0
2002	8,563	237,331.4	27,717.4	24,985.6	2,918.0
2003	8,717	236,730.1	27,158.8	20,432.1	2,344.1
2004*	8,873	239,835.9	27,029.2	22,608.7	2,548.0
2005*	9,033	262,051.3	29,011.2	33,774.7	3,739.1
2006*	9,195	290,015.2	31,539.9	35,897.2	3,903.9
2007*	9,361	314,592.8	33,608.4	41,228.1	4,404.5
2008*	9,529	331,126.8	34,750.0	45,717.6	4,797.8
2009*	9,700	342,564.1	35,315.8	46,717.6	4,815.6
*Preliminary data					
Growth Rates (%)					
Years	Population	GDP Reference 1991		Current GDP	Current GDP
	(Thousands)	(Million RD$)	(Percapita RD$)	(Million US$)	(Percapita US$)
2000	1.8	5.7	3.8	10.3	8.4
2001	1.8	1.8	0.0	3.2	1.4
2002	1.8	5.8	3.9	1.7	(0.1)
2003	1.8	(0.3)	(2.0)	(18.2)	(19.7)
2004*	1.8	1.3	(0.5)	10.7	8.7
2005*	1.8	9.3	7.3	49.4	46.7
2006*	1.8	10.7	8.7	6.3	4.4
2007*	1.8	8.5	6.6	14.9	12.8
2008*	1.8	5.3	3.4	10.9	8.9
2009*	1.8	3.5	1.6	2.2	0.4
*Preliminary data					
Source: Central Bank of the Dominican Republic					

d. Economically Active Population Employed by Economic Sector

Out of the total population of 9,529 thousand in 2008, the Dominican Republic has totally about 7,628 thousand population of 10 years and over, in which 4,246 thousand are economically active. The number of employed workers is about 3,650 thousand with the employment rate of

86% of the economically active population while the unemployment rate is 14%, improved by 2% from the previous year.

ECONOMIC SECTOR	Employed Population	%
AGRICULTURE, LIVESTOCK, FISHING AND FORESTRY	516,081	14.1%
MINING	8,992	0.2%
MANUFACTURING	501,178	13.7%
ELECTRICITY, GAS AND WATER	31,522	0.9%
CONSTRUCTION	250,585	6.9%
WHOLESALE AND RETAIL TRADE	773,692	21.2%
HOTELS, BARS AND RESTAURANTS	228,477	6.3%
TRANSPORTATION AND COMMUNICATIONS	271,951	7.5%
FINANCIAL SERVICES	77,249	2.1%
PUBLIC ADMINISTRATION AND DEFENSE	156,794	4.3%
OTHER SERVICES	833,380	22.8%
TOTAL	**3,649,901**	100.0%

As shown in the table below, the employed population was distributed among various sectors. The largest number of population is employed in wholesale and retail sector (21.2%), followed by the primary industry sector (14.1% including agriculture, livestock, etc.) and manufacturing (13.7%).

Table 2-6: Employed Population in the DR (April 2008)

Source: Central Bank of the Dominican Republic

The table below shows the relative share of GDP and employment among the three economic sectors. The percentage of employed population in the primary sector (agriculture, livestock, fishing and forestry) is much higher than the ratio of GDP.

Table 2-7: Composition of GDP and employed population in 2008

Economic Sector	GDP (%)	Employed Population (%)
Primary Sector	6.3%	14%
Secondary Sector	29.9%	21%
Tertiary Sector	63.8%	65%

e. Public Debt

The data on public debt was published by the Central Bank of the Dominican Republic up until the year 2004, and by the Finance Secretariat from the year 2005. The cumulative yearly growth rate of public debt between December 2000 and December 2004 was 11.5%, but decreased to 5.1% between 2005 and 2008. A large increase in public debt could be observed in 2003, when public debt reached around 32% of GDP and 29% in 2004, but then decreased significantly to around 20% in 2005 and 2006, and to 18% in 2007.

Table 2-8: Public Debt of the Dominican Republic 2000-2008

Month & Year	Public Debt (Million US$)
December 2000	3,682.12
December 2001	4,176.84
December 2002	4,534.95
December 2003	5,971.43
December 2004	6,332.02
2005	6,812.50
2006	7,266.10
2007	7,565.90
2008	8,322.80

Source: Central Bank of the Dominican Republic up to 2004, Finance Secretariat from 2005

f. Foreign Trade

f.1. Exports

The export value of the Dominican Republic was US$5,737 million in 2000 but declined slightly in the following 3 years, to rebound in 2004 to US$5,936 million, US$6,145 million in 2005, US$6,610 million in 2006 and US$7,160 million in 2007, which gives a cumulative yearly growth rate of 4.8% between 2004 and 2007, and slight decrease in 2008 to 6,949 million. The relative importance of the exports from the free trade zones has been on a declining trend, from around 80% in 2000-2004, to 63% in 2007. On the other hand, mineral products increased their importance from around 3% in 2000-2003, to 7% in 2004-2005, 10% in 2006 and 15% in 2007, but reduced to 7.1% in 2008.

Table 2-9: Composition of the Dominican Exports 2000-2008 (%)

DETAIL	2000	2001	2002	2003	2004	2005	2006	2007	2008
I. FREE ZONES	83.2%	84.9%	83.6%	80.6%	78.9%	77.3%	70.8%	63.2%	65.4%
II.- SUGAR AND OTHER SUGAR CANE DERIVATIVES	1.6%	1.7%	1.9%	1.8%	1.6%	1.6%	2.0%	1.8%	1.7%
III.- COFFEE AND OTHER MANUFACTURES	0.6%	0.2%	0.2%	0.3%	0.1%	0.1%	0.3%	0.2%	0.2%
IV.- COCOA AND OTHER MANUFACTURES	0.5%	0.8%	1.3%	1.4%	0.9%	0.7%	1.0%	1.3%	1.5%
V.- TOBACCO AND OTHER MANUFACTURES	0.8%	0.6%	0.5%	0.4%	0.7%	0.3%	0.2%	0.2%	0.2%
VI.- MINERALS	4.1%	2.8%	3.0%	4.4%	6.6%	6.2%	10.7%	15.3%	7.1%
VII.- PORT-ACQUIRED GOODS	3.19%	2.70%	2.18%	2.77%	3.94%	5.48%	5.67%	5.79%	7.77%
VIII.- MINOR PRODUCTS	6.1%	6.3%	7.2%	8.5%	7.2%	8.3%	9.3%	12.2%	16.0%
IX.- GENERAL TOTAL (million $US)	5,737	5,276	5,165	5,471	5,936	6,145	6,610	7,160	6,949

f.2. Imports

Total imports of the Dominican Republic amounted to around US$6,000 million between 2000 and 2002, declined to around US$5,000 million in 2003, but continued increasing since 2004 to reach US$13,500 million in 2008. This jump in imports between 2003 and 2008 was equivalent to the average annual growth of 21.6%.

As shown in the table below, 50% of the total import accounts for consumer goods, followed by raw materials (around 30%) and capital goods (around 20%).

Table 2-10: Composition of the Dominican Imports 2000-2007 (%)

DETAIL		2000	2001	2002	2003	2004	2005	2006	2007	2008
I.	CONSUMER GOODS	49.7%	48.0%	49.8%	47.3%	47.9%	52.8%	50.7%	52.4%	50.5%
II.	RAW MATERIALS	31.7%	29.6%	29.9%	34.8%	36.4%	31.8%	33.0%	31.4%	33.7%
III.	CAPITAL GOODS	18.7%	22.5%	20.3%	18.0%	15.6%	15.3%	16.3%	16.2%	15.8%
	TOTAL (million $US)	6,416	5,953	6,237	5,096	5,368	7,366	9,559	11,097	13,570

f.3. Trade Balance and Remittance

The trade balance has been negative in all years during 2000-2008. The trade deficit amounted to around US$ 6,500 million in 2007 and around US$ 9,150 million in 2007, as illustrated in the table below. The export originated from non-free zones have been steadily increasing during this period (2000-2008) with the annual average growth of 12% while free zone export has been kept between 4,000 and 5,000 million US$.

Table 2-11: Dominican Trade Balance 2000-2008 (Million US$)

ITEM	2000	2001	2002	2003	2004	2005	2006*	2007*	2008**
TRADE BALANCE	**-3,741.8**	**-3,503.0**	**-3,672.7**	**-2,156.0**	**-1,952.1**	**-3,724.7**	**-5,563.7**	**-6,436.8**	**-9,146.5**
EXPORTS	**5,736.7**	**5,276.3**	**5,165.0**	**5,470.8**	**5,935.9**	**6,144.7**	**6,610.2**	**7,160.2**	**6,948.9**
NATIONAL	966.1	794.7	847.7	1,064.0	1,250.7	1,395.1	1,931.4	2,635.1	2,404.1
FREE ZONES	4,770.6	4,481.6	4,317.3	4,406.8	4,685.2	4,749.6	4,678.8	4,525.1	4,544.8
IMPORTS	**-9,478.5**	**-8,779.3**	**-8,837.7**	**-7,626.8**	**-7,888.0**	**-9,869.4**	**-12,173.9**	**-13,597.0**	**-16,095.4**
NATIONAL	-6,416.0	-5,952.9	-6,237.3	-5,095.9	-5,368.1	-7,366.3	-9,558.8	-11,097.3	-13,569.9
FREE ZONES	-3,062.5	-2,826.4	-2,600.4	-2,530.9	-2,519.9	-2,503.1	-2,615.1	-2,499.7	-2,525.5

Source: Central Bank of the Dominican Republic

Remittance from Dominican residents abroad increased steadily from US$ 1,689 million in 2000 to US$ 3,110 million in 2008, the latter being equivalent to 45% of the total export in of the same year.

f.4. Inflation and Exchange Rate

The annual increase of consumer price index (CPI on average of 12 months) remained below 10% between 1996 and 2002, but jumped to 27.5% in 2003 and shot up to 51.5% in 2004. These extremely high inflation were tamed in 2005, which recorded 4.2%, followed by 7.6 % in 2006, 6.1% in 2007 and 10.4% in 2008.

The exchange rate between the Dominican currency RD$ and the US$ has changed gradually from 12.9 RD$ per US$1.00 in 1996 to around 17.5 RD$ per US$1.00 in 2002, when divergent rates began to be reported for the sellers and buyers of foreign currency. In 2003 and 2004, the economic downturn caused the exchange rate of the RD$ to worsen drastically to around 29 RD$ per US$, and to about 41 RD$ per US$ in 2004. Later, as the economy recovered, the Dominican currency strengthened in 2005, and achieved a relative stability at around 33 RD$ per US$ between 2005 and 2007, and 34 RD$ per US$ in 2008, as shown in the table below.

Table 2-12: Exchange Rate between RD$ and US$ 2000-2008

Year	ASK	BID
2000	16.18	
2001	16.69	
2002	17.45	17.59
2003	29.06	29.37
2004	41.25	41.93
2005	30.00	30.28
2006	33.09	33.30
2007	33.02	33.17
2008	34.41	34.53

Source: Central Bank of the Dominican Republic

2.2 National Mechanism for CDM Project Development in the Dominican Republic

2.2.1 The National Council for Climate Change and Clean Development Mechanism (CNCCMDL)

a. Establishment of CNCCMDL

In the Dominican Republic, the Designated National Authority of Clean Development Mechanism (DNA-CDM) had been temporarily established at the National Office of CDM (ONMDL) of the former Secretariat of State of Environment and Natural Resources (SEMARENA). In September 2008, in accordance with the President Decree No. 601-08, the Dominican Republic newly established the National Council for Climate Change and Clean Development Mechanism (CNCCMDL) under which ONMDL was officially authorized to be the DNA of CDM.

CNCCMDL is the Council under direct control of the President of the Dominican Republic with the following organizational structure as of December 2010.

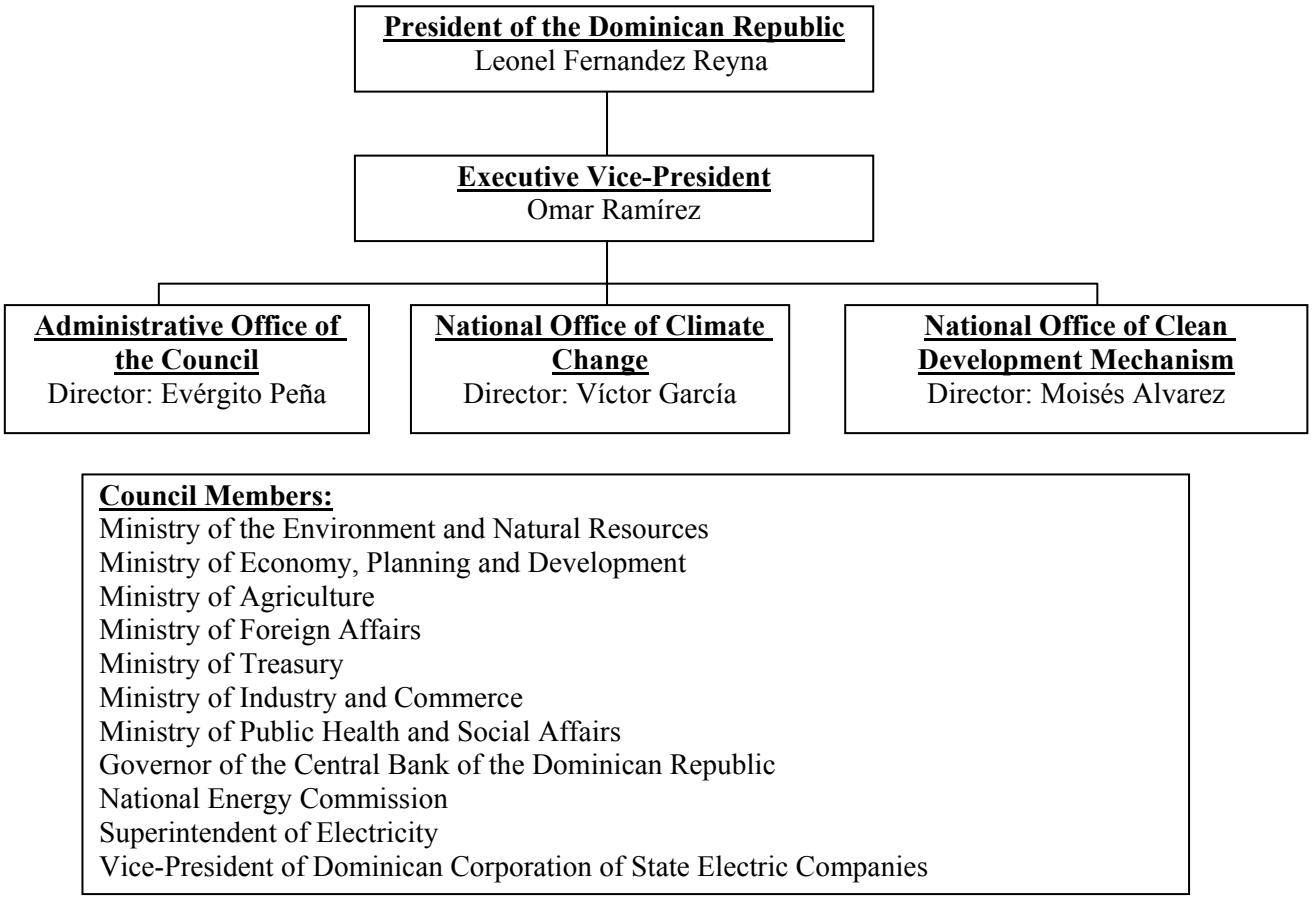


Figure 2-2: Members and Administrative Structure of CNCCMDL

b. Roles of CNCCMDL

The Decree 601-08 provides the roles of CNCCMDL as follows:

- Formulate, design and execute the public policies necessary for the prevention and mitigation of emissions of greenhouse gases (GHG), the adaptation to adverse effects of Climate Change, and promote the development of programs, projects and strategies of climate action related to the compliance with the commitments of the Dominican Republic in the UNFCCC and the instruments derived from it, particularly the Kyoto Protocol.
- Contribute to the mitigation of Climate Change by means of investments that are environmentally sustainable through projects or other instruments using the international mechanisms provided by the UNFCCC and its Kyoto Protocol, to promote economic development that contributes to poverty alleviation, with the active participation of the public and private sector at national and international level.
- Formulate and approve the investment strategy of CDM projects to be implemented.
- Evaluate and supervise the activities of ONCC and ONMDL, and the financing established by the National Carbon Account.
- Strengthen the scientific and technical capabilities for the formulation of CDM projects in the public and private sectors, as well as in the civil society.
- Provide projects of climate change mitigation that generate certificates of emission reduction according to requirements established by international instruments on climate change.
- Establish the necessary inter-institutional coordination with the authorities related with climate change, in order to ensure implementation of projects that stabilize the concentration of GHG in the atmosphere.
- Establish the local coordination and institutional consensus building with the stakeholders in the government, private sector, and the civil society, defining the roles and functions of the National Carbon Account, its regulation and operation.
- Ensure the correspondence between efforts on one side, and the Environmental Policy and the National Strategy for Climate Change Programs on the other side, and guarantee the synergy with the regional plans, ongoing and to be implemented, with a view to poverty reduction in the country.
- Supervise the management of the carbon fund.

- Prepare and approve the regulation and the manual of organization and function of ONCC, ONMDL, and the Directors Board.
- Approve and implement the training plan for the formulation, certification, evaluation and monitoring of CDM projects.
- Be the focal point of UNFCCC and the Kyoto Protocol, as well as appoint the Director of National Office of Climate Change, and the Director of National Office of Clean Development Mechanism.
- Formulate the annual budget and the balance sheet of the National Carbon Account.
- Responsible for other functions that may be established by the Internal Regulation of Organization and Function.
- Coordinate with the Governmental Committee for Ozone (COGO) so that the activities, projects and technology transfer to be undertaken, lead to the effective reduction of GHG emission in the short, medium and long term, at the lowest possible cost to the country.

c. ONMDL as DNA

The President Decree 601-08 provides that the National Office of Clean Development Mechanism (ONMDL) function as Designated National Authority of CDM in the Dominican Republic with the following objective and specific roles:

c.1. Overall Objective

To execute projects on renewable energy, energy efficiency, methane capture, use of cleaner fuel, among others, within the framework of UNFCCC and the Kyoto Protocol, with the purpose of reducing and capturing the GHGs.

c.2. Specific Roles

- Promote at national and international levels the approval and registration of initiatives or programs that give incentives to the execution of projects on capturing and reducing GHGs emissions defined by the UNFCCC and the Kyoto Protocol.
- Facilitate the project developers the necessary resources for the formulation and implementation of the projects that reduce the emission of GHGs or does not emit such gases, as well as the procurement of additional financial sources under attractive conditions, when they are required;
- Facilitate the implementation of mechanisms to remove barriers that restrict the execution of renewable energy projects;

- Advise different sectors in the preparation of CDM projects;
- Facilitate at the national level the endorsement of CDM projects;
- Identify initiatives interested in the projects to buy CERs, or CO_2 sequestration by sinks in the international market;
- Facilitate different sectors the negotiation of CERs in the international market;
- Promote creation of the national technical capabilities for the preparation of projects to mitigate GHGs which are in line with the environmental policy of the Dominican Government;
- Function as the Designated National Authority of CDM;
- Execute programs and projects within CDM with focus on gender equality;
- Propose and negotiate agreements, accords, letters of understanding or any other mechanism or instruments that facilitate the approval of projects within CDM, in coordination with national and international organizations;
- Direct the processes of certification of CDM projects presented by the official sector, private sector and the NGOs, according to the criteria set by the Secretariat of State for the Environment and Natural Resources and the CDM Executive Board of the Framework Convention on Climate Change.

c.3. Personnel Organization of ONMDL

Currently, ONMDL is headed by the Director with the rank of undersecretary of the state and organized by 2 staff members.

2.2.2 Key Roles of Government and Private Sector Organizations

a. Key Public and Private Sector Organizations

There are various key public and private sector organizations in promoting CDM projects in the Dominican Republic. The table below shows the potential key public and private organizations by potential sectors of CDM project development.

Table 2-13: Key Public and Private Organizations by Potential Sectors of CDM Projects

Relevant organizations by Sector	
Sector	**Organizations**
Energy	• **National Energy Commission (CNE)** • **Dominican corporation of State Electric Companies (CDEEE)** • **Coordinating organism of the Interconnected National Electrical System of the Dominican Republic (SENI)** • **Dominican Hydropower Generation Company (EGEHID)**
	• National Council of Private Enterprise（*CONEP)* • ***Private generators of the National Power Sector*** • *Electrical Distribution Companies, EDE (North, South and East)* • ***Renewable Energy Producers Association***
Solid wastes	• **Ministry of Environment and Natural Resources (SEMARENA)** • **Dominican Municipal League** • **Dominican Federation of Municipalities** • City Hall • Institute of Innovation for Biotechnology and Industries (IIBI)
	• *National association of Hotels and Restaurants ASONAHORES* • ***Wastes Management Companies***
Agriculture	• **Ministry of Agriculture (SEA)** • Dominican Agrarian institute • Dominican agricultural loan bank • National commission for the Agro forestry Investigation • Agro forestry Development Center • **Council State of Sugar**
	• ***Dominican Agro-enterprise Board JAD*** • *Cattle's Association of the Licey al Medio* • *Cattle's Association of Cibao*
Industry	• **Ministry of Industry and Commerce (SEIC)** • Institute of Innovation for Biotechnology and Industries (IIBI) • Exportation and Investment Center of the Dominican Republic
	• *Industries Association of the Dominican Republic* • ***Dominican Confederation of Small and Medium Industries (CODOPYME)*** • ***Free Zones Dominican association (ADOZONA)***
Transport	• Office for the Transportation Reordering (OPRET) • Technical Office of Terrestrial Transport (OTTT) • Main Directorate of Terrestrial Transit (DGTT)
	• National Council of Private Enterprise（*CONEP)* • *METRO Bus* • *National Center of United Carriers (CNTU)* • *CARIBE Tours* • *National Confederation of Carriers (CONATRA)*
Forest	• **Ministry of Environment and Natural Resources (SEMARENA)** • National Commission for the Agro forestry Investigation (CONIAF) • Agro forestry Development Center (CEDAF)
	• *National Forest Chamber*
Tourism	• Ministry of Tourism (SECTUR)
	• National Council of Private Enterprise（*CONEP)* • *National Association of Hotels and Restaurants (ASONAHORES)*
Organizations of Support	
Public	• Ministry of Foreign Affairs • Ministry of Public Health and Social Affairs (SESPAS) • Ministry of Treasury (SHE) • Ministry of Economy, Planning and Development (SEEPyD) • Central Bank of the Dominican Republic (BCRD) • **National institute of Hydraulic Resources**
Private	• **National Council of Private Enterprise （*CONEP)*** • *National network of Enterprise Support to Environmental Protection (RENAEPA)* • *Banks Association of Dominican Republic (ABA)*

Remark: Organizations shown in bold fonts are the key actors of great importance in CDM project development. Organizations above are identified based on the discussions with the counterpart members and confirmed in the Steering Committee of the Study.

2.2.3 Laws and Regulations Relevant to CDM Project Development

There are a number of laws and regulations relevant to development of CDM projects in the Dominican Republic. The table below shows the list of such laws and regulations by sectors.

Table 2-14: Relevant Laws and Regulations to Promotion of CDM Project Development

Relevant Laws and Regulations	
Specific aspect	**Content**
Political constitution of the Dominican Republic 2002	♦ Article 67, Protection of Environment provides that the pollution should be prevented to protect the environment for current and future generations.
Climatic Change - International Conventions and Protocols - - Laws and Regulations	♦ **The United Nations Framework Convention on Climatic Change (The international convention on climate change that the Dominican Republic has ratified in 1998.)** ♦ **Kyoto Protocol of the Convention framework of the United Nations on Climatic Change (The international protocol that provides CDM. The Dominican Republic has ratified in 2002.)** ♦ 02-2002 Resolution SEMARENA creating the National Climate Committee ♦ **601-08 Decree on establishment of the National Council for the Climate Change and Clean Development Mechanism (Presidential decree on establishment of CNCCMDL.)** ♦ **582-08 Decree on the appointment of the high rank officers of the National Council for the Climatic Change and Clean Development Mechanism (The decree that appoints the Chairman and directors of CNCCMDL)**
Energy	♦ **125-01 General Law of Electricity (The basic law on electricity that all the power generation activities are required to comply with.)** ♦ Regulation for the Application of the Law 125-01 General Law of Electricity ♦ 186-07 Law that modifies the General Law of Electricity ♦ **Resolution that establishes the procedures and requirements to participate in the market of the natural gas (NG) (The resolution that provides the procedures and requirements for participation in natural gas market that are relevant to the fuel switch projects to convert from coal or oil to natural gas for GHGs emission reduction.)**
Water, Air and Solid Waste	♦ **NA-RS-001-03 Standard for the Environmental Management of non-Dangerous Solid wastes (The standard specifies the technical criteria for treatment and disposal of non-dangerous solid waste that should be taken into consideration in formulating SWM related CDM projects.)** ♦ Environmental norm on Quality of Ground Waters and Discharge to the Subsoil (The CDM projects that deal with effluent control must comply with this norm.) ♦ AG-CC-01 Standard for Water Quality and Effluent Control (The CDM projects that deal with effluent treatment must comply with this standard.) ♦ AR-CA-01 Standard for Air Quality and Atmospheric Emissions Control (The CDM projects that influences air quality must comply with this standard.)
Environmental	♦ **64-00 General Law on Environment and Natural Resources (All the CDM projects must comply with this law.)** ♦ 42-01 General Law on Health ♦ **Procedure for Environmental Impact Assessment (All the CDM projects are screened by this procedure to identify their necessity of environmental impact assessment. If they are necessary, EIA has to be properly implemented in accordance with this procedure.)** ♦ **Guidelines for the Accomplishment of the Social Impact assessment (SIA) within the Environment Impact Assessment Process (EIA) (All the projects are encouraged to conduct SIA in accordance with this guidelines although it is not compulsory.)** ♦ Procedure for the Elaboration of Instruments of Environmental Regulation ♦ **Procedure for the completion of the Environmental Permission of Existing Facilities (If the existing facilities conducts some improvement for CDM purpose, it should go through this procedure to obtain environmental permission.)** ♦ **Regulation on the Permissions System and Environmental Licenses (All the new project activities including CDM projects must comply with this regulation to obtain environmental license.)**

Relevant Laws and Regulations	
Specific aspect	**Content**
Tributary Financing and Incentives	♦ **57-07 Law of Incentive to the Renewable Energies and Special Regimes (The law provides the scheme of incentives to be given to the development and utilization of renewable energy resources, that are relevant to renewable energy CDM projects.)** ♦ Implementation rules and regulations of Law 57-07

Remark: Laws and Regulations with bold font indicates stronger relevance to CDM project development

2.2.4 Policy Tools and Incentives in relation to CDM Project Development

a. National Carbon Accounts

The President Decree 601-08 provides creation of National Carbon Account (NCA), which incorporates to a sub-account of the National Fund for Environment and Natural Resources, in accordance with article 71 of the law 64-00 with the following stipulations.

a.1. Fund Management

The Executive Vice-president will exert the manager position of the NCA, according to the procedures and mechanisms settled down in the Law No 64-00, and as so, it has the following functions:

- Leads and administers the NCA Funds, according to the approval by the Council, and "Internal regulation of Organization and Operation of NCA", with the right to handle the investment fund and the necessary technical attendance.
- Provide to the organizations, people and donors the information on the use and management of the resources.

a.2. Main Objective

To finance the plans, programs, studies, strategies and necessary projects to reach the CNCCMDL objectives and the dispositions of the Kyoto Protocol with emphasis in the CDM.

a.3. Conditions

The regulation and operation of ONCC and ONMDL will determine the conditions and the operation framework of the NCA in the form of agreement on the operation standards of the National Fund for Environment and the Natural Resources.

a.4. Current status of NCA

NCA has not yet been established so far. CNCCMDL is currently in the process of formulating the operation policy of NCA based on the recommendations by this Study and in cooperation with the expert from UNDP. Once it is prepared, policy and financial coordination between

CNCCMDL and the Ministry of Environment and Natural Resources are required as provided in the President Decree 601-08 above.

b. Incentives under the Law 57-07 on Renewable Sources of Energy Incentives and its Special Regimes

b.1. Scheme of the Incentives

The incentives provided by the Law 57-07 are of great importance in relation to CDM project development in the field of renewable energy. The table below summarizes the outline of this law.

Table 2-15: Outline of Law 57-07 on Renewable Sources of Energy Incentives and its Special Regimes

Item	Contents/Outline
Date of Promulgation	May 07, 2007
Scope ofd the Law	It constitutes the normative frame and regulations to stimulate and to control the development and the investment in renewable energy resources
Objectives of the Law	▪ To increase energy diversity of the country with regards to the self-sufficiency of non-conventional energy and fuels as strategic energy input. ▪ To reduce dependency on imported fossil fuels. ▪ To stimulate private investment projects in renewable energy resources. ▪ To promote participation of private investment in the electricity generation to be supplied to SENI, under regulations by relevant government agencies, and in accordance with the public interest. ▪ To mitigate the negative environmental impacts of energy production from fossil fuels. ▪ To favor social/community-based investment in renewable energy projects. ▪ To contribute to decentralization in the production of the electrical energy and bio-fuels in order to increase competition among different energy supplies. ▪ To contribute to the attainment of the goals of the National Energy Plan, specifically with regards to renewable energy resources including bio-fuels.
Application Area	▪ Wind farms and isolated windmills with the installed capacity of no more than 50MW. ▪ Small and micro hydropower plants with the installed capacity of no more than 5 MW. ▪ Photovoltaic facilities of any kind and capacity level. ▪ Solar thermal facilities with the installed capacity of no more than 120MW. ▪ Biomass power generation with the installed capacity of no more than 80 MW ▪ Bio-fuels production plants (distillery or bio-refinery) of any size and production volume

Item	Contents/Outline
	▪ Energy farms, plantations or agricultural/agro-industrial infrastructure of any size, developed exclusively for biomass production for energy, vegetable oil for bio-diesel production, or sugar liquor production (glucose, xylose) for ethanol and bio-fuel ▪ Oceanic energy facilities such as wave/tidal energy and ocean thermal energy conversion (OTEC) of any size ▪ Solar thermal facilities for water heating and cooling.
Responsible Body	▪ The National Commission of Energy (CNE) is responsible for monitoring the compliance with this law. ▪ Advisory body of the CDE: Technical consultative organization to support decisions by CDE (Member) - Ministry of Industry and Commerce (SEIC) - Ministry of Environment and Natural Resources (SEMARENA) - Ministry of Economy, Planning and Development (SEEPyD) - Dominican Corporation of State Electric Companies (CDEEE) (Ad-hoc members) - Ministry of Agriculture - Ministry of Higher Education, Science and Technology - Superintendence of Electricity (SIE) - Dominican Hydropower Generation Companies (EGEHID) - Institute of Innovation for Biotechnology and Industry (IIBI) - National Institute of Hydraulic Resources (INDRHI) - Dominican Electric Transmission Company (ETED) - General Directorate of Tax (DGII) - General Directorate of Customs (DGA) - Energy Institute of the Autonomous University of Santo Domingo (UASD) - Dominican Oil Refinery - State Sugar Council (CEA) - General Directorate of Standards and Quality System (DIGENOR)
Attributions of CNE	▪ To authorize or reject, after technical and economic evaluation, the request of incentives of this Law. ▪ To produce certifications, documentation, and registrations in relation to application and control of the incentives in accordance with the regulations established under this Law. ▪ To rule the pertinent administrative and judiciary actions to pursue and sanction non-compliance with this laws and relevant regulation. ▪ To examine and decide the revision requests submitted by the interested parties within the timeframe provided by the regulation. ▪ To submit an annual report to the National Congress on the execution of plans and programmes to develop renewable energy resources.
General incentives	1. Exemption of import tax All import tax on equipment, machinery and accessories imported by business firms or individual persons for energy production from renewable sources. The tax on the Transfer of Industrialized Goods and Services (ITBIS) and all taxes on final sale are also exempted for import of these equipment and materials. 2. Exemption of income tax The tax on income from the generation and sale of electricity, hot water, steam, motor power, bio-fuel or synthetic fuel generated from

Item	Contents/Outline
	renewable energy sources, as well as the income from the sale and installation of equipment, parts, and system that are listed as the items for import tax exemption will be exempted. 3. Reduction of tax on external financing. 4. Tax credit for investment cost of the equipment for renewable energy generation and consumption for auto-producers 5. Incentives community based renewable projects (financing at the lowest market rate of interest) 6. Certified Emission Reduction under CDM of Kyoto Protocol
Special Regime of Power Generation	The power generation activities from renewable energy resources provided by this Law will be treated under the following special regime if they are duly approved and registered as the beneficiaries of this Law. ▪ Premium selling price of the electricity generated from renewable energy sources (sum of marginal cost of power generation and price premium determined to be determined for each type of renewables-based power generation.). ▪ Provision of Energy Market Quotas to the renewable-based power generators outside of the Spot Market. ▪ Obligation of the power distribution companies to buy surplus electricity from the installed renewable-based power generation facilities. ▪ All authorities of the electricity sub-sector should strive for the goal that 25% of the energy demand be supplied from renewable energy sources; for the 2015 at least 10% of the electricity purchased by the distribution companies should come from renewable energy sources.

b.2. Current Status of Incentives Application

As of October 2010, the total financial incentive given under this law stands at approximately RD$ 66 million (66 million peso). The types of incentives provided to the renewable energy projects are outlined in the table below.

Table 2-16: Financial Incentives given under the Law 57-07

Types of Incentives	Number of Projects Provided	Amount of Incentives Provided (RD$ million)
Tax Exemption on Imports	153	32.1
Tax Credit	18	22.5
ITBIS in Local Purchase	14	12.3
	Total Incentives	66.9

Source: Extract from the Presentation by Julian Desparadol of National Energy Commission on the Final Seminar of the Project (October 2010)

On the other hand, the total of about 1,100 MW capacity of renewable energy power generation is granted under this law while its majority is for wind power generation (1,050MW), as shown in the next table.

Table 2-17: Renewable Power Generation Projects granted under Law 57-07

Types of Renewable Energy	Total Installed Capacity (MW)
Wind Power	1,050
Photovoltaic	50
Mini Hydropower	1.4
Biomass	1
Total	1,102.4

Source: Extract from the Presentation by Julian Desparadol of National Energy Commission on the Final Seminar of the Project (October 2010)

2.2.5 Environment Impact Assessment Procedure

Depending upon the types and magnitude of potential impacts upon the environment, CDM projects are also required to conduct environmental impact assessment in accordance with the relevant laws and regulations. The legal framework of environment impact assessment in the Dominican Republic is provided by Law No. 64-2000 on the Environment and Natural Resources and "the Regulation on the System of Environmental Permits and Licenses, approved by the Secretariat of State for the Environment and Natural Resources.

a. Categorization of Project Activities and Requirement of EIA

In accordance with Law No. 64-2000, all projects, works or activities included in the following categories are subject to the so-called "Environment Evaluation Process". The level of environmental evaluation required is determined in view of the characteristics of the relevant project, work or activity and vulnerability of its site/location.

First of all, all the projects, works and activities fall into one of the 3 (three) categories defined in the table below.

Table 2-18: Categories of Projects, Works and Activities

Category A	▪ Projects, works or activities with chain environmental impacts of high complexity, with regional and even national level effects fall into this category. They are required to conduct full-scale environment impact assessment study that analyzes all possible impacts including cumulative and synergetic ones. The project proponent is also required to formulate an Environment Management and Adaptation Programme as the proof of the capacity of the project to prevent, control, mitigate and compensate the environmental impacts to be generated. The scope of environmental impact assessment study will be prepared by SEMARENA in the form of the terms of reference.
Category B	▪ Projects, works or activities with significant environmental impacts, but limited to the project site and its direct influence area fall into this category. They are required to submit "Environment Impact Declaration". If a project, work or activity is located in the area of high or very high environmental vulnerability, a complementary environmental study may be required with its

	focus on critical aspects or issues. The scope of a complementary environmental study will be determined by SEMARENA in the form of the terms of reference.
Category C	▪ Projects, works or activities with moderate/low potential impacts that are easily prevented or mitigated with appropriate practices if construction and operation, or for which there are economically viable technologies. In general, the environmental impacts arising from the projects, works and activities falling into this category are manageable with simple and well-known technologies and measures. The necessity of full-scale environmental Impact evaluation or complementary environmental study will be decided based on evaluation of the environmental impact declaration submitted by the project proponent.

Project Area is defined as the geographic area that the project occupies.
Direct influence area is the part of geographic area that receives direct impacts of the project, generally limited to a band of 500 meter width measured from the boundary of the project area.
Indirect influence area consists of parts of geographic area that may receive impacts directly or indirectly, but are not immediately adjacent to the project area.

Source: Procedimiento de Evaluacion de Impacto Ambiental (SEMARENA)

The categorization of the projects, works and activities is made based on their types in accordance with the table below.

Table 2-19: Categorization of Project Activities by Sectors

SECTOR	ACTIVITY	CATEGORY		
		A	B	C
TRANSPORT	Airports	■		
	Shipyards	■		
	Rural roads			■
	Canals for inland navigation		■	
	Construction and expansion of roads and highways	■		
	Parking			■
	Ports, Marinas and Wharf	■		
	Rehabilitation of roads and highways		■	
	Terminals of bus, train or streetcar			■
	Sea terminals	■		
	Railroads	■		
HYDRAULIC	Irrigation canals	■		
	Channeling of river canals		■	
	Dike	■		
	Channeling of rivers and streams	■		
	River embankment			■
	Dams and reservoirs	■		
	Water transfer channel between hydrographic basins	■		
URBAN DEVELOPMENT AND HUMAN SETTLEMENT	Massive application of chemical products in urban zones			■
	Rural settlements			■
	Buildings exceeding 5000 m2			■
	Land subdivision into plots			■
	Urban development projects	■		
	Shopping centers			■
	Urban development projects	■		

SECTOR	ACTIVITY	CATEGORY		
		A	B	C
	Urban development with more than 5000 houses	■		
	Urban development between 50 and 500 houses			■
	Urban development between 501 and 5000 houses		■	
INFRASTRUCTURE	Artificial reefs	■		
	Telecommunication cable & antennas		■	
	Undersea communication cable	■		
	Cemeteries			■
	Health centers, hospitals, clinics		■	
	Non-hazardous solid waste disposal		■	
	Hazardous solid waste transport or disposal	■		
	Undersea wastewater discharge	■		
	Hazardous Materials handling	■		
	Markets			■
	Industrial wastewater treatment plant		■	
	Municipal wastewater treatment plant		■	
	Drinking water treatment plant		■	
	Non-hazardous solid waste collection			■
	Reuse and recycling of non-hazardous waste		■	
	Breakwater	■		
	Aqueduct system and storage of drinking water		■	
	Sewer system		■	
	Rainwater drainage system		■	
INDUSTRY	Agro-industry		■	
	Cement, lime, gypsum production	■		
	Construction materials manufacturing		■	
	Fertilizer manufacturing	■		
	Pesticide manufacturing	■		
	Explosives manufacturing or distribution		■	
	Manufacturing or assembling of equipment and machinery			■
	Printing and publishing			■
	Food industry and processing plants		■	
	Tire and inner tube industry	■		
	Battery industry	■		
	Paint and varnish industry	■		
	Pulp, paper and charcoal industry		■	
	Electronic industry		■	
	Pharmaceutical industry	■		
	Liquor and beer industry		■	
	Wood industry		■	
	Metal and metal works industry	■		
	Textile industry		■	
	Sugar mill industry	■		
	Dry cleaning services			■
	Chemical products industry	■		
	Industrial slaughterhouse		■	
	Mixing and packing chemicals and agrochemicals		■	
	Industrial parks and free trade zones		■	
	Oil refinery	■		

SECTOR	ACTIVITY	CATEGORY		
		A	B	C
	Motor vehicle repair shops			■
	Equipment repair and maintenance shops			■
	Tanneries	■		
AGRICULTURE, LIVESTOCK, FORESTRY	Aquaculture and hydro-biological resources		■	
	Agrochemical application on areas greater than 100 has			■
	Industrial size dairy farms			■
	Commercial exploitation of forest products			■
	Energy farms for charcoal			■
	Poultry farm		■	
	Cattle ranch		■	
	Pig farm		■	
	Commercial fishing		■	
	Agricultural transformation plan			■
	Agricultural plantations of over 50 has			■
	Forestry plantations of over 50 has			■
	Commercial plantation of trees and sawmills			■
	Industrial scale animal production			■
	Salt production		■	
	Agroforestry system of over 50 has			■
	Forestry-livestock system of over 50 has			■
	Nurseries & animal breeding			■
TOURISM	Aquariums	■		
	Camping grounds		■	
	Golf courses	■		
	Hotels in coastal areas	■		
	Hotels in mountain areas		■	
	Hotels in urban areas			■
	Water parks in coastal areas		■	
	Theme parks			■
	Tourism development plans	■		
	Recovery of beaches	■		
	Cable car		■	
MINING	Development, exploitation and processing of non-metal minerals	■		
	Development, exploitation and processing of metallic minerals	■		
	Mineral exploration and prospecting			■
	Oil exploration and prospecting		■	
	Extraction of peat, mineral coal or natural gas	■		
	Metallurgical extraction	■		
	Small scale mining	■		
	Mining industry park	■		
	Mineral aggregation/processing plant		■	
	Oil wells	■		
	Tailings dam	■		
ENERGY	Oil exploration		■	
	Oil exploitation	■		
	Gas pipeline	■		
	Waste-to-energy facility		■	
	Hydropower (1-3 MW)			■
	Hydropower (3-20 MW)		■	
	Hydropower (more than 20 MW)	■		

SECTOR	ACTIVITY	CATEGORY		
		A	B	C
	High voltage power transmission lines	■		
	Oil pipeline	■		
	Wind parks		■	
	Nuclear plants	■		
	Power distribution lines			■
	Power substations		■	
	Oil storage		■	
	Thermal power plants	■		
FUEL DISPENSING AND SERVICES	Gas stations			■
	Car wash			■
	Lubricants and gas stations			■
	LPG stations			■
MISCELLANEOUS	Facility/capacity expansion works			■
	Waste oil handling/management		■	
	Engineering works in the areas with vulnerable ecosystem	■		
	Works dealing with hazardous/toxic substances		■	
	Works in the protected area	■		

Source: Procedimiento de Evaluacion de Impacto Ambiental (SEMARENA)

For the projects, works and activities falling into category A, the full-scale environmental impact study (what we call EIA) is required while those falling into category B or C, the Ministry of Environment and Natural Resources will determine the necessity of full-scale environment impact study based on the environment impact declaration prepared and submitted by the proponents of projects, works and activities. The next table shows the matrix for determining the level of environment evaluation process.

Table 2-20: Project Categorization Matrix for determining the level of environment evaluation process

Category	Vulnerability Index of the Project Site			
	Very High	High	Moderate	Low
A	▪ Environmental Impact Study	▪ Environmental Impact Study	▪	▪
B	▪ Environmental Impact Study	▪ Environmental Impact Study	▪ Environmental Impact Declaration ▪ Complementary Environmental Study	▪ Environmental Impact Declaration ▪ Complementary Environmental Study
C	▪ Environmental Impact Study	▪ Environmental Impact Declaration ▪ Complementary Environmental Study	▪ Environmental Impact Declaration	▪ Environmental Impact Declaration

Remark: The need for complementary environmental study will be determined based on the evaluation result of environmental impact declaration by the project proponent. Therefore, it will not be always required.

2.2.6 Host Country Approval of CDM Projects

a. Procedure

Issuance of host country approval for CDM project in the Dominican Republic is conducted by ONMDL, CNCCMDL in accordance with the procedure illustrated in the figure below.

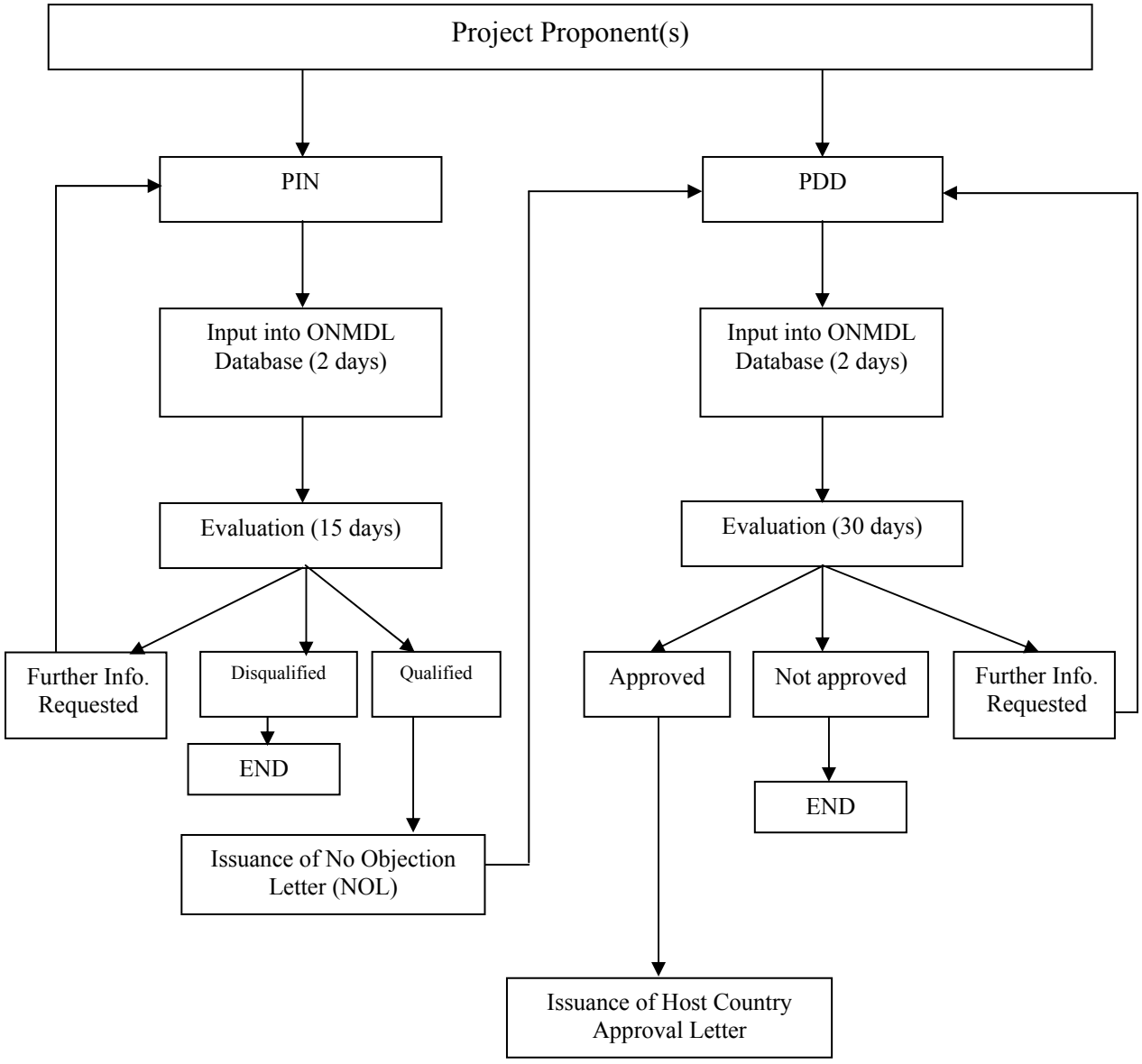


Figure 2-3: Procedure for CDM Project Approval in the Dominican Republic

PIN (Project Idea Note) submission before PDD (Project Design Document) production is optional for project proponents. They can apply for host country approval of the CDM project with submission of PDD without prior screening of PIN.

b. National Criteria for Evaluation of CDM Projects

ONMDL, CNCCMDL currently adopts the following "Sustainability Criteria" for assessment of CDM projects in PIN and PDD approval procedure:

Table 2-21: Sustainability Criteria adopted by DNA of the Dominican Republic

Types of Criteria	Criteria
1.Environmental Sustainability Criteria	♦ Environmental protection
	♦ Conservation of biodiversity
	♦ Sustainable land use
	♦ Protection of maritime coastal resources
	♦ Reduction of air, water and soil pollution
	♦ River basin/watershed protection
2.Socio-Economic Sustainability Criteria	♦ Reduced import of fossil fuels
	♦ Increased use of renewable energy resources
	♦ Improved energy efficiency
	♦ Transfer of cleaner technology
	♦ Employment generation
	♦ Improvement of the quality of life of the community

The above sustainability criteria are specifically reflected to the evaluation procedure for CDM projects by preparing the detail PIN/PDD evaluation form (See ANNEXES).

2.3 Sector-Wise Potentials and Barriers of CDM Project Development in the Dominican Republic

This section identifies the potentials and issues of CDM project development for each key sector in the Dominican Republic. The sectors and potential areas investigated and reviewed are shown in the table below.

Table 2-22 Sectors and Areas of CDM Project Potential in the Dominican Republic

Sector	Potential Area
Renewable Energy	▪ Wind ▪ Biomass ▪ Hydropower (mini and micro hydro) ▪ Solar
Waste Management	▪ Landfill methane capture and utilization (biogas) ▪ Methane avoidance by composting of organic waste
Industry	▪ Fuel switch ▪ Energy efficiency improvement ▪ Process-specific GHGs emission technologies ➢ Blended cement production ➢ Methane capture and utilization from industrial wastewater
Agriculture	▪ Biogas collection and use from animal manure management systems
Transportation	▪ Fuel switch ▪ Energy efficiency improvement ▪ Mass transportation system
Forestry	▪ Carbon sequestration activities through afforestation/ reforestation

2.3.1 Renewable Energy

a. Wind Power

a.1. Potential

The Wind Atlas developed in 2001 indicated the approximate total installed capacity of 3,200 MW and 9,000 GWh/year of wind power generation with the wind resources evaluated as "excellent", which would further increase to 10,200 MW or 24,600 GWh/year if including those evaluated as "good", as shown in the table below.

Table 2-23: Good-to-Excellent Wind Resource at 30 m (Utility Scale)

Wind Resource (Utility Scale)	Wind Power (W/m^2)	Wind Speed (m/s)	Total Area (km^2)	Total Capacity Installed (MW)	Total Power (GWh/yr)
Good	300-400	7.0-7.7	1,022	7,000	15,600
Excellent	400-600	7.7-8.9	377	2,600	7,100

Wind Resource (Utility Scale)	Wind Power (W/m^2)	Wind Speed (m/s)	Total Area (km^2)	Total Capacity Installed (MW)	Total Power (GWh/yr)
Excellent	600-800	8.9-9.8	61	400	1,400
Excellent	800-1,000	9.8-10.5	22	200	500
Total			1,482	10,200	24,600

Source: Wind Energy Resource Atlas of the Dominican Republic (2001).

The greatest concentration of good-to-excellent wind resource for utility-scale applications and for village power applications has been identified in the extreme southwestern part of the country (provinces of Pedernales and Barahona) and in the northwestern part (provinces of Puerto Plata and Monte Cristi), which have abundant upper-air winds and ocean winds.

Significant areas of good-to-excellent wind resource were also identified in many other locations, such as well-exposed hilltops and ridge crests of the Samana Peninsula and other near-coastal locations that have excellent exposure to the prevailing winds that blow from the east and the major mountain ranges, including Cordillera Septentrional, Cordillera Oriental, Cordillera Central, and Sierra Neiba. The figure on next page shows the distribution of physical wind power potential in the Dominican Republic.

a.2. Current Development of Wind Power Generation

The first registered CDM project of wind power, "El Guanillo Wind Farm" has not been implemented so far, mainly due to the lack of an agreement with a large-scale wind farm investor/project developer.

However, there are currently 3 (three) wind power CDM projects now under final stage of validation as outlined in the table below.

Table 2-24: Outline of the Wind Power CDM Projects under Validation (as of 30 Nov.2010)

Project Title	Project Participants	Location	Planned Installed Capacity (MW)	Estimated GHGs Reduction (tCO_2/yr)
Los Cocos Wind Farm Project	▪ EGE HAINA	The Province of Pedernales (between the communities of Juancho and Los Cocos)	25.2	55,987
Matafongo Wind Farm	▪ Grupo Eólico Dominicano, C. por A. ▪ CO2 Global Solutions International S.A.	The Province of Peravia (Villa Fundación, Matanzas District)	30.6	70,316
Quilvio Cabrera Wind Farm Project	▪ CEPM (Consorcio Energético Punta Cana-Macao)	The Province of Pedernales (between the communities of Juancho and Los Cocos)	8.25	11,394
		Total	64.05	127,697

Source: National CDM Portfolio of the Dominican Republic

In addition, there are several wind farm CDM project pipelines as shown in the table below.

Table 2-25: Wind Farm CDM Projects in Pipeline (as of 30 Nov. 2010)

Project Title	Project Participants	Location	Planned Installed Capacity (MW)	Estimated GHGs Reduction (tCO_2/yr)
Granadillos Wind Power Generation	▪ Grupo Eólico Dominicano, C. por A	The Province of Montecristi (Villa Vásquez Municipality)	34	65,178
Puerto Plata-Imbert Wind Farm	▪ Jasper Caribbean Wind Power	The Province of Puerto Plata	115	236,000
Madrileña Wind Farm	▪ MDL Cubaenergia	The Province of Altagracia	10	19,600
		Total	159	108,378

Source: National CDM Portfolio of the Dominican Republic

a.3. Barriers

Against the large physical potential of wind power in the Dominican Republic, there are significant barriers to be overcome for its realization as described below.

a.3.1 Access to the grid electricity

Connection to the national grid electricity is of great importance for the wind power to develop and operate with stable income from selling the electricity based on the power purchasing agreement (PPA) with the grid electricity suppliers. Independent power supply by wind power may only be possible for rural electrification with its installed capacity less than 5MW. Therefore, the wind farms have to be located in due consideration of the access to the grid electricity.

a.3.2 Potential conflict with the current and/or competing land use

Significant potentials of wind power in the Dominican Republic are found along the coastline where there is a strong sea breeze, hilltops and ridge crests of mountainous areas. Significant conflict of land use with tourism development may arise in the areas along the coastline while hilltops and mountainous areas have stricter land use regulations in relation to nature/forest reserve and environmental protection. Proper coordination needs to be made at national level to solve these land use conflict for actualization of wind power potentials.

a.3.3 Technological issues

The wind power facility must be well designed to put up with extreme weather events arising in the Dominican Republic such as hurricanes and floods. The project insurance may also increase against hurricane risk areas. The installed capacity may also need to be discounted, taking into account such risks. Incorporation of these risks may increase the investment and operation cost of wind power in this country. Instability of power supply from wind farms due

to dependence upon weather conditions may also create another risk when connecting to the national grid. Proper coordination is required with SENI, the grid power supply authority.

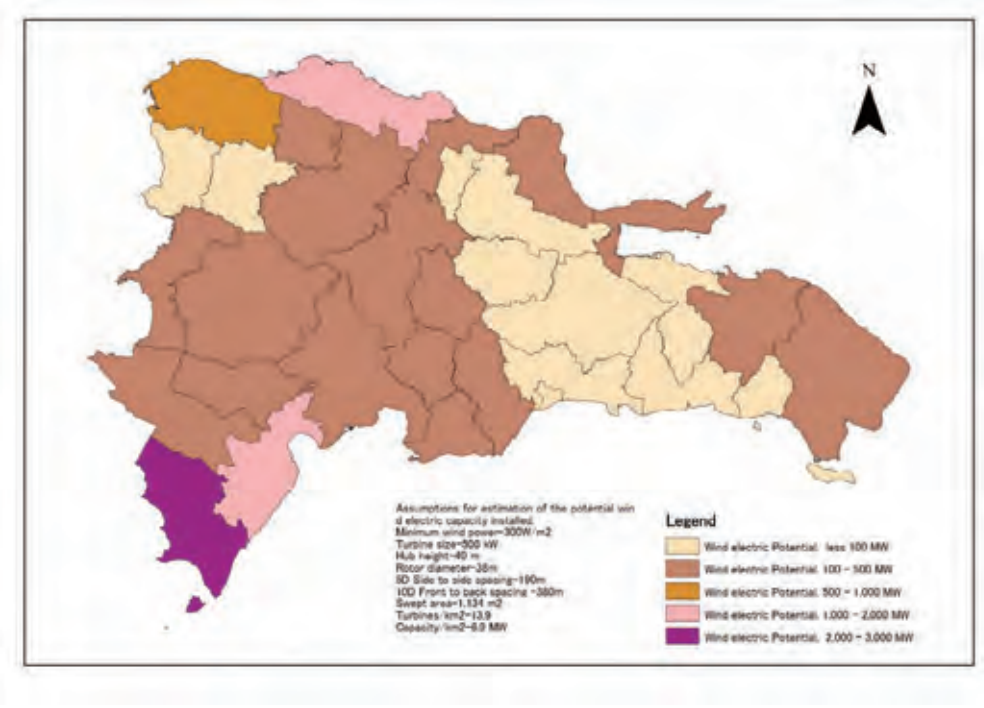


Figure 2-4 Wind Power Potential in the Dominican Republic

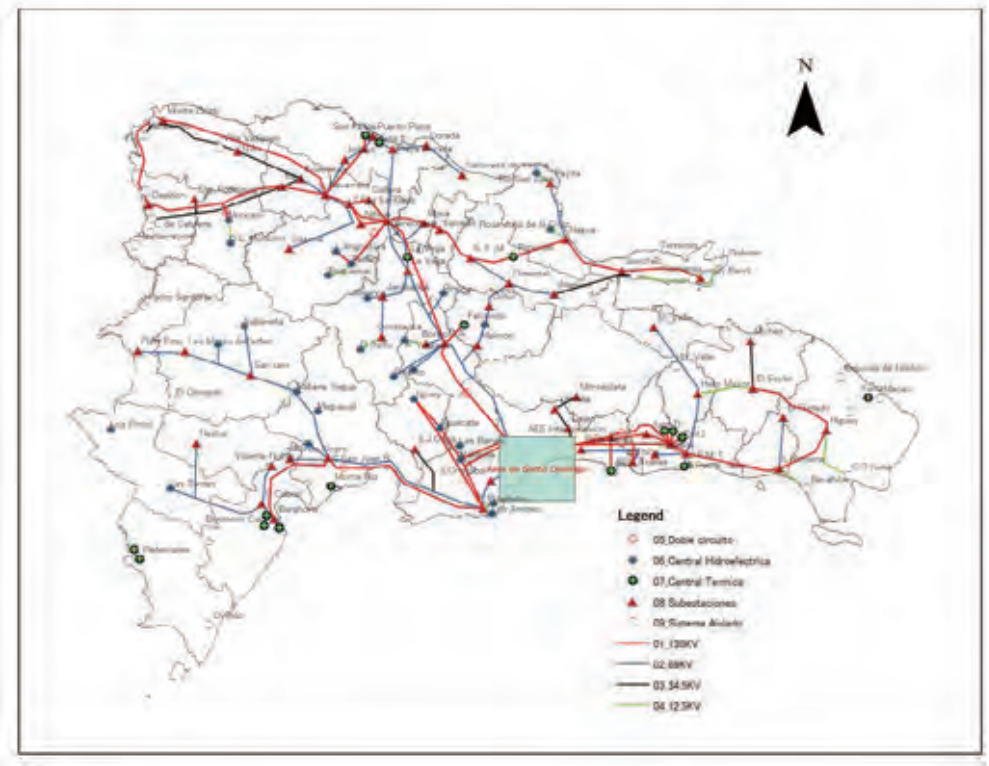


Figure 2-5 Current Grid Electricity Network in 2009 (SENI 2009)

b. Biomass

b.1. Potential

The figure below illustrates the conceptual prototype of CDM project with biomass energy utilization. By converting the current fossil fuel use to biomass for energy purpose, significant amount of GHGs emission reduction is expected.

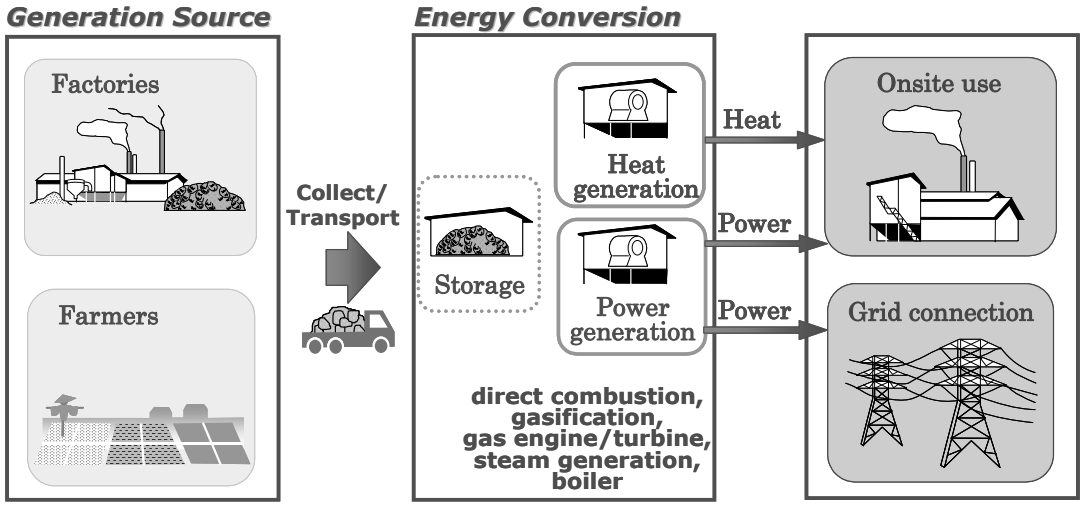


Figure 2-6 Basic Concept of Biomass Energy Utilization

The major potential biomass sources for energy in the Dominican Republic include:

- Sugarcane bagasse and residues (leaves)
- Wood residues
- Rice straw/husk
- Cacao/coffee husk
- Others (Palm oil residues, etc.)

Based on the data available in the Dominican Republic, the Study estimated the amount and their energy potentials for the following biomass residues:

- Rice husk
- Coconut shells
- Coffee residues
- Sugarcane bagasse

The results of estimation for each biomass residue are shown in the following tables.

Table 2-26: Amount and Energy Potential of Rice Husk (2009)

Rice husk	2009			
Region	Crop Area (ha)	Production: white rice (MT/yr)	Production: Residues (Rice husk) (MT/yr)	Energy in Residues (GJ)
NORTE	1,902	5,840	1,577	22,705
NORDESTE	82,708	230,024	62,106	894,333
NOROESTE	49,004	166,543	44,967	647,521
NORCENTRAL	27,951	94,214	25,438	366,302
CENTRAL	3,466	12,554	3,390	48,809
SUR	566	0	0	0
SUROESTE	13,237	33,781	9,121	131,342
ESTE	3,178	8,410	2,271	32,697
TOTAL	182,012	551,365	148,869	2,143,709

Source: SEA, Departamento de Seguimiento, Control y Evaluación

Note: Residue Production Ratio (Residue/product ratios/Mid-range) of Rice husk is 0.27 (Source: Koopmans & Koppejan 1998)

Note: Lower heating value (MJ/kg or GJ/ton) of Rice hulls is 14.4 (Source: Biomass: based on Leach & Gowen 1987; Fossil fuel: IEA 2003a; Natural gas: BP2003)

Table 2-27: Amount and Energy Potential of Coconut Shells (2009)

Coconut shell	2009			
Region	Crop Area (ha)	Production: Coconut (MT/yr)	Production: Residues (coconut shell) (MT/yr)	Energy in Residues (GJ)
NORTE	1,140	170	90	1,612
NORDESTE	54,181	2,911	1,543	27,621
NOROESTE	284	57	30	543
NORCENTRAL	842	100	53	947
CENTRAL	6,501	532	282	5,050
SUR	3,185	384	203	3,639
SUROESTE	482	60	32	568
ESTE	22,444	1,220	647	11,575
TOTAL	89,059	5,434	2,880	51,555

Source: SEA, Departamento de Seguimiento, Control y Evaluación

Note: Residue Production Ratio (Residue/Product ratio/Mid-range) of Coconut Shell is 0.53 (Source Koopmans & Koppejan 1998)

Note: Lower heating value (MJ/kg or GJ/ton) of Coconut shells is 17.9 (Source: Biomass: based on Leach & Gowen 1987; Fossil fuel: IEA 2003a; Natural gas: BP2003)

Table 2-28: Amount and Energy Potential of Coffee Residues (2008)

Coffee Residues	2008			
Region	Crop Area (ha)	Production: Coffee Beans (MT/yr)	Production: Residues (Coffee residues) (MT/yr)	Energy in Residues (GJ)
NORTE	24,813	11,343	15,880	260,432
NORDESTE	5,289	1,745	2,443	40,065
NOROESTE	8,073	3,199	4,479	73,456
NORCENTRAL	15,178	5,718	8,006	131,298
CENTRAL	31,694	5,411	7,575	124,230
SUR	27,636	5,845	8,182	134,185
SUROESTE	18,869	3,562	4,987	81,787
ESTE	1,790	1,528	2,139	35,080
TOTAL	133,342	38,351	53,691	880,532

Source: Division de Estadisticas e Informacion, Dpto. De Planificacion, CODOCAFE

Note: The residue potential would be 1.4 times the mass of green beans produced (Source: UNDP Biomass Energy for Cement Production Opportunities in Ethiopia 2009)

Note: Lower heating value (MJ/kg) of coffee husk is 16.4 (Source: UNDP Biomass Energy For Cement Production Opportunities in Ethiopia 2009)

Table 2-29: Amount and Energy Potential of Sugarcane Bagasse (2009)

Sugarcane Bagasse	2009			
Sugar refinery (Municipalities)	Plant Area (ha)	Production: Sugarcane (MT/yr)	Production: Residues (Bagazze) (MT/yr)	Energy in Residues (GJ)
Central Romana	65,497	3,178,881	1,049,031	8,602,052
Cristal Colon	18,298	825,452	272,399	2,233,673
Barahona	8,176	616,942	203,591	1,669,445
TOTAL	91,971	4,621,275	1,525,021	12,505,170

Source: Instituto nacional del Azúcar (INAZUCAR)

Note: Residue Production Ratio (Residue/Product ratio /Mid-range) of Sugarcane is approximately 0.33 of Sugarcane (Source: MEMORIA DEL INSTITUTO AZUCARERO DOMINICANO 1995)

Note: Lower heating value (MJ/kg or GJ/ton) of Bagasse (wet) is 8.2 (Source: Biomass: based on Leach & Gowen 1987; Fossil fuel: IEA 2003a; Natural gas: BP2003)

On the other hand, potential demand of biomass residue as an alternative to fossil fuels is expected in the industry sector, that mainly utilizes imported heavy fuel oil or diesel oil to meet their heat and electricity demand if the fuel switch to biomass residue can produce additional income from CERs under CDM. Depending upon the potential of efficient logistical development, small to medium scale (1MW to 10MW) biomass fuel conversion potential can be realized for some manufacturing industries (distillers, food production, textiles, etc.)

b.2. Current Development of Biomass Energy

There are currently 3 CDM project proposals under validation are summarized in the table below.

Table 2-30: Biomass Energy CDM Projects under Validation (as of Nov. 2010)

Project Title	Project Participants	Location	Biomass Used	Estimated GHGs Reduction (tCO_2/yr)
CEMEX Dominicana: Alternative fuels and biomass project at San Pedro Cement Plant	▪ CEMEX Dominicana, S.A. ▪ CEMEX International Finance Company ▪ CO_2 Global Solutions International, S.A.	The Province of San Pedro Macoris (San Pedro Cement Plant)	▪ Biomass residues (bagasse, rice husk, etc.) ▪ For heat production	148,889
Steam Generation Using Biomass	▪ Gildan Activewear Dominican Republic Textile Company Inc. ▪ One Carbon International B.V.	The Province of Santo Domingo Este (Zona Franca Industrial Bella Vista)	▪ Agroforestry residues (rice husk/straw, coconut shell, bagasse, etc.) ▪ Switch of boiler fuels	79,557
Textile Offshore Site Dominicana Biomass Residues Cogeneration Project (TOS-2RIOS)	▪ Hanesbarands Dos Rios Textiles Inc. ▪ One Carbon International B.V.	The Province of Monseñor Nouel (Bonao)	▪ Agricultural residues ▪ Biomass-based co-generation	32,780
			Total	261,226

Source: National CDM Portfolio of the Dominican Republic

On the other hand, there also several biomass energy CDM projects in pipelines as illustrated in the table below.

Table 2-31: Biomass CDM projects in pipeline (as of Nov. 2010)

Project Title	Project Participants	Location	Biomass Used	Estimated GHGs Reduction (tCO_2/yr)
RJS Group-Grid Connected Electricity Generation from Biomass Residues	▪ RJS Group	The Provinces of Monte Cristi, Valverde Mao, Santiago, Rodriguez y Dabajon	▪ Bagasse produced in an new ethanol plant ▪ 285GWh/yr of electricity is planned to generate.	220,000
Programmatic Project of electricity generation from renewable synthesis gas energy: KOAR Dominican Energy	▪ Dominican KOAR Energy	To be identified	▪ Agricultural residues ▪ 10 units of 10MW capacity plans to be developed in the first phase.	595,000
Cogeneration plant in Bioethanol Boca Chica	▪ Bioethanol Boca Chica	The Province of Santo Domingo/San Pedro de Macoris	▪ Sugarcane Bagasse ▪ 40MW installed capacity planned	180,000
			Total	995,000

Source: National CDM Portfolio of the Dominican Republic

"The programmatic CDM project of electricity generation from renewable synthesis gas" mentioned in the table above is promoted by KOAR with close cooperation with ONMDL and JICA Study Team. As the result, JICA Study Team prepared the model PDD of this project, which is in the ANNEXES to this report.

b.3. Barriers

The barriers against utilization of biomass resources as energy sources are identified as follows:

b.3.1 Geographical dispersion of biomass resources

Most of the biomass residues are generated from agricultural activities that are extensively found in sub-urban and rural areas in the country. Due to their area-wide dispersion, stable procurement of biomass resources require extensive logistic network for their collection that may increase the cost of biomass energy utilization for industries. Seasonal fluctuation of biomass residue supply due to climate-dependent agriculture is also a problem for stable procurement of resources.

b.3.2 Potential conflict with conventional use and treatment of biomass residues

Some of the biomass residues are currently utilized for other purposes as fertilizers, soil improvers, and so forth. In the procurement of biomass residues, the potential conflict with

such current use of biomass needs to be avoided not to disturb sustainable agriculture in the country. On the other hand, there is also another concern that a large amount of biomass residue was uncontrollably burned on site with no use, resulting in environmental pollution and nature degradation. Proper use of biomass as alternative energy resources can potentially solve this issue while meeting the energy demand in the industry sector. The project must identify such win-win scenario of biomass energy development that can create socio-economic and environmental co-benefits in addition to GHGs emission reduction.

c. Hydropower

c.1. Potential

EGEHID (Dominican Hydropower Generation Company) has already identified potential locations of hydropower development at large, medium, and small-scale levels. It also has its own hydropower development plan. The total planned capacity of hydropower including all scales is 119.2MW, with the estimated annual power generation of 403.48 GWh annually. EGEHID also estimated that the average annual CER of 338,923 tons of CO_2 could be obtained if all these projects were developed as CDM.

Table 2-32 Planned Hydropower Projects and Estimated CER

Location	Province/ Municipality	Generation Capacity (MW)	Estimated Annual Generation (GWh/year)	Estimated Annual CERs (tonCO_2/year)
La diferencia	Rancho Arriba, San Jose de Ocoa	11	30.4	25,536
Arroyo Gallo	Moncion, Santiago	13.2	48.6	40,824
Hondo Valle	Hondo Valle, Elias Piña	13.5	47.5	39,900
Los Jaimenes	La Hilguera, San Juan de la Maguana	6.4	27.1	22,764
El Torito-Los Veganos	Piedra Blanca, Monseno Nouel	14.9	67.05	56,322
Artibonito	El Corte I/Pedro Santana, Elias Piña	45	124.83	104,857
La Hilguera	La Hilguera, San Juan de la Maguana	15.2	58	48,720
	Total	**119.2**	**403.48**	**338,923**

In addition to the above planned hydropower development, the Dominican Republic has further potentials of developing mini-hydropower at rural areas with its design install capacity of less than 5MW. There are also the needs of supplying electricity by developing independent micro-hydro (less than 1 MW) plants at remote rural areas. Based on the country-wide hydropower potential data provided by INDRHI, the Study produced a potential map of hydropower as shown on next page.

c.2. Current Development of Hydropower

Currently, there is one hydropower project under validation and another in the pipelines, both of which are developed by EGEHID as shown in the next table.

Table 2-33: Hydropower CDM Projects (under validation and in the pipelines)

Project Title	Project Participants	Location	Planned Installed Capacity (MW)	Estimated GHGs Reduction (tCO_2/yr)
Palomino Hydropower Project (under Validation)	▪ EGEHID ▪ CNO (Constructora Norberto Odebrecht)	The Province of San Juan de la Maguana	80 (40MW x 2)	122,833
Pinalito Hydropower Project (in the pipelines)	▪ EGEHID ▪ CNO (Constructora Norberto Odebrecht)	The Province of Santo Domingo Norte (Bonao)	50 (25MW x 2)	97,820
		Total	130	220,653

Source: National CDM Portfolio of the Dominican Republic

In addition to the above projects, the Study, in cooperation with UNDP, developed a model PDD of the programmatic mini-hydropower CDM project, targeting the rural non-electrified communities. The model PDD developed in this process is available in the ANNEXES to this report.

c.3. Barriers

In general, EGEHID has already well identified hydropower potential of the country and formulated the plan for its implementation. The only and biggest barrier is the investment cost required for its implementation. Without the grant or preferential financial scheme, hydropower development cannot be realized. Therefore, if we can well demonstrate such economic/financial barriers, the hydropower development projects can be promoted as CDM with the acquisition of CER.

As to the data from INDRHI, since it is limited to flow volume and rate of river water at designated observation/monitoring points, further investigations are required to clearly identify the potentials of hydropower generation for each potential location.

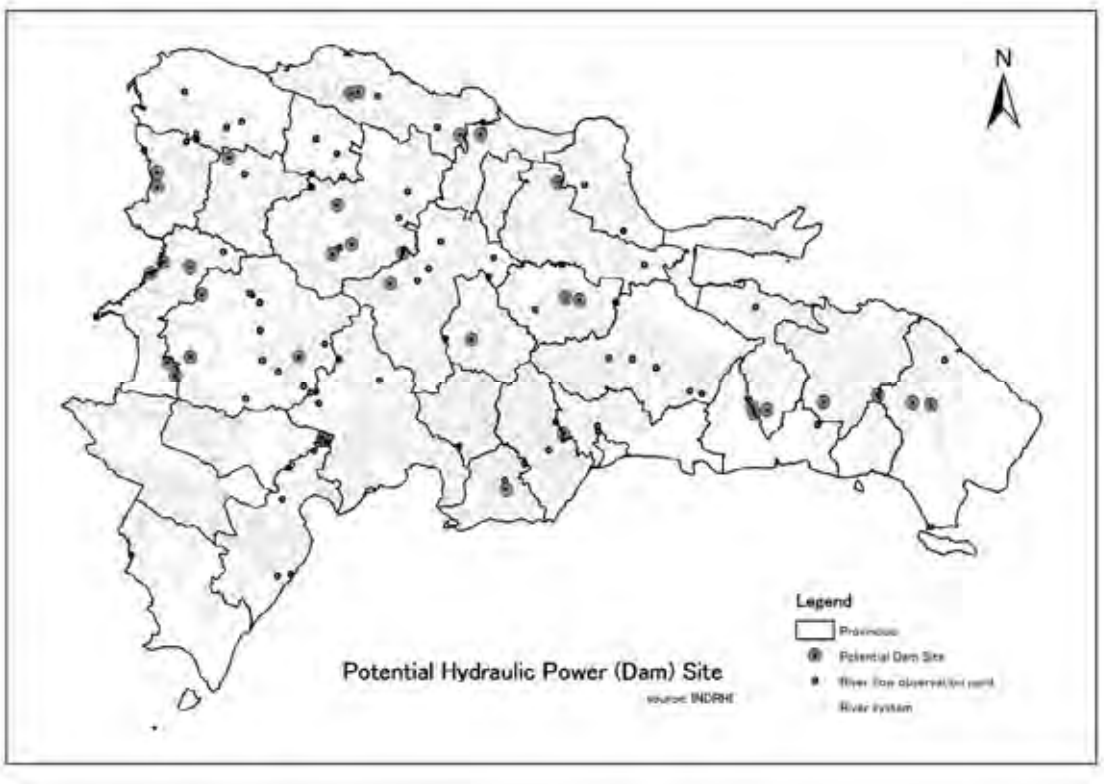


Figure 2-7: Potential Hydraulic Power (DAM) Sites

d. Solar Energy

d.1. Potential

Although the physical potential of solar energy is abundant in the country, solar system applications at medium and large scale are difficult due to comparatively high cost of installation and its maintenance. Solar system application may be focused on small scale applications such as:

- Application of small-scale solar system (solar panel, solar home system, solar cookers, etc.) for the rural areas distant from available national power grid; and
- Application of small-scale solar technology for residential and commercial sector as alternative energy to fossil fuels and electricity (solar water heating, etc.)

Therefore, solar energy CDM projects need to be developed as the bundled or programmatic CDM projects in which homogenous technology or system is applied with a large number of areas, residences, or buildings to obtain enough CER to partially cover their initial investment.

d.2. Current Development of Solar CDM Project

There are two PINs submitted to the DNA on solar CDM projects as outlined in the table below.

Table 2-34: Solar Energy CDM Project in the Pipelines

Project Title	Project Participants	Location	Planned Installed Capacity (MW)	Estimated GHGs Reduction (tCO_2/yr)
60MW Photovoltaic park in La Victoria	Elctrotex del Caribe, S.A.	The Provice of Santo Domingo Norte (La Victoria)	60MW	89,693
Electricity Generation through photovoltaic modules	Investment S.C.S.A	Not specified	Not specified	14,000

Source: National CDM Portfolio of the Dominican Republic

d.3. Barriers

The major barrier against promotion of solar energy is that the scale of solar energy CDM project is too small as a single project in comparison with the high cost of its installation. High cost of installation device also hinders dissemination of solar system in the country. Due to its high value of solar device, there is also the risk of robbery especially for the stand-alone solar system.

2.3.2 Waste Management

Along with renewable energy sector, waste management sector also has a big potential of developing CDM projects. The major prototypes of CDM projects in this sector are:

- Methane capture and flaring/energy utilization from final disposal landfills; and
- Methane avoidance/reduction by composting of organic waste

a. Landfill Gas Capture and Utilization

In the final disposal landfill of solid waste, a significant amount of methane gas is produced in the process of anaerobic decomposition of organic matters in solid waste. The basic concept of landfill gas capture and utilization is to collect the gas from landfills and utilize it for energy use. Since the global warming potential of methane is 22 fold of carbon dioxide, flaring of gas can also reduce green house gas emissions. The use of collected gas for energy purposes (heat production or power generation) can also contribute to reduction of fossil fuels consumption. The figure below shows the conceptual scheme of landfill gas capture and utilization.

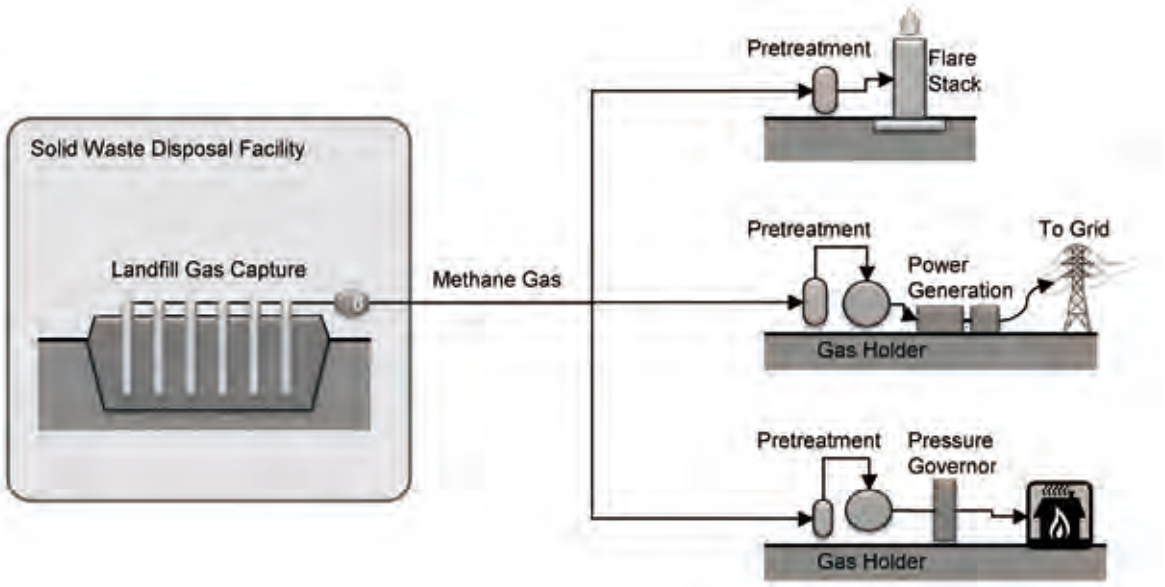


Figure 2-8 Conceptual Diagram of Landfill Gas Capture Project

a.1. Potential

The potential amount of landfill gas methane capture depends upon the amount of organic waste disposal and management practice of landfill. In principle, the higher the organic content in the waste, the higher the potential of gas emission. Degree of aerobic/anaerobic condition in the landfill is another important factor that influences the methane emission from landfills. In aerobic condition such as shallow open dumping, the amount of methane emission is reduced while deep compacted landfills with anaerobic condition will accelerate methane emission.

In the case of the Dominican Republic, the potential of landfill gas capture mainly exists in the big cities dealing with larger amount of waste, such as Santo Domingo, Santiago and so forth. Considering the required investment cost for landfill gas capture and utilization facilities, the project is only applicable to the medium or big cities with the average daily waste disposal amount of more than 300 tons. Assuming that the per capita waste generation is ranging from 0.6 to 1.0 kg/day, the cities with the population ranging from 300,000 to 500,000 is required at its minimum to implement the landfill gas capture project. The table below shows the provinces with more than 300 thousand populations in the Dominican Republic.

Table 2-35 Population of the provinces with more than 300 thousand population in the Dominican Republic

Province	Population
National District of Santo Domingo	1,026,239
Province Santo Domingo	2,042,003
San Cristobal	601,593
Santiago	966,869

Province	Population
Puerto Plata	332,958
Duarte	342,948
San Pedro de Macoris	311,878
La Vega	421,771

Source: Estimaciones y Proyecciones de la Poblacion Dominicana por Regiones, Provincias, Municipios y Distritos Municipales, 2008

Based on the population and available waste data in the Dominican Republic, the Study produced a baseline map of municipal solid waste generation by province. This will provide us with the fundamental potentials of CDM project development in the waste management sector.

a.2. Current Development of Landfill Gas Capture CDM Projects

There is one CDM project that has been officially registered and operated as outlined in the table below.

Table 2-36: Landfill Gas Capture CDM Project in Operation

Project Title	Project Participants	Location	Estimated GHGs Reduction (tCO_2/yr)
Bionersis Project on La Duquesa Landfill	Bionersis Dominicana, S.A.	National District of Santo Domingo	392,870

Source: National CDM Portfolio of the Dominican Republic

a.3. Barriers

The existing barriers against development of landfill gas capture CDM project are identified as follows:

a.3.1 Lack of Essential Data

Many of the provinces and municipalities do not have enough data on waste amount and composition and landfill operation that are essential for screening the possibility of developing landfill gas capture CDM project.

a.3.2 Lack of Technical and Financial Capacity

Many of the provinces and municipalities do not have enough capacity of waste management including collection, haulage and final disposal landfill operation. It will be difficult for them to properly develop and manage landfill gas capture project that also requires continuous monitoring of the project under CDM.

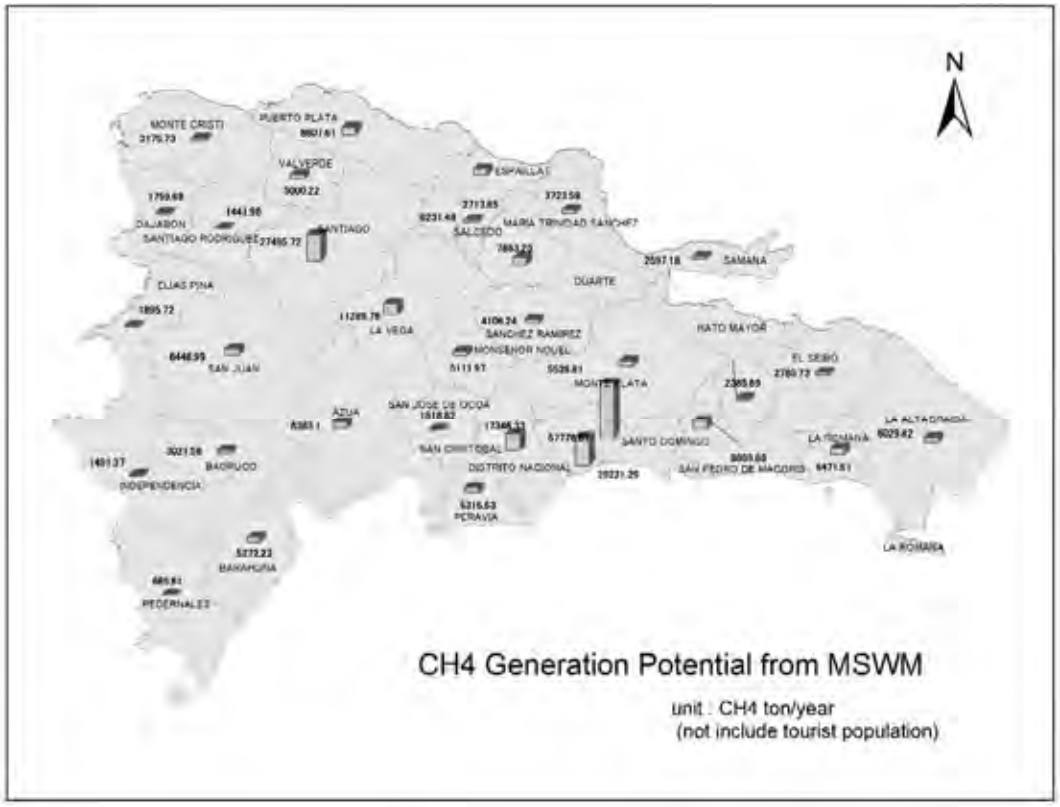


Figure 2-9: Estimated CH_4 Generation Potential from Municipal Solid Waste

b. Methane Avoidance by Composting

Composting of organic waste can also reduce methane emission from solid waste through accelerating aerobic decomposition of waste in the composting process shown below.

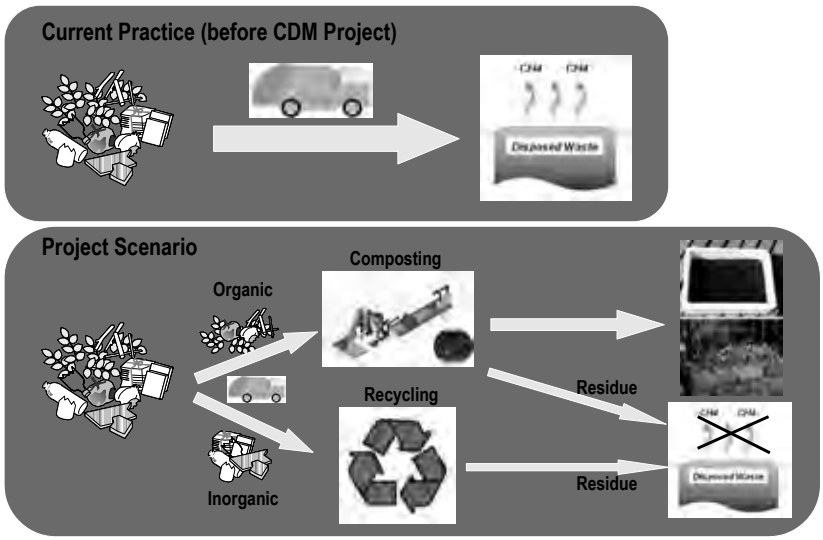


Figure 2-10 Basic Concept of Methane Avoidance by Waste Composting

Composting of organic waste also has many other potential positive impacts, such as minimization of waste disposed at landfills, application of produced compost as fertilizer or soil conditioners of agricultural land and so forth. Proper separation of organic waste at sources of

generation will enhance the quality of compost to be used as fertilizers and it will reduce the use of chemical fertilizers.

b.1. Current Development of Composting CDM Projects

There are two CDM projects in the pipelines related to composting of organic waste as outlined in the table below.

Table 2-37: Current Composting CDM Projects in the Pipelines

Project Title	Project Participants	Location	Estimated GHGs Reduction (tCO_2/yr)
Co-composting of EFB (Empty Fruits Bunch) and POME (Palm Oil Mill Effluent) PIN submitted	Induspalma Dominicana, S.A.	Monte Plata	12,252
Production of Compost from Solid Waste and Agricultural Residues (Concept plan)	Fundacion Agricultura y Medio Ambiente (FAMA) y Bioliga	Not identified	Not estimated

Source: National CDM Portfolio of the Dominican Republic

b.2. Potential

Composting CDM project has wider applicability regardless of its scale. Various technologies are also available ranging from simple and low cost manual technology to advanced mechanical ones. Considering the high content of organic materials in solid waste in the Dominican Republic, composting of organic waste has high potential of methane emission reduction and CDM project development. Although small-scale composting may produce small amount of methane emission reduction, it can be developed as a Programmatic CDM under a common technology application in wider areas.

Large or intensive organic waste generators need to be targeted to efficiently collect organic waste for composting such as wet market, restaurants, hotels, and so forth.

b.3. Barriers

The main barriers against the development of composting CDM will be as follows:

b.3.1 Lack of Essential Data

As is the case of landfill gas capture project, lack of data on waste amount and composition is one of the critical barriers against promotion of composting CDM project. Current waste amount and composition data with current waste collection system have to be identified for each province and municipality. It is also important to identify the large generators of organic waste to efficiently collect organic waste for composting.

b.3.2 Limited technical and management capacity

The local capacity of SWM will be limited in many provinces and municipalities to further increase their daily works by conducting composting. Taking into account that composting requires some educational and training works of the people for proper handling of organic waste in addition to the management of composting facilities; the project cannot be carried out only by the initiative of local government.

c. Other Waste Related CDM Projects

There is another waste management CDM project proposing introduction of waste-to-energy facility, as outlined in the table below.

Table 2-38: Other Waste Related Projects in the Pipelines

Project Title	Project Participants	Location	Planned Installed Capacity (MW)	Estimated GHGs Reduction (tCO_2/yr)
Biofuturo Plant of Industrial Recycling of MSW in Santo Domingo	▪ Consorcio Empresarial Biofuturo, SRL	National District of Santo Domingo	6.0	175,705

Source: National CDM Portfolio of the Dominican Republic

2.3.3 Industry

a. Fuel Switch and Energy Efficiency Improvement

a.1. Potential

Most of the factories in the Dominican Republic, regardless of its products and scale, depend upon the imported fuels (especially liquid fuels such as heavy fuel oil or diesel oil) for energy production and consumption. The Dominican Republic is also characterized by heavy dependence upon independent back-up diesel power generators owned by each large electricity consumers including not only factories, but also buildings, commercial facilities, even independent houses, mainly due to instable supply of national grid power supply.

This current situation indicates large potential of GHGs emission reduction by fuel switching as well as energy efficiency improvement at each factory level.

The largest potential of GHGs emission reduction exists in energy-intensive industries. In the case of the Dominican Republic, they include ferronickel and gold mining as well as cement production industries.

There are also significant potentials of GHGs emission reduction in other industries, that are dominating in the Dominican Republic, such as food and beverage, agricultural products

processing, and textiles/garments if we can collectively introduce similar energy efficiency technology or device to specific industry sub-sectors.

The potential fuel switch and energy efficiency improvement measures include:

- Fuel switch to less carbon fuels (coal>oil>natural gas>biomass) in boilers, furnaces, and back-up power generators;
- Introduction of combined heat and power system (cogeneration or waste heat recovery);
- Introduction high efficiency boilers; and
- Application of in-process (elemental) technology (cleaner production technology with less energy consumption).

a.2. Current Development of CDM Projects on Fuel Switch and Energy Efficiency Improvement

There are several CDM projects at the early stage of project formulation without any preparation of PINs and PDDs. The table below shows the list of such projects.

Table 2-39: Current Fuel Switch/Energy Efficiency Improvement CDM Projects under Validation and in the pipelines

Project Title	Project Participants	Location	Project Information
METALDOM Fuel Switch in Furnaces	▪ METALDOM Dominicana	Not Specified	▪ The project aim to switch the actual consumption of fuel oil from the furnaces to Natural Gas
Fuel switch from heavy fuel oil (HFO) to natural gas	▪ Seaboard Dominicana	Not specified	▪ Replacement of HFO by natural gas ▪ GHGs reduction of 200,000tCO2/yr is estimated
Fuel switch from diesel oil to natural gas in industry and hotel sector	▪ AES Dominicana	Not specified	▪ Programmatic project of switching diesel by natural gas in heat production and electricity in industry and hotel sector.
Energy efficiency by smart devices or replacing high consumption appliances	▪ T & S Energia	Not specified	▪ Energy efficiency measures in hotels through installation of smart devices in rooms and replacement of A/C units. ▪ GHGs reduction of 40,000tCO2/yr is estimated.
Improvement of the efficiency of electricity distribution	▪ CDEEE	Not specified	▪ GHGs reduction of 50,000tCO_2/yr is estimated.

Source: National CDM Portfolio of the Dominican Republic

a.3. Barriers

There are two major barriers against implementation of fuel switch and energy efficiency improvement CDM projects, i.e.

a.3.1 Lack of energy and power consumption data by sub-sector of industries

To assess the potential and financial feasibility of fuel switch as well as energy efficiency improvement, it is indispensable to clearly identify the current energy and power consumption

patterns for each type of industry or even each factory. Such data needs to be collected and compile by each sub-sector of industries with its production data so that the energy efficiency can be estimated in the form fuel/power consumption per unit product to compare with the other county's data. Such efforts have to be led by the government organizations in energy and industry sector (CNE, Ministry of Industry and Commerce) in cooperation with industry associations.

a.3.2 Cost/benefit of fuel switch or energy efficiency improvement projects for industries

Cost and benefit of fuel switch or energy efficiency improvement needs to be carefully assessed based by comparing the total energy cost including the cost of procurement, transportation, storage, and fuels themselves as well as potential benefits to be obtained from CERs. Likewise, switching fuel to biomass may also be carefully considered since it may increase the cost of fuel in total due to high cost of transportation and other relevant expenses depending on the geographical locations of biomass sources. Real cost estimation needs to be carefully conducted for each specific project scenario.

b. Process-Specific GHGs Emission Technologies

In the Dominican Republic, there are mainly two areas of introducing process-specific GHGs emission technologies, as described below:

b.1. Potential

b.1.1 Blended Cement Production with Reduced Content of Clinker

Cement industry can reduce the emission of CO_2 by reducing the amount of clinker (calcium oxide) content of the produced cement by utilizing alternative materials. So-called blended cement production may have a significant impact upon GHGs emission reduction from cement production. In relation to this, CEMEX Dominicana had been trying to develop a CDM project to reduce its clinker content in the cement manufacturing before, but due to strict national quality standard that requires high content of clinker in the cement, the project was halted. However, the project has been reactivated with the deregulation of the above standard. The project is currently under validation.

b.1.2 Methane Capture and Utilization from Industrial Wastewater

As is the case of solid waste, the wastewater of high organic matters content also produces methane in the anaerobic environment. The factories that discharge wastewater of high organic matters content have potentials of developing methane capture and utilization project under CDM. Such industries may include food and beverage and agricultural/livestock

product processing factories. To identify the potential factories, the following data and information have to be collected:

- Wastewater discharge amount and flow rate;
- Quality of wastewater (BOD, COD, TOC, etc)
- Current wastewater treatment measures

These parameters are the key factors of determining methane emission from wastewater.

There are mainly two types of methane collection technologies, i.e. covered lagoon and the use of digesters, as shown in the figures on next page.

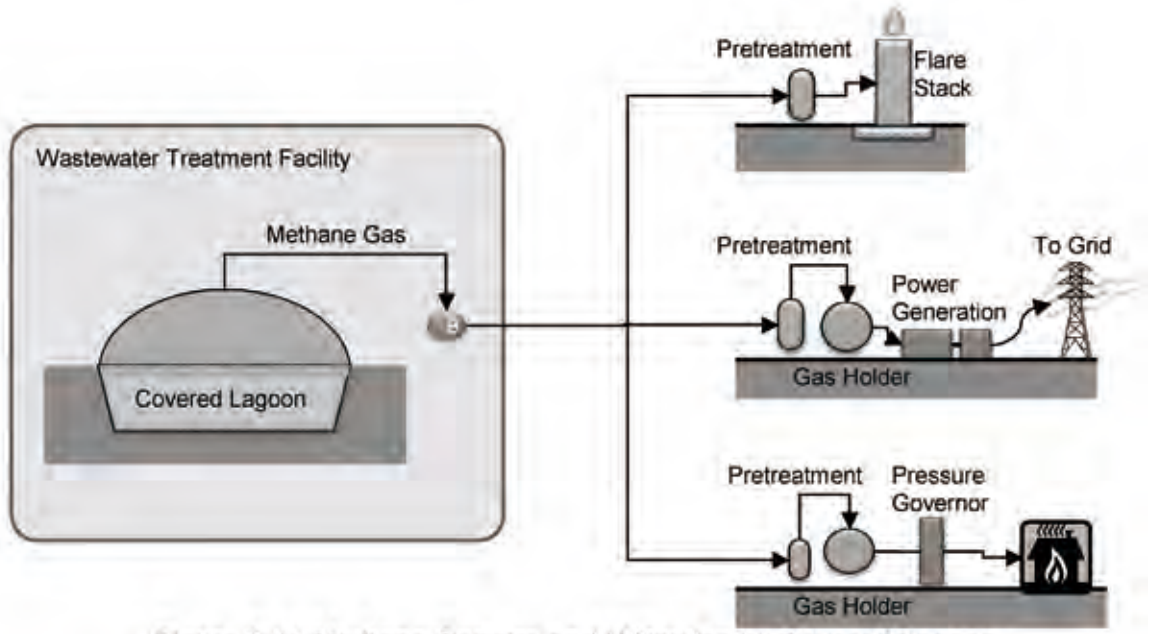


Figure 2-11 Methane Capture and Utilization by Covered Lagoon

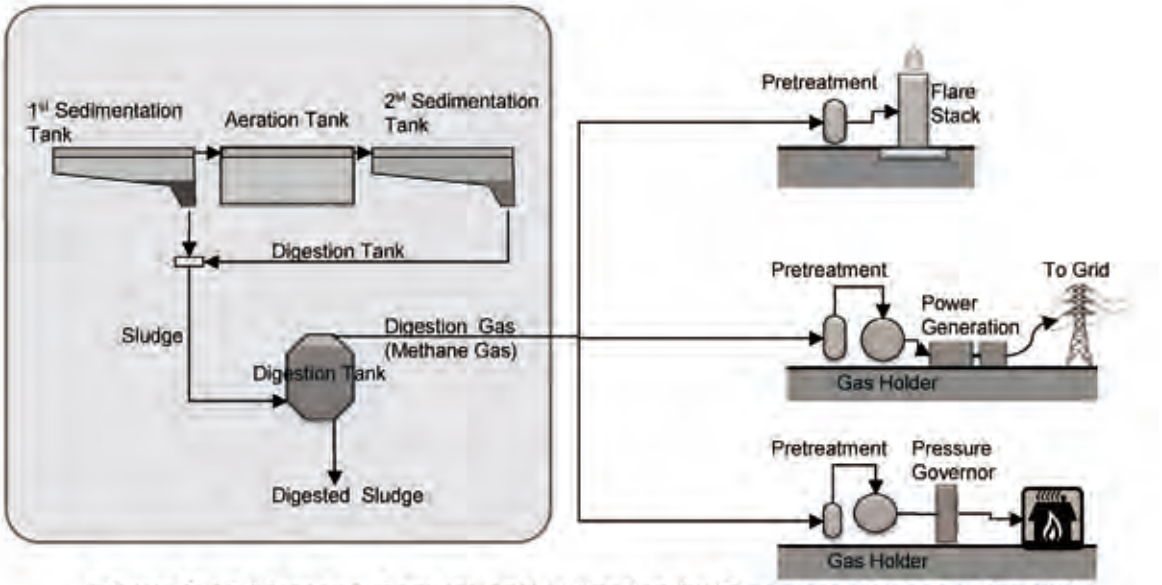


Figure 2-12 Methane Capture and Utilization by Digesters (Digestion Tanks)

b.2. Current Development of Process Specific CDM Projects

There are several process-specific CDM projects under validation and in pipelines as outlined in the table below.

Table 2-40: Current Process Specific CDM Projects in the Pipelines

Project Title	Project Participants	Location	Estimated GHGs Reduction (tCO_2/yr)
CEMEX Dminicana: Blended Cement Project (under validation)	CEMEX Dominicana, S.A.	The Province of San Pedro Macoris	138,297
Co-composting of EFB (Empty Fruits Bunch) and POME (Palm Oil Mill Effluent) PIN submitted	Induspalma Dominicana, S.A.	Monte Plata	12,252

Source: National CDM Portfolio of the Dominican Republic

b.3. Barriers

Since the process-specific GHGs emission reduction potentials depend upon the unique industrial production process and technologies applied by each factory, they should be investigated by each type of industrial sub-sector. In this respect, the efforts by each industrial enterprise in identifying the potentials of GHGs emission are the key of realizing this type of CDM projects.

As to the potential of methane capture from industrial wastewater, on the other hand, it can be identified by collecting the information and data mentioned above (wastewater discharge amount and flow rate, BOD, COD, and current wastewater treatment system).

2.3.4 Agriculture

a. Potential

The largest potential of CDM project in agricultural sector is the use of biomass for energy purpose, as mentioned in the previous section. Another potential area of CDM project development is in animal manure management in livestock sector. Because of its high content of organic matters, animal manure produces a considerable amount of methane in an anaerobic condition, where there is a potential of capturing methane for energy use as shown in the figure below.

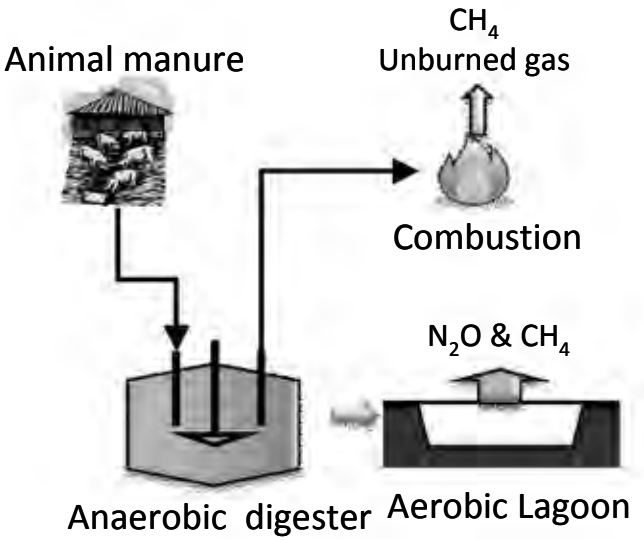


Figure 2-13 Conceptual Flow of Methane Capture in Animal Manure Management

b. Current Development of Animal Manure Management CDM Project

There are currently 4 CDM projects in the pipelines related to methane capture from animal manure management as outlined in the table below.

Table 2-41: Current Animal Manure Management Related CDM Projects in the Pipelines

Project Title	Project Participants	Location	Estimated GHGs Reduction (tCO_2/yr)
Methane capture and its applications in pig farms' self-consumption and in associative activities (Programmatic CDM)	▪ APORLI (as CME) ▪ Member pig farmers of APORLI	Licey al Medio and Moca (Cibao Central)	116,202 (average of 10 years)
Methane capture and power generation in the pig farms in Moca	▪ Rancho Zafarraya, C.A.	Moca (Cibao Central)	Not estimated
ICC-Co-digestion and co-composting of animal waste and mud	▪ Confidential	Confidential	7,814
BIoenergias Dajabon	▪ RENTEC	Dajabon	30,000

Source: National CDM Portfolio

In addition to the project in the pipelines above, the Study produced model PDDs of the programmatic CDM project on methane capture and utilization from pig farms, in cooperation with COOPCIBAO, an Association of pig farmers in Cibao. The model PDDs are available in the ANNEXES to this report.

c. Barriers

The major existing barriers against the development of animal manure management CDM projects are as follows:

c.1. Lack of Essential Data

To assess the potential of animal manure management CDM project, the potential methane emission in the current treatment system has to be estimated. The factors that determine the potential of methane capture from the treatment system of animal manure include:

- Type and number of livestock (The manure from cattle and swine has larger potential of methane emission than other livestock); and
- Current animal manure treatment system (The higher the anaerobic condition of treatment lagoon is, the higher the potential of methane emission.).

However, these key data and information is not readily available at each livestock farm level. Such baseline information and data need to be collected and monitored on site to correctly identify the potentials.

c.2. Limiting Factors of methane capture potential

There are several limiting factors of methane capture potential from animal manure management in the Dominican Republic. One of such factors is the limited number of livestock per farm that reduces the potential of methane capture from animal manure. Another limiting factor is the uncontrolled treatment of animal manure on site. If animal manure is not treated in anaerobic condition before its final discharge to the environment, methane emission will be minimized, so is the potential of methane capture. Uncontrolled discharge of animal manure found in small-scale livestock farmers in this country may reduce the potential of methane capture from animal manure.

2.3.5 Transport

a. Fuel Switch and Energy Efficiency Improvement

a.1. Potential

The potentials of fuel switch and energy efficiency improvement largely exist in collective introduction of such measures to public transport (buses, taxis) or freight transport where, similar technology or measure can be collectively applied. There are 3 (three) relevant CDM projects in the pipelines, but only at concept level without no PINs or PDDs. The table below outlines these plans.

Table 2-42: Fuel Switch/Energy Efficiency CDM Projects in the Pipelines

Project Title	Project Participants	Location	Project Information
Fuel switching in inter-urban transport unit of passengers	▪ Caribe Tours	Not Specified	▪ Fuel switch in vehicle units using diesel to another less carbon-intensive fuel.
Fuel switching in passenger transport means	▪ Central Nacional de Transportistas Unificados (CNTU)	Not specified	▪ Fuel switch in taxis and buses of the urban transport from gasoline/diesel to natural gas.
Incorporation of hydrogen in the combustion chambers of the transport vehicles	▪ New Energy Dominicana	Not specified	▪ Incorporation of hydrogen in the combustion chambers of the internal combustion engines of vehicles for fuel saving and emission control ▪ Reduction of 60,000tCO_2/yr is estimated.

Source: National CDM Portfolio

a.2. Barriers

The existing barriers against promotion of fuel switch and energy efficiency improvement may include:

- Development of infrastructure for stable supply of alternative fuels (e.g. CNG stations, etc.)
- Quality control of alternative fuels
- Adequacy of service facilities against the security standards in the handling of alternative fuels like ethanol
- Secured supply of alternative fuels
- Procurement of equipment (gas engines)
- Limited capacity for monitoring of the project by project owner(s).

b. Mass Transit System

Although the Metro subway project is trying to prepare the PDD for registration as CDM project in cooperation with CAF (Corporacion Andina de Fomento), no documented information has been submitted to the DNA so far. Since the prior examples of CDM project of this sort is very limited (only 3 projects with two on mass transit system), it is not certain

whether this type of project can be developed as CDM. For this moment, we should prefer to wait for the progress and result of the above effort.

2.3.6 Afforestation/Reforestation

a. Potential

According to the preliminary study on A/R CDM potential area carried out by JOFCA (Japan Overseas Forestry Consultants Association) in 2007 with the cooperation by SEMARENA, the total potential area of A/R CDM in the country is 10,256,773 hectare as shown in the following figure. The details of this analysis is available in "The Study on the Baseline for Afforestation and Reforestation CDM", which is available on the CDM website.

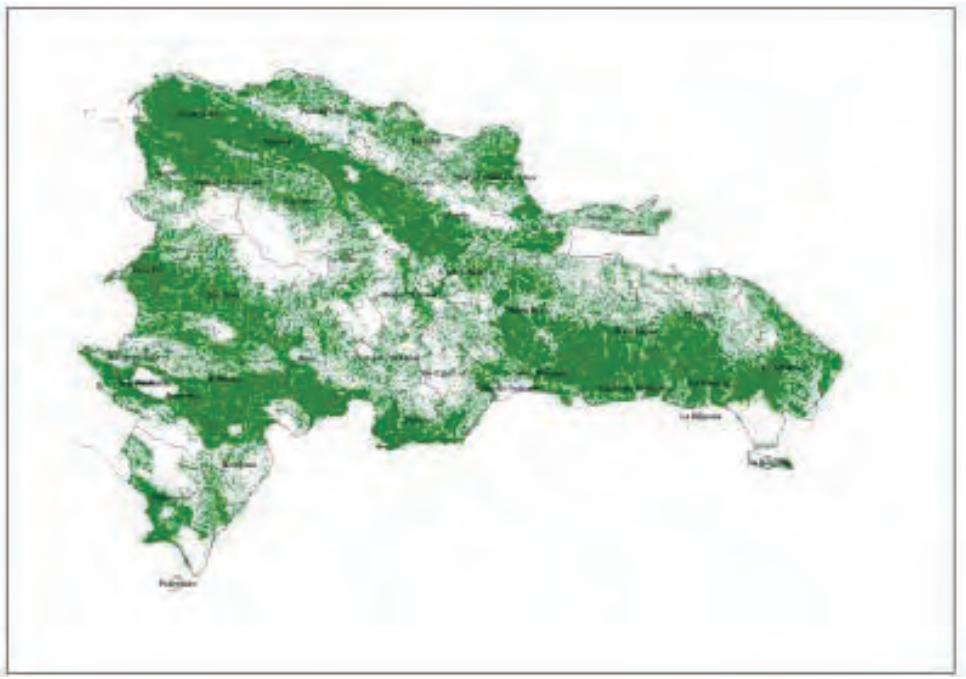


Figure 2-14 Identified Potential Area of A/R CDM in the Dominican Republic

b. Current Development of A/R CDM Project

There are several concept level plans on A/R CDM projects as outlined in the table below.

Table 2-43: Current A/R CDM Projects in the pipelines

Project Title	Project Participants	Location	Project Information
RainTree Corp. Reforestation Project	▪ RainTrtee Crop.	Not specified	▪ Reforestation of deforested zones of the country with agroforestry cooperatives and nursery
Reforestation of the Blanco River basin	▪ TNC	The Province of Monsenor Nouel (Bonao)	▪ Reforestation for 6,071ha ▪ Estimated sequestration of GHGs at 40,181tCO_2/yr on average.

c. Barriers

The existing barriers against A/R CDM in the Dominican Republic are as follows:

- Potential high risk of leakage arising from conflictive land use scenarios and the country's deficit on forestry products.
- High incidence of hurricanes and floods.
- Potential risk of arising land tenure issues.
- Risks of registration in terms of proving the eligibility of the project area as A/R CDM (mainly due to the limited proper record keeping of land use history in the country.).