



COMISIÓN
NACIONAL DE
ENERGÍA
SOMOS LO QUE CREEMOS



STATUS AND OUTLOOK OF THE RENEWABLE ENERGIES IN THE DOMINICAN REPUBLIC



**GLOBAL WORKSHOP ON CLEAN ENERGY DEVELOPMENT:
Establishing a Foundation for Low Carbon Energy Systems**

December 1 - 8, 2012

Washington, DC

DISCLAIMER

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Presentation Content:

- Political and Economic view of D.R.
- Overview of Energy Sector.
- Legal Framework for the Electrical Sector and Renewable Energies.
- Development of Renewable Energies in D.R.
 - Wind Projects.
 - Solar Projects.
 - Biofuels.
 - Biomass.
 - Hydropower.
 - Rural Communities Projects.
- Energy Efficiency / Rational Use of Energy.

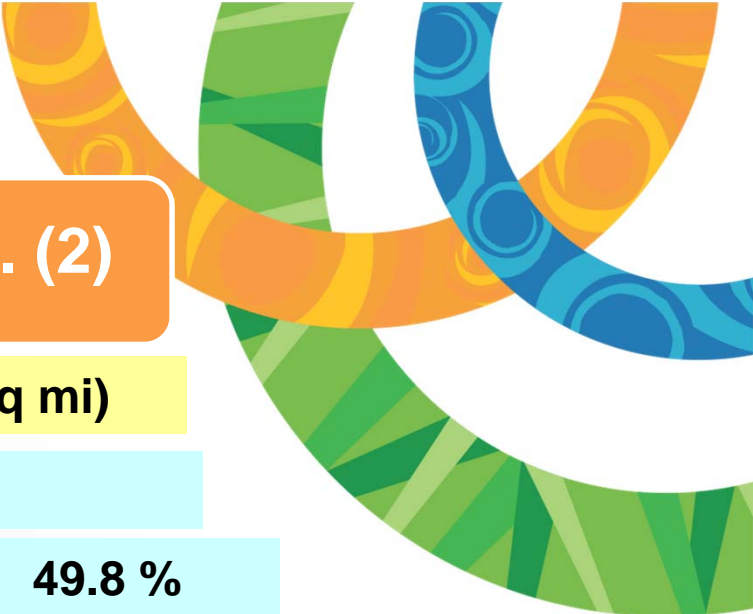




Political and Economic view of D.R.

Political and Economic view of D.R. (1)





Political and Economic view of D.R. (2)

➤ **Country Extension: 48,442 Km² (18,704 sq mi)**

➤ **Population: 9,445,281 (Census 2010)**

➤ **Male: 50.2 % Female: 49.8 %**

➤ **Urban: 74.4 % Rural: 25.6 %**

➤ **Territorial Division : 1 National District and 31 Provinces.**

➤ **Capital: Santo Domingo (Aprox. 3.0 Millions people.)**

➤ **Currency: Dominican Peso (Aprox. RD\$ 39.80 > USD\$ 1.00)**

➤ **Government: Democratic, Republican and Representative.**

➤ **Period of Government: 4 years.**

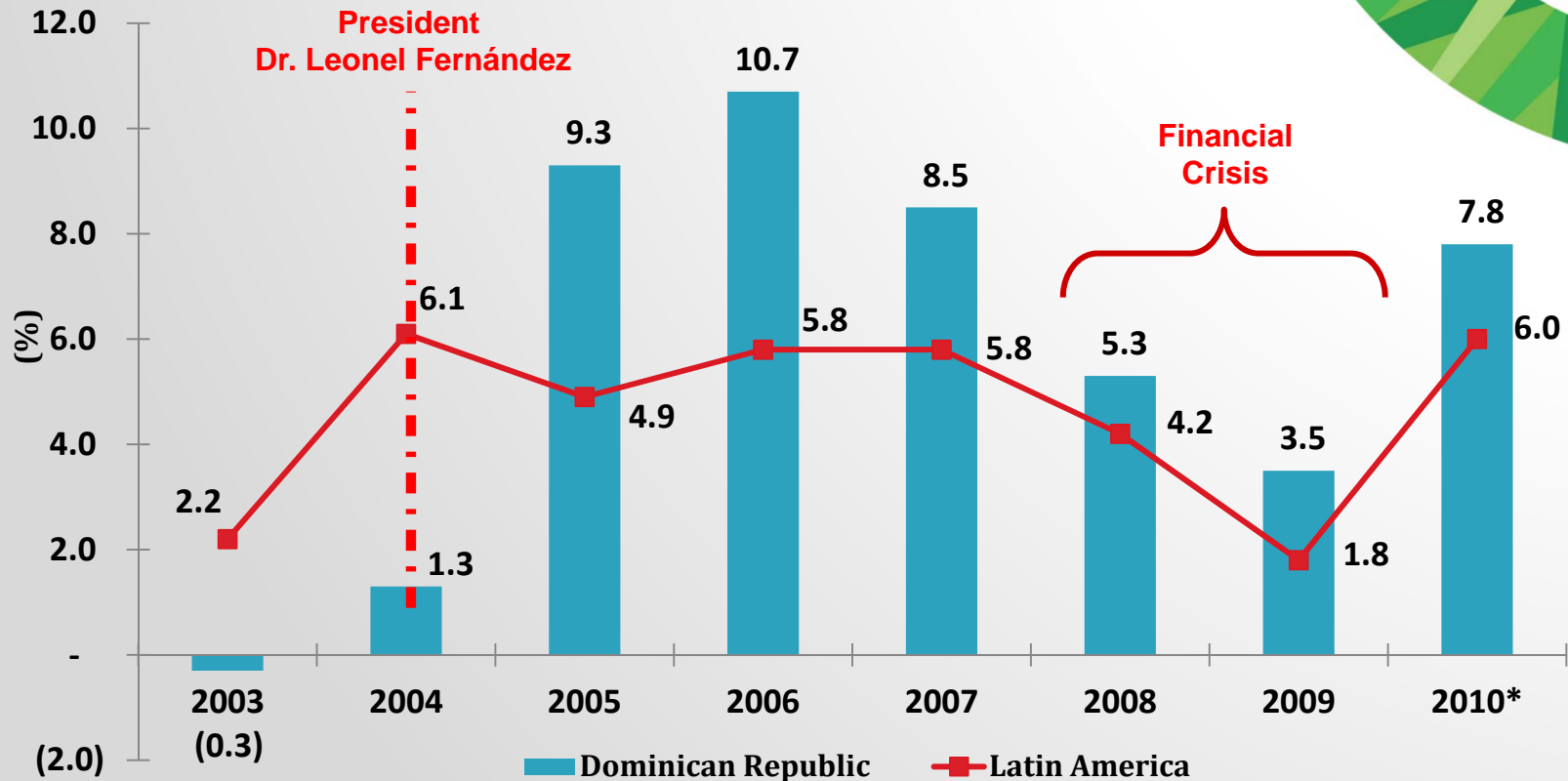
➤ **G.D.P.: USD\$ 55,666.0 Millones (BCRD 2011)**

➤ **G.D.P. per Capita: USD\$ 5,538.3 (BCRD 2011)**



Political and Economic view of D.R. (3)

GDP : Dominican Republic versus Latin America (2003-2010)

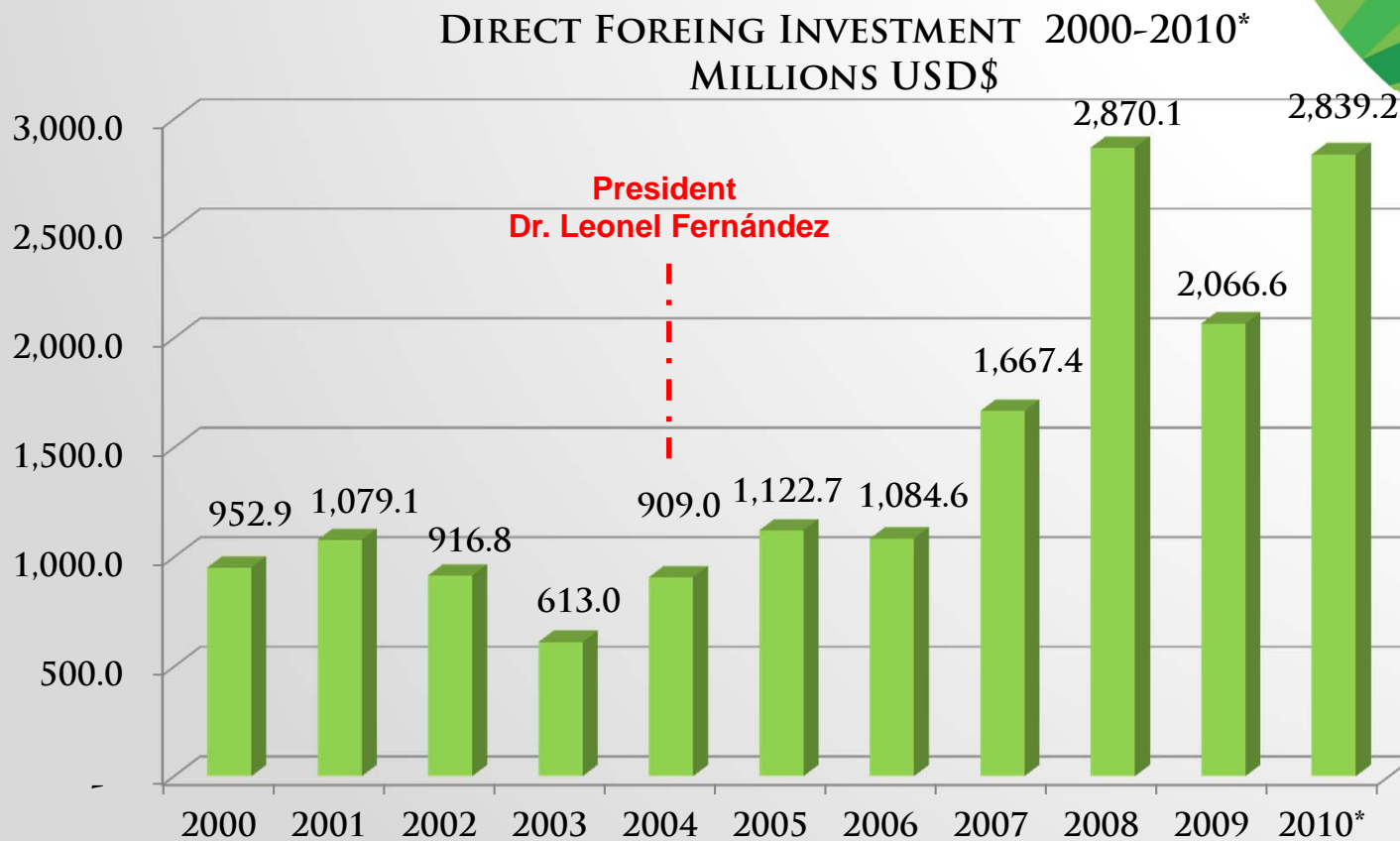


(*) Preliminary data.

Source: - CEI-RD Presentation (www.cei-rd.gov.do)
- Data Central Bank of Dominican Republic (BCRD) (www.bancentral.gob.do)
- Economic Commission for Latin America & Caribbean (ECLAC)



Political and Economic view of D.R. (4)



Source: CEI-RD Presentation (www.cei-rd.gov.do)

Data Central Bank of Dominican Republic (BCRD) (www.bancentral.gob.do)

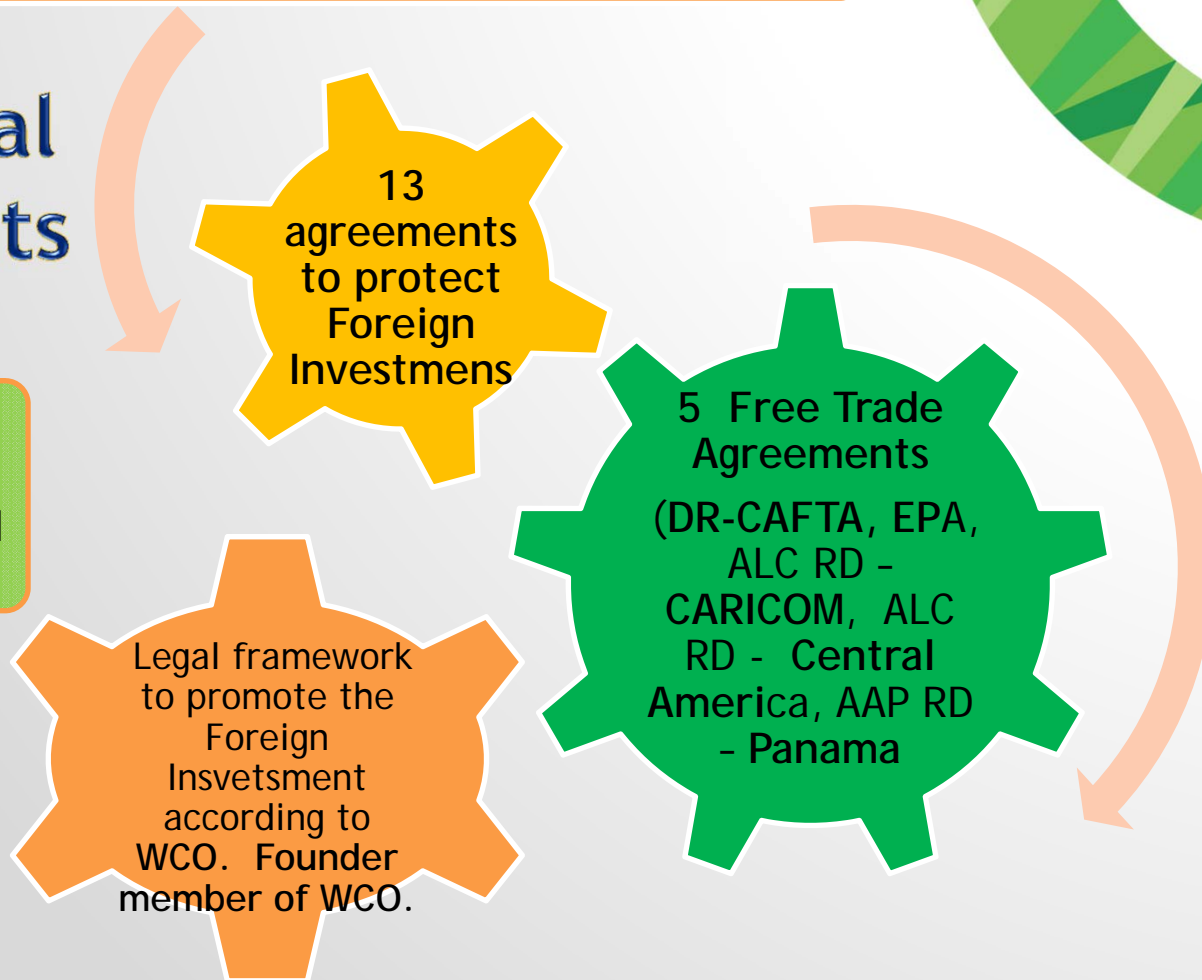
(*) Preliminary data.



Political and Economic view of D.R. (5)

Commercial Agreements

- In discussion: Agreements with Mexico and Canada.

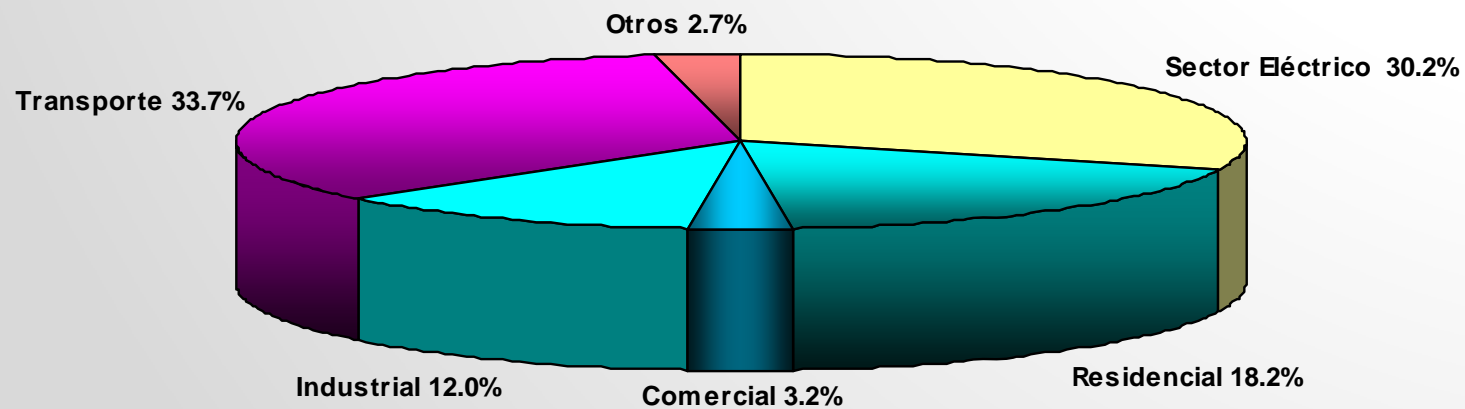


Source: CEI-RD Presentation (www.cei-rd.gov.do)

Overview of Energy Sector.

Overview of Energy Sector. (1)

Comisión Nacional de Energía
Gerencia de Planificación
Consumo de Energía por Sector, 2006
(en %)



**Total Energy
Consumption: 4,930 Ktep**

Fuente :Comisión Nacional de Energía/Gerencia de Planificación:Balance Nacional de Energía Preliminar, 2006

Overview of Energy Sector. (2)

National Electrical Integrated Grid (SENI)

Año 2011

- **Installed Capacity : 2,960 Mw ?**
 - Thermo: 2,437 Mw / 82.3%
 - Hydro: 523 Mw / 17.7%
- **Max. Demand: 1,800 Mw ?**
- **Energy Supplied: 13,150 Gwh**
 - Thermo: 11,622 Mw / 88.4%
 - Hydro: 1,528 Mw / 11.6%

Source: OC – Memoria 2011 (www.oc.org.do)

- **Territorial Coverage : 7.0 %**

Transmission Lines

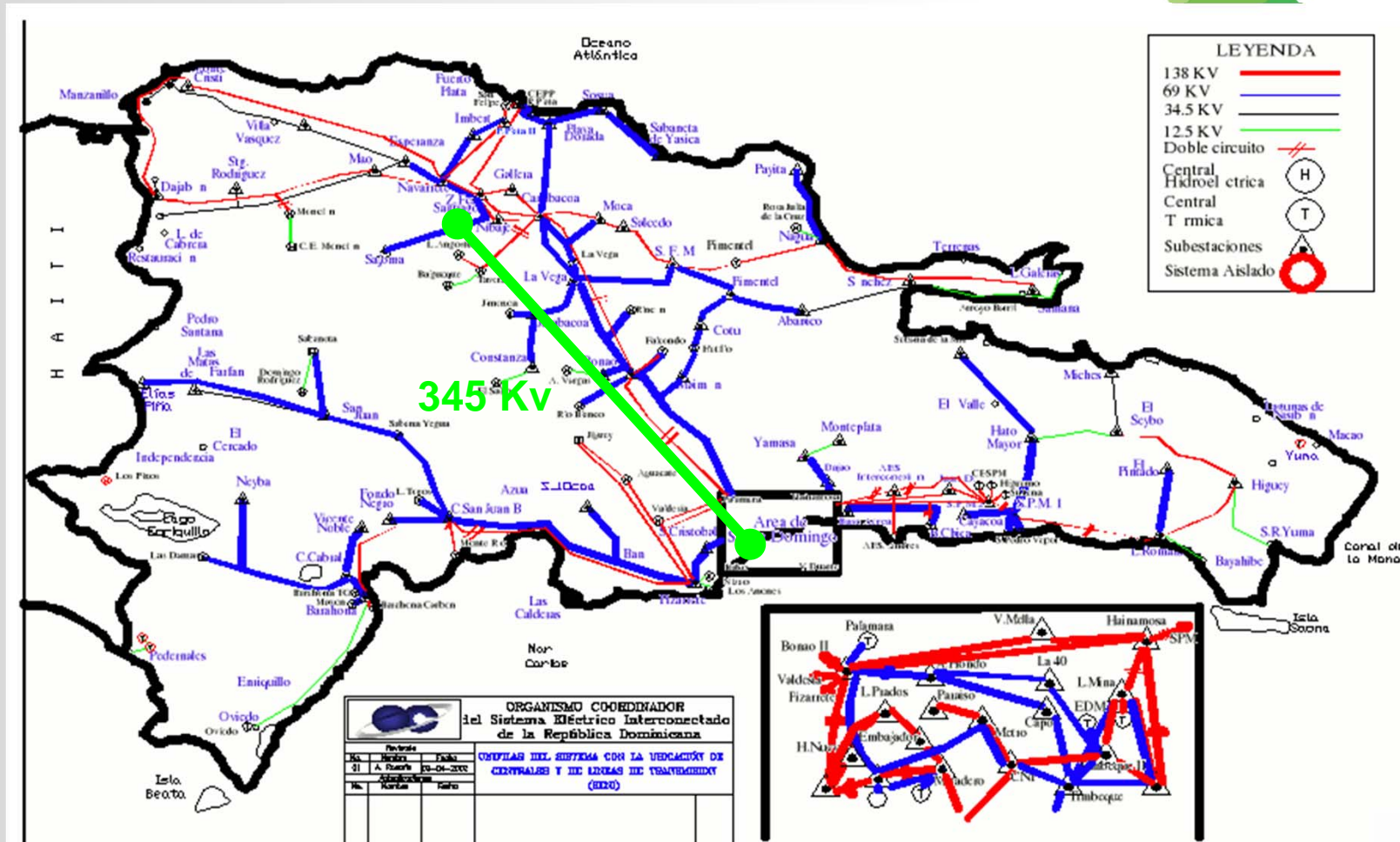
- **Lines 345 Kv: 160 Kms.**
- **Lines 138 Kv: 1,337 Kms.**
- **Lines 69 Kv: 1,657 Kms.**
- **Territorial Coverage: 85.0 %**

OFF-Grid Systems

- **CEPM: 70 Mw**
- **CEB: 4 Mw**
- **Punta Cana: 18 Mw**
- **Cap Cana: 28 Mw**
- **Las Terrenas: 12 Mw**
- **Puerto Plata: 43 Mw**

Overview of Energy Sector. (3)

National Electrical Integrated Grid (SENI)



Source: OC (www.oc.org.do)

Overview of Energy Sector. (4)

Transportation Sub-Sector (1)

Vehicles Types

Tipo	2010	2011 ^{a/}	Variación	
			Absoluta	Relativa
Automóviles ^{1/}	662,633	678,732	16,099	2.4%
Autobuses	73,862	76,300	2,438	3.3%
Jeeps	254,044	274,810	20,766	8.2%
Carga ^{2/}	343,362	355,337	11,975	2.9%
Motocicletas	1,409,975	1,481,255	71,280	5.1%
Volteos	18,343	18,650	307	1.7%
Máquinas Pesadas	18,300	18,913	613	3.3%
Otros ^{3/}	13,137	13,576	439	3.3%
Totales	2,795,596	2,917,573	121,977	4.4%

Source: DGII / Parque Vehicular 2011 (www.dgii.gov.do)

➤ METRO System:

2008 > Line 1: 14 Kms.

2012 > Line 2: Const.

Fuels Types

- Gasoline
- Diesel
- GLP
- GNC
- Electricity

In Implementation Process

- Gasohol (5-10 %)
- Biodiesel (5-10%)

Overview of Energy Sector. (5)

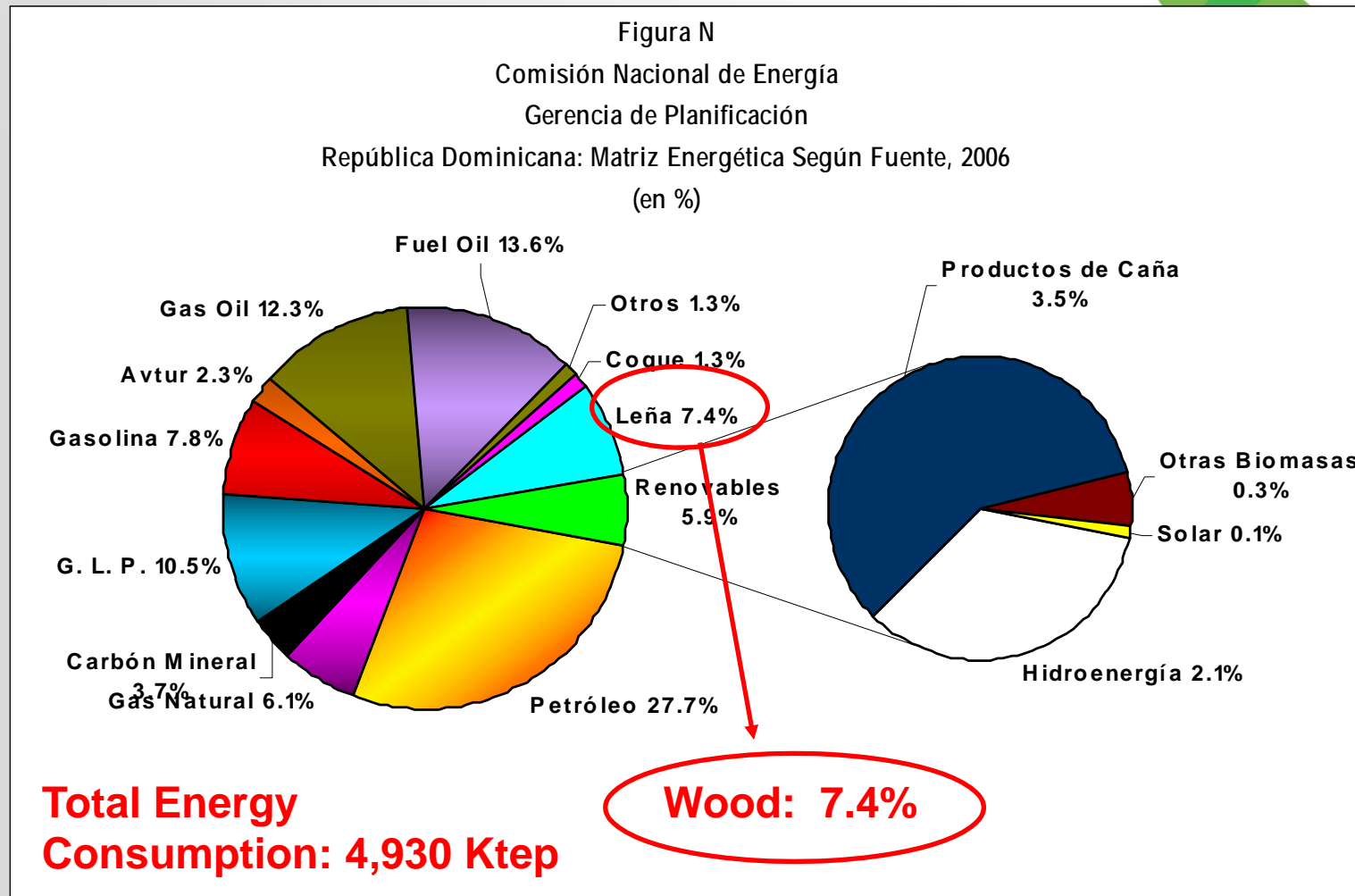
Transportation Sub-Sector (2)



El Caribe 15-Abr-2011

Overview of Energy Sector. (6)

Use of Wood and Charcoal

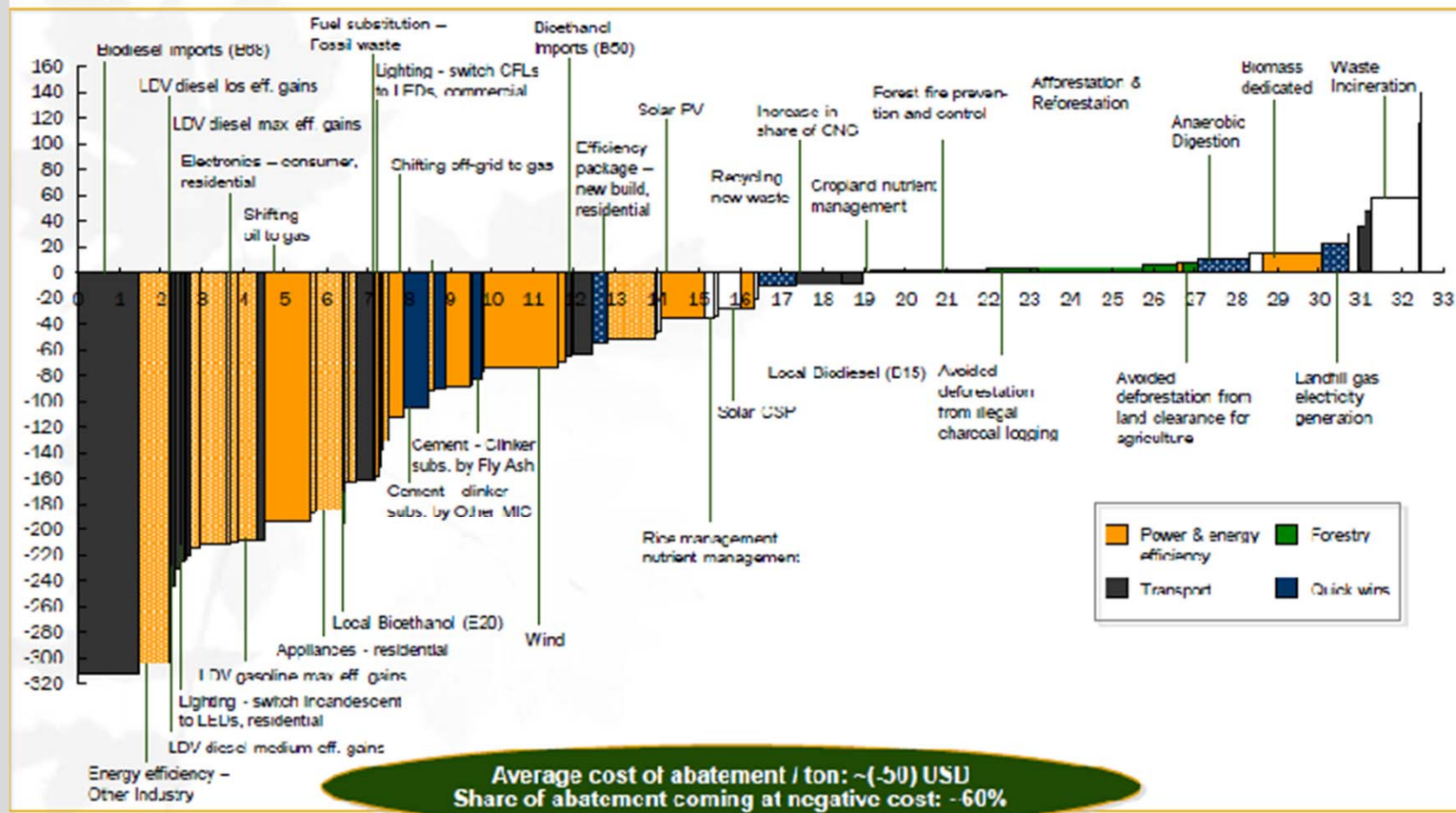


Overview of Energy Sector. (7)

DISTRIBUTION OF GHG ABATEMENT COST

75% of the DR's abatement potential is concentrated in 3 sectors, with ~ 60% of potential achievable at negative cost to the DR

Cost¹,
USD / t CO₂e



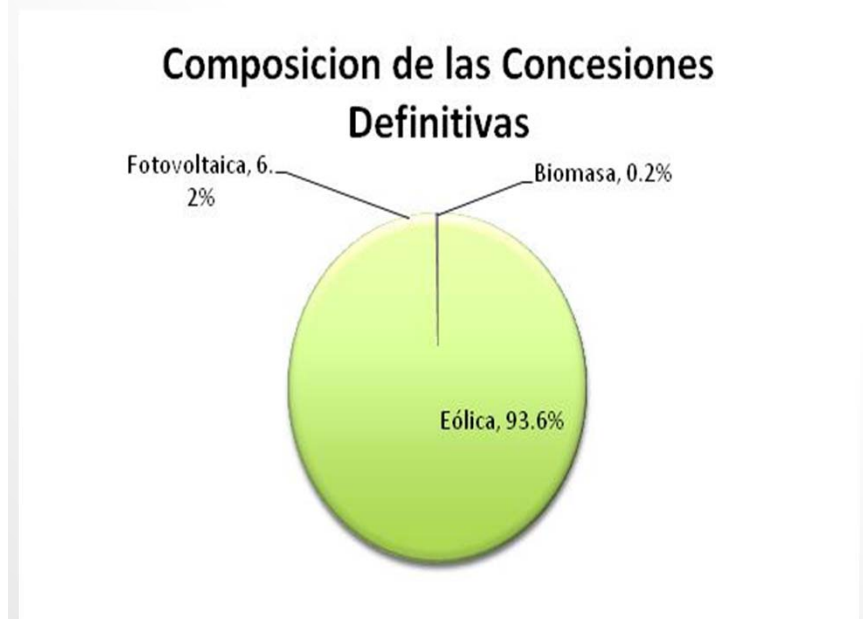
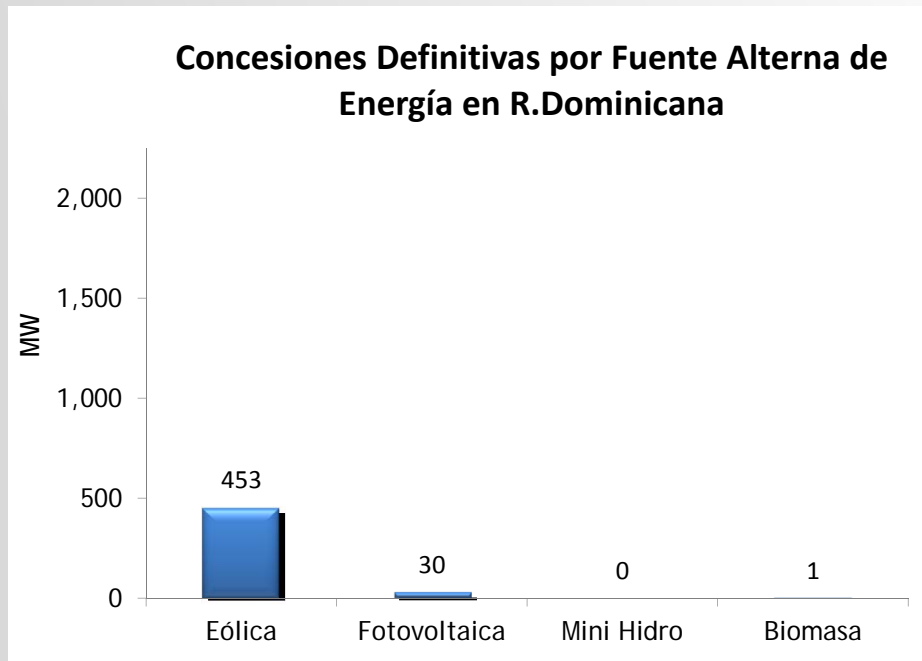
⁽¹⁾ Cut-off defined at 150 USD / t CO₂e, not included in overall cost-curve display for clarity / visibility reasons

Legal Framework for the Electrical Sector and Renewable Energies.

- 1997: > General law to Reform the Public Enterprises (Law 141-97).
- 2000: > Environment Law (Law 64-00)
> Hydrocarbons Law (Law 112-00)
- 2001: > General electrical Law (Law 125-01).
- 2007: > Renewables Energies Incentives Law (**Law 57-07**).
> Law 186-07 that modified Law 125-01.
- 2008: > Presidential Decree 601-08. Creating CNCCMDL.
- 2010: > **New Constitution of the Dominican Republic. (Feb.)**
- **2011:** > “Net Metering” Regulation. (Jun.)
> “Distributed Generation” Regulation. (Nov.)
- **2012:** > **National Development Strategy (END) (Law 01-12).**

Incentives Law for Renewable Energies and Special Regimes (Law 57-07). (7)

Definitive Concessions under Law 57-07



Source: Renewable Energies Division. FAURE Direction / CNE



Development of Renewable Energies in D.R.

WIND PROJECTS.

WIND POTENTIAL.

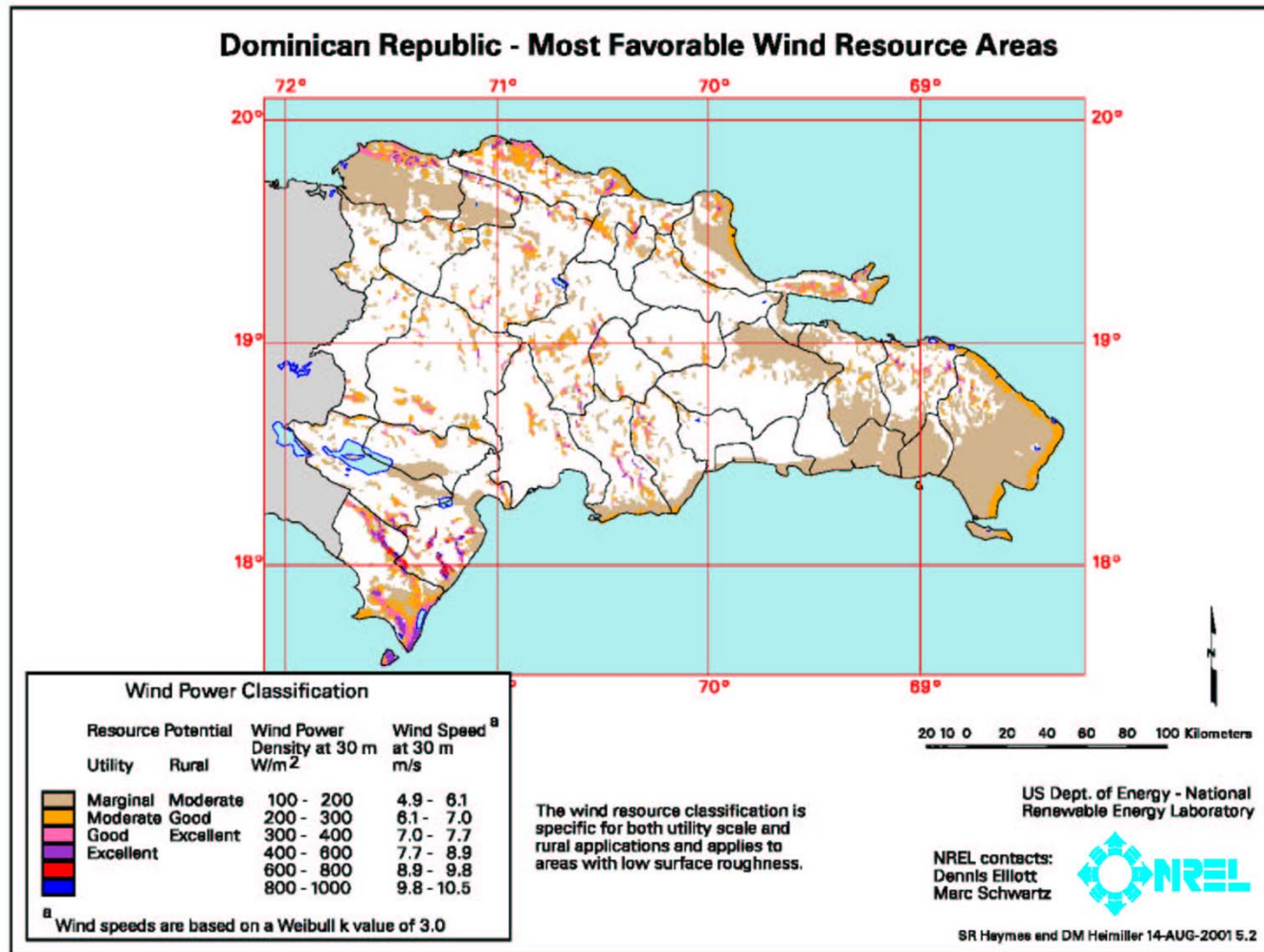
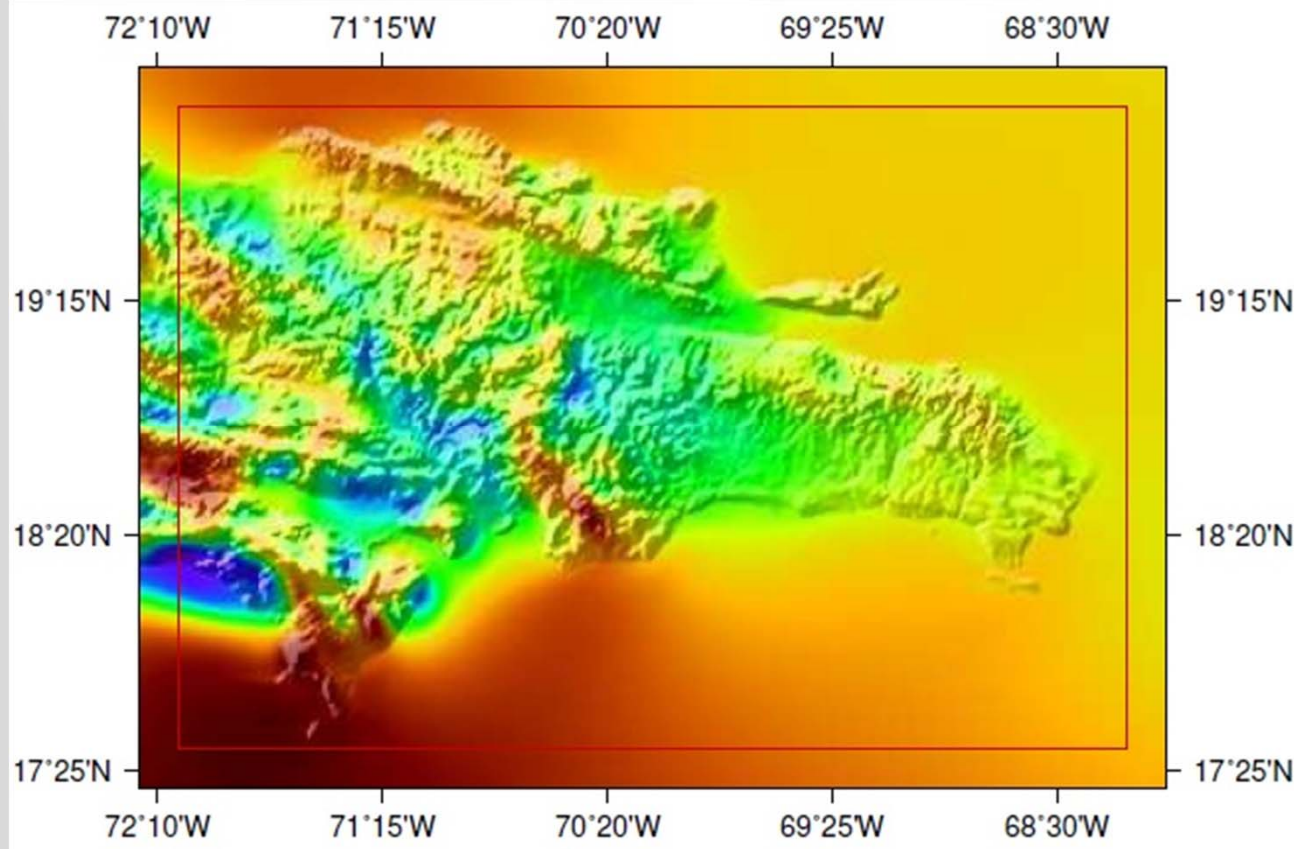


Figure 6-1

WIND POTENTIAL.



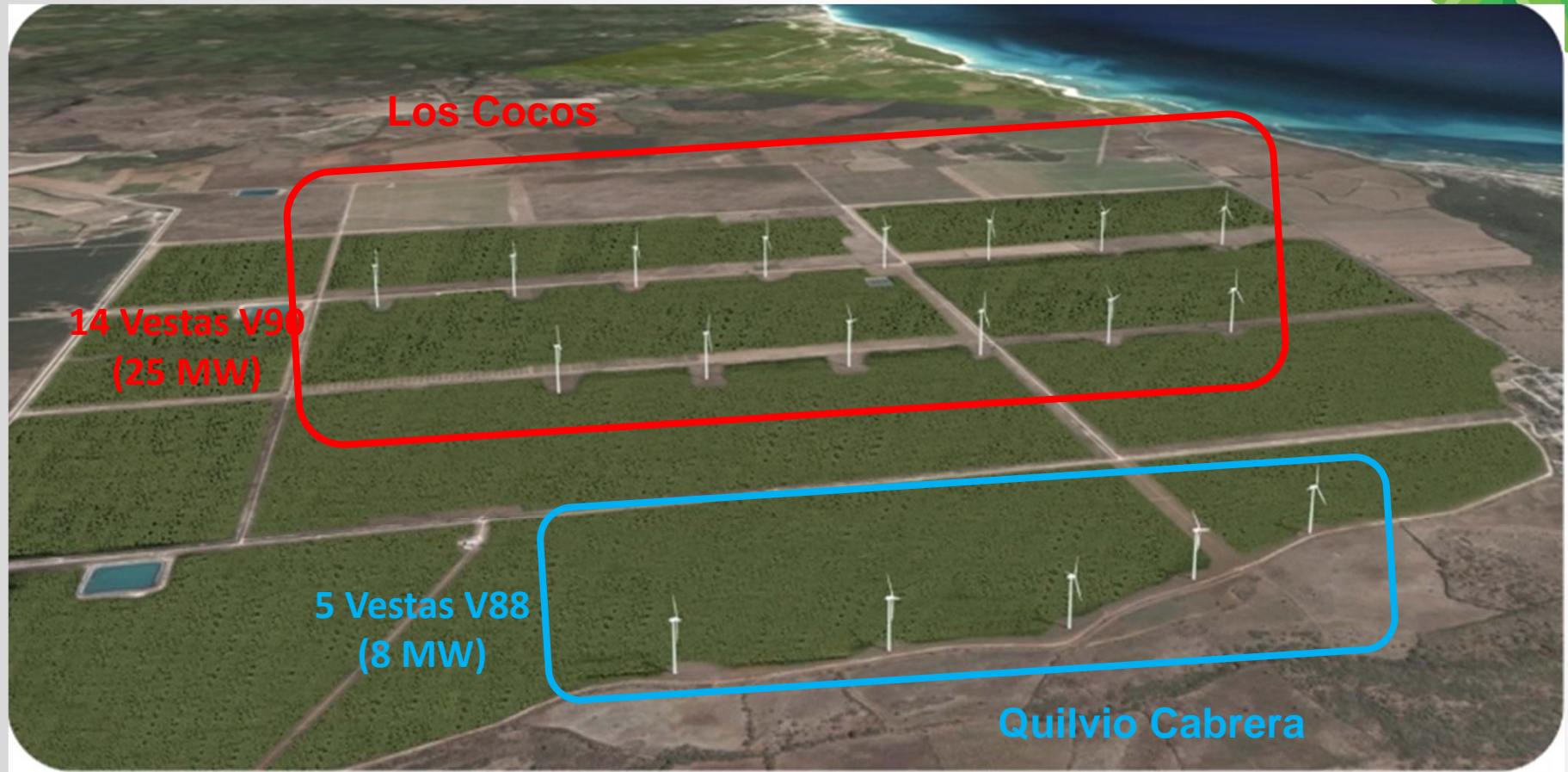
Información basada en los últimos diez años (desde enero 2000 a diciembre 2009) usando un modelo de ecuación regional no hidrostático de la atmósfera.



Source: 3TIER Advanced Applications



WIND FARMS THAT STARTED OPERATION IN 2011



Virtual Design.
Cortesy: EGE-Haina / CEPM)



WIND FARMS TO START OPERATION IN 2013

Matafongo

Grupo Eólico
Dominicano S.A.

Capacity: 30 MW

Investment: US\$ 62 MM

El Guanillo

Parques Eólicos del
Caribe S.A. (PECASA)

Capacity: 50 MW

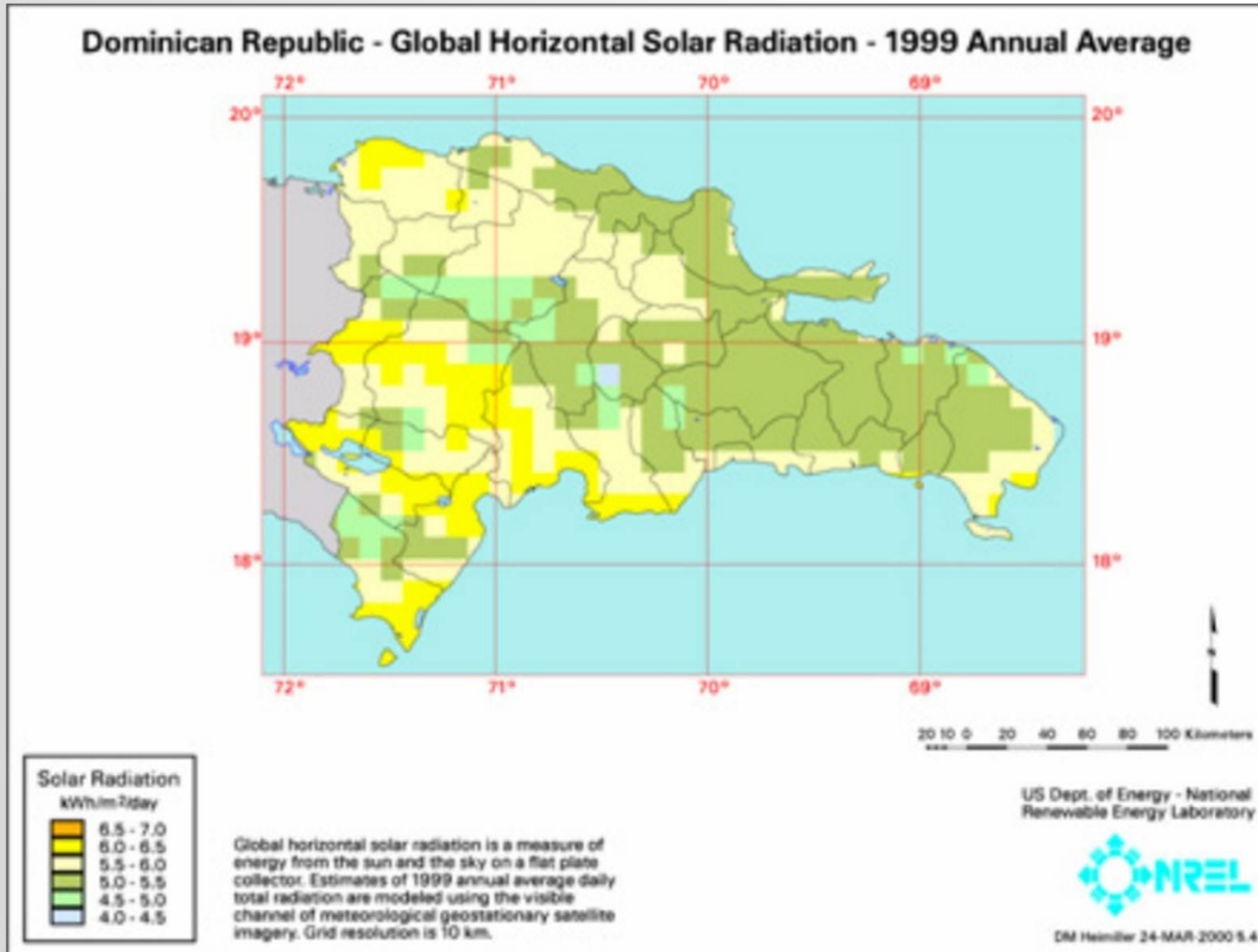
Investment: US\$103 MM



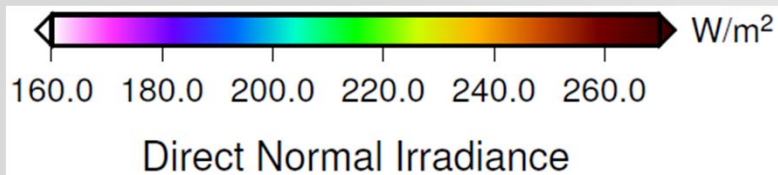
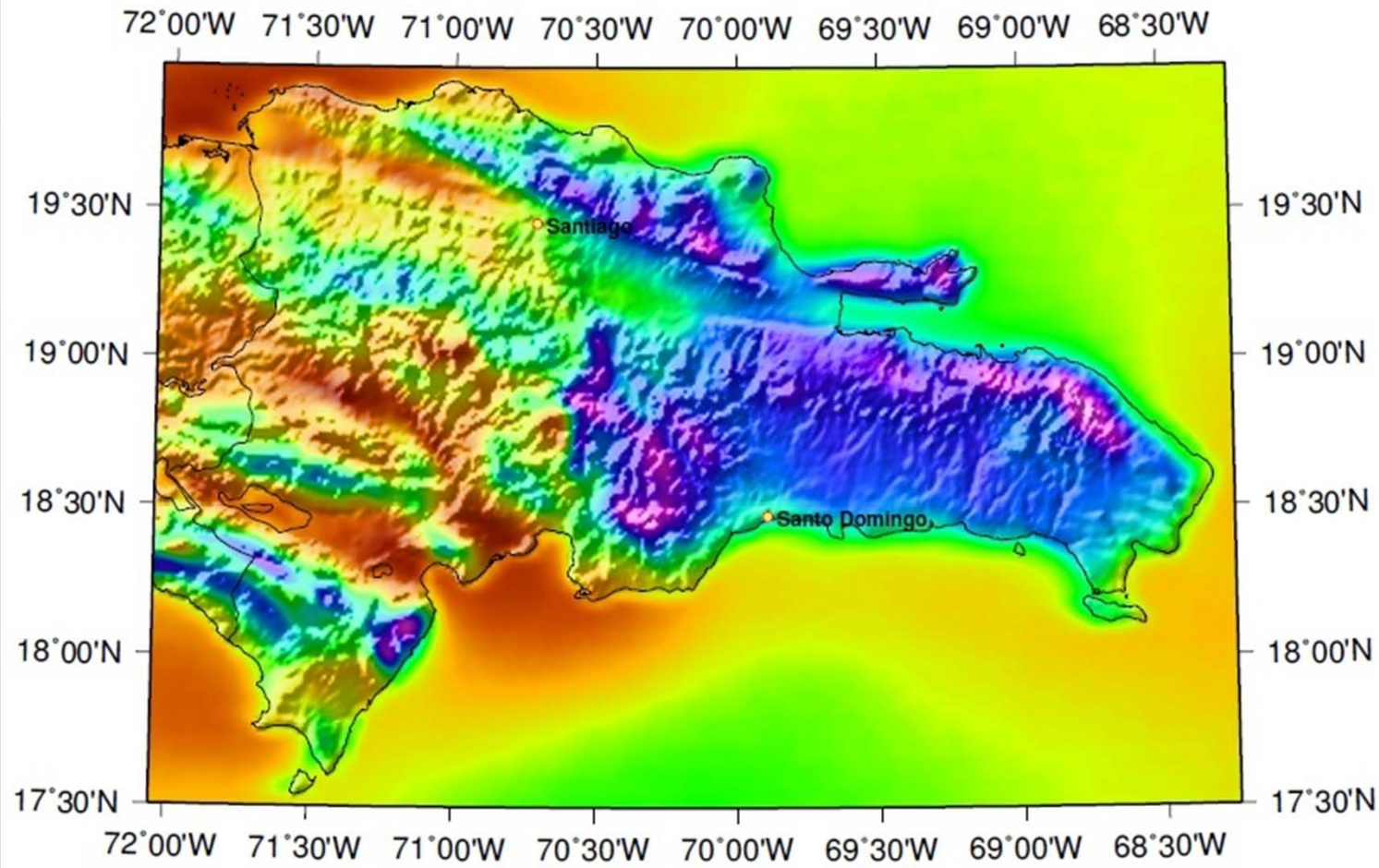
Development of Renewable Energies in D.R.

SOLAR PROJECTS.

SOLAR POTENTIAL



SOLAR POTENTIAL

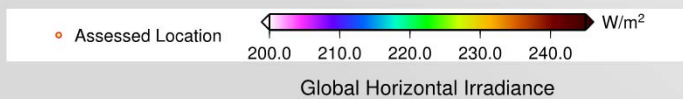
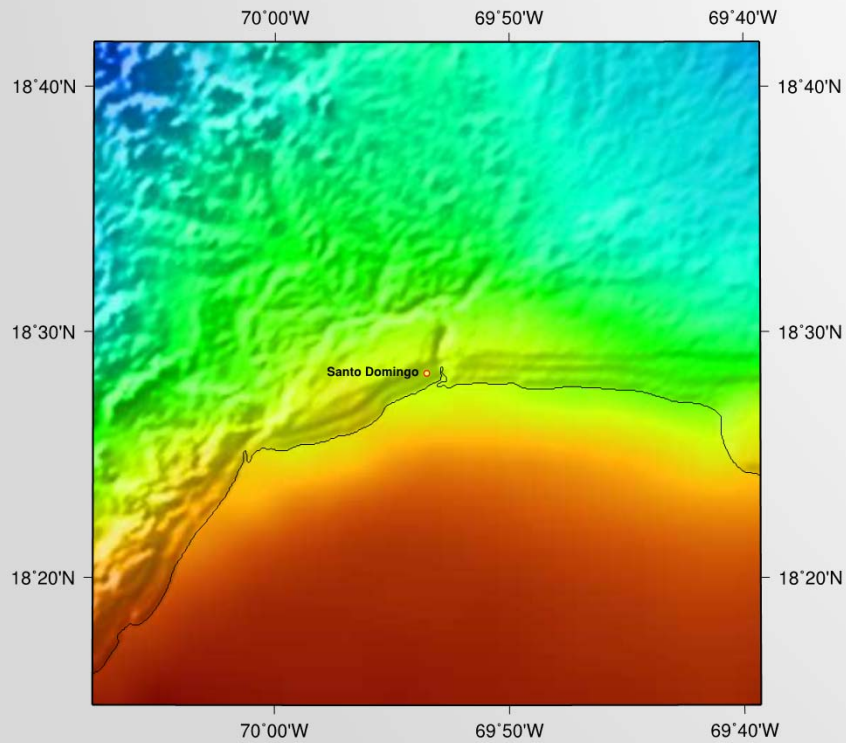


Source: 3TIER Advanced Applications

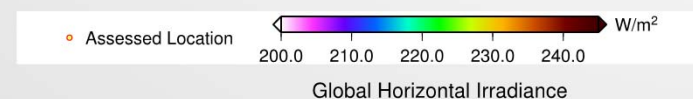
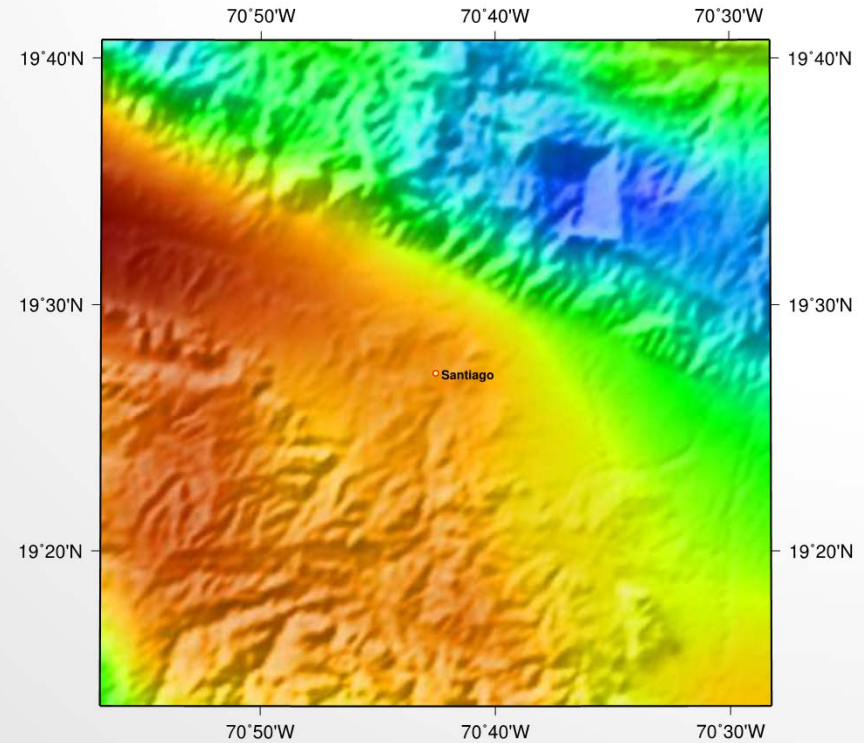
SOLAR POTENTIAL (RADIACIÓN GLOBAL [W/M²])



Santo Domingo



Santiago



Source: 3TIER Advanced Applications

SOLAR FARMS TO START OPERATION IN 2011



Monte Plata

Electronic J.R.C.

Capacity: 30 MW

Investment: \$\$\$

Monte Plata Project



30 Mw Solar Farm



Organización de los Estados Americanos



COMISIÓN NACIONAL DE ENERGÍA
SOMOS LO QUE CREEMOS

CREDP

Caribbean
Renewable
Energy
Development
Programme

giz Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH

Cooperación Austríaca para el Desarrollo

CNE Solar FV System General Specifications

- > Total Capacity Installed 22 Kwp
- > Annual Estimated Generation 35,358 kw-hr
- > Annual Energy Reduction Aprox. 18% of Electrical Bill
- > Total CO2 Emissions Reduction Aprox. 655 Tons

Solar Panels

Total Panels	88
Capacity per panel	250 Wp
Panels Brand	Tenesol

Inverters

Total Inverters	4
Capacity per Inverter	5 kws
Inverters Brand	Kaco

System connected to the Electrical Grid by a "Net Metering" contract.

PERSPECTIVES: SOLAR PROJECTS



Sistema fotovoltaico villas en San José de Ocoa.



PERSPECTIVES: SOLAR PROJECTS

30 Sistemas fotovoltaicos en estaciones de telecomunicaciones al 2010.



En proyección 35 Sistemas fotovoltaicos para el 2011.





PERSPECTIVES: SOLAR PROJECTS



Residential PV System in Santo Domingo.

Apartments PV Systems for common areas in Santo Domingo.



AUTOPRODUCERS PV SYSTEMS



**SISTEMA 300 KWP
1,460 PANELES DE 235 WP**

TOTAL SYSTEMS CONNECTED UNDER “NET METERING” REGULATION:



By Distribution Company (July 2012)

Empresa	KW	% Participación
Edesur	417,22	67,22
Edenorte	177,26	28,56
Edeeste	11,90	1,92
CEPM	6,44	1,04
Costasur Dominicana	7,90	1,27
Total distribuidoras	620,72	100,00



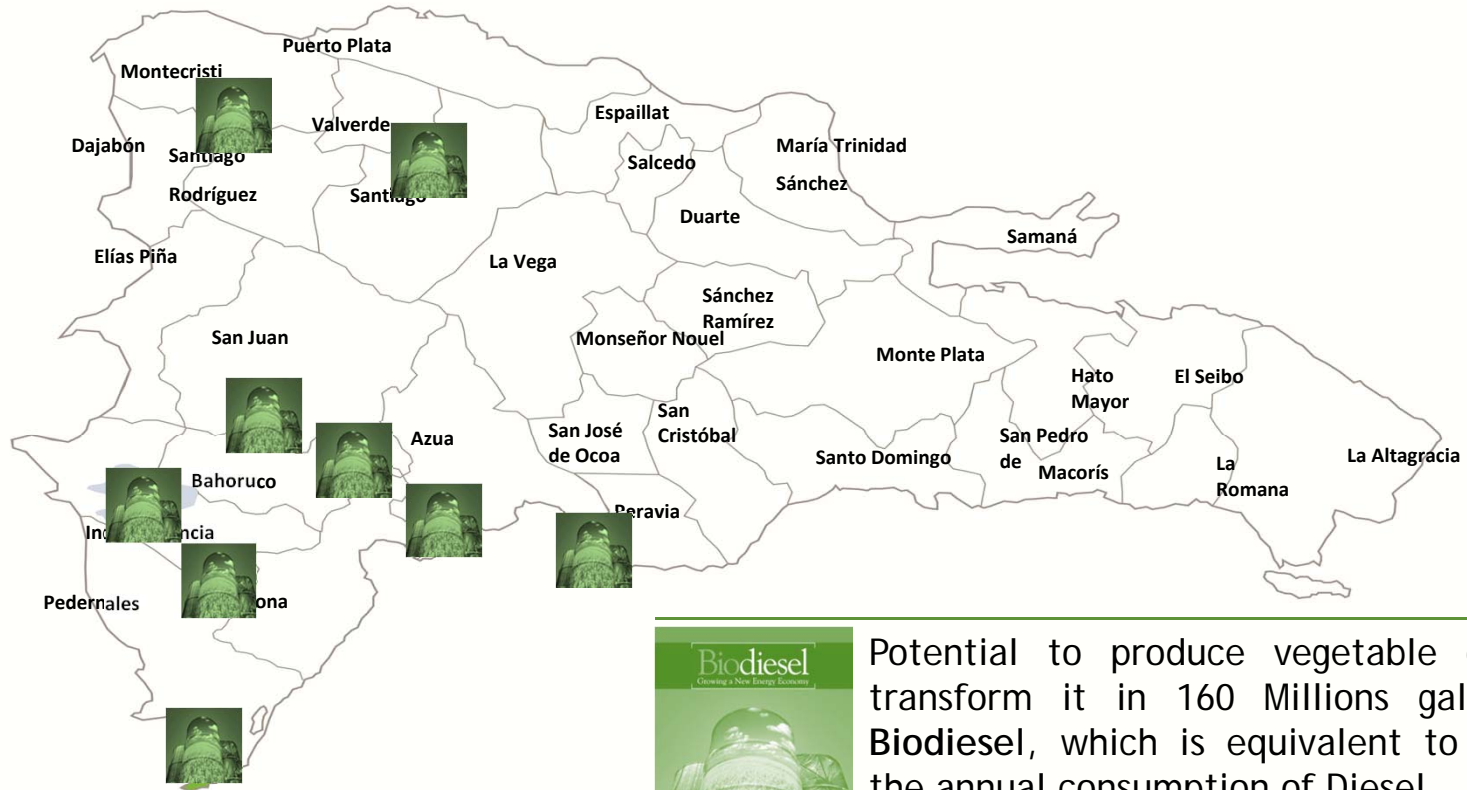
Development of Renewable Energies in D.R.

BIOFUELS.

POTENTIAL AREAS FOR BIODIESEL PRODUCTION.

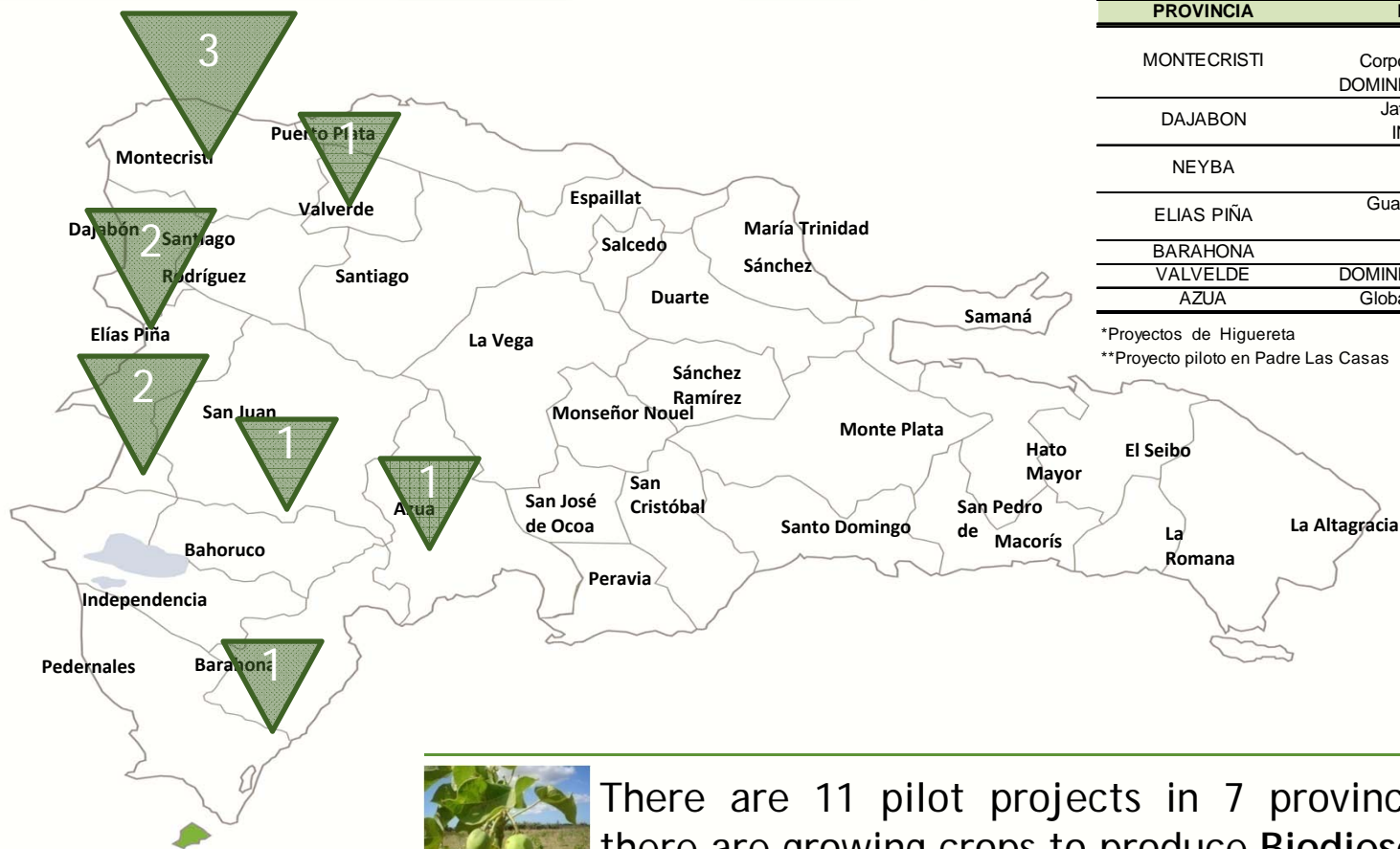


Biodiesel



Fuente: IDIAF

BIODIESEL PROJECTS



PROVINCIA	INSTITUCION
	CNE
MONTECRISTI	Corporacion agricola LN DOMINICAN RENEWABLES
DAJABON	Jatropha de Caribe INVERAVANTE
NEYBA	ADOPROH* Biogasoil*
ELIAS PIÑA	Guanito Agroindustrial IDDI
BARAHONA	IDDI
VALVELDE	DOMINICAN RENEWABLES
AZUA	Globasol y Sur Futuro**

*Proyectos de Higuiereta
**Proyecto piloto en Padre Las Casas

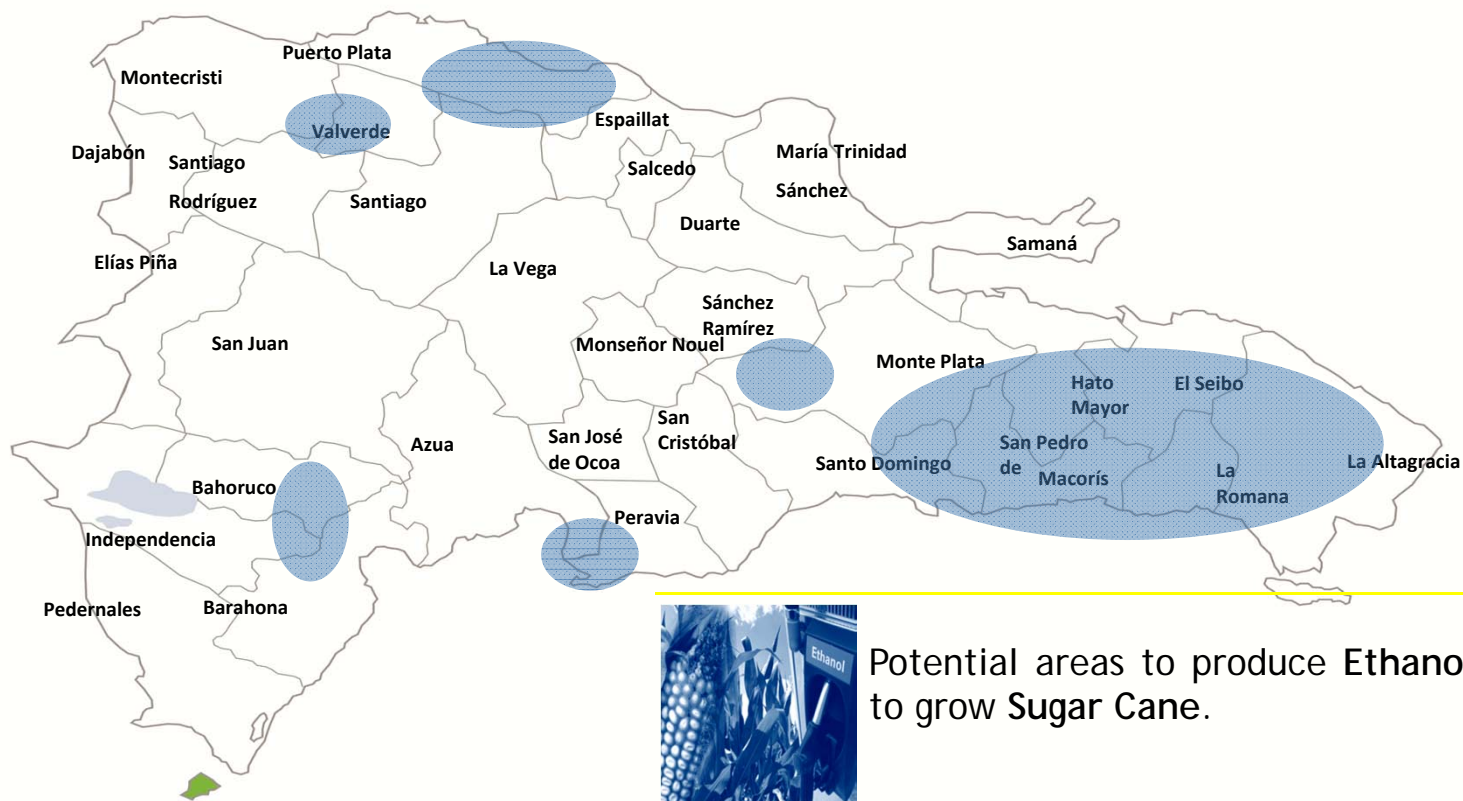


There are 11 pilot projects in 7 provinces, where there are growing crops to produce Biodiesel.

POTENTIAL AREAS FOR ETHANOL PRODUCTION.

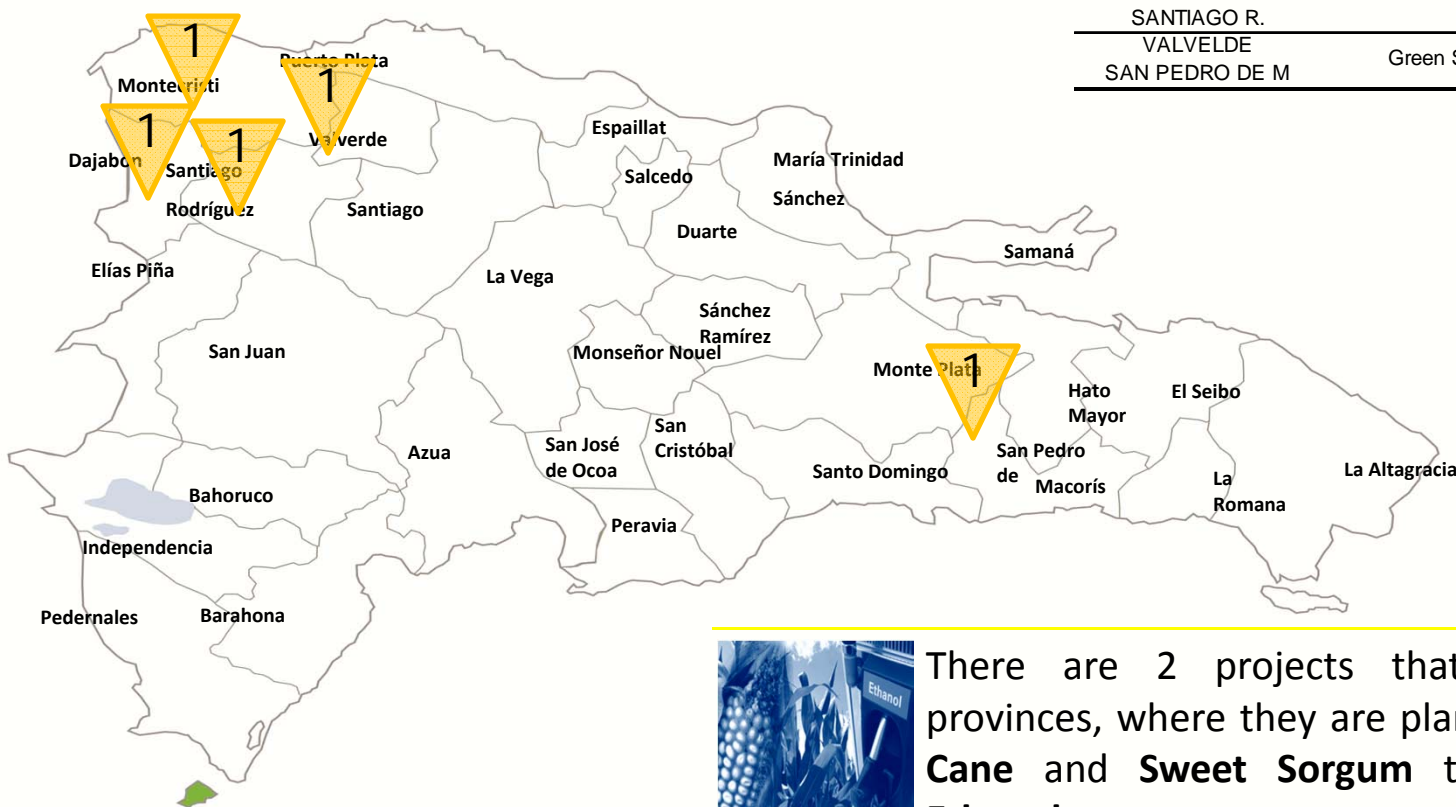


Etanol



Potential areas to produce Ethanol. Areas to grow Sugar Cane.

ETHANOL PROJECTS



PROVINCIA	INSTITUCION
MONTECRISTI	RJS Group S.A.
DAJABON	
SANTIAGO R.	
VALVELDE	Green Solutions, S.A.
SAN PEDRO DE M	



There are 2 projects that cover 5 provinces, where they are planting **Sugar Cane** and **Sweet Sorghum** to produce **Ethanol**.



Development of Renewable Energies in D.R.

BIOMASS.

BIOMASS.

- Use of Wood / Charcoal for food cooking in rural and suburban areas (Aprox. 10%)
- Use of sugar cane bagasse in Sugar Mills to produce steam and electricity.
- 2 fabrics manufacturing companies changed their steam boilers from Diesel to Biomass. One of them to produce electricity.
- 200 Kw Pilot Project for Gasification of agricultural crops residues.
- Electricity generation using the Methane recovery from **MSW** Landfills.
- In process study of potential of available **BIOMASS** from agricultural residues to produce electricity.
- **Biodigestors** projects using animals waste (Cow, Chicken and Pork).



Development of Renewable Energies in D.R.

HYDROPOWER.

HYDROPOWER. (1)



Empresa de Generación Hidroeléctrica Dominicana (EGEHID)

- Big Hydro facilities in Dominican Republic (2011):
 - 25 facilities interconnected to the national grid.
 - 523 Mw total installed capacity.
 - 17.5 % of the Electrical Installed capacity.
 - 11.6 % of Energy generated.
 - Big river sources already cover.
- Potential for Small, Mini and Micro Hydro
 - 500 MCH.
 - Electrification of small rural communities.
 - Private sector could support the development.
 - Incentives according to Law 57-07.



HYDROPOWER. (2)

Agent	Central	Technology	Fuel	Location	Mw
EGEHID	Aguacate	Hidroeléctrica	Hidráulica	Peravia	52.0
	Aniana Vargas	Hidroeléctrica	Hidráulica	Monseñor Nouel	0.6
	Baguaque	Hidroeléctrica	Hidráulica	Santiago	1.2
	Contra Embalse Monción	Hidroeléctrica	Hidráulica	Valverde	3.2
	Domingo Rodríguez	Hidroeléctrica	Hidráulica	San Juan	4.0
	El Salto	Hidroeléctrica	Hidráulica	La Vega	0.7
	Hatillo	Hidroeléctrica	Hidráulica	Sánchez Ramírez	8.0
	Jigüey	Hidroeléctrica	Hidráulica	Peravia	98.0
	Jimenoa	Hidroeléctrica	Hidráulica	La Vega	8.4
	Las Damas	Hidroeléctrica	Hidráulica	Independencia	7.5
	López Angostura	Hidroeléctrica	Hidráulica	Santiago	18.4
	Los Anones	Hidroeléctrica	Hidráulica	Peravia	0.1
	Los Toros	Hidroeléctrica	Hidráulica	Azua	9.7
	Magueyal	Hidroeléctrica	Hidráulica	Azua	3.0
	Monción	Hidroeléctrica	Hidráulica	Valverde	52.0
	Nizao Najayo	Hidroeléctrica	Hidráulica	Peravia	0.3
	Rincón	Hidroeléctrica	Hidráulica	Monseñor Nouel	10.1
	Río Blanco	Hidroeléctrica	Hidráulica	Monseñor Nouel	25.0
	Rosa Julia de la Cruz	Hidroeléctrica	Hidráulica	María Trinidad Sánchez	0.9
	Sabana Yegua	Hidroeléctrica	Hidráulica	Azua	12.8
	Sabaneta	Hidroeléctrica	Hidráulica	San Juan	6.3
	Tavera-Bao	Hidroeléctrica	Hidráulica	Santiago	96.0
	Valdesia	Hidroeléctrica	Hidráulica	Peravia	54.0
	Las Barias	Hidroeléctrica	Hidráulica	Peravia	0.9
	Pinábito	Hidroeléctrica	Hidráulica	Monseñor Nouel	50.0

SOURCE: OC – 2011 Memoria. (www.oc.org.do)



Development of Renewable Energies in D.R.

RURAL COMMUNITIES PROJECTS.

RURAL COMMUNITIES PROJECTS. (1)

Rural and Suburban Projects

International Organizations Programs



NGO's





ENERGY EFFICIENCY / Rational Use of Energy.

ENERGY EFFICIENCY.

- Bulbs substitution program from incandescent lamps to **CFL**. (Aprox. 12 millions between years 2008 y 2009).
- Substitution of incandescent **Traffic Lights** with **LED** systems.
- Substitution of incandescent Public Lamps for **LED** lamps.
- **Energy Audits** in government institutions.
- Fuels substitution program (use of **NG** in industries and vehicles).
- Awareness campaigns by private companies and government institutions.
- Creation of the **Energy Manager** in government institutions and start a program to reduce energy consumption (electricity and fuels).
- Formulate the **Energy Efficiency Law**.

Thank You

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Has it all



<http://www.godominicanrepublic.com>

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