CLEAN DEVELOPMENT MECHANISM
PROJECT DESIGN DOCUMENT FORM (CDM-PDD)
Version 03 - in effect as of: 28 July 2006

CONTENTS

SECTION A. General description of project activity

A.1. Title of the project activity:

30MW Solar PV - Monte Plata
Version 1
07.12.2011

A.2. Description of the project activity:

The project activity consists in the installation of a 30MW photovoltaic Solar Energy Farm, which is considered as a sustainable source of electricity generation. There are no emissions of Green House Gases (GHS) associated with this kind of energy generation.

The project activity is developed by Electronic J.R.C., S.L.R., a company from the Dominican Republic. The proposed project activity will be the largest solar power plant in Latin America, and will generate an estimated direct employment for about 1,500 persons during the construction phase and approximately 500 jobs during its operational stage[1]. With the proposed project activity the Dominican Republic emphasizes its commitment of reducing its GHG emissions and at the same time also decreases its dependence on fossil fuels and related imports.

By the development of the proposed project activity there will be a real and measurable contribution to the sustainable development of the Dominican Republic ("**Dom Rep**") in the following aspects:

- The project activity is in compliance with all the national environmental initiatives:
  - The "Ley No. 57 – 07 de Incentivo a las Energías Renovables y Regímenes Especiales" promotes the creation of new renewable energy projects in the country, in order to incentive the regional, rural and agro industrial economic development. The Dominican Republic has no meaningful fossil fuel sources, which increases the dependence of foreign sources of energy, having a direct impact on the countries balance of foreign trade.
  - The project activity is in compliance with all the quality conditions established in the "Ley General de Electricidad (125-01)".
- The proposed project activity will produce renewable energy at a production price that is independent from the worldwide market fluctuations and risks for fossil fuels:
  - Having an operative, affordable, reliable and financially stable national energy production matrix is essential for any economic development of any country. Based on a reliable national energy generation matrix, stable supply and affordable energy prices, companies get more confidence and security with regards to their investments, especially in the productive or energy intensive sectors. This leads to the creation of more business opportunities and to increased GDP.

[1] All data regarding the staff hired for the construction and operation of the Project site is available to the DOE for validation purposes.

- During the past three years, Dominican Republic GDP has presented a continuous growth rate of 5.33[2] meanwhile the electricity sector presented a continuous growth rate of 5.85%[3]. This means that the electricity demand is growing even faster than the economic activity of the country and new energy sources are needed. If the present trend continues, the most of the new installed capacity additions will be with fossil fuel powered power plants, i.e. diesel aggregates, and fuel oil. This situation will increase the instability of the industrial platform of the country.
- Having an operative, affordable, reliable and financially stable national energy production matrix in addition is essential for any social development of any country. Inhabitants want to rely on stable and affordable energy supply services in order to consume electricity for their basic needs. Electricity in the Dominican Republic is rather expensive, as the generation sector is relying on many expensive or outdate power plants with high operational costs. The willingness of inhabitants to pay for expensive electricity in the Dominican Republic generally is low and hence any price stabilization based on renewable energy enables to bring down the electricity tariffs also for private customers in a medium term. By that the willingness of consumers to pay the electricity bills would increase, which again would permit the sector to provide even cheaper, more reliable and stable power supply, as more means can be re-invested into the entire generation and transmission or distribution system. This positive feedback on long-term supports the development of a cheaper, cleaner and more efficient electricity sector where electricity is affordable to private consumers.

- Employment creation:
  - As mentioned before, during the construction stage of the project activity, around 1,500 new employment sources will be created; during the operation of the power plant, around 500 employments are expected. Also, there is no previous experience of this kind of technology to be installed in the country, hence transfer technology and knowledge to the local technicians and experts will take place on subjects as implementation as well as operation.
- Technology and Knowledge transfer:
  - All the components used for the development of the solar PV plant will be “state of the art” technology.
  - Not only the solar panels will be most modern, also the control systems and the (remote) monitoring of the entire facility are most modern and developed especially for the purpose of solar power projects[4].
  - Most remarkable is the modern tracking system, which ensures that the solar panels face optimal sun radiation. The tracking system ensures that the panels can be turned around an axis and therefore the slope of the panels relative to the ground as well as the azimuth angle can be optimized in dependence of the sun’s position at the horizon.

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[2] Source: CIA - World Fact Book: Dominican Republic, available at: https://www.cia.gov/library/publications/the-world-factbook/geos/dr.html, accessed on 8/06/11

[3] Source: Superintendencia de Electricidad, Reporte Annual de Operación. Organismo Coordinador del SENI.

[4] Documents with specific technical information of the software and equipment to be used are available to the DOE during the validation process.

- Transfer of knowledge and capacity building will need to take place as part of the project activity. Extra efforts and expenses need to be undertaken to train new staff and technicians and to hire international experts for the capacity building as well as the O&M activities during operation of the solar PV plant. Also the supply chain of any spare parts is more complex and time consuming, as neither specialized solar energy industry nor manufacturers are domiciled in the Dominican Republic.

- Environmental Impact:
  - All electricity that is being generated by the Solar PV Farm is delivered to the national interconnection grid and will displace electricity that has some GHG emissions associated, proven by the emission factor calculations later on. The project activity basically consists in the electro-chemical transformation of the solar radiation (photons) into electric energy. No other by-products are produced during operation of the project activity.
  - The environmental impact, compared to fossil fuels plants that produce the same amount of electric energy, is negligible. There are no affectations to the underlying water deposits and the affectation to local bird species is minimal[5].
  - The site where the project activity will be established was used mainly for agricultural activities; hence no relocation of local communities or individual households will take place and no forestation takes place. A detailed explanation of all the Environmental Impact Assessment and the corrective actions can be found in section D.

Based on the Solar Irradiation Study performed by "M&A Ingeniería, C. por A."[6], an annual irradiation hiding the solar panels of 2,088 kWh/m^2 has been determined.

Considering these conditions, the project is expected to deliver an annual average of nearly 44,727 MWh electricity to the National Electric Interconnected System ("**SENI**" by its name in Spanish: "Sistema Eléctrico Nacional Interconectado"). Therefore a total of about 3,000 individual structures (units) will be installed, each one of them equipped with approx. 46 solar panels (modules) of approximately 220 W_p, each, which together will composite a total maximum capacity of 10 kW per structure. The total area dedicated to the project activity is about 974,391 m^2, which is privately owned by the project participants[7]. The final module manufacturer has not been chosen yet and hence the exact amount of structures, panels and Watt_peak per module remains subject of small potential variations.

A.3. Project participants:

The project is developed by the Electronic J.R.C., S.R.L. as principle project owner.

Name of Party involved (*) ((host) indicates a host Party))	Private and/or public entity(ies) project participants (*) (as applicable)	Kindly indicate if the Party involved wishes to be considered as project

[5] The details of the environmental affectations are stated in the "Environmental Impact Assessment", available to the DOE during the validation process.

[6] Solar Irradiation Study is available to the DOE during the validation process.

[7] As stated in the Land Purchase Agreement, dated September 3rd, 2010.

		participant (Yes/No)
Dominican Republic (Host)	Electronic J.R.C., S.R.L (private)	No
United Kingdom (Guest)	Foundation myclimate (private)	No
	Think Carbon GmbH (private)	
(*) In accordance with the CDM modalities and procedures, at the time of making the CDM-PDD public at the stage of validation, a Party involved may or may not have provided its approval. At the time of requesting registration, the approval by the Party(ies) involved is required.		

A.4. Technical description of the project activity:

A.4.1. Location of the project activity:

A.4.1.1. Host Party(ies):

Dominican Republic

A.4.1.2. Region/State/Province etc.:

Monte Plata

A.4.1.3. City/Town/Community etc.:

Cruce de Boronga

A.4.1.4. Details of physical location, including information allowing the unique identification of this project activity (maximum one page):

The Project Activity will be installed in the parcels No. 41, 41 - Sub – 24, 41 – Sub - 44, all of the part of the Distrito Catastral. No. 64 in the Cruce de Boronga sector, municipality and province of Monte Plata.

The general project location can be demarcated by the following rectangle[8] (coordinates: UTM WGS84, Zone 19Q):

416610E; 2080571N
416615E; 2080597N
416694E; 2080564N
416497E; 2080790N [9]

[8] The detailed polygon coordinates are available to DOE for validation purposes.

[9] As mentioned in the "Concesion Provisional", available to DOE during validation

The province of Monte Plata is located in the south-eastern region and was created in 1982 by dividing the province of San Cristóbal. Its name already hints at the province's capital. Monte Plata is characterized by a fertile soil, luscious vegetation, mountains and a number of rivers, streams and water springs. With a total surface area of 2,632.4 km², the province borders on Santo Domingo to the west and, in the north, on the provinces of Sánchez Ramírez, Duarte and Samaná; San Pedro de Macorís lies to the south and the provinces of San Cristóbal an Monseñor Nouel are to the east.

In the next satellite image we can clearly see the physical delimitation of the project activity enclosed in the yellow polygon; all the structures will be installed within these limits.

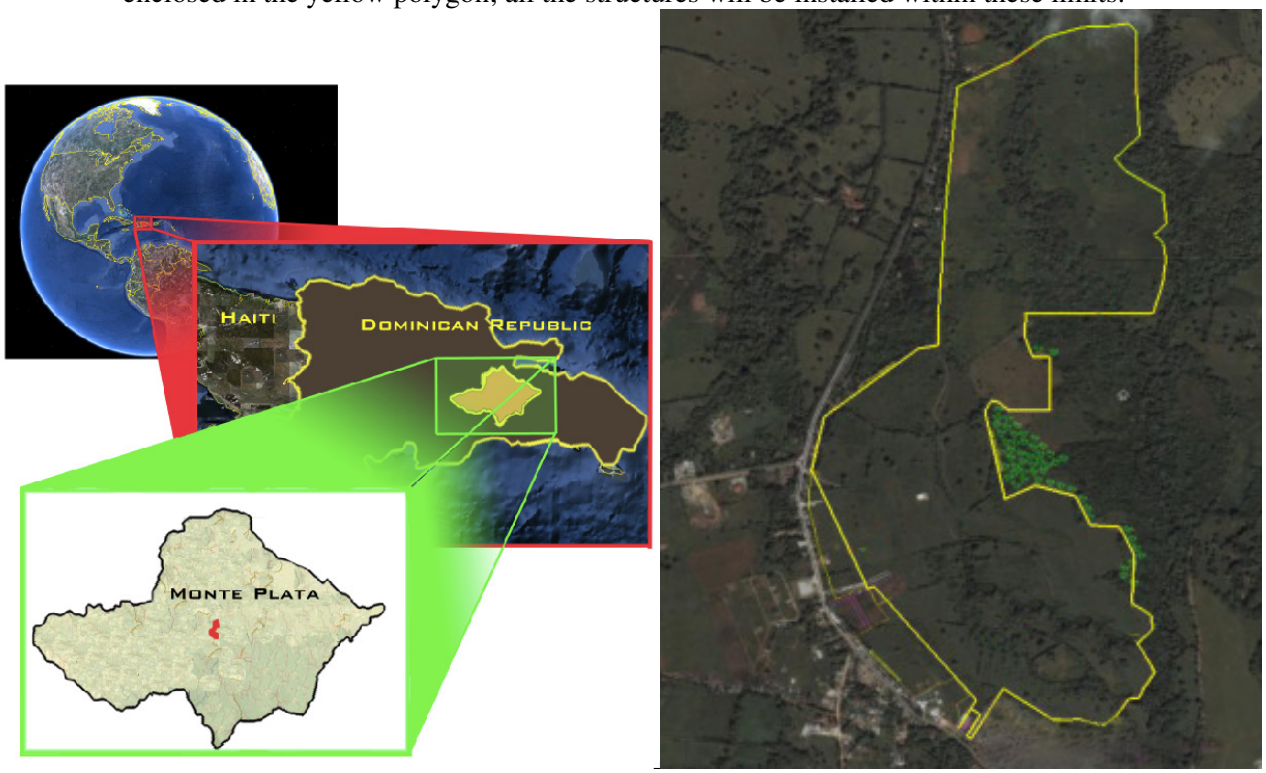


Figure 1: Macro and Micro location of the Project Activity

A.4.2. Category(ies) of project activity:

The Project Activity falls into:

- Scope: 1
- Sectoral scope: Energy Industries – Renewable Sources
- Project Activity: Grid connected electricity generation by renewable sources

A.4.3. Technology to be employed by the project activity:

The proposed project activity consists in the electro-chemical conversion of solar radiation (photons) into electric energy. With this kind of electricity generation, no other by-products are generated during the process. The only natural and sustainable input for the electricity generation is the solar radiation.

The installation of the proposed project activity considers installation of three thousand individual units, each one equipped with about 46 photovoltaic modules. The units are installed over one axis solar tracking systems, inverters and transformers. Basically the photovoltaic modules collect the solar irradiation and transform it into direct current (DC). Subsequently the inverters "alternate" the current (AC); finally the transformers increase the tension to transmission values at the point of common coupling (PCC) in order to deliver the energy into the SENI.
The photovoltaic solar generation with a one horizontal[10] axis tracking system is more efficient than the steady systems without tracking system[11].

For the project activity, the following equipment will be installed:

- About 3,000 modular units, each equipped with approx. 46 modules (panels) and with a dual axis solar irradiation tracker
- PV Panels: Ningbo, approximately 220 Watt peak
- Inverter: SMA Tripower 12000 TL (suggested)
- Substation: Siemens (suggested)

A.4.4. Estimated amount of emission reductions over the chosen crediting period:

The expected annual emission reductions are as follows:

Years	**Annual estimation of emission reductions in tons of CO_2e**
2013 (October – December)	13,364
2014	53,455
2015	53,455
2016	53,455
2017	53,455
2018	53,455
2019	53,455
2020 (January – September)	40,091
Total estimated emission reductions (tons of CO_2e)	**374,183**
Total number of crediting years	**7**
Annual average over the crediting period of estimated reductions (tons of CO_2e)	**53,455**

[10] The horizontal axis tracking system means that the structure will be tracking the sun position throughout the day, not during the year.

[11] All data and the technical references about the equipment to be installed will be available to the DOE at the validation.

Note: According to the methodology ACM0002 V.12.2.0, no fugitive emissions are considered for the calculation.

A.4.5. Public funding of the project activity:

No public funding is considered for the project activity.

SECTION B. Application of a baseline and monitoring methodology

B.1. Title and reference of the approved baseline and monitoring methodology applied to the project activity:

The approved baseline and monitoring methodology applied to the project activity is the:

- ACM0002: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", Version 12.2.0, valid from September 17th of 2010 onwards.

Also for the documentation of the Project Activity, the following tools were followed:

- Tool to calculate the emission factor for an electricity system – Version 02.2.1[12]
- Tool for the demonstration and assessment of additionality - Version 05.2.1[13]

Because the project activity relies on the generation of electricity through the electro-chemical conversion of solar radiation, no associated emissions are generated during the operation, so there will be no leakage emissions considered.

B.2. Justification of the choice of the methodology and why it is applicable to the project activity:

The methodology ACM0002 V.12.2.0 is applicable to grid-connected renewable power generation project activities that:

a) Install a new power plant at site, where no renewable power plant was operated prior to the implementation of the Project Activity.
b) Involve capacity addition.
c) Involve a retrofit of an existing plant.
d) Involve replacement of an existing plant.

Also the Project Activity should meet the following condition:

- The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydropower plant/unit, wind power/plant unit, geothermal power/plant unit, wave power/plant unit or tidal power/plant unit.

The proposed project activity consists out of the installation of a photovoltaic solar power plant at a site where hasn't been any previous non-renewable nor renewable power generation plant. The solar PV farm moreover is adding capacity to the National Dominican Republic Grid and hence fulfils the applicability criteria of the ACM0002 V.12.2.0.

[12] Valid from September 29th 2011 onwards, EB 63 Annex 19

[13] Valid from August 11th 2011 onwards, EB 39 Annex 10

Also the proposed Project Activity doesn't involve switching from fossil fuels to renewable energy sources at the site of the Project Activity, so the base line can be identified as described in section B.4.

All the necessary historical data for making the calculations, as established in the ACM0002 V.12.2.0 and in the different tools mentioned within the methodology, is publicly available at different government institutes and entities.
The geographic and system boundary can be clearly identified.

B.3. Description of the sources and gases included in the project boundary:

The project boundary is defined as the spatial extent of the project activity, in which all the mechanical and electrical devices are located, along with the necessary infrastructure to deliver the generated electricity to the SENI.

As the photovoltaic solar electricity is defined as a "cero emission electricity source", no emissions will be considered for the project activity. On the other hand, the emission sources included in the project boundaries are only those calculated for the baseline.

Source		GHG	Included?	Justification/explanation
Baseline	CO_2e emissions from electricity generation in fossil fuel power plants that are displaced due to the project activity.	CO_2	Yes	Main emission source
		CH_4	No	Minor emission source
		N_2O	No	Minor emission source
Project Activity	For geothermal power plants, fugitive emissions CH_4 and CO_2 from non-condensable gases contained in geothermal steam.	CO_2	No	N/A
		CH_4	No	N/A
		N_2O	No	N/A
	CO_2 emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants.	CO_2	No	N/A
		CH_4	No	N/A
		N_2O	No	N/A
	For hydro power plants, emissions of CH_4 from reservoir.	CO_2	No	N/A
		CH_4	No	N/A
		N_2O	No	N/A

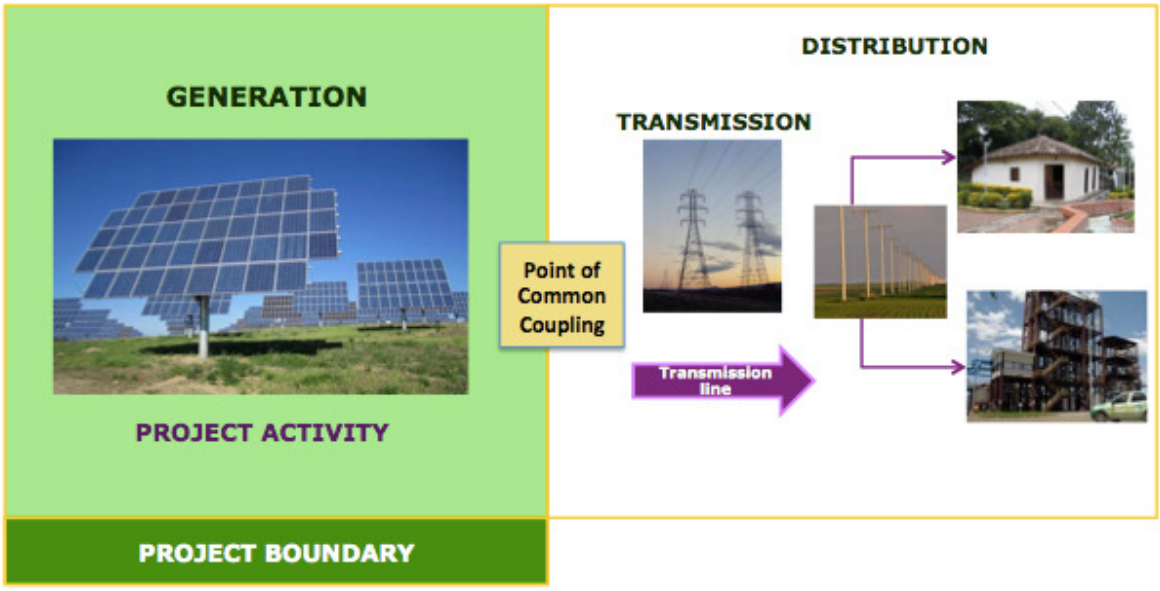


Figure 2: Project boundary

B.4. Description of how the baseline scenario is identified and description of the identified baseline scenario:

The ACM0002 V.12.2.0 states that if the project activity is the installation of a new grid-connected renewable power plant unit, the baseline scenario is the following:

> *"Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system".*

Therefore, the baseline scenario for the project activity is defined as the total emissions of GHG generated by the electricity production of the SENI. This is calculated with the amount of electricity generated by each power plants/units connected to the SENI, multiplied by the emission factor of the grid[14]; for the proposed project activity, the baseline year had a total energy generation of 12.101 TWh, which generated an estimated emission of 14,463,114 tones of CO_2e.[15]

The total power plants and their contribution to the electric platform during the baseline year is as follows:

	Year	**2010**	**Efficiency %**
Electricity Power Plants		**GWh**	
Combined Cycle	CESPM 1	31.44	45.26%

[14] The emission factor of the SENI is calculated as per guidance of the "Tool to calculate the emission factor for an electric system".

[15] All data is publicly available by request from the National Energy Commission.

	CESPM 2	50.51	45.26%
	CESPM 3	83.04	45.26%
	SAN FELIPE	771.68	32.94%
	AES ANDRES	2,082.69	45.36%
Hydroelectric	AGUACATE 1	-	0.01
	AGUACATE 2	-	0.01
	ANIANA VARGAS 1	0.27	0.01
	ANIANA VARGAS 2	0.55	0.01
	BAIGUAQUE 1	0.85	0.01
	BAIGUAQUE 2	1.42	0.01
	CONTRA EMBALSE MONCION 1	9.94	0.01
	CONTRA EMBALSE MONCION 2	9.11	0.01
	DOMINGO RODRIGUEZ 1	6.72	0.01
	DOMINGO RODRIGUEZ 2	6.00	0.01
	EL SALTO	2.58	0.01
	HATILLO	63.83	0.01
	JIGUEY 1	-	0.01
	JIGUEY 2	193.44	0.01
	JIMENOA	47.24	0.01
	LAS BARIAS	3.77	0.01
	LAS DAMAS	36.39	0.01
	LOPEZ ANGOSTURA	87.28	0.01
	LOS ANONES	0.07	0.01
	LOS TOROS 1	16.63	0.01
	LOS TOROS 2	18.61	0.01
	MAGUEYAL 1	4.07	0.01
	MAGUEYAL 2	5.79	0.01
	MONCION 1	96.91	0.01
	MONCION 2	120.38	0.01
	NIZAO NAJAYO	0.21	0.01
	PINALITO 1	51.75	0.01
	PINALITO 2	69.01	0.01
	RINCON	23.67	0.01
	RIO BLANCO 1	69.11	0.01
	RIO BLANCO 2	62.38	0.01
	ROSA JULIA DE LA CRUZ	1.75	0.01
	SABANA YEGUA	60.30	0.01
	SABANETA	30.05	0.01
	TAVERA 1	143.91	0.01
	TAVERA 2	105.13	0.01
	VALDESIA 1	35.86	0.01
	VALDESIA 2	40.96	0.01
Thermoelectric	BARAHONA CARBON	315.97	0.25
	ITABO 1	707.63	30.25%
	ITABO 2	663.63	28.77%
	FALCONDO 1	231.56	28.69%
	FALCONDO 2	165.86	28.69%
	FALCONDO 3	69.55	28.69%
	HAINA 1	35.19	24.29%
	HAINA 2	-	26.45%
	HAINA 4	61.23	26.74%
	PUERTO PLATA 1	-	24.75%
	PUERTO PLATA 2	18.86	25.97%
	SAN PEDRO VAPOR	27.90	25.49%
	CEPP 1	84.08	37.93%
	CEPP 2	274.19	39.56%
	ESTRELLA DEL MAR	527.67	41.92%
	ESTRELLA DEL NORTE	213.73	38.19%

	LA VEGA	414.25	39.93%
	METALDOM	195.14	41.75%
	MONTE RIO	525.98	42.82%
	PALAMARA	609.80	39.97%
	PIMENTEL	541.21	42.19%
	SULTANA DEL ESTE	688.20	43.55%
	RIO SAN JUAN	8.66	1.00%
	HAINA TG	79.78	27.49%
Gas Turbine (Natural Gas)	LOS MINA 5	573.53	25.50%
	LOS MINA 6	622.82	30.30%

Table 1: Net Electricity Generation 2010

The percentage of participation of the different technologies were:

Type of Technology	2010 (GWh)	%
Combined Cycle	3019.3650	24.95%
Hydroelectric	1425.9344	11.78%
Thermoelectric	6460.0536	53.38%
Gas Turbine (Natural Gas)	1196.3484	9.89%
Total Production	**12101.7014**	**100.00%**

Table 2: Energy generation in 2010

As per guidance of the "Tool to calculate the emission factor for an electric system", the emission factor of the electric grid is defined as the combination of the Operating Margin and the Build Margin. The Operating Margin is the number that reflects the emission factor of the actual installed capacity of the electric grid. The Build Margin is the number that reflects the emission factor of the projection of the additions in the installed capacity of the electric grid. For the proposed project activity, the power plants to be included in the calculation of the Build Margin are as follows:

Electricity Power Plants	Year of addition	Type of Power Plant	Net generation 2010 (MWh)	%	Cumulative %
LAS BARIAS	2009	Hydroelectric	3768.7814	0.0311%	0.0311%
PIMENTEL	2009	Thermoelectric	541213.7961	4.4722%	4.5034%
PINALITO 1	2009	Hydroelectric	51750.8455	0.4276%	4.9310%
PINALITO 2	2009	Hydroelectric	69009.0210	0.5702%	5.5012%
MAGUEYAL 1	2008	Hydroelectric	4071.5002	0.0336%	5.5349%
MAGUEYAL 2	2008	Hydroelectric	5786.8404	0.0478%	5.5827%
RIO SAN JUAN	2008	Thermoelectric	8655.4070	0.0715%	5.6542%
ROSA JULIA DE LA CRUZ	2006	Hydroelectric	1749.2498	0.0145%	5.6687%

DOMINGO RODRIGUEZ 1	2005	Hydroelectric	6720.4290	0.0555%	5.7242 %
DOMINGO RODRIGUEZ 2	2005	Hydroelectric	6003.6310	0.0496%	5.7738 %
AES ANDRES	2003	Combined Cycle	2082690.7830	17.2099%	22.9837 %

Table 3: Build Margin Power Plants

B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity (assessment and demonstration of additionality):

The objective of the project activity is to generate sustainable power through modern solar PV energy converters and by this replacing fossil fuel in the national Dominican Republic interconnected grid. By replacing fossil fuel generated electricity in the SENI, the Project Activity contributes to decrease the GHG emissions, compared to the applicable business as usual scenario.

The CDM revenues that this proposed project activity could create, are not sufficient enough to be the only decisive factor in the financial balance of the project, but they are a sufficient reserve to act as an additional payment source for the investors and the finance actors; this means that the CDM revenue would bring to the project a higher stability in its financial performance, making it more attractive to the potential investors. This even more is valid if developed as a Gold Standard project, improving the quality of any certificate generated and hence yielding in higher or more stable certificate prices needed for accessing the investment and financing.
Without the CDM financial stability, the project activity would not have been implemented due to its prohibitive high investment costs, if compared to other, simpler investment alternatives in the electricity sector of the DomRep.

The construction start of the proposed project activity is planned in January 2012. Before, the serious consideration of the CDM application was proven and decided in the Board Meetings. Previously to the project starting date Project Participants were aware:

a. Of the rough and approximate course of the CDM project registration process;

b. Of the institutional challenges attached to the implementation of a solar power plant, which is not the business as usual in Dominican Republic;

c. That CDM revenues are available for such renewable energy projects, which fulfil additionality criteria and comply with further eligibility criteria;

d. That the CDM income revenues will contribute to the necessary financial stability to obtain the equity investors and the debt financing from the banks involved and by this the CDM revenues reduces the financial and investment barriers (access to finance barrier) and will help to increase the acceptance among the lenders and investors of taking additional technical risks of such new technology applied in the Dominican Republic.

Related documents such as the Minutes from the Board Meetings and correspondences with the financial institutions are available as evidences for the validation process.

Date	Host	Participant(s)	Description	Documents /Evidence[16]
8th September, 2010	National Energy Commission	Shareholders of Electronic	Provisional concession request	Official letters and receipts.
15th November, 2010	National Energy Commission	Shareholders of Electronic	Provisional concession allowed	Official letters and receipts.
20th January, 2011	Electronic	Electronic and Comercializadora Agrícola Enriquillo	Real Estate purchase	Official contract.
19th February, 2011	National Energy Commission	Shareholders of Electronic	Permanent concession request	Official letters and receipts.
28th February, 2011	M&A Ingeniería	Electronic	Solar irradiation study.	Official report.
29th March, 2011	Environment Ministry	Electronics and Environment Ministry	Environment Impact Assessment approval.	Official report.
17th May, 2011	Electronic	Electronic – Think Carbon GmbH	Signature of the contract for CDM services for the Project Activity.	Contract with Think Carbon
6th June, 2011	National Energy Commission	Shareholders of Electronic	Permanent concession allowed	Official letters and receipts.
14th June, 2011	Think Carbon	Electronic - Think Carbon – ONMDL (host DNA)	Prior CDM consideration letter sent to ONMDL (host DNA)b	Electronic document
14th June, 2011	Think Carbon	Electronic - Think Carbon – UNFCCC	Prior CDM consideration letter sent to UNFCCC Secretariat	Electronic document
7th July, 2011	Electronic	Electronic	Simulation parameters for the one axis layout.	Electronic document
8th July, 2011	Think Carbon	Electronic - Think Carbon – UNFCCC	Prior CDM consideration letter confirmation received.	Electronic document
20th July, 2011	Think Carbon	Electronic - Think Carbon – ONMDL (host DNA)	Prior CDM consideration letter confirmation received.	Electronic document

[16] All evidential documents are available to the DOE during the site visit and the validation process

24th October, 2011	CDEEE	CDEEE – Electronics	PPA contract signature.	Official contract.
26th October, 2011	maclimate	myclimate – Electronics	ERPA contract signature.	Official contract.
23th November, 2011	ONMDL	ONMDL	Non Objection Letter – pre approval	Official letter.

Table 4: Chronology of the most relevant documents for the CDM process.

Additionality Demonstration

As per guidance of the ACM0002 V.12.2.0, the "Tool for the demonstration and assessment of additionality" is used for justifying the additionality of the proposed project activity. For this mater, the following steps are followed:

Step 1: Identification of alternatives to the project activity consistent with current laws and regulations

For an accurate description of different alternatives to the project activity, the following sub-steps are followed:

Sub-step 1a: Define alternatives to project activity.

As mentioned before, the electricity sector in Dominican Republic presents a high variability. Around 70% of the total electricity generated in the country is powered by fossil fuels which are imported. For this condition, three valid alternative scenarios are proposed:

- Alternative Scenario 1: A 30MW nominal capacity addition to the SENI, following the average trend that has prevailed during the past decade, in which a fossil fuel based thermoelectric power plant will be the most likely option to be installed.
- Alternative Scenario 2: The proposed project activity not undertaken as a CDM.
- Alternative Scenario 3: No development of the proposed project activity, i.e. continuation of "business as usual"; in other words, no extra capacity addition.

Sub-step 1b: Consistency with mandatory laws and regulations.

Dominican Republic's strategic priorities in the energy sector are incorporated into the new 57-07 law. This Energy Law provides a legal framework for the renewable energy market in Dominican Republic and the legal basis for the different distribution companies. The aim of the law is to open a new period of energy generation in the country, and open the Dominican Republic energy sector to new investments.

Also the "Ley General de Electricidad (125-01)" provides the necessary legal framework for all the electric generation and distribution activities in the country; the proposed project activity is in compliance with all the dispositions of this law.

As per guidance of the "Tool for the demonstration and assessment of additionality", either the *Step 2: Investment analysis* or *Step 3: Barrier analysis* can be selected for demonstrating the additionality of the proposed project activity. The Step 3 will be chosen as the project activity faces barriers that will prevent the development of the proposed project activity; the main barrier to address will be the "first of its kind", which will be discussed in detail in the following section:

Step 2: Investment Analysis

Not applicable

Step 3: Barrier analysis

The outcome of this section is to demonstrate that the project will be facing different barriers that will:

- prevent the implementation of this type of proposed project activity
- not prevent the implementation of at least one the alternatives

The CDM expected incomes of the proposed project activity will alleviate the identified barriers as described in the next:

Sub-step 3a: Identify barriers that would prevent the implementation of the proposed CDM project activity.

Following the guidance of the "Tool for the demonstration and assessment of additionality", there must be established the realistic and credible barriers that would prevent the implementation of the CDM activity. For the proposed project activity the following barriers has been identified:

Barriers due to prevailing practice:

As mentioned before, there is no experience available in Dominican Republic for any similar project and technology[17]. This condition implies that the project participant must overcome many other barriers like the lack of experienced staff in Dominican Republic or the higher cost of importing all the supply chain of the project. However, these barriers are not the main ones that could prevent the implementation of the proposed project activity, therefore the following barrier is used to demonstrate the additionality:

Access to Finance Barrier:

The most challenging obstacle that the project activity must overcome is the lack of financing means availability in the country for this type of technology and project size. The project activity has an estimated investment volume of more than $120 MMUSD, which makes it one of the most important investment projects in the country for 2012. Only this project activity

[17] No other similar activities can be found in the country, according to the information provided by the National Energy Commission (CNE). References are available to DOE during the validation.

will cover more than the 50% of foreign investment in the energy sector in Dominican Republic during that year[18].

The finance entities that the Project Owner has been approaching in order to obtain the necessary equity and debt finance for the project activity, have expressed their concerns about the project risks and highlighted the necessity of the CDM revenues, in order to incorporate an additional positive cash-flow to the project and by that make its finance more stable and less risky, seen the magnitude, the new technology introduced in the country and the general national investment climate[19]. The financing closure of the project activity has not been yet performed but at this point, but several possible finance entities have been expressing their concern about the need of the CDM revenues to be incorporated into the financial model[20].

Sub-step 3b: Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except proposed activity):

As mentioned in the *Sub-step 1a* the identified alternative scenarios, different from the proposed project activity are:

- Alternative Scenario 1: A 30MW nominal capacity addition to the SENI, following the average trend that has prevailed during the past decade, in which a fossil fuel powered thermoelectric power plant will be the most likely option to be installed.
- Alternative Scenario 3: No development of the proposed project activity, i.e. continuation of "business as usual"; in other words, no extra capacity addition.

For those two alternative scenarios, the identified barriers in the *Sub-step 3a*, are not preventing the implementation of either one of them. For the Alternative Scenario 1, the SENI has been running this kind of plants during the past decades, proving that there is enough experience and security to raise the finance for constructing this kind of conventional power plants, therefore the identified barrier will not affect the implementation of this Alternative Scenario. The "First of its kind" barrier is not affecting this scenario because the implementation of a fossil fuel fired thermal power plant will not be first of its kind in the Dominican Republic.

For the Alternative Scenario 3, no project activity will occur, so there will not be any need of finding the necessary finance for the project activity; therefore the identified barrier is not preventing the Alternative Scenario 3.

The Dominican Republic energy portfolio consists of four different technologies, in which the fossil fuel based takes more than 75% of the total share.

[18] According to the National Statistics of the Dominican Republic Central Banc: http://www.bancentral.gov.do/estadisticas.asp?a=Sector_Externo

[19] Documents from the financial institutions requesting the necessity of the CDM revenues are available to DOE upon request, for validation purposes.

[20] The financial model that includes the CDM revenues that has been used for negotiating the equity and debt finance will be available to the DOE for validation purposes

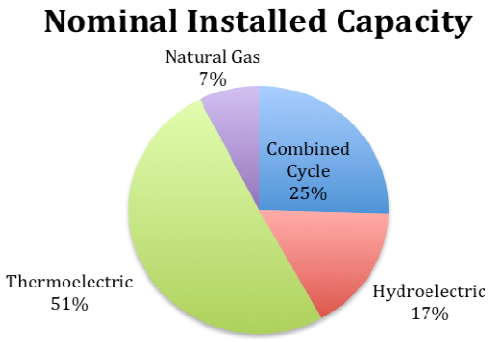


Figure 3: Nominal Installed Capacity

During the past 10 years the Dominican Republic electric sector had net growth of 72.13%, increasing the total installed capacity from 1.83 GW in 1999, to 3.16 GW in 2009. The sector that grew the most during that time was the Combined Cycle (diesel and natural gas) with a total increase of 334.5%. The thermoelectric (fossil fuel) sector grew a 57.79% in total, with an addition of more than 580 MW.

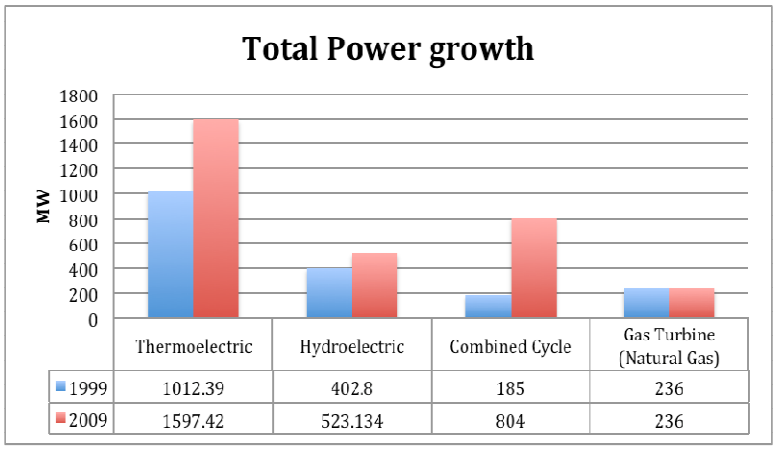


Figure 4: Total Power Growth

Step 4: Common practice analysis

The aim of this step is to prove that the proposed project activity will not occur because of the natural trend of the electric generation market expansion.
Two sub-steps were followed in order to justify the additionality of the project activity. They are described as follows:

Sub-Step 4a: Analyse other activities similar to the proposed project activity

According to what the "Tool for the demonstration and assessment of additionality" states, a comparison of the project activity with other similar activities must be done. With the information presented in previous sections, it becomes clear that the proposed project activity will not occur as a natural consequence of the actual trend in the expansion of the installed capacity attached to the SENI in the Dominican Republic.

The Tool defines that an activity is similar to the proposed project activity, if they are in the same country/region and/or rely on a broadly similar technology, are of a similar scale, and take place in a comparable environment with respect to the regulatory framework, investment climate, access to technology, access to financing, etc.

Also is stated that other CDM project activities (registered project activities and project activities which have been published on the UNFCCC web site for global stakeholder consultation as part of the validation process) are not to be included in this analysis.

In the Dominican Republic there are no other activities that, according with the definition, are similar to the proposed project activity. In the Dominican Republic there are only two CDM activities that have been registered and none proposed CDM activities that were published for the GSP. These projects consisted in the construction of a wind farm and a landfill biomass project, which in both cases, are completely different in size and technology.
By the nature of being "first of its kind", there are no comparable grid-connected solar PV modules with tracking system installed or developed in the Dominican Republic yet.

Sub-Step 4b: Discuss any similar Options that are occurring

As explained in the previous sub-step, there are no similar project activities within the country, so can be concluded that the proposed project activity is not the common practice in the host country. This statement is also proven in Chapter B.4. "Description of how the baseline scenario is identified".

In summary and according to the "Tool for the demonstration and assessment of additionality", it becomes clear that there are at least two identified alternatives to the proposed project activity that are in accordance with the laws and regulations of the country; there is at least one barrier preventing the implementation of the project proposed activity, which is that the project is "first of its kind". This barrier is not preventing the implementation of any of the two alternative scenarios; there are no similar activities to the proposed project activity, so therefore, the project is additional.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

The chosen methodology, ACM0002 V.12.2.0, establishes the parameters for calculating the baseline emissions. It is important to notice that the first parameter that needs to be calculated is the emission factor of the electric grid.

This parameter is expressed in tons CO_2/MWh, and it indicates the amount of CO_2-equivalent GHG emissions that are emitted per each MWh of electricity fed into the SENI. As mentioned before, the emission factor used for the baseline emission calculations is made with the combination of two emission factors. The first one is called *Operating Margin* (**OM**), and it expresses the average emission factor of the actual energy production capacity. The second component is the *Build Margin* (**BM**), which reflects the future trend of the electric grid expansion, in terms of emissions per generated MWh.

Both emission factors, the OM and the BM are combined in different proportions to have a final Combined Margin (**CM**) that will reflect the real emission factor of the Dominican Republic electric grid.

For the calculation of all these parameters, the ACM0002 indicates that the "Tool to calculate the emission factor for an electric grid" must be used. This tool proposes six steps to be followed in order to complete the calculations. The steps are explained as follows:

Step 1: Identify the relevant electricity system
For this Project Activity, the relevant electricity system is the SENI, as there are no other relevant interconnected systems and because the project activity is delivering all its electricity to the SENI.

For the baseline year, the SENI was compound by a total of 69 different power plants, dived in the following categories:

Technology	Number of Plants
Thermoelectric	24
Hydroelectric	38
Combined Cycle	5
Gas Turbine	2

Table 5: Total number of power plants in Dominican Republic Grid

Step 2: Choose whether to include off-grid power plants in the project electricity system (optional)
The project participants can choose between the following two options to calculate the operating margin and the build margin emission factor.

- Option I: Only grid power plants are included in the calculation.
- Option II: Both, grid power plants and off-grid power plants are included in the calculation.

For the proposed Project Activity, only grid power plants are included in the calculation; there are no other relevant off-grid power plants in the country.

Step 3: Select a method to determine the Operating Margin (OM)
For calculating the OM, the following methods are proposed by the methodology:

a) Simple OM
b) Simple adjusted OM
c) Dispatch data analysis
d) Average OM

For the Project Activity the OM will be calculated using the simple OM method.

This is election is made because in Dominican Republic, the low-cost/must-run power plants do not exceed the 50% of the total electricity generation during the five years previous the baseline year. Also, there is no hourly information of the operation of the different plants, so the Dispatch

data analysis cannot be used. By last, the Average OM cannot be used because not all the power plants can be considered as low-cost/must-run. The principal fossil fuel source for electricity production in Dominican Republic is diesel and bunker (heavy fuel oil). As mentioned before, for the Simple adjusted OM there is no hourly information available about the operation of the power plants so the Simple OM will be chosen.

The simple OM will be calculated utilising an *Ex ante* data vintage. With this option, the emission factor will be determined at the validation stage, and no monitoring and recalculation of the emission factor during the crediting period will be required. Information of the past 3 years of operation of all the power plants connected to the grid is publicly available.

Step 4: Calculate the operating margin emission factor, according to the selected method.
As per guidance of the tool, the simple OM is calculated as the generation-weighted average CO_2 emissions per unit net electricity generation (tCO_2/MWh) of all generating power plants serving the system, not including low-cost/must-run power plants.

For this calculation, Option A will be used, because the information about the net electricity generation and the CO_2 emission factor of each power unit is available.

Option A states that the simple OM emission factor is calculated based on the net electricity generation of each power unit and an emission factor of each power unit, as follows:

Equation 1:
$$EF_{grid,OMsimple,y} = \frac{\sum_m EG_{m,y} * EF_{EL,m,y}}{\sum_m EG_{m,y}}$$

Where:

$EF_{grid,OMsimpe,y}$	Simple Operating margin in year "*y*" (tCO_2/MWh)
$EG_{m,y}$	Net quantity of electricity generated and delivered to the grid by power unit "*m*" in year "*y*" (MWh)
$EF_{EL,m,y}$	CO_2 emission factor of power unit "*m*" in year "*y*" (tCO_2/MWh)
m	All power units serving the grid in year "*y*", except low-cost/must-run power units
y	The relevant year as per the data vintage chosen in Step 3

This formula express that the emission factor of the grid in the year "*y*", is the quotient of the sum of all the net electricity generated by each one of the power plants, multiplied by the emission factor of the fuel used to run that power plant, divided bye the sum of all the net electricity generated by each one of the power plants.

The net quantity of electricity generated and delivered to the grid is publicly available. The emission factor of each power unit has been calculated according the tool[21].

Step 5: Calculate the build margin emission factor

As per guidance of the tool, the sample group of power units "*m*" used to calculate the build margin consist of either:

a) The set of five power units that have been built most recently or;

[21] The full calculations and databases used are available to the DOE during the validation process.

b) The set of power capacity additions in the electricity system that comprise the 20% of the system generation (in MWh) and that have been built most recently.

It also states that the project participants should use the set of power units that comprises the larger annual generation. For the baseline year, the power plants that will be included in the Build Margin calculations are:

Electricity Power Plants	Year of addition	Type of Power Plant	Net generation 2010 (MWh)	%	Cumulative %
LAS BARIAS	2009	Hydroelectric	3768.7814	0.0311%	0.0311%
PIMENTEL	2009	Thermoelectric	541213.7961	4.4722%	4.5034%
PINALITO 1	2009	Hydroelectric	51750.8455	0.4276%	4.9310%
PINALITO 2	2009	Hydroelectric	69009.0210	0.5702%	5.5012%
MAGUEYAL 1	2008	Hydroelectric	4071.5002	0.0336%	5.5349%
MAGUEYAL 2	2008	Hydroelectric	5786.8404	0.0478%	5.5827%
RIO SAN JUAN	2008	Thermoelectric	8655.4070	0.0715%	5.6542%
ROSA JULIA DE LA CRUZ	2006	Hydroelectric	1749.2498	0.0145%	5.6687%
DOMINGO RODRIGUEZ 1	2005	Hydroelectric	6720.4290	0.0555%	5.7242%
DOMINGO RODRIGUEZ 2	2005	Hydroelectric	6003.6310	0.0496%	5.7738%
AES ANDRES	2003	Combined Cycle	2082690.7830	17.2099%	22.9837%

Table 6: Build Margin power plants

As commented before, the build margin is defined as the generation-weighted average emission factor of all power units "*m*" during the most recent year "*y*" for which power generation data is available. It is calculated as follows:

Equation 2:

$$EF_{grid,BM,y} = \frac{\sum_m EG_{m,y} * EF_{EL,m,y}}{\sum_m EGm,y}$$

Where:

$EF_{grid,BM,y}$ = Build margin CO_2 emission factor in year "*y*" (tCO_2/MWh)

$EG_{m,y}$ = Net quantity of electricity generated and delivered to the grid by power plant "*m*" in year "*y*" (MWh)

$EF_{EL,m,y}$ = CO_2 emission factor of power plant "*m*" in year "*y*" (tCO_2/MWh)

m = Power units included in the build margin

y = Most recent historical year for which power generation data is available.

The emission factor of each power plant is calculated in the same way for the OM and the BM. The formula used for doing such calculation is the following:

Equation 3:

$$EF_{EL,m,y} = \frac{EF_{CO2,m,i,y} * 3.6}{\eta_{m,y}}$$

Where:

$EF_{EL,m,y}$ = CO_2 emission factor of power plant "*m*" in year "*y*" (tCO_2/MWh)

$EF_{CO2,m,i,y}$ = Average CO_2 emission factor of fuel type "i" used in power unit "m" in yeart "y" *(tCO_2/GJ)*

$n_{m,y}$ = Average net energy conversion efficiency of power unit "m" in year "y" (ratio)
m = All power units serving the grid in year "y" except low-cost/must-run power units
y = The relevant year as per data vintage chosen in Step 3

As there is no information of the total volume of fuel consumed by each plant, the $EF_{EL,m,y}$ is calculated using the efficiency of each power plant. The efficiency is calculated as the total energy output (electricity), divided by the total amount of energy input (fuel).

Step 6: Calculate the combined margin emission factor (CM)
As commented above, the combined margin emission factor is the combination of both emission factors, the OM and the BM. The formula to calculate it is as follows:

Equation 4: $$EF_{grid,CM,y} = EF_{grid,OM,y} * w_{OM} + EF_{grid,BM,y} * w_{BM}$$

Where:
$EF_{grid,OM,y}$ = Operating margin emission factor in year "y" (tCO_2/MWh)
$EF_{grid,BM,y}$ = Build margin emission factor in year "y" (tCO_2/MWh)
w_{OM} = Weighting of operating margin emissions factor (%)
w_{BM} = Weighting of build margin emissions factor (%)

For solar and wind power generation activities, the values for w_{OM} and w_{BM} should be of 0.75 and 0.25 respectively.

Once one has calculated the emission factor of the Dominican Republic electric grid, it is necessary to calculate the project and the baseline emissions, in order to calculate the total emission reductions of the project activity.
For the project, there are no leakage emissions or any other emissions source that could be accounted, so the total project emissions in the year "y" is zero, i.e. $PE_y = 0$.

According to the ACM0002 V.12.2.0, the baseline emissions include only CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The baseline emissions are calculated as follows:

Equation 5: $$BE_y = EG_{PJ,y} * EF_{grid,CM,y}$$

Where:
BEy = Baseline emissions in year "y" ($tCO_2/year$)
$EGP_{J,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year "y" (MWh/year)
$EF_{grid,CM,y}$ = Combined Margin CO_2 emission factor for grid connected power generation in year "y" calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (tCO_2/MWh)

The methodology states that the total emission reductions will be the difference between the baseline emissions and the project emissions. As mentioned before, a wind farm project has no emissions that could be accounted, so the total emission reductions will be the baseline emissions.

B.6.2. Data and parameters that are available at validation:

Data / Parameter:	$EG_{m,y}$
Data unit:	kWh
Description:	Net energy delivered to the grid by power unit "*m*" during year "*y*"
Source of data used:	Statistical Data from the National Energy Commission
Value applied:	Data for 2008, 2009 and 2010. References are in Annex 3
Justification of the choice of data or description of measurement methods and procedures actually applied :	The information is official and publicly available.
Any comment:	-

Data / Parameter:	$EF_{CO2,I,y}$
Data unit:	$kgCO_2/TJ$
Description:	Emission factor of the fossil fuel type "*i*"
Source of data used:	2006 IPCC Guidelines for National Greenhouse Gas Inventories", Volume 2: Energy, Chapter 2: Stationary Combustion – Table 2.2
Value applied:	**Fossil Fuel used:** **Emission Factor** Carbon 101.0000 Fuel Oil #6 77.4000 Fuel Oil #2 74.1000 Gas Natural 64.2000 Water 0.0000
Justification of the choice of data or description of measurement methods and procedures actually applied :	The information is official and publicly available.
Any comment:	-

Data / Parameter:	**NCV**
Data unit:	TJ/Gg
Description:	The NCV refers to the energy content of these fossil fuels
Source of data used:	2006 IPCC Guidelines for National Greenhouse Gas Inventories", Volume 2: Energy, Chapter 1: Introduction – Table 1.2. Lower limit.
Value applied:	**Fossil Fuel used:** **NCV** Carbon 11.9000 Fuel Oil #6 40.4000 Fuel Oil #2 43.0000
Justification of the choice of data or description of measurement methods	No other trustable source is publicly available for the data.

and procedures actually applied :	
Any comment:	The values were used in a conservative manner.

Data / Parameter:	$FC_{i,m,y}$
Data unit:	Volume units
Description:	Amount of fossil fuel type "*i*" used in power unit "*m*" during year "*y*"
Source of data used:	National Energy Commission - CNE
Value applied:	Data for 2007, 2008, 2009 and 2010 References are in annex 3.
Justification of the choice of data or description of measurement methods and procedures actually applied :	The information is official and publicly available by request.
Any comment:	-

Data / Parameter:	**Density of fuels**
Data unit:	kg/m^3
Description:	The density express the concentration of mass in a determined volume
Source of data used:	Official fuel analysis from ESSO refinery in Managua, Nicaragua, audited by DNV.
Value applied:	Fuel Oil – 957.0699 Diesel – 865.7000
Justification of the choice of data or description of measurement methods and procedures actually applied :	The density of the fossil fuels is not commonly available. Only a very few sources describe the range in which a fossil fuel can oscillate. The values used are from laboratory test and not estimated within a range of values.
Any comment:	-

B.6.3. Ex-ante calculation of emission reductions:

According to the current methodology for the calculation of the ex-ante emission reductions, is necessary to calculate the emission factor of the electric grid; then as commented in the previous section and using the Equation 5, we calculate the Baseline emissions:

Equation5:

$$BE_y = EG_{PJ,y} * EF_{grid,CM,y}$$

Where:

BE_y is the baseline emissions of the year "*y*"

$EG_{PJ,y}$ is the quantity of net electricity generation that is produced and fed into the grid as a result of the CDM project activity in the year "*y*"

$EF_{grid,CM,y}$ is the Combined Margin CO_2 emission factor for grid connected power generation in year "*y*".

The Combined Margin is calculated as per guidance of the "Tool to calculate the emission factor for an electric system", which states that this emission factor is the result of the combination of the Build Margin and the Operation Margin in a proportion as described below:

Equation 4:
$$EF_{grid,CM,y} = EF_{grid,OM,y} * w_{OM} + EF_{grid,BM,y} * w_{BM}$$

Where:

$EF_{grid,BM,y}$	is the Build Margin CO_2 emission factor in year "y" (tCO_2/MWh)
$EF_{grid,OM,y}$	is the Operating Margin CO_2 emission factor un year "y" (tCO_2/MWh)
W_{om}	is the Weighting of operating margin emissions factor (%)
W_{bm}	is the Weighting of build margin emissions factor (%)

For our specific project activity, the values of W_{om} and W_{bm} are 75% and 25% respectively.

Once all the calculations have been made, the calculated value for the baseline emission reductions of the proposed project activity is:

BE_y = 53,455 tonsCO_2e/year

B.6.4 Summary of the ex-ante estimation of emission reductions:

Year	Estimation of project activity emissions (tons of CO_2e)	Estimation of baseline emissions (tons of CO_2e)	Estimation of leakage (tCO_2e)	Estimation of overall emission reductions (tons of CO_2e)
2012 (October – December)	0	13,364	0	13,364
2013	0	53,455	0	53,455
2014	0	53,455	0	53,455
2015	0	53,455	0	53,455
2016	0	53,455	0	53,455
2017	0	53,455	0	53,455
2018	0	53,455	0	53,455
2019 (January – Sepbemter)	**0**	40,091	0	40,091
Total		374,183		374,183

B.7. Application of the monitoring methodology and description of the monitoring plan:

B.7.1 Data and parameters monitored:

Data / Parameter:	$EG_{facility,y}$
Data unit:	MWh/y
Description:	Quantity of net electricity generation supplied by the project plant to the grid in year y.
Source of data to be used:	Readings of the on-site metering connected to the grid.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	44,727 MWh
Description of measurement methods and procedures to be applied:	Data will be measured continuously and recorded at least monthly. Data will be measured in the Point of Common Coupling; that means in the project boundary. All energy loses within the boundaries of the project, will not be accounted as emission reductions. Data of the "onsite" measurements will be crosschecked with the data approved and provided by the buyer.

QA/QC procedures to be applied:	Meter should be periodically calibrated in order to ensure a maximum error of +- 0.2% following national requirements or manufacturer specifications.. Sales receipts will be kept in order to verify the consistency of the data monitored[22].
Any comment:	All data collected will be achieved electronically and be kept at least for 2 years after the end of the last crediting period.

B.7.2. Description of the monitoring plan:

As established in the methodology, the only variable that needs to be verified and monitored during the crediting period is the total amount of electricity delivered to the electric grid, since the calculations of the emission factor are performed in a *ex ante* basis, so is not necessary to update any other variable during the crediting period.

So far the definition of the precise equipment to be installed for measuring the total amount of energy delivered to the grid is not yet available. The technical aspects of the equipment to be installed will be available once the final agreement between the project participant and the National Electric Grid is finished. However, the suggested main characteristics that the equipment will have for measuring the total amount of electricity delivered to the electric grid at the Point of Common Coupling (PCC), are the following:

- Electronic multifunction for being assembled in electric board.
- Back connection
- Anti dust sealed
- With an application of a multi tariff billing system
- Real time measuring access
- Bi-directional measurement capability
- Remote data transmission capability
- Massive memory storage
- Precision 0.2%

Also, the meter installed onsite will have the indication of maximum supply, expressed in kWh for the daily double tariff measuring system, with integration periods of 15 minutes. All meters installed will be a “plug in” type and with the dimensions 200mm x 200mm.

All the meters will be designed to work in a four wire three phases system.

The nominal tension and the type of service will be self-programmable within the range of 57 – 277 V and will have an operation rage of +- 15% of the nominal tension, base type, with quartz controlled internal digital clock, independent from the frequency of the grid.

The multifunction system will be able to register currents and tensions, power factor, active, reactive and apparent power. It will be able to transmit all the data remotely.

It will have two communication buses RS 485, one of them commutable to a RS 232, with an internal modem of 33.6 kbps.

[22] Calibration procedures will be available to DOE during validation.

Emission Reductions:
Also, the emission reductions of the project will be accounted as the total electricity delivered to the grid, multiplied by the emission factor of the SENI. In order to monitor the total emission reductions a simplified calculation model will be used (See Annex 4 for details).

Total Energy Generated:
To monitor the output of the electricity of the solar plant, the installed meter will be sending all the information to the control cabin. All the information will be recorded and stored. The final crosscheck of the data will be with the sales receipts. Also, each one of the structures will have a direct monitoring for detecting any kind of failure in the electric system.[23]

B.8. Date of completion of the application of the baseline study and monitoring methodology and the name of the responsible person(s)/entity(ies):

The baseline calculation and monitoring methodology application was performed by Rodrigo Perez Matabuena on 15/10/2011, employed at Think Carbon GmbH. The company is a project participant listed in Annex 1.

- Address: Ahornstr 10
  D-49744 Geeste
  Germany
- Phone: +49-4421-209089-0
- Fax +49-4421-209089-9
- Website: www.german-profec.com
- Email: info@german-profec.com

SECTION C. Duration of the project activity / crediting period

C.1. Duration of the project activity:

C.1.1. Starting date of the project activity:

The project starting date is defined by the date of signature of the purchase agreement for the key-equipment (i.e. the solar panels and tracking system): expected in January 2012

The project activity is expected to be fully installed and start delivering electricity to the SENI by June 2012.

C.1.2. Expected operational lifetime of the project activity:

[23] Further detail about the monitoring procedures will be available to the DOE at the validation.

The project is expected to have an operational lifetime of 20 years[24].

C.2. Choice of the crediting period and related information:

C.2.1. Renewable crediting period:

C.2.1.1. Starting date of the first crediting period:

01/10/2012 or date of registration, whichever occurs later.

C.2.1.2. Length of the first crediting period:

7 years

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

N/A

C.2.2.2. Length:

N/A

SECTION D. Environmental impacts

D.1. Documentation on the analysis of the environmental impacts, including transboundary impacts:

In December of 2010 the Investment Orientation, Promotion and Support Cernter (COAPI, by its name in Spanish: *Centro de Orientación, Apoyo y Promoción al la Inversión*) performed the Environmental Impact Assessment (EIA) for the proposed project activity, with the objective of determine the positive and negative impacts of the project, considering the natural and social environment. For this purpose, an independent analyse was performed for the construction and operation stages. The total budget assigned for the EIA was slightly more than $980,000 USD.

The main impacts found are described as follows:

Construction Stage:

The main negative impacts of the construction stage are the removal of the vegetation soil coverage of the project site and the ground drilling for installing the structures and other

[24] The lifetime of the solar plant is expected to be higher, but for keeping a conservative approach only 20 years are considered for the financial calculations.

construction works, however a list of all the impacts found during the construction stage can be the following:

- The loss of the vegetation coverage is the most relevant impact during the construction stage:
  This action affects the flora, fauna, soil, landscape and water quality. This impact is considered as a "one time impact", with presence in the short term, permanent, mitigable and with a short term reversibility.
  It is considered as a "low importance" impact for the water and soil, but it has a "mid importance" in terms of the flora and fauna. The landscape impact is considered as a "high importance".

- Ground drilling:
  This impact will be affecting the air quality because of the amount of suspended particles that will be released into the atmosphere; also could be obstructing the natural water flows and affect the health of the workers. However, its considered as a "low importance" impact.

- Solid waste and waste water:
  Because of the construction activities, mobile sanitary facilities will be installed on site, for preventing any uncontrolled biological discharge of waste water. This impact is considered as a "low importance".
  Also all the industrial solid waste will be specially treated. This condition has an immediate affectation,
  a short term impact, are mitigable and are considered sporadic and of low intensity. For these reasons, this impact is considered as a "low importance".

Analysing by sector, the impacts that were found are:

- Air:
  Two negative impacts that affect the quality of the air: emission of suspended dust particles and emission of exhaust gases from heavy machinery. These impacts are considered "low importance" because of their sporadic occurrence and their small magnitude.

- Water:
  Three impacts are found that affects water: sediments due the erosion of the soil, possible oil spills from heavy machinery, possible discharge of untreated waste water. These impacts are considered "low importance", non recurrent, with a short term affectation, mitigables and of sporadic occurrence.

- Flora:
  Four impacts are found: vegetation coverage, protected flora species, landscape, ecosystem alterations. All these impacts are considered of a high intensity, permanent, with a short term occurrence, with a mid term reversibility, mitigables and its level of importance oscillates between "mid" and "high importance".

- Socio economic:
  For this aspect, two negative impacts and three positive impacts are found. The negatives are: noise emission and traffic congestion in the surrounding areas; both considered of a

high relevance. The positive impacts are: employment generation, family income improvement, local income improvement; these impacts are considered of a high intensity, with a short term occurrence, cumulative and "high importance"
During the construction stage, 65% of the negative impacts are of a "low importance", 25% of a "mid importance" and only 10% of a "high importance". Also the positive impacts are 100% of "high importance".

Operation Stage:

During this stage a total of seventeen impacts are found where eleven are negative and six are positive. The positive impact directly in the socioeconomic aspect regarding the permanent employment generation, local cash flow increase, local economy increase, currency exchange savings, green energy production and CO2 emission reduction. All these impacts are of a "high importance" permanents, cumulative, continuous and of a short term occurrence.

The negative impacts are divided in the following categories:

- Soil:
  The negative impacts are: erosion, oil and grease spills, non organic solid waste. These impacts are considered of low intensity, sporadic, presents a long term affectation and "low importance".

- Water:
  The main impacts are: sedimentation because of the soil erosion, oil and grease spills, discharge of untreated waste water. All these impacts are of low intensity, mitigables, and of a "mid importance".

- Flora and Fauna:
  Basically the impacts in these sectors refers to all the landscape affectations, because of the modification of the flowers landscape. These impacts are considered of a high intensity, occurrence in the short term, permanents, mitigables, and of a "mid importance".

In general the negative impacts of the operation stage of the project activity are considered of a "mid importance" and affects soil, water and air and also the flora and fauna of the site. The positive impacts affect directly the socio economic aspect and are considered of a "high importance".

D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party:

In order to mitigate all the negative impacts described in the section D.1, the following procedures and measures will be adopted:

- Soil and Air Management:
  The main objective will be to minimize the total area affected by the presence of the construction activities. The following measures will take place:
  - Removal of the vegetation layer strictly only in the excavation zones.
  - Working activities will take place only during the day.
  - Daily watering with treated water to decrease the emission of dust particle to the atmosphere.
  - Collection and disposal of rubble and solid waste.

- Landscape management:
  The objective will be to minimize changes in the ecosystem of the area and preserve the floral species in the area. For these purposes, the activities that will take place are the following:
  - Relocation within the project boundaries of the protected floral species.
  - Establishment of a "live fence" in the perimeter of the project site.
  - Implementation of small scale farming activities within the boundaries of the project activity.
  - Maintenance of the relocated species.

- Water:
  The objective will be to protect the natural superficial and underground water sources. The activities that will take place are:
  - Companies specialized and certified in water management systems will be hired for the maintenance services of all the infrastructure of the project.
  - Mobile sanitary services will be hired for the operation of the project site during the construction and operation stage, so no untreated wastewater will be discharged in the area.

Whit these activities all the negative impacts will be minimized in order to develop the proposed project activity with the minimum harm to the local and global environment, and maximizing the opportunities of creating new employment. The project activity will not present a serious hazard to the local environment and instead will bring many benefits to the local adjacent communities and to the country itself.

The full Environmental Impact Assessment is available to the DOE for the validation purposes.

SECTION E. Stakeholders' comments

E.1. Brief description how comments by local stakeholders have been invited and compiled:

On October 7th of 2011, the Stakeholder consultation of the proposed project activity took place. Details about how the consultation was conducted are given below.

The consultation was oriented for groups I, II and II, following the guidelines of the stakeholders consultation process[25], and the guidelines from the Dominican Republic DNA. The Project Participant identified and invited the following groups:

GROUP I: NATIONAL LEVEL

- AND – Autoridad Nacional Designada (Oficina ONMDL) – *Designed National Athority – CDM Office*
- CNE - Comisión Nacional de Energía – *National Energy Commission.*
- Ministerio de Medio Ambiente y Recursos Naturales – *Ministry of Environment and Natural Resources*

The entities identified in the Group I were invited via invitation letter[26], mailing and/or telephonic invitation to the programmed Project Activity presentation to explain the project activity characteristics and to receive their comments.

GROUP II: REGIONAL OR CORPORATION LEVEL

- Mundo Ecológico – Local NGO
- Employees of Electronics and CDEEE
- Centro de Orientación, Apoyo y Promoción a la Inversión – *Investment Promotion, Orientation and Support Centre.*
- Monte Plata Tax Attorney
- Monte Plata Environment Office
- Monte Plata Governor
- Etc.

GROUP III: LOCAL LEVEL

- Local Neighbors and Residents

The entities identified in the Group III were invited via invitation letter, mailing, email and telephonic invitation to the programmed Project Activity presentation. Also the project participant published an open invitation to the public trough an announcement in the local newspaper and also posters were printed and placed in strategic points so the community could be aware of the presentation.

After the presentation to the tree identified groups, an opinion poll took place. All the comments received were taken into account and available for the DOE in the validation process.

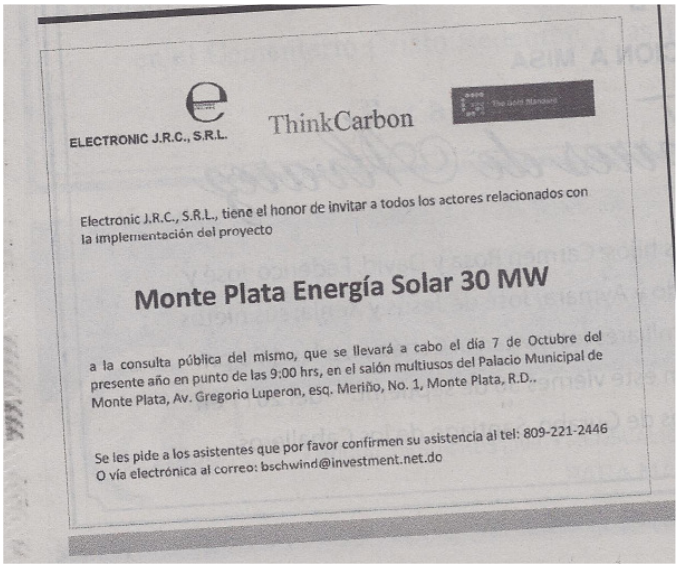
Also, at the end of the consultation, the participants were asked to answer a brief survey and about the project and the presentation.

For the stakeholders consultation were prepared the following support material

[25] Executive Board meeting 26 (EB26) of the UNFCCC

[26] A list of invited persons, mailing and invitation letters of the three different groups, are available for the validation process.

- Power point presentation of the project activity
- Informative leaflets
- Announcements in the Local Newspaper ”Listin Diario” calling for the stakeholders’ consultation


ELECTRONIC J.R.C., S.R.L.

ThinkCarbon

Electronic J.R.C., S.R.L., tiene el honor de invitar a todos los actores relacionados con la implementación del proyecto

Monte Plata Energía Solar 30 MW

a la consulta pública del mismo, que se llevará a cabo el dia 7 de Octubre del presente año en punto de las 9:00 hrs, en el salón multiusos del Palacio Municipal de Monte Plata, Av. Gregorio Luperon, esq. Meriño, No. 1, Monte Plata, R.D..

Se les pide a los asistentes que por favor confirmen su asistencia al tel: 809-221-2446
O vía electrónica al correo: bschwind@investment.net.do

Figure 5: Local Newspaper invitation

Figure 6: Stakeholder presentation

Figure 7: Leaflet with information given to the audience

Figure 8: Working groups for the GS Sustainability Matrix

Figure 9: Posters with the public invitation to the LSC

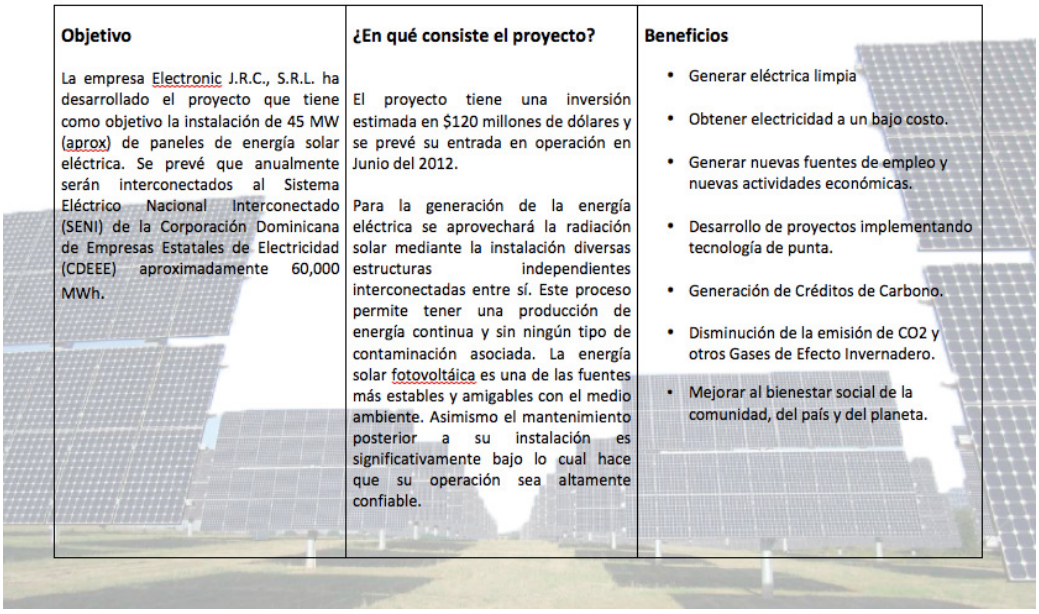


Figure 10: Informative leaflet

The Stakeholder Consultation started at 10:00 am on October 7th. Mr. Ramón Santos started the presentation introducing to the audience the purpose of the meeting and introducing all the different assistants. After that, Mr. Rodrigo Pérez Matabuena from Think Carbon began his exposition talking about the CDM Project Activity, talking about Climate Change and the importance of the CER's for the project. After that, Miss Paloma Sarria from myclimate made her presentation about the sustainability aspects that the Gold Standard Certification is requesting, the

sustainable development matrix and the blind exercise that moments later, all the audience would have to perform.

The technical explanation about the project operation was made by Mr. Sixto de los Santos; he made a brief explanation of the overall mechanism for producing the electric energy and the technical aspects of how it is going to be delivered to the National Grid. Finally the last presenter was Mr. Cirilo Marte, who explained the audience the different environmental, social and economic impacts of the project activity.

E.2. Summary of the comments received:

After the CDM Project Activity presentation, all the attendants were asked to answer a brief feedback form about the content of the presentation and the objectives of the Project Activity. The questions of the form were the following:

1. What was your impression about the consultation?
2. What is what you liked the most about the project activity?
3. What is what you don't like about the project activity?
4. In your opinion, what are the social benefits of the project?
5. In your opinion, what are the environmental benefits of the project?
6. In your opinion, what are the economic benefits of the project?
7. In your opinion, what are the social disadvantages of the project?
8. In your opinion, what are the environmental disadvantages of the project?
9. In your opinion, what are the economic disadvantages of the project?
10. General comments

Compilation of the results expressed in the feedback forms:

The feedback forms were filled out at the end of the consultation, before the closure. After reviewing the completed forms, we obtained the following results:
All of the participants indicated that the LSC was very interesting and positive, and some indicated that they were happy to see that the meeting included a very complete representation of stakeholders. Also, they liked how democratic the process was given that it proactively involved their participation in the discussion of impacts of the project on sustainable development.

In terms of what they liked most about the project, some said that they liked everything about the project, others referred to the technology, and others said they liked that it involves the participation of the community of Monte Plata and it will bring jobs and higher incomes. Regarding the question on what stakeholders did not like about the project, some said that they did not like that the project was not yet 'up and running' and that certain authorities were taking such a long time in approving such an important project; 2 people said that they did not like the lack of compromise of the project with the Municipality of Monte Plata; and 2 people mentioned that they did not like that the project would modify the flora of the project site.

When given the opportunity to describe the advantages of the project, the vast majority responded that the main socioeconomic benefit of the project is the fact that it will generate a number of temporary and permanent jobs, which lead to new sources of income and higher living standards in the community. Others mentioned that the project would lead to big savings in foreign

exchange and high investment in the country. One person made the interesting comment that this project could lead to a more dynamic economy in Monte Plata and the potential of ecotourism in the region. Another person commented that this project would lead to the generation of clean energy and cheaper energy. This point should be clarified in the Stakeholder Feedback Round as this project will not necessarily result in lower energy tariffs. In terms of environmental advantages, most stakeholders mentioned CO2 reduction as the main advantage.

When asked about the disadvantages of the project, many stakeholders said that they did not find anything negative about the project. Those who did find disadvantages primarily referred to the fact that the project will relocate trees to other areas. In addition, two people commented that a social disadvantage of the project is that the land of the project site could have been used for housing for people of the community instead of the project. With respect to this last comment, it should be clarified in the feedback round that the project site is privately-owned and that no other potential use (housing or other) has been displaced by the project.

E.3. Report on how due account was taken of any comments received:

During the question and answers session, some comments were made. In the following table is a summary of those comments and the response form the Project Participant.

Stakeholder comment	Was comment taken into account (Yes/ No)?	Explanation (Why? How?)
Lisandro Gomdrez, Firefighter of Monte Plata Now that you have located the zone in which the project will take place, I understand that there is an area that will be deforested. Once the plant has been installed, will you reforest somewhere else?	Yes	The plants that are found in the project site are mainly wild vegetation with just a few trees. Either way, we will relocate the plants and trees to a different area during the construction phase. Also the site will be used to plant crops, such as pineapple, which can grow under the solar panels. There is a particular area next to a river in the project site that will be conserved. The Environmental Impact Study contains an Environmental Management Plan which provides details on plants relocation, conservation in the project site, etc.
Dione Fermin, Civil Society After the construction stage, how many employments will	Yes	After the construction there will be an approximate of 150 permanent employments during the operational

be generated?		lifetime of the project activity.
Juan Fernando, Inhabitant, Neighborhood of Barrio Lindo, Monte Plata Are there any houses in the project site? In case there are, what are you planning to do with them?	Yes	No, there are no houses or any person living on the project site.
Domingo Tavares, Cooperative Casa Verde What is missing in order to complete the execution of the project?	Yes	We need the support of Monte Plata Municipality in order to get the final component of finance.
Daniel Sebastián, Civil Society: For security reasons, what is the minimum distance that should exist between the project activity and human/animal settlements?	Yes	There is no need to have a distance between the project activity and human/animal settlements. The project does not represent any hazard for the surrounding communities, as there are no emissions of any kind of gas, liquid, waste or any other by-product that could harm in some way the communities or any animal. In addition, there will be approximately 100+ people working permanently on the site. The only reason of keeping the site isolated with a fence is for protecting the equipment form any kind of vandalism.
Felix Heredia, Community Inhabitant How many molecules of CO2 are there in a CO2 ton? And what could be the equivalent emission of CO2 that is being avoided because of the project activity?	Yes	There are many molecules in one ton of CO_2. The national electric grid in Dominican Republic has an associated emission factor of approximately 1 ton of CO2 per MWh generated. The project activity will reduce approximately 35,000 tons of CO2 per year. One ton of CO2 is equivalent to the emission of an efficient

		commercial vehicle after covering a distance of 5,000 kms.
Leni Valdes, Council of the Municipality of Monte Plata I want the project to have a real benefic impact for Monte Plata and not only to use the natural resources of the region without any other benefit to the population.	Yes	The project activity is being developed by a company not by a charity. The energy will be delivered to the SENI and they will be distributing it, not the PO. The company is committed with the community and with the government of Monte Plata and will work together for developing new opportunities for the people, but the company should always remain as a business because otherwise we will be jeopardizing its profitability and therefore the company will not continue offering the employment sources to the Monte Plata municipality.

Table 7: Stakeholders comments

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

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Annex 2

INFORMATION REGARDING PUBLIC FUNDING

No public funding is involved in the project activity.

Annex 3

BASELINE INFORMATION

ELECTRICITY POWER PLANTS	YEAR	2007	2008	2009	2010	EFFICIENCY %
COMBINED CYCLE	CESPM 1	121.71	225.93	355.34	31.44	45.26%
	CESPM 2	32.46	82.86	110.44	50.51	45.26%
	CESPM 3	46.03	90.72	11.39	83.04	45.26%
	SAN FELIPE	687.62	1,022.73	761.03	771.68	32.94%
	AES ANDRES	1,892.32	2,029.53	1,717.41	2,082.69	45.36%
HYDROELECTRIC	AGUACATE 1	92.32	-	0.00	-	0.01
	AGUACATE 2	87.14	-	0.00	-	0.01
	ANIANA VARGAS 1	0.56	0.41	0.00	0.27	0.01
	ANIANA VARGAS 2	0.33	0.49	0.48	0.55	0.01
	BAIGUAQUE 1	0.82	0.37	0.70	0.85	0.01
	BAIGUAQUE 2	1.06	1.19	0.97	1.42	0.01
	CONTRA EMBALSE MONCION 1	9.97	7.17	7.86	9.94	0.01
	CONTRA EMBALSE MONCION 2	9.11	6.99	4.80	9.11	0.01
	DOMINGO RODRIGUEZ 1	4.03	5.17	6.46	6.72	0.01
	DOMINGO RODRIGUEZ 2	5.15	5.93	5.70	6.00	0.01
	EL SALTO	3.20	3.67	3.25	2.58	0.01
	HATILLO	60.58	61.35	66.76	63.83	0.01
	JIGUEY 1	196.22	243.44	53.26	-	0.01
	JIGUEY 2	-	0.04	191.74	193.44	0.01
	JIMENOA	26.00	46.38	34.91	47.24	0.01
	LAS BARIAS	-	-	3.65	3.77	0.01
	LAS DAMAS	42.90	58.32	49.83	36.39	0.01
	LOPEZ ANGOSTURA	97.12	108.95	84.81	87.28	0.01
	LOS ANONES	0.03	-	0.00	0.07	0.01
	LOS TOROS 1	25.82	24.96	29.71	16.63	0.01
	LOS TOROS 2	26.93	24.14	26.72	18.61	0.01
	MAGUEYAL 1	-	3.05	8.73	4.07	0.01
	MAGUEYAL 2	-	1.64	2.96	5.79	0.01
	MONCION 1	126.02	62.88	57.03	96.91	0.01
	MONCION 2	138.87	70.63	62.14	120.38	0.01
	NIZAO NAJAYO	0.41	0.00	0.16	0.21	0.01
	PINALITO 1	-	-	22.71	51.75	0.01
	PINALITO 2	-	-	18.28	69.01	0.01
	RINCON	27.51	19.36	30.42	23.67	0.01
	RIO BLANCO 1	80.69	50.91	82.17	69.11	0.01
	RIO BLANCO 2	64.25	69.78	65.01	62.38	0.01
	ROSA JULIA DE LA CRUZ	2.33	2.30	1.79	1.75	0.01
	SABANA YEGUA	66.90	95.93	81.05	60.30	0.01
	SABANETA	33.38	35.50	26.65	30.05	0.01
	TAVERA 1	200.16	114.69	150.07	143.91	0.01

	TAVERA 2	177.16	157.93	180.24	105.13	0.01
	VALDESIA 1	43.45	49.81	47.56	35.86	0.01
	VALDESIA 2	45.11	50.85	50.03	40.96	0.01
THERMOELECTRIC	BARAHONA CARBON	305.01	308.82	266.84	315.97	0.25
	ITABO 1	798.50	782.76	774.81	707.63	30.25%
	ITABO 2	775.31	756.30	710.43	663.63	28.77%
	FALCONDO 1	410.61	317.50	66.64	231.56	28.69%
	FALCONDO 2	360.32	299.98	248.03	165.86	28.69%
	FALCONDO 3	311.07	316.65	148.23	69.55	28.69%
	HAINA 1	50.79	26.49	72.60	35.19	24.29%
	HAINA 2	-	-	-	-	26.45%
	HAINA 4	235.19	109.97	37.62	61.23	26.74%
	PUERTO PLATA 1	-	-	-	-	24.75%
	PUERTO PLATA 2	-	5.77	0.01	18.86	25.97%
	SAN PEDRO VAPOR	-	3.81	41.44	27.90	25.49%
	CEPP 1	73.92	57.63	59.01	84.08	37.93%
	CEPP 2	288.19	207.00	239.48	274.19	39.56%
	ESTRELLA DEL MAR	526.00	538.05	542.39	527.67	41.92%
	ESTRELLA DEL NORTE	254.80	262.33	266.68	213.73	38.19%
	LA VEGA	437.22	532.32	525.21	414.25	39.93%
	METALDOM	240.16	229.93	187.13	195.14	41.75%
	MONTE RIO	464.03	540.85	530.15	525.98	42.82%
	PALAMARA	444.77	544.90	585.18	609.80	39.97%
	PIMENTEL	243.59	235.82	390.63	541.21	42.19%
	SULTANA DEL ESTE	1,000.48	819.41	625.20	688.20	43.55%
	RIO SAN JUAN	-	5.00	8.78	8.66	1.00%
	HAINA TG	27.78	44.20	49.62	79.78	27.49%
GAS TURBINE (NATURAL GAS)	LOS MINA 5	131.78	133.63	30.26	573.53	25.50%
	LOS MINA 6	231.30	202.73	428.30	622.82	30.30%

Table 8: Net Electricity Generation 2007-2010

All the information is publicly available upon request at the National Energy Commission – CNE **www.cne.gov.do**

Electricity Power Plants	Fossil Fuels expressed in Gg											
	2007			2008			2009			2010		
	Carbon	Diesel	Fuel Oil	Carbon	Diesel	Fuel Oil	Carbon	Diesel	Fuel Oil	Carbon	Diesel	Fuel Oil
CESPM 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESPM 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CESPM 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SAN FELIPE	0.00	4110.75	0.00	0.00	5758.79	0.00	0.00	4393.99	3558.53	0.00	3617.03	4688.04
AES ANDRES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AGUACATE 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
AGUACATE 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ANIANA VARGAS 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ANIANA VARGAS 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BAIGUAQUE 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BAIGUAQUE 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CONTRA EMBALSE MONCION 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
CONTRA EMBALSE MONCION 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DOMINGO RODRIGUEZ 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DOMINGO RODRIGUEZ 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EL SALTO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HATILLO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JIGUEY 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JIGUEY 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
JIMENOA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LAS BARIAS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LAS DAMAS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LOPEZ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

ANGOSTURA												
LOS ANONES	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LOS TOROS 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LOS TOROS 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAGUEYAL 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MAGUEYAL 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MONCION 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
MONCION 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
NIZAO NAJAYO	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PINALITO 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PINALITO 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RINCON	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RIO BLANCO 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
RIO BLANCO 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
ROSA JULIA DE LA CRUZ	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SABANA YEGUA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SABANETA	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TAVERA 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TAVERA 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VALDESIA 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
VALDESIA 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
BARAHONA CARBON	159.14	0.00	0.00	163.23	0.00	0.00	139.02	0.00	0.00	117.90	0.00	0.00
ITABO 1	0.00	0.00	7.03	0.00	0.00	3.64	0.00	0.00	4.68	0.00	0.00	0.00
ITABO 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FALCONDO 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FALCONDO 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FALCONDO 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HAINA 1	0.00	0.00	704.05	0.00	0.00	366.74	0.00	0.00	1122.96	0.00	0.00	505.34
HAINA 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

HAINA 4	0.00	0.00	3264.98	0.00	0.00	1491.28	0.00	0.00	509.19	0.00	0.00	488.61
PUERTO PLATA 1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
PUERTO PLATA 2	0.00	0.00	0.00	0.00	0.00	86.35	0.00	0.00	0.20	0.00	0.00	246.36
SAN PEDRO VAPOR	0.00	0.00	0.00	0.00	0.00	56.32	0.00	0.00	636.63	0.00	0.00	418.69
CEPP 1	0.00	0.00	599.32	0.00	0.00	496.07	0.00	0.00	559.96	0.00	0.00	774.48
CEPP 2	0.00	0.00	2203.01	0.00	0.00	1792.79	0.00	0.00	2250.78	0.00	0.00	2490.42
ESTRELLA DEL MAR	0.00	0.00	2635.52	0.00	0.00	4746.21	0.00	0.00	4733.70	0.00	0.00	4633.26
ESTRELLA DEL NORTE	0.00	0.00	1381.34	0.00	0.00	2464.96	0.00	0.00	2494.16	0.00	0.00	1976.29
LA VEGA	0.00	0.00	3977.36	0.00	0.00	3349.07	0.00	0.00	4765.17	0.00	0.00	3740.50
METALDOM	0.00	0.00	2285.94	0.00	0.00	2011.24	0.00	0.00	1515.29	0.00	0.00	1015.37
MONTERIO	0.00	0.00	3642.69	0.00	0.00	4656.97	0.00	0.00	3774.25	0.00	0.00	4578.44
PALAMARA	0.00	0.00	4217.90	0.00	0.00	3405.08	0.00	0.00	5490.59	0.00	0.00	5679.03
PIMENTEL	0.00	0.00	2110.41	0.00	0.00	2066.18	0.00	0.00	0.00	0.00	0.00	0.00
SULTANA DEL ESTE	0.00	0.00	8673.81	0.00	0.00	7849.44	0.00	0.00	8295.81	0.00	0.00	6050.10
RIO SAN JUAN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
HAINA TG	0.00	350.18	0.00	0.00	536.81	0.00	0.00	596.39	0.00	0.00	711.98	0.00
LOS MINA 5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LOS MINA 6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 9: Fossil Fuels Consumption 2007 - 2010

In order to present the information in a concise manner, the total amount of fossil fuels consumption has been converted into a mass unit. The detail of how the calculations were made is available to the DOE for validation purposes.

Electricity Power Plants	**Year of addition**	**Type of Power Plant**	**Net generation 2010 (MWh)**	**%**	**Cumulative %**
LAS BARIAS	2009	Hydroelectric	3768.7814	0.0311%	0.0311%
PIMENTEL	2009	Thermoelectric	541213.7961	4.4722%	4.5034%
PINALITO 1	2009	Hydroelectric	51750.8455	0.4276%	4.9310%
PINALITO 2	2009	Hydroelectric	69009.0210	0.5702%	5.5012%
MAGUEYAL 1	2008	Hydroelectric	4071.5002	0.0336%	5.5349%
MAGUEYAL 2	2008	Hydroelectric	5786.8404	0.0478%	5.5827%

RIO SAN JUAN	2008	Thermoelectric	8655.4070	0.0715%	5.6542%
ROSA JULIA DE LA CRUZ	2006	Hydroelectric	1749.2498	0.0145%	5.6687%
DOMINGO RODRIGUEZ 1	2005	Hydroelectric	6720.4290	0.0555%	5.7242%
DOMINGO RODRIGUEZ 2	2005	Hydroelectric	6003.6310	0.0496%	5.7738%
AES ANDRES	2003	Combined Cycle	2082690.7830	17.2099%	22.9837%

Table 10: Build Margin Power Plants

Annex 4

MONITORING INFORMATION

Figure 11: Monitoring Data Control

Emission Reductions Protocol										
Month	Item	Bill No.	Net Electricity	Net Electricity	EFy exante	ER (tCO_2)	Difference	Verified by	Signature	Comments
1					1195.1307					
2					1195.1307					
3					1195.1307					
4					1195.1307					
5					1195.1307					
6					1195.1307					
7					1195.1307					
8					1195.1307					
9					1195.1307					
10					1195.1307					
11					1195.1307					
12					1195.1307					

Responsible	
Date	

This monitoring format will be used in order to generate the emission reductions for the Project Activity, and also for pointing out if there is any difference between the energy that is being fed into the national grid at the PCC and the energy that is being purchased by the clients.

Each one of the following columns should be filled as follows:

Month: The consecutive month in which the measurement is being taken.
Item: Description of the measurement, e.g. “January Measurement”
Bill No. The number of the bill that covers that measurement.
Net Electricity Generation Sales (GWh): Is the total amount of electricity expressed in GWh that is being measured in the meter at the PCC.
EFy ex-ante: Is the emission Factor for the Electric Grid. It is a constant value for the entire project. It will be updated after the first crediting period.
ER (CO_2) Is the total amount of Emissions Reductions achieved with the project activity. It is made by multiplying the Net Electricity Sales and the EF_y ex-ante. Is expressed in tons of CO_2
Difference: In case that there are differences between what is being measured and what is being paid by the clients (verified with the sales receipts), it should be reported here.
Verified by: The name of the person who is reporting the data.
Signature: The signature or personal ID of the person who is reporting the data.
Comments: Any relevant information about the production, maintenance, etc.

This table will be presented as a summary of all the electricity generated during the lifetime of the project activity and also as a record of all the emission reductions generated by the presence of the solar plant.

It is important to mention that all the detailed technical data and any other information that is not listed here, but that is relevant to the project activity, will be fully available to DOE for the validation process.