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

CONTENTS

Annexes

SECTION A. General description of project activity

A.1. Title of the project activity:

Title of the project activity: REB *Cassino* Wind Energy Complex CDM Project Activity.

Version number of the document: 03.

Date: 13/04/2012.

A.2. Description of the project activity:

The primary objective of the Wind Power Plants considered in this CDM Project Activity is to help meet Brazil's rising demand for energy due to economic growth and to improve the supply of electricity, while contributing to environmental, social and economic sustainability by increasing the share of renewable energy consumption for Brazil (and for the region of Latin America and the Caribbean).

The Latin America and the Caribbean region countries have expressed their commitment towards achieving a target of 10% renewable energy for the total energy use in the region. Through an initiative from the Ministers of the Environment in 2002 (UNEP-LAC, 2002)[1], a preliminary meeting of the World Summit for Sustainable Development (WSSD) was held in Johannesburg in 2002. In the WSSD final Plan of Implementation no specific targets or timeframes were stated, however, their importance was recognized to achieve sustainability in accordance with the Millennium Development Goals[2].

The privatization process initiated in 1995 arrived in conjunction with the expectation of adequate tariffs (fewer subsidies) and more attractive prices for generators. It drew the attention of investors to possible alternatives not available in the centrally planned electricity market. Unfortunately the Brazilian energy market lacked a consistent expansion plan, with the biggest problems being political and regulatory uncertainties. At the end of the 1990's a strong increase in demand in contrast with a less-than-average increase in installed capacity caused the supply crisis/rationing from 2001/2002. One of the solutions the government provided was flexible legislation favoring smaller independent energy producers. In addition to this, the possible eligibility under the Clean Development Mechanism of the Kyoto Protocol also drew the attention of investors regarding renewable energy projects.

In this context, the proposed project activity can be seen as an example of a solution by the private sector to the Brazilian electricity crisis of 2001, contributing to the country's sustainable development. This indigenous and cleaner source of electricity will also have an important contribution to environmental

[1] **UNEP-LAC (2002).** Final Report of the 7th Meeting of the Inter-Sessional Committee of the Forum of Ministers of Environment of Latin America and the Caribbean. United Nations Environment Programme, Regional Office for Latin America and the Caribbean. May 15th to 17th, 2002, São Paulo (Brazil).

[2] WSSD Plan of Implementation, Paragraph 19 (e): "*Diversify energy supply by developing advanced, cleaner, more efficient, affordable and cost-effective energy technologies, including fossil fuel technologies and renewable energy technologies, hydro included, and their transfer to developing countries on concessional terms as mutually agreed. With a sense of urgency, substantially increase the global share of renewable energy sources with the objective of increasing its contribution to total energy supply, recognizing the role of national and voluntary regional targets as well as initiatives, where they exist, and ensuring that energy policies are supportive to developing countries' efforts to eradicate poverty, and regularly evaluate available data to review progress to this end.*"

sustainability by reducing carbon dioxide emissions that would have occurred otherwise in the absence of the project. The project activity reduces emissions of greenhouse gases (GHG) by avoiding electricity generation from fossil fuel sources, which would be generated (and emitted) in the absence of the project.

The proposed project activity consists of three wind power plants: *EOL REB Cassino I*, *EOL REB Cassino II* and *EOL REB Cassino III.* The installed capacity of *EOL REB Cassino I, II* and *III* is 22 MW, 20 MW and 22 MW, respectively. These three plants are expected to become operational in January, 2013 and are all located in *Rio Grande* municipality, *Rio Grande do Sul* state, Southern region of Brazil.

The owner of the plant is the company *REB Empreendimentos e Administradora de Bens S.A.* which develops renewable energy as wind farms, solar and hydropower plants. *REB Empreendimentos e Administradora de Bens S.A.* belongs to Capital de Riesgo Global (CRG) which is a company from Santander Group. There is a specific area in the company known as Asset & Capital Structuring (A&CS) which invests in renewable energy. In Brazil, the group acts for four years developing projects in different stages.

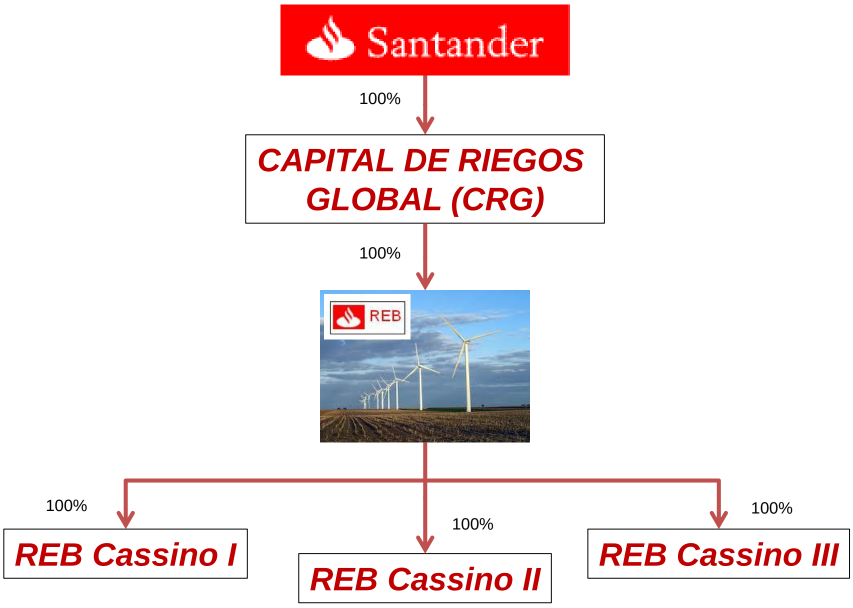

Figure 1: Organizational chart of the owners of the wind power plants.

The project contributes to sustainable development since it meets present needs without compromising the ability of future generations to meet their own needs, as defined by the Brundtland Commission (1987)[3]. In other words, the implementation of wind power plants ensures renewable energy generation, reduces the demand on the national electric system, avoids negative social and environmental impacts caused by fossil fuel fired thermo power plants, and drives regional economies, increasing the quality of life in local communities.

[3] **WCED (1987).** Our Common Future. The World Commission on Environment and Development. Oxford University Press.

In summary, the proposed project activity will contribute to the sustainable development in the following aspects:

- Reducing air pollutants that are emitted from fossil fuel electricity generation from power plants connected to the Brazilian grid;
- Creating job opportunities during the project construction, operation and maintenance, improving capacities related to wind farms in Brazil through advanced technology transferred from developed countries;
- Efficiently generating electricity, for which there is a growing demand in the country;
- Contributing towards national economic development, adding an Independent Power Producer, leading to energy diversification and creation of additional renewable energy sources;

From the above, it can be concluded that the project has reduced environmental impacts and will develop the regional economy, resulting in better quality of life. In other words, environmental sustainability combined with social and economic justice, undeniably contributing to the host country's sustainable development.

A.3. Project participants:

Table 1: Party (ies) and private/public entities involved in the project activity.

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 whishes to be considered as project participant (Yes/No)
Brazil (host)	REB Empreendimentos e Administradora de Bens S.A.	No
	Ecopart Assessoria em Negócios Empresariais Ltda. (private entity)	
(*) 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.		

Detailed contact information on party(ies) and private/public entities involved in the project activity listed in Annex 1.

A.4. Technical description of the project activity:

A.4.1. Location of the project activity:

A.4.1.1. Host Party(ies):

Brazil.

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

All of the plants are located at *Rio Grande do Sul* state.

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

All of the plants are located at *Rio Grande* municipality.

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

The geographic coordinates of each site are presented in the table below.

Table 2: *EOL REB Cassino I*, *II* and *III* wind power plants geographic coordinates.

Geographic Coordinates	*EOL REB Cassino I*[4]	*EOL REB Cassino II*[5]	*EOL REB Cassino III*[6]
Longitude (*West*)	-52.2228	-52.2236	-52.2247
Latitude (*South*)	-32.2014	-32.2016	-32.2016

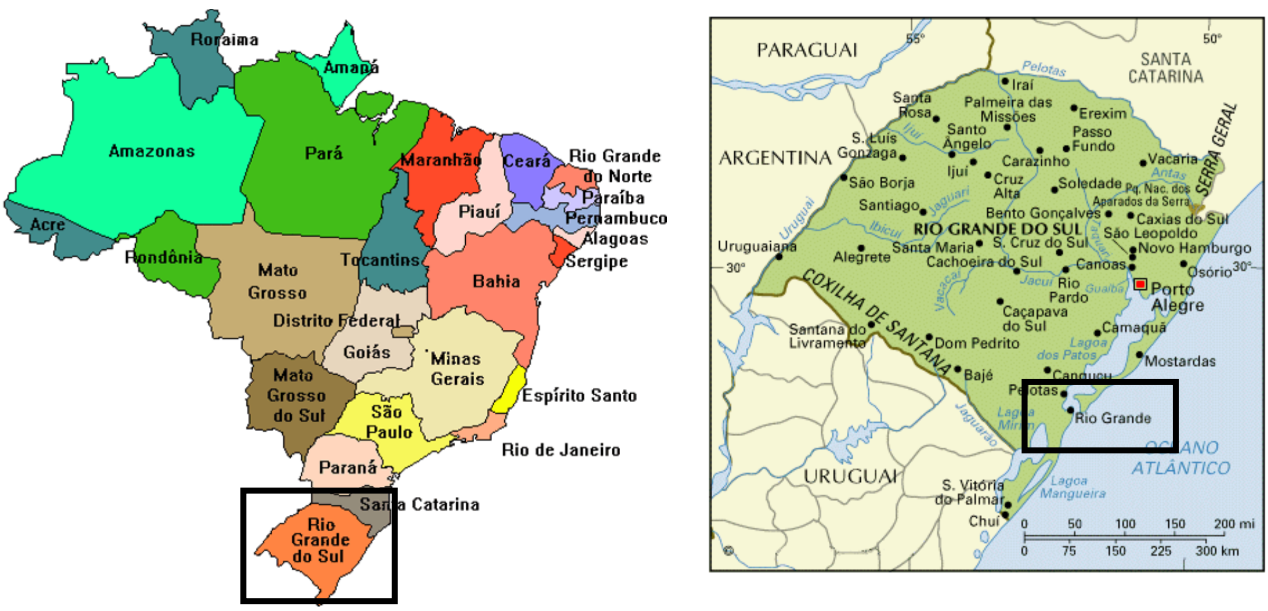

Figure 2: *Rio Grande do Sul* state (on the left)[7] and *Rio Grande* municipality (on the right)[8]

[4] *EOL REB Cassino I* geographic coordinates are described in ANEEL Ordinance #153, dated March, 10th 2011. The document is publicly available at: <http://www.aneel.gov.br/cedoc/prt2011153mme.pdf>. Accessed on August, 15th 2011.

[5] *EOL REB Cassino II* geographic coordinates are described in ANEEL Ordinance #162, dated March, 18th 2011. The document is publicly available at: <http://www.aneel.gov.br/cedoc/prt2011162mme.pdf>. Accessed on August, 15th 2011.

[6] *EOL REB Cassino III* geographic coordinates are described in ANEEL Ordinance #152, dated March, 10th 2011. The document is publicly available at: <http://www.aneel.gov.br/cedoc/prt2011152mme.pdf>. Accessed on August, 15th 2011.

Furthermore, find below the geographic coordinates of each aerogenerator as described in the wind certification.

Table 3: Geographic coordinates of the aerogenerator's location of the REB Cassino I, II and III wind power plants.

Aerogenerator	*REB Cassino I*		*REB Cassino II*		*REB Cassino III*	
	Longitude	*Latitude*	*Longitude*	*Latitude*	*Longitude*	*Latitude*
1	-52.2031	-32.2187	-52.2112	*-32.2119*	-52.2219	-32.2004
2	-52.2146	-32.2241	-52.2190	-32.2161	-52.2282	-32.2051
3	-52.2190	-32.2278	-52.2183	-32.2200	-52.2328	-32.2096
4	-52.2267	-32.2305	-52.2301	-32.2269	-52.2199	-32.2037
5	-52.2099	-32.2144	-52.2099	-32.2144	-52.2247	-32.2082
6	-52.2230	-32.2207	-52.2230	-32.2207	-52.2363	-32.2153
7	-52.2330	-32.2240	-52.2330	-32.2240	-52.2177	-32.2068
8	-52.2114	-32.2188	-52.2114	-32.2189	-52.2225	-32.2106
9	-52.2235	-32.2247	-52.2235	-32.2247	-52.2382	-32.2182
10	-52.2289	-32.2203	-52.2289	-32.2203	-52.2155	-32.2089
11	-52.2211	-32.2364			-52.2293	-32.2148

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

Sectoral Scope: 1 - Energy industries (renewable - / non-renewable sources).

Category: Renewable electricity generation for a grid.

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

The project activity is the construction of three wind power plants summing 64 MW of installed capacity. The technology to be employed by each of the sites considered in this project activity is described below in Table 4.

Table 4: Project technical description (*Source:* Gamesa's website[9]).

	Wind Power Plant	***EOL REB Cassino I***	***EOL REB Cassino II***	***EOL REB Cassino III***
		Turbines		
General	Model	G97	G97	G97
	Quantity	11	10	11

[7] Available at: < http://www.portalsaofrancisco.com.br/alfa/brasil-mapas/>.

[8] Available at: <http://www.viagemdeferias.com/mapa/rio-grande-do-sul/>.

[9] Aerogenerators Information. Available at: <http://www.gamesa.es/es/productos-servicios/aerogeneradores/gamesa-g97-20-mw-iiia.html>.

Rotor	Nominal Power (MW)	2.0	2.0	2.0
	Installed capacity (MW)	22	20	22
	Manufacturer	Gamesa	Gamesa	Gamesa
	Diameter (m)	97	97	97
	Area swept (m^2)	7,390	7,390	7,390
	Nominal revolutions (rpm)	9.6 to 17.8	9.6 to 17.8	9.6 to 17.8
	Number of blades	3	3	3
Generators				
General	Nominal output (kW)	2,000	2,000	2,000
	Quantity	11	10	11
	Frequency (Hz)	60	60	60
	Tension (V)	690	690	690

The equipment and technology utilized in the proposed project activity has been applied to similar projects all over the world.

Figure 3: Gamesa's turbine (*Source:* Gamesa's website, 2011[10])

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

The full implementation of proposed project activity will generate the estimated annual reductions as related in Table 5 below.

Table 5: Project Emissions Reductions Estimation

Years*	**Annual estimation of emission reductions in tonnes of CO_2e**

[10] Available at: <http://www.gamesa.es/en/products-and-services/wind-turbines/gamesa-g90-20-mw-iia-en.html>.

2013	54,978
2014	54,978
2015	54,978
2016	54,978
2017	54,978
2018	54,978
2019	54,978
2020	54,978
2021	54,978
2022	54,978
Total estimated reductions (tonnes of CO_2e)	**549,780**
Total number of crediting years	10
Annual average over the crediting period of estimated reductions (tonnes of CO_2e)	54,978

**From January, 01st, 2013 to December, 31st 2022*

A.4.5. Public funding of the project activity:

This project does not receive any public funding and it is not a diversion of ODA.

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:

ACM0002 - "*Consolidated baseline methodology for grid-connected electricity generation from renewable sources*" (Version 12.3.0).

- Tool to calculate the emission factor for an electricity system (version 2.2.1);
- Tool for the demonstration and assessment of additionality (version 6.0.0);
- Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion (version 2);
- Combined tool to identify the baseline scenario and demonstrate additionality (version 4.0.0).

The *Combined tool to identify the baseline scenario and demonstrate additionality* and the *Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion* are not applicable to the project activity, and therefore are not used.

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

The applicability conditions of ACM0002 are all fulfilled by the proposed project activity as further detailed below.

According to this methodology, it *is applicable to grid-connected renewable power generation project activities that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).*

The proposed project activity comprises three greenfield plants corresponding to option a).

The methodology also provides the following conditions:

- *The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;*

The proposed project activity is the installation of three new wind power plants.

- *In the case of capacity additions, retrofits or replacements (except for capacity addition projects for which the electricity generation of the existing power plant(s) or unit(s) is not affected: the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity addition or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity;*

Not applicable. The proposed project activity does not correspond to a capacity addition, retrofit or replacement.

- *In case of hydro power plants, at least one of the following conditions must apply:*
  - *The project activity is implemented in an existing single or multiple reservoirs, with no change in the volume of any of the reservoirs after the implementation of the project activity; or*
  - *The project activity is implemented in an existing single or multiple reservoirs, where the volume of any of reservoirs is increased and the power density of each reservoir, as per definitions given in the Project Emissions section, is greater than 4 W/m^2 after the implementation of the project activity; or*
  - *The project activity results in new single or multiple reservoirs and the power density of each reservoir, as per definitions given in the Project Emissions section, is greater than 4 W/m^2 after the implementation of the project activity.*

Not applicable. The proposed project activity does not correspond to a hydropower plant.

- *In case of hydro power plants using multiple reservoirs where the power density of any of the reservoirs is lower than 4 W/m^2 after the implementation of the project activity all of the following conditions must apply:*
  - *The power density calculated for the entire project activity using equation 5 is greater than 4 W/m^2;*

- *All reservoirs and hydropower plants are located at the same river and where are designed together to function as an integrated project that collectively constitutes the generation capacity of the combined power plant;*
- *The water flow between the multiple reservoirs is not used any other hydropower unit which is not a part of the project activity*
- *The total installed capacity of the power units, which are driven using water from the reservoirs with a power density lower than 4 W/m^2, is lower than 15 MW;*
- *Total installed capacity of the power units, which are driven using water from reservoirs with power density lower than 4 W/m^2, is less than 10% of the total installed capacity of the project activity from multiple reservoirs.*

Not applicable. The proposed project activity does not correspond to a hydropower plant.

Finally, the methodology has the following restrictions – *i.e.* project activities may not be applicable in the following cases:

- *Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site;*
- *Biomass fired power plants;*
- *A hydro power plant that result in the creation of new single reservoir or in the increase in an existing single reservoir where the power density of the reservoir is less than 4 W/m^2.*

The project is still applicable for the use of ACM0002 since it does not correspond to any of the restrictions listed above. In addition to the applicability conditions of the ACM0002 methodology, the applicability conditions of the tools used must also be assessed.

In order to estimate the baseline emissions occurring after the implementation of the proposed project activity the "*Tool to calculate the emission factor for an electricity system*" is used. This tool provides the steps required to estimate the CO_2 emission factor, which consists of a "*combined margin*", for the displacement of electricity generated by plants connected to an electric grid.

As further described below in section B.6.1, off-grid power plants are not considered. Hence, the requirements of Annex 2 of the tool, referring to the applicability conditions that shall be met when this kind of plants are considered, is not applicable. Besides, the Brazilian Electric System is neither partially nor totally located in any Annex-I country.

In this sense, it can be concluded that there are no applicability conditions preventing the use of this tool to estimate the CO_2 emission factor of the Brazilian Electricity System in the context of the proposed project activity.

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

According to ACM0002, *the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to*.

On May 26th, 2008, the Brazilian Designated Authority published Resolution #8[11] defining the Brazilian Interconnected Grid as a single system covering all five geographical regions of the country (North, Northeast, South, Southeast and Midwest).

The figure below is a representation of the project boundary.

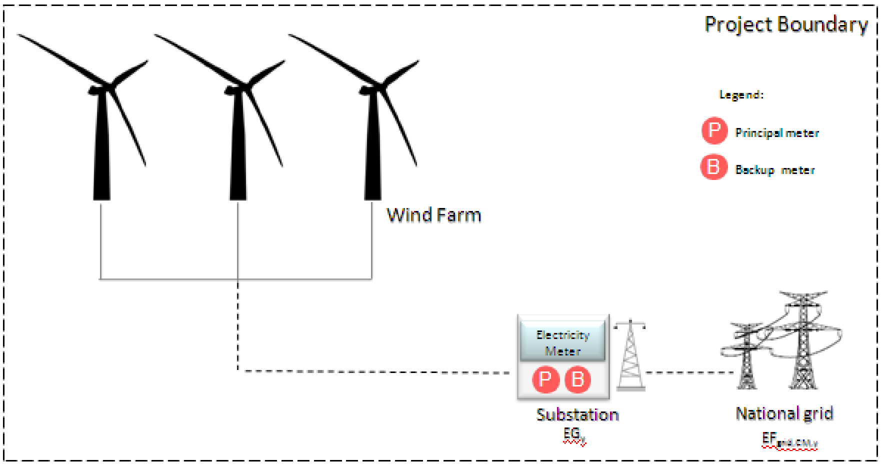

Figure 4: Project boundary

The greenhouse gases and emission sources included in or excluded from the project boundary are shown in the table below.

Table 6: Emissions sources included or excluded in the project boundary

	Source	*Gas*	*Included?*	*Justification/Explanation*
Baseline	CO_2 emissions from electricity generation in fossil fuel fired 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 of CH_4 and CO_2 from non-condensable gases contained in geothermal steam.	Not applicable.		
	CO_2 emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants	Not applicable.		
	For hydro power plants, emissions of CH_4 from the reservoir.	Not applicable.		

[11] Comissão Interministerial de Mudança Global do Clima (CIMGC). Available at: <http://www.mct.gov.br/upd_blob/0024/24719.pdf>.

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

The project activity is the installation of three new grid-connected renewable power plants/units. Therefore, according to ACM0002, 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 as described in the "Tool to calculate the emission factor for an electricity system"*.

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 "Glossary of CDM terms" states that the start date of a CDM project activity is: "*the earliest date at which either the implementation or construction or real action of a project activity begins*". Therefore, the identified starting date of the proposed project activity is 09/08/2011, which represents the date when the Power Purchase Agreements (PPA) of *REB Cassino I, II* and *III* were signed. For details on how the project starting date was identified please refer to Section C.1.1.

In addition, according to the "*Guidelines in the demonstration and assessment of prior consideration of the CDM*" (Annex 22, EB 49) for projects activities with a starting date on or after 02 August 2008, Project Participants must notify the host country Designated National Authority (DNA) and the UNFCCC secretariat of their intention to seek CDM status within six months of the project activity start date.

As identified above, the project starting date is August, 09th 2011; therefore Project Participants forwarded the Prior Consideration of the CDM Form on August, 25th 2010 to the UNFCCC secretariat and the Brazilian DN*A (CIMGC – Comissão Interministerial de Mudança Global do Clima)* in order to guarantee the CDM status for the wind power plants presented in this project activity.

Besides, Project Participants held a timeline for the wind power plants with the main dates of actions for the project implementation (Table 7).

Table 7: Actions related to EOL REB *Cassino I, II* and *III* wind power plants implementation.

Actions	***EOL REB Cassino I, II and III***
Power Purchase Agreement (PPA)	09/08/2011
Construction Permit Issuance	20/10/2011
Alteration in the wind power plants	26/01/2012

configuration	
Major Equipment Orders	15/02/2012
Starting Date of Construction	01/04/2012
*Financing Agreement**	01/09/2012
*Starting date of operation**	01/01/2013

* Estimated

The additionality of the proposed project activities will be assessed and demonstrated trough the application of the "*Tool for the demonstration and assessment of additionality*". This tool provides 4 steps to determine whether the project activity is additional or not, which are below further detailed.

Step 1. Identification of alternatives to the project activity consistent with current laws and regulation

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

Scenario 1: continuation of the current (previous) situation of electricity supplied by the Brazilian Interconnected Grid.

Scenario 2: The proposed project activity undertaken without being registered as a CDM project activity.

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

Both alternative scenarios identified above are in compliance with all regulations according the following entities: National Electric System Operator (ONS from the Portuguese *Operador Nacional do Sistema Elétrico*), Electricity Regulatory Agency (ANEEL from the Portuguese *Agência Nacional de Energia Elétrica*), *Rio Grande do Sul* State Environmental Agency (*FEPAM* – from the Portuguese *Fundação Estadual de Proteção Ambiental Henrique Luiz Roessler)* and the CDM Executive Board.

In order to obtained detailed information about the regulations that the project activity and the proposed scenarios are in compliance with Brazilian Regulations in electrical and environmental sectors, refer to Section B.7.2 – *Description of the monitoring plan* – and Section D.1 – *Documentation on the analysis of the environment impacts, including transboudary impact* – above which describe the procedures established by *ONS* applied by the project activity and the environmental norms and laws that the project activity complies to, respectively.

SATISFIED/PASS – Proceed to Step 2

Step 2. Investment analysis

Sub-step 2a. Determine appropriate analysis method:

Additionality is demonstrated through an investment benchmark analysis (option III). Options I and II are not applicable to the proposed project activity considering the following:

Option I – both the CDM project activity and the alternatives identified in Step 1 generate financial and economic benefits other than CDM related income.

Option II – the implementation of other project types of renewable energy generation - *i.e.* cogeneration or small hydro power plant projects - are not potential alternatives in the site where the project is planned.

In addition, in accordance with paragraph 19, Annex 5, EB 62, the benchmark analysis was identified as the most appropriate method to demonstrate the additionality of the proposed CDM Project Activity since the alternative to the implementation of the wind power plant is the supply of electricity from the grid.

The financial indicator identified for the project activity is the Internal Rate of Return (IRR) calculated in the project cash-flow. The IRR here presented is compared to the appropriate benchmark of the electric sector, which is the Weighted Average Cost of Capital (WACC).

Sub-step 2c: Calculation and comparison of financial indicators

The first significant commitment towards the implementation of the project happened in August, 2011, when the Power Purchase Agreement (PPA) was signed. Therefore, the most recent information is going to be used to estimate the WACC of the sector, as of today – *i.e.* July, 2011. The rationale of the WACC and financial indicator calculations is presented below. The assumptions hereinafter described follow the guidance and rationale presented in the "*Guidelines on the assessment of investment analysis*" (version 05).

Weighted Average Cost of Capital (WACC)

The weighted-average cost of capital (WACC) is a rate used to discount business cash flows and takes into consideration the cost of debt and the cost of equity of a typical investor in the sector of the project activity. The benchmark can be applied to the cash flow of the project as a discount rate when calculating the net present value (NPV) of the same, or simply by comparing its value to the internal rate of return (IRR) of the project (in accordance with paragraph 12, Annex 5, EB 62). The WACC considers that shareholders expect compensation towards the projected risk of investing resources in a specific sector or industry in a particular country.

The WACC calculation is based on parameters that are standard in the market, considers the specific characteristics of the project type, and is not linked to the subjective profitability expectation or risk profile of this particular project developer. Once a wind power potential is discovered, any corporate entity is able to obtain the authorization from the government to build a wind power plant. In addition to that, even after the project proponent obtains such authorization, it can be negotiated afterwards. Therefore, the use a sectorial benchmark is applicable as per the guidance provided in paragraph 13, Annex 5, EB 62.

The WACC of the sector considered is the one calculated for 2011 – *i.e.* financial analysis completed – and is equal to 10.74%. This value was calculated through the formula below:

$$WACC = Wd \times Kd + We \times Ke$$

We and **Wd** are, respectively, the weights of equity and debt typically observed at the sector. **We** is of 32.3%, and **Wd** of 67.7%. These numbers derive from the typical leverage of similar projects in the sector in Brazil, based on the rules for available long term loans from Brazilian Development Bank (BNDES - from the Portuguese *Banco Nacional de Desenvolvimento Econômico e Social*)[12]. BNDES is the major provider of long-term loans in the country; it supplies the financing for small to large scale projects. Long-term loans are scarcely provided by commercial banks, and in general, these entities do not have competitive rates compared to the BNDES. The use of BNDES' structure is in accordance with paragraph 18, Annex 5, EB62, since it represents the *typical debt/equity finance structure observed in the sector*.

Kd is the cost of debt, which is observed in the market related to the project activity, and which already accounts for the tax benefits of contracting debts In the **Kd** calculation, the marginal tax rate (**t**) is multiplied by the Cost of debt and then by the debt to total cost of capital ratio to ascertain the debt portion of the WACC formula. In the case of Brazil, and specifically to energy projects, this tax factor could either be 34% (actual profit) or 0% (presumed profit). This is decided by the specific type of project and tax regime under which it sits. In the case of the proposed project activity, the 0% tax factor applies. This method for calculating the corporate income tax and social contribution is called Presumed Profit (detailed explanations are provided while calculating financial indicator below).

The proposed project activity is a post-tax cash flow. Thus, it must be compared against a sectorial post-tax benchmark (Weighted Average Cost of Capital - WACC). The companies opting for the Presumed Profit System do not benefit from the cash and non-cash items deductions (as further detailed in the financial indicator calculation section below). Therefore, in the calculation for the cost of debt the marginal tax is zero. This results in a pre-tax WACC percentage equal to a post-tax WACC percentage, as follows:

$$\text{Post-tax Rate} = (\text{Pre-tax Rate} \times (1 - \text{Marginal Tax}))$$

Therefore, if marginal tax is 0 (zero) (Presumed Profit scheme), Post-tax rate is equal to Pre-tax rate. Thus, the post-tax Cost of Debt is added in the WACC calculation reaching a post tax WACC in accordance with the post-tax cash flow as recommended in paragraph 11 of Annex 5, EB 62.

The nominal rate achieved for debt is used to calculate nominal WACC, which is used to discount nominal cash flow projections. In order to achieve the real cash flow rate, the inflation targeting figure (d) for Brazil is reduced from the nominal figure achieved. The (d) is obtained from the Brazilian Central Bank (www.bcb.gov.br) and has experienced very little variance in the past 5 years.

Kd is calculated through the following equation:

$$Kd = [1 + (a+b+c) \times (1-t)] / [(1+d) - 1]$$

Values used in the cost of debt calculation are presented in Table 8.

Table 8: Cost of debt (Kd) calculation

Cost of Debt (Kd)	
(a) Financial cost[13]	6.27%
(b) BNDES fee[14]	0.90%
(c) Credit risk rate[15]	3.57%
(a+b+c) Pre-Cost of Debt	10.74%
(t) Marginal tax rate[16]	0.00
(d) Inflation forecast[17]	4.50%
After tax Cost of Debt	5.97%p.a.

According to the table above, **Kd** is of 5.97%.

Ke is the cost of equity. As per option b) provided in the paragraph 15 of Annex 5, EB 62, it was estimated using the best financial practices through the Capital Asset Pricing Model (CAPM), mentioned as an appropriate method to determine benchmarks in guidance 14, Annex 5, EB 62. This method considers the risk associated in investing in the Brazilian electricity market, which has become increasingly competitive in the last years mainly due the electricity auctions conducted by the government.

The following equation is used to calculate **Ke**:

$$Ke = [(1+ Rf) /(1+I)-1] + \beta \times (Rm-Rf) + Rc$$

Rf stands for the risk free rate. The risk-free rate used for **Ke** calculation was a long term bond rate. This bond was issued by the Brazilian government, denominated in US dollars. Therefore the rate includes the Brazilian country risk. There is a higher risk associated to investing in Brazil, or in Brazilian bonds, compared to investing in a mature market such as the United States. This risk is reflected in higher returns expected on Brazilian government bonds compared to the mature markets government bonds. In considering the Brazilian government bond, this premium for a higher risk is captured in our calculations.

[13] BNDES. Available at: http://www.bndes.gov.br/SiteBNDES/bndes/bndes_pt/Institucional/Apoio_Financeiro/Custos_Financeiros/Taxa_de_Juros_de_Longo_Prazo_TJLP/index.html
[14] BNDES. Available at: http://www.bndes.gov.br/SiteBNDES/bndes/bndes_pt/Institucional/Apoio_Financeiro/Produtos/FINEM/meio_ambiente.html
[15] BNDES. Available at: http://www.bndes.gov.br/SiteBNDES/bndes/bndes_pt/Institucional/Apoio_Financeiro/Produtos/FINEM/meio_ambiente.html
[16] Secretariat of the Federal Revenue of Brazil. Available at: http://www.receita.fazenda.gov.br/Aliquotas/ContribCsll/Aliquotas.htm http://www.receita.fazenda.gov.br/Aliquotas/ContribPj.htm
[17] Central Bank of Brazil. Available at: http://www.bcb.gov.br/pec/metas/InflationTargetingTable.pdf

In order to adjust the risk-free rate (**Rf**) to the inflation adjusted rate, the expected inflation rate (for the United States) (**π'**) is reduced. The inflation is calculated based on the treasury through spot TIPS (Treasury Inflation Protected Securities) which are readily quoted in the market. There is no need to adjust for Brazil's expected inflation when dealing with a hurdle rate in real terms.

Beta, or **β,** stands for the average sensitivity of comparable companies in that industry to movements in the underlying market. **β** derives from the correlation between returns of US companies from the sector and the performance of the returns of the US market. **β** has been adjusted to the leverage of Brazilian companies in the sector, reflecting both structural and financial risks. **β** adjusts the market premium to the sector.

Rm represents the market premium, or higher return, expected by market participants in light of historical spreads attained from investing in equities versus risk free assets such as government bond rates, investors require a higher return when investing in private companies. The market premium is estimated based on the historical difference between the S&P 500 returns and the long term US bonds returns. The spread over the risk-free rate is the average of the difference between those returns.

Note that in the formula above there is the factor EMBI+ (Emerging Markets Bond Index Plus), considers as the country risk premium, **Rc**. This factor accounts for the country or sovereign risk embedded in the debt of a country. Assuming that relative to the US risk-free debt market EMBI+ is 0, then Brazil's EMBI+ would calculate for the added or reduced risk relative of Brazils debt markets to the US.

Justification for the EMBI+ addition to the risk-free rate lies in the vast differences between the United States in such factors as credit risk, inflation history, politics, debt markets, and more. Ignoring these differences would result in the incorrect application of relevant environmental factors in the decision-making process of an investor in Brazil.

Values used in the cost of equity calculation are presented in Table 9.

Table 9: Cost of equity (Ke) calculation

Cost of Equity (Ke) – CAPM	
(Rf) Risk-free rate[18]	4.25%
(Rm) Equity risk premium[19]	6.03%
(Rc) Estimated country risk premium[20]	2.37%
(β) Sectorial Risk[21]	2.70%
(I) US expected inflation[22]	2.15%
Cost of Equity with Brazilian Country Risk (p.a.)	20.73%p.a.

[18]Damodaran website. Available at: http://pages.stern.nyu.edu/~adamodar/
[19] Damodaran website. Available at: http://pages.stern.nyu.edu/~adamodar/
[20]JP Morgan. Available at: www.ipeadata.gov.br
[21] Damodaran website. Available at: http://pages.stern.nyu.edu/~adamodar/
[22] Federal Reserve. Available at: http://www.federalreserve.gov/econresdata/researchdata.htm

According to the table above, **Ke** is of 20.73%. As

Plugging these numbers into WACC formulae:

$$WACC = 67.7\% \times 5.97\% + 32.3\% \times 20.73\% = 10.74\%$$

Each assumption made and all data used to estimate the benchmark has been presented to the DOE. The spreadsheet used for calculation of the WACC is available with the Project Participants and has also been provided to the DOE. For complete reference of the data used to estimate the benchmark please refer to this spreadsheet, which is also attached to this PDD.

Financial Indicator, Internal rate of return (IRR)

As mentioned above, the financial indicator identified for the Project Activity is the project Internal Rate of Return (IRR). According to the Guidance 3 of the "*Guidelines on the Assessment of Investment Analysis*" (EB 62, Annex 5), the period of assessment should not be limited to the proposed crediting period of the CDM project activity. The calculation shall as a preference reflects the period of the wind power plants expected operational life, which is estimated in 20 years. Furthermore, the auction public notice states that the electric power negotiated at the 2nd Alternative Sources Auction (from the Portuguese *2º Leilão de Fontes Alterantivas – LFA*) will present a PPA which lasts 20 years. Therefore, considering both the expected operational lifetime of the aerogenerators and the period estimated in the PPA that the electric power will be negotiated and sold, EOL *REB Cassino I, II* and *III* cash flow, which considers the three sites, will be of 20 years. The cash flow shows that the IRR of the project is 6.60%. Sources of all input values used to estimate the IRR of the project are detailed in the IRR calculation spreadsheet, which is also attached to this PDD.

In Brazil, there are two income taxes: (a) the corporate income tax (IRPJ) and (b) the social contribution tax on profits (CSLL) (see KPMG report "Investment in Brazil"5[23]). There are also three methods provided by legislation to calculate corporate income tax and social contribution tax due on profits: Actual Profit, Presumed Profit and Arbitrated Profit.

The paragraph 6 from the "Guidelines on the Assessment of Investment Analysis" (EB 62, Annex 5) states that: "Input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant". For the Presumed Profit eligibility, corporate entities revenues must be under R$ 48 million per year (Article #13, Law #9.718/1998)[24]. Since EOL *REB Cassino I, II* and *III* revenues are under R$ 48 million per year, they were able to choose for the Presumed Profit system.

For the Presumed Profit system, 8% of gross sales in addition to financial revenues/earnings is used as basis for the income tax calculation. To this figure a 25% rate is applied resulting in the final income tax

[23] KPMG. Investment in Brazil: tax. São Paulo: Escrituras Editora, 2008. Publicly available in English at: <http://www.kpmg.com.br/publicacoes/livros_tecnicos/Investment_in_Brazil10_out08.pdf>.

[24] Publicly available in Portuguese at: <http://www.receita.fazenda.gov.br/legislacao/leis/Ant2001/lei971898.htm>.

value. For the social contribution calculation 12% of gross sales in addition to financial revenues/earnings is used as a basis for the calculation. To this figure a 9% rate is applied resulting in the final social contribution value as per Article #518 of the Federal Decree #3000, dated 26 March 1999. Please, see Table 10 as an example.

Table 10: Income Tax and Social Contribution (illustrative calculation)

Income Tax	**$**
Gross Sales	1.000
Presumed Profit for income tax (8%)	80
Financial revenue	500
Total Presumed for income tax	580
Income tax due (app. 25%)	145

Social contribution	**$**
Gross Sales	1.000
Presumed Profit for social contribution (12%)	120
Financial revenue	500
Total Presumed Profit for social contribution	620
Social contribution due (9%)	55.80

Source: KPMG. "Investment in Brazil: tax." (2008) [23].

Therefore, a corporate entity that opts for the presumed profit scheme pays the same rate of income tax and social contribution regardless of its costs, expenses, other cash items such as payable interest and non-cash items such as depreciation, because these elements are not deductable under this system.

The relevant assumptions made are in accordance with the *Guidlines on the Assessment of Investment Analysis* (version 05). The table presented below provides a summary of the main input values as well as a brief justification for their use, for each plant. The final results are also presented in the table below.

Table 11: Description and justification of data used in the investment analysis and comparison between Project's IRR and WACC of the sector

Parameter	***Wind Power Plants***			***Justification/source of information used***
	EOL REB Cassino I	***EOL REB Cassino II***	***EOL REB Cassino III***	
Installed Capacity (MW)	20	20	22	Based on the project design of the wind farms. The wind certification was performed by Garrad Hassen Ibérica S.L.U. (please refer to the document Cassino Energy Production Assessment - from the Portuguese E*studo de Avaliação da Produção de Energia do Núcleo de 3 Parques – Cassino*).
Guaranteed power output (MW)	8.85	8.70	9.83	Value estimated by the wind certification company at 50% of probability (P50). This range of probability represents 50:50 of chance of higher or lower generation of electricity by the plant. This is range is conservative. As

				an example, the financing institutions usually consider P90 for the financing agreement.
Plant Load Factor (%)	44.27	43.49	44.67	Determined according to the study performed by Garrad Hassen Ibérica S.L.U. (please refer to the document Cassino Energy Production Assessment - from the Portuguese E*studo de Avaliação da Produção de Energia*) *do Núcleo de 3 Parques – Cassino*). This parameter is used to estimate the electricity generated by the plant.
PPA price (BRL/MWh)	136.59	136.60	136.58	This value represents the price of the PPA, as submitted and obtained by the project owner in the 2nd Alternative Sources Auction (from the Portuguese *2º Leilão de Fontes Alterantivas – LFA*). Please refer to the cash flow spreadsheet of the wind power plants for the exact value used. The tariff obtained by the project sponsor is publicly available at www.ccee.org.br.
TUSD fee (BRL/kW.month)	100% of 3.01			In Brazil, electricity producers using renewable sources receive a 50% discount in the Tariff for the Use of the Electric Distribution Systems - TUSD fee (from the Portuguese *Tarifa de Uso dos Sistemas Elétricos de Distribuição*). This discount aims at boost investments in renewable energy projects and shall be considered as a Type E- policy as defined by Annex 3, EB 22. Additionally, according to this clarification, type E-policies[25] do not need to be considered in the development of the baseline scenario if implemented after November, 11th 2001. The reduction in the TUSD fee was regulated by the Law 10,438, dated April, 26th 2002[26]. Therefore, the discount is not going to be taken into account.
ANEEL fee – TFSEE (BRL/kW)	385.73			It corresponds to the value fixed by ANEEL regarding the Supervision Tax on Electricity Power Services (from the Portuguese *Taxa de Ficalização de Serviços de Energia Elétrica – TFSEE)* implemented by the Law nr. 9,427, dated December, 12th 1996 and regulated by the Decree nr. 2,410 issued on November, 28th 1997. The TFSEE aims to compose the ANEEL revenue in order to cover its administrative and operational costs. The Dispatch nr. 360, dated February, 4th 2011 defined the most recently available data for the *TFSEE* value, i.e., for 2011.
CCEE fee	0.102			The *CCEE* fee is based on paragraph 4 of article 4 of Law

[25] From paragraph 6.b) of Annex 3, EB 22 Type E- policies are *National and/or sectoral policies or regulations that give comparative advantages to less emissions-intensive technologies over more emissions-intensive technologies (e.g. public subsidies to promote the diffusion of renewable energy or to finance energy efficiency programs).*
[26] Available in Portuguese at <http://www.aneel.gov.br/cedoc/lei200210438.pdf>. Accessed on 28/04/2011.

(BRL/MWh)		nr. 10,848, dated March 15th 2004 and regulated by the Decree nr. 5,177 dated August, 12th 2004. The fee varies year to year and is estimated dividing the *CCEE* costs (operational and investment) by the electricity produced and dispatched in the Interconnected Electricity System (from the Portuguese *Sistema Interligado Nacional – SIN*) (MWh) dividing proportionally by each energy producer. Please, refer to the attached spreadsheet "*Premissas*" to accesses the information.
ONS fee (BRL/kW)	0.29	Please, refer to the attached spreadsheet "*Premissas*" to access the ONS fee value.
Land (% of the gross revenue)	1.8%	The land rent was determined by a contract signed between the land owner and the energy producer company (from the Portuguese *Compromisso Irrevogável e Irrevitável de Uso de Propriedade*).
Insurance	0.5% of Total CAPEX	The value applied was proposed according to the project participant experience and studies developed at the sector. Please, refer to the attached spreadsheet "*Premissas*" to accesses the information.
Administration Expenses (BRL)	883,118	The Administration Expenses is determined based on quotations provided by the suppliers and Project Participant estimative according to the sector.
O&M (years 3, 4 and 5) (1,000BRL)	2,665	The O&M for the 3rd, 4th and 5th year is determined in the quotations issued from the manufacturers (GAMESA).
O&M (year 5+) (1,000BRL)	3,030	The O&M for the 5th year onwards is determined in the quotations issued from the manufacturers (GAMESA).
BOP Maintenance (BRL)	592,100	The investment considers the aerogeneratos and the BOP and is based on quotations issued from the manufacturers (GAMESA).
Investment (WTG + BOP) (1,000BRL)	245,376	The investment considers the aerogeneratos and the BOP and is based on quotations issued from the manufacturers (GAMESA).
IRR (%)	6.60	**See the IRR´s spreadsheet attached.**
WACC (%)	***10.74***	**See the WACC´s spreadsheet attached.**

The project IRR, as presented to the DOE, is 6.60%. This number shows that the IRR of the project is lower than the WACC of the sector – 10.74% – the benchmark. Hence, it is evident that the project activity is not financially attractive to the investor (Table 11).

The cash flow of the project activity, containing the calculation of the project IRR was provided to the DOE in a separate annex to this CDM-PDD. All documents used as evidence for the values presented in the project cash flow were submitted to the DOE and are available with the Project Participants.

Sub-step 2d: Sensitivity analysis

A sensitivity analysis was conducted by altering the following parameters:

• Increase in electricity generation, which may increase the project revenues;

• Increase in electricity tariff, which may also influence project revenues;

• Reduction in expected investments;

• Reduction in O&M costs.

Those parameters were selected as being the most likely to fluctuate over time. In addition, these variables constitute more than 20% of either total project costs or total project revenues (Guidance 20 of Annex 5, EB62). As verified at the wind power plant cash flows the revenue is obtained exclusively from the energy generation. Therefore the sensitivity analysis carried out considering the variation in the electricity generation and the electricity tariff corresponds to more than 20% of the total revenues.

The investment, also considered in the sensitivity analysis, corresponds to the estimative costs of the aerogenerators and BoP according to the Gamesa proposal (as specified at Table 11 above) and represents approximately 70% of the total costs of a wind power plant.

The O&M costs of *REB Cassino I, II and III* wind power plants correspond to approximately 32%of the total operating expenses and therefore should be included in the sensitivity analysis of the project activity.

Financial analyses were performed altering each of these parameters by 10%, and assessing what was the impact on project’s IRR (Guidance 21 of Annex 5, EB62). The results of the sensitivity analysis, considering a variation of the selected parameters by 10%, are presented below in Table 12.

Table 12: Sensitivity analysis

Scenario	**IRR %** ***EOL REB Cassino I, II and III***
Original	6.60
Increase in electricity generation	8.27
Increase in the tariff	8.28
Reduction in project investment	8.08
Reduction in O&M costs	6.74

As it can be seen from the results presented above, the IRR of the projects do not surpass the benchmark considering the variation of the selected parameters by 10%. Yet, a simulation was conducted in order to verify possible scenarios where the IRR of each plant would equal the benchmark. The results for the plants is presented and discussed below (Table 13).

Table 13: Scenarios when IRR of the project equals the benchmark (10.74%) – *EOL REB Cassino I, II* and *III*.

	IRR %	***PRICE (BRL/MWh)***	***INVESTMENT (1,000BRL/MWh)***	***ELECTRICITY (MWh/yr)***	***Variation (%)***
Original	6.60	136.59	245,376	239,843	N/A
Price	10.74	171.69	245,376	239,843	25.70
Investment	10.74	136.59	185,504	239,843	24.40
Electricity	10.74	136.59	245,376	301,483	25.70

The prices used in the analyses were taken from the results of the public auction conducted by the Chamber of Electrical Energy Commercialization (CCEE – *Câmara de Comercialização de Energia Elétrica*) in which the electricity to be dispatched by each plant was negotiated. According to CCEE *the criterion of the least tariff is used to define the winners of a given auction, that is, the winners of the auction shall be those bidders which offer electric power for the least price per Mega-Watt Hour to supply the demand envisaged by the Distributors*.

The result of a successful participation in this kind of public auction is the signature of a Power Purchase Agreement called CCEAR – Contract on Energy Commercialization in Regulated Market[27]. CCEAR's will have a duration of 20 years, will remain fixed throughout the years, and will only be adjusted accordingly to the Amplified Consumers Price Index (from the Portuguese *Índice de Preços ao Consumidor Amipliado - IPCA*), which is the official index that measures the inflation in Brazil. However, the cash flow was done without considering any variation due to inflation over the considered years. <u>Hence, no variation in the projects IRR can be expected to be associated to a possible increase in the price of electricity.</u>

The electricity generation is not expected to rise because the estimative is based on the guaranteed power as measured at the plants' site by a third party at 50% of probability (P50). As verified in the Wind Certification, the P50 estimative is the highest value when comparing the estimative at 75% and at 90% of probability, P75 and P90, respectively. As explained previously this range means that there is a 50:50 chance of a higher or lower generation of electricity generation by the plant. At this range, more wind is captured indicating and optimistic estimative. For a reference, financing institutions consider wind measurements at

[27] According to CCEE *the new model for the electric sector states that the commercialization of electric power is accomplished in two market ambiences: the Regulated Contracting Ambience – ACR (Ambiente de Contratação Regulada) and the Free Contracting Ambience –ACL (Ambiente de Contratação Livre). Contracting in the ACR is formalized by means of regulated, bilateral agreements, called Electric Power Commercialization Agreements within the Regulated Ambience (CCEAR – Contratos de Comercialização de Energia Elétrica no Ambiente Regulado) entered*

90% of probability (P90) as a conservative approach. In this sense, the P50 value applied to conduct the additionality analysis of the project activity is the most conservative. Furthermore, considering the new project IRR equal to the benchmark, the electricity generation would be 301,483 MWh/yr, which results in a plant load factor of more than 50% of the wind power plants, which surpass the value estimated by the Wind Certification. Therefore, an increase in projects revenues due to an increase in the electricity generation above the assumption presented in the cash-flows is not probable.

The total investment necessary to build the plants as it is presented in the cash flows correspond to the estimated investment cost made by the project owner. Specifically for this project activity the project owner signed an EPC contract. This type of contract fixes the price to build a plant and any variation either in favor or against the project is in charge of the construction company which means that no variation in project IRR can be attributed to a variation in the investment costs.

Related to the O&M costs, they were not included in the table of the sensitivity analysis where it is conducted the project's IRR variation until reaches the benchmark since it was observed that, even considering the O&M costs of the wind power plants equal to zero, the projects' IRR would not reach the benchmark (10.74%). The analysis was conducted and according to the project cash flow, for an O&M costs equal to zero, the IRR would be 7.95%. Therefore, a decrease in the O&M costs until the IRR projects reach the benchmark is not expected to occur.

However, it is important to mention that on January, 26th 2012 a new wind certification study was performed by Garrad Hassen and the wind power plants were optimized. This new wind certification shows that the electricity generated by the *REB Cassino I, II* and *III* is higher than the one applied in the investment analysis. Furthermore, project sponsor have already signed the EPC Contract and the investment was also updated. In order to demonstrate that the project activity remains additional, even considering the alterations in the electricity generations and in the total investment, a cash flow considering the updated parameters was performed. In addition, the electricity tariff and the O&M costs were updated considering the *IPCA* index until the date of the alterations of the wind power plants' configuration.

Table 14: Sensitivity analysis

	EOL REB Cassino I	***EOL REB Cassino II***	***EOL REB Cassino III***
Electricity generation	85,568	74,986	84,026
Electricity tariff (BRL/MWh)	149.38	149.39	149.37
Investment (BRL)	243,121,210		
BOP Maintenance (BRL/yr)	626,699		
O&M costs 3rd, 4th and 5th year (BRL/yr)	2,820,738		

into between Selling Agents (sellers, generators, independent producers or self-producers) and Purchasing Agents (distributors) which participate of electric power purchase and sale auctions.

O&M costs 6th year onwards (BRL/yr)	3,207,290
IRR project (%)	8.52

As verified above, even considering the alteration in the project configuration which resulted in the increase of the electricity generated by the wind power plants, a decrease in the investment costs and the adjustment of the electricity tariff and the O&M costs, the project activity IRR (8.52%) does not surpass the benchmark (10.74%) and therefore, the project remains additional.

Outcome

The IRR of the project activity without being registered as a CDM project is significantly below the sector benchmark, evidencing that project activity is not financially attractive to investor. Then, scenario 1 would be the most plausible alternative to the project activity, *i.e.* the continuation of the current situation with additional electricity supplied by the Brazilian Interconnected Grid.

SATISFIED/PASS – Proceed to Step 3

Step 3. Barrier analysis

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

Not applicable. Step 2 was applied in order to determine project's additionality.

Sub-step 3b. Show that the identified barriers would not prevent the implementation of at least one of the alternatives:

Not applicable. Step 2 was used to determine project's additionality.

SATISFIED/PASS – Proceed to Step 4

Step 4. Common practice analysis

Sub-step 4a. Analyze other activities similar to the proposed project activity:

Amongst the operational plants in the country, wind power plants represent only 1.02 (Figure 5).

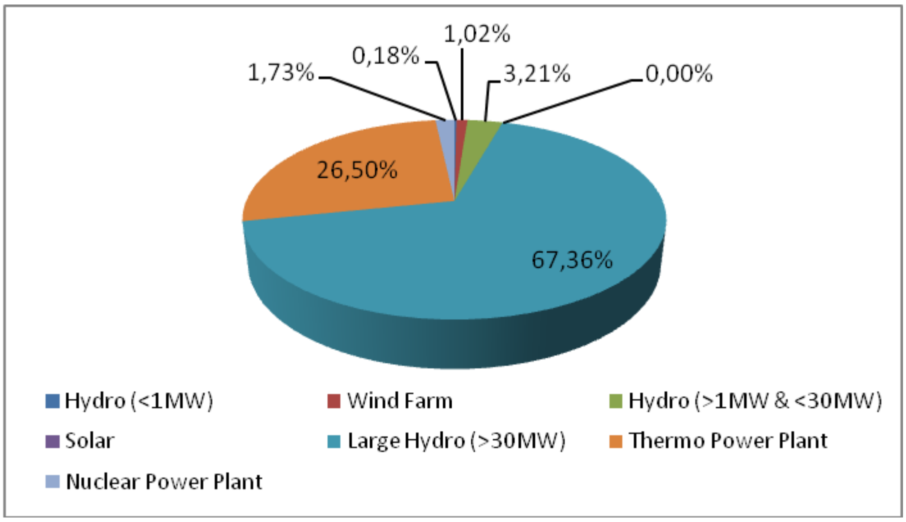

Figure 5: Brazil's generation capacity per type of energy source. (Source: ANEEL (2011)[28])

According to the additionality tool (version 6.0.0), "*projects are considered similar 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 regulatory framework, investment climate, access to technology, access to financing, etc*". Thus, the steps proposed in the "*Guidelines on Common Practice*" (Annex 12, EB 63), also included in the new version of the additionality tool approved by the board in its 65th Meeting, will be considered in order to identify the projects that are similar to proposed project activity under consideration.

Considering the definitions provided by the above mentioned guidelines as well as the project specific characteristics, the following criteria is considered while assessing the common practice:

(i). ***Applicable geographical region:*** Brazil has an extension of 8,514,876.599 square kilometres[29] (with over 4,000 km distance in the north-south as well as in the east-west axis) and 6 distinct climate regions: sub-tropical, semi-arid, equatorial, tropical, highland-tropical and Atlantic-tropical (humid tropical). These climatic variations obviously have a strong influence in the technical aspects related to the implementation of wind farms.

According to the Brazilian Electricity Regulatory Agency all regions of the country have some potential to generate electricity using wind, however the highest wind power potential is located in the northeast region of the country, where the majority of operational projects are located (Figure 6). However, in line with the recommendation of the guidelines, the assessment will be conducted considering projects located in Brazil.

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[28] ANEEL (2011). Banco de Informações de Geração - BIG. Capacidade de Geração do Brasil. http://www.aneel.gov.br/aplicacoes/capacidadebrasil/capacidadebrasil.asp. Accessed on October, 14th 2011.

[29] Available at: http://www.ibge.gov.br/home/geociencias/areaterritorial/principal.shtm.

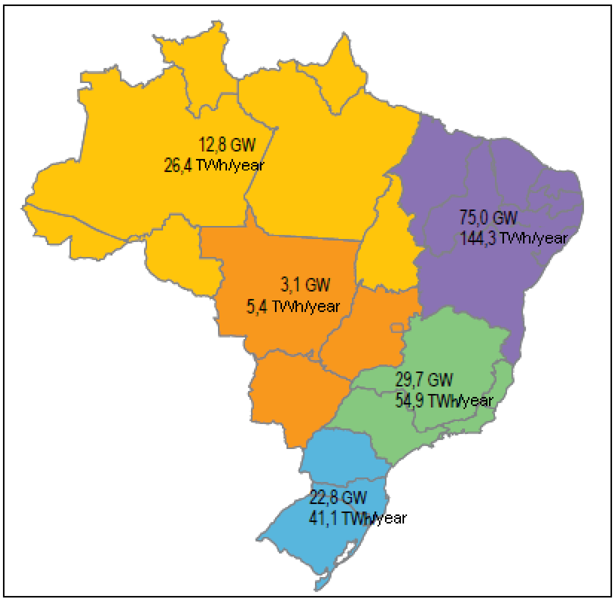

Figure 6: Brazilian wind resource potential[30].

(ii). ***Measure***: The assessment will be done consistently with the purpose of the proposed project activity and its alternative baseline scenario, corresponding to item b) switch of technology with change of energy source. In other words, the electricity generation by wind power plants will displace electricity generated by other sources connected to the grid.

(iii). ***Output***: Only the grid connected power plants producing are going to be considered.

(iv). ***Different technologies:*** Within this criteria**,** the following aspects are going to be taken into consideration while conducting the common practice analysis:

(a) Energy source: given the particularities of wind power generation, only wind power plants are going to be considered;

(b) Legal regulations: Until the beginning of the 1990's, the energy sector was composed almost exclusively of state-owned companies. From 1995 onwards, due to the increase in international interest rates and the lack of state investment capacity, the government started the privatization process. However, by the end of 2000 results were still modest. Further initiatives, aiming to improve electric generation in the country, were taken from the late 1990's to 2003; however they did not attract new investment to the sector. In 2003 the recently elected government decided to fully review the electricity market institutional framework in order to boost investments in the electric energy sector. The market rules were changed and new institutions were created such as Energetic Research Company (in a free translation from the Portuguese *Empresa de Pesquisa Energética* – EPE) – an institution that would become responsible for the long term planning of the electricity sector with the role of evaluating, on a perennial basis, the safety of the supply of electric power –

[30] ANEEL - Agência Nacional de Energia Elétrica. **Atlas de energia elétrica do Brasil**. 3ed. – Brasília: Aneel, 2008. Available at <http://www.aneel.gov.br/biblioteca/EdicaoLivros2009atlas.cfm>.

and Chamber for the Commercialization of Electric Power (CCEE) – an institution to manage the commercialization of electric power within the interconnected system. This new structure was approved by the House of Representatives and published in March of 2004[31]. Given the new regulatory framework and investment climate only projects starting after March of 2004 will be considered similar to the proposed project activity;

(c) *Promotional Policies:* The Brazilian Federal Government has provided important incentives for wind electricity generation. One of the most recognized ones is the Alternative Electricity Sources Incentive Program (in a free translation from the Portuguese *Programa de Incentivo às Fontes Alternativas de Energia Elétrica – PROINFA*). The *PROINFA* was created through the Law # 10,438 dated April 26th, 2002. Among others, one of the initiative's goals was to increase the renewable energy sources share in the Brazilian electricity market, thus contributing to a greater environmental sustainability. In order to achieve such goals, the Brazilian government has designated the federal state-owned power utility *Eletrobrás* (*Centrais Elétricas Brasileiras S/A*) to act as the primary off-taker of electric energy generated by alternative energy facilities in Brazil, by entering into long-term Power Purchase Agreements with alternative energy power producers, at a guaranteed price of at least 80% of the average energy supply tariff charged to ultimate consumers. Also, the Brazilian Decree # 5,025 dated March 30th, 2004, which regulates the Law # 10,438, states that *PROINFA* aims for the reduction of greenhouse gases as established by the United Nations Framework Convention on Climate Change (UNFCCC) under Kyoto Protocol, contributing to the sustainable development. Therefore, the program is clearly a "Type E-" policy.

Sub-step 4b. Discuss any similar options that are occurring:

Considering information above, Project Participants applied the steps provided by the "*Guidelines on Common Practice*" (Annex 12, EB 63) to perform the common practice analysis, as further detailed below.

Step 1: *Calculate applicable output range as +/-50% of the design output or capacity of the proposed project activity.*

Only plants with installed capacity from 50% lower to 50% higher[32] than the wind power plants installed capacity considered in this CDM Project Activity will be analyzed. Considering that the project activity encompasses three wind power plants, EOL REB *Cassino I*, EOL REB *Cassino II* and EOL REB *Cassino III*, with 22 MW, 20 MW and 22 MW of installed capacity, respectively, the range which is going to be taken into consideration is between 10 and 33 MW. Also, the three plants together sum 64 MW of installed capacity. Hence, for conservative reasons the analysis comprising plants with an installed capacity between 32 and 96 MW will also be conducted.

[31] http://www.planalto.gov.br/CCIVIL/_Ato2004-2006/2004/Lei/L10.848.htm.

[32] This range was deemed acceptable by the Board as per the request for review of the CDM Project Activity Ref.# 2010. Document is available at <http://cdm.unfccc.int/Projects/DB/TUEV-SUED1218108477.61/Review/0TR4ZO639HTMUB7EMY2AYRD5BSWR0I/display>.

Step 2: *In the applicable geographical area, identify all plants that deliver the same output or capacity, within the applicable output range calculated in Step 1, as the proposed project activity and have started commercial operation before the start date of the project. Note their number* N_{all}*. Registered CDM project activities and project activities undergoing validation shall not be included in this step;*

The ANEEL database was checked[33]. The result is that 24 wind power plants considering the range between 10 and 33 MW and the range between 32 and 96 MW identified in Step 1, have started commercial operations before the start date of the project, *i.e.*, before August, 09th 2011. Furthermore, registered CDM projects or projects activities undergoing validation were not taking into account. Hence, $\boldsymbol{N_{all}}$ **= 18**.

Step 3: *Within plants identified in Step 2, identify those that apply technologies different that the technology applied in the proposed project activity. Note their number* N_{diff}*.*

Within the plants identified in the Step 3, considering the range between 10 and 33 MW of and the range from 32 to 96 MW of installed capacity, 17 received incentives from PROINFA (identified as a promotional policy, as explained above). *Eólica de Prainha* wind power plant started its commercial operation in 1999, *i.e.*, before the project starting date. However, as stated above, the wind power plant started the operations in a different market institutional framework and therefore is also characterized as a different technology when comparing to the proposed project activity. Hence, $\boldsymbol{N_{diff}}$ **= 18**.

Step 4: *Calculate factor* $F=1-N_{diff}/N_{all}$ *representing the share of plants using technology similar to the technology used in the proposed project activity in all plants that deliver the same output or capacity as the proposed project activity.*

The factor is ***F = 1- 18/18 = 0.00***. This factor represents the share of plants using a similar technology to the one used by the proposed project activity.

The proposed project activity is a "common practice" within a sector in the applicable geographical area if the factor F is greater than 0.2 and N_{all}*-*N_{diff} *is greater than 3.*

The factor determined above in *Step 4* is not greater than 0.2. Also $N_{all} – N_{diff}$ is not greater than 3. Hence, the proposed project activity cannot be considered a common practice in the applicable geographical area.

SATISFIED/PASS – Project is ADDITIONAL

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

[33] ANEEL (2011b). Fiscalização dos serviços de geração. Acompanhamento da expansão da oferta de geração de energia elétrica. Resumo geral do acompanhamento das usinas de geração elétrica – Version dated September 2011. Available at: http://www.aneel.gov.br/area.cfm?idArea=37&idPerfil=2. Accessed on October, 26th 2011

Emission Reductions (ER_y)

According to ACM0002 emission reductions by the proposed project activity are calculated as follows.

$$ER_y = BE_y - PE_y$$ **Equation 1**

Where,

ER_y = Emission reductions in year *y* (t CO_2e);

BE_y = Baseline emissions in year *y* (t CO_2);

PE_y = Project emissions in year *y* (t CO_2e).

Baseline emissions (BE_y)

Baseline emissions are calculated as follows:

$$BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$$ **Equation 2**

Where,

BE_y = Baseline emissions in year *y* (tCO_2);

$EG_{PJ,y}$ = 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);

$EF_{grid,CM,y}$ = 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).

For Greenfield projects as it is the case of the proposed project activity $EG_{PJ,y}$ is determined as follows.

$$EG_{PJ,y} = EG_{facility,y}$$ **Equation 3**

Where,

$EG_{PJ,y}$ = 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);

$EG_{facility,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* (MWh).

Explanations as to how the quantity of net electricity generation supplied by the project plants/units to the grid ($EG_{facility,y}$) was estimated, is presented below in section B.6.3. The calculation of the combined margin CO_2 emission factor for grid connected power generation ($EF_{grid,CM,y}$) follows, as recommended by ACM0002, the procedures established in the methodological tool "*Tool to calculate the emission factor for* *an electricity system*".

According to this tool Project Participants shall apply six steps to the baseline calculation as further detailed below.

- **STEP 1 -** Identify the relevant electric power system

According to the tool, "*If the DNA of the host country has published a delineation of the project electricity system and connected electricity systems, these delineations should be used. If such delineations are not available, project participants should define the project electricity system and any connected electricity system and justify and document their assumptions in the CDM-PDD*".

Brazilian DNA published Resolution #8, issued on May, 26th 2008, defining the Brazilian Interconnected Grid as a single system that covers all the five macro-geographical regions of the country (North, Northeast, South, Southeast and Midwest). Hence this figure will be used to calculate the baseline emission factor of the grid.

- **STEP 2** – Choose whether to include off-grid power plants in the project electricity system (optional).

Option I of the tool is chosen, which is to include in the calculation only grid power plants.

- **STEP 3 -** Select a method to determine the operating margin (OM).

The operating margin emission factor ($EF_{grid,OM,y}$) chosen was the *ex-ante* vintage. The calculation of the operating margin emission factor ($EF_{grid,OM,y}$) is based on one of the following methods:

(a) Simple OM, or

(b) Simple adjusted OM, or

(c) Dispatch data analysis OM, or

(d) Average OM.

Considering that project participants have opted to use the *ex-ante* vintage, dispatch data analysis in not an available option for the calculation of the operating margin since it is only applicable for the *ex-post* vintage, which is not the vintage chosen by the project participants. The simple operating margin can only be used where low-cost/must-run resources[34] constitute less than 50% of total grid generation in: 1) average of 5 most recent years, or 2) based on long-term normals for hydroelectricity production. Table 15 shows the share of hydroelectricity in the total electricity production for the Brazilian interconnected system. However, the results show the non-applicability of the simple operating margin to the proposed CDM Project Activity.

[34] Low operating cost and must run resources typically include hydro, geothermal, wind, low-cost biomass, nuclear and solar generation.

Table 15: Share of hydroelectricity generation in the Brazilian interconnected system, 2006 to 2010

Year	Share of hydroelectricity (%)
2006	91.81%
2007	92.79%
2008	88.62%
2009	93.27%
2010	88.77%

Source: ONS - Operador Nacional do Sistema: Histórico de Geração, 2011. Available at: <http://www.ons.org.br/historico/geracao_energia.aspx>.

The fourth alternative, an average operating margin, is an oversimplification and does not reflect at all the impact of the project activity in the operating margin. Therefore, the simple adjusted operating margin will be used in the project.

- **STEP 4 -** Calculate the operating margin emission factor according to the selected method

According to the tool "*the simple adjusted OM emission factor ($EF_{grid,OM-DD,y}$) is a variation of the simple OM, where the power plants/units (including imports) are separated in low-cost/must-run power sources (k) and other power sources (m)*".

The simple adjusted OM was calculated based on the net electricity generation and a CO_2 emission factor for each power unit – i.e. similarly to **Option A** of the simple OM method – as follows:

$$EF_{grid,OM-adjy} = (1-\lambda_y)\cdot\frac{\sum_m EG_{m,y}\cdot EF_{EL,m,y}}{\sum_m EG_{m,y}} + \lambda_y\cdot\frac{\sum_k EG_{k,y}\cdot EF_{EL,k,y}}{\sum_k EG_{k,y}} \qquad \textbf{Equation 4}$$

Where,

$EF_{grid,OM-asj,y}$ = Simple adjusted operating margin CO_2 emission factor in year *y* (tCO_2/MWh)

λ_y = Factor expressing the percentage of time when low-cost/must run power units are on the margin in year *y*

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

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

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

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

$EG_{PJ,y}$ = Total electricity displaced by the project activity in year *y* (MWh)

m All grid power units serving the grid in year *y* except low-cost/must-run power units

k = All low-cost/must-run grid power units serving the grid ion year *y*

y = The relevant year as per the data cintage chosen in step 3

Determination of $EF_{EL,m,y}$

Considering that only data on electricity generation and the fuel types used in each of the power units was available, the emission factor was be determined based on the CO_2 emission factor of the fuel type used and the efficiency of the power unit, as per **Option A2** of the tool. The following formula was used:

$$EF_{EL,m,y} = \cdot \frac{EF_{CO2,m,i,y} \cdot 3.6}{\eta_{m,y}}$$ **Equation 5**

Where,

$EF_{EL,m,y}$ = CO_2 emission factor of power unit *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 year *y* (tCO_2/GJ)

$\eta_{m,y}$ = 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 the data vintage chosen in Step 3

Determination of $EG_{m,y}$

Information used to determine this parameter was supplied by The Electric System National Operator (from the Portugues *Operador Nacional do Sistema – ONS*), which is an official source, as recommended by the tool. *ONS* is an entity of private right, non-profitable, created on August, 26th 1998, responsible for coordinating and controlling the operation of generation and transmission facilities in the National interconnected Power System (NIPS) under supervision and regulation of the Electric Energy National Agency (ANEEL)[35].

- **STEP 5** – Calculate the build margin emission factor.

In terms of vintage, **option 1** was chosen, i.e., the build margin emission factor ($EF_{grid,BM,y}$) *ex-ante* vintage. In this sense, the build margin was calculated using the most recent information available on units already built for sample group *m* at the time of CDM-PDD submission to the DOE, *i.e.* 2010.

The sample group of power units *m* used to calculate the build margin emission factor ($EF_{grid,BM,y}$) was determined following the guidance provided by the tool as further discussed in section B.6.3 below.

The build margin was calculated following the same approach described above in step 4.

- **STEP 6** – Calculate the combined margin (CM) emissions factor EF_y.

The combined margin is calculated as follows:

$$EF_{grid,CM,y} = EF_{grid,OM,y} \cdot w_{OM} + EF_{grid,BM,y} \cdot w_{BM}$$ **Equation 6**

Where,

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

$EF_{grid,OM,y}$ = Operating margin CO_2 emission factor in year y (tCO_2/MWh);

w_{OM} = Weighting of operating margin emissions factor (%);

w_{BM} = Weighting of build margin emissions factor (%).

As mentioned above, the *ex-ante* vintage was chosen in order to calculate the operating and build margin emission factors. Therefore, the combined margin emission factor ($EF_{grid,CM,y}$) applied to calculate the baseline emissions of the grid is the *ex-ante* vintage.

According to the tool, for wind power generation project activities, as is the case of the proposed project activity, weights are w_{OM} = 0.75 and w_{BM} = 0.25.

Project emissions (PE_y)

According to ACM0002, *for most renewable power generation project activities, PE_y = 0. However, some project activities may involve project emissions that can be significant. These emissions shall be accounted for by using the following equation:*

[35] http://www.ons.org.br/institucional/modelo_setorial.aspx?lang=en

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$$ **Equation 7**

Where,

PE_y = Project emissions in year *y* (tCO_2e);

$PE_{FF,y}$ = Project emissions from fossil fuel consumption in year *y* (tCO_2);

$PE_{GP,y}$ = Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year *y* (tCO_2e);

$PE_{HP,y}$ = Project emissions from water reservoirs of hydro power plants in year *y* (tCO_2e/).

Emissions from fossil fuel combustion ($PE_{FF,y}$)

According to the methodology, only geothermal and solar thermal projects have to account for emissions from the consumption of fossil fuels. Therefore, in the case of the proposed project activity, $PE_{FF,y}$ = 0 tCO_2/year.

Emissions from the operation of geothermal power plants due to the release of non-condensable gases ($PE_{GP,y}$)

Considering that the proposed project activity consists of the construction of three wind power plant, there are no emissions related to non-condensable gases from the operation of geothermal power plants. Therefore, $PE_{GP,y}$ = 0 tCO_2/year.

Emissions from water reservoirs of hydro power plants ($PE_{HP,y}$)

New hydro electric power projects resulting in new reservoirs, shall account for CH_4 and CO_2 emissions from reservoirs. Considering that the proposed project activity consists of the construction of three wind power plant, there are no emissions from water reservoirs. Therefore, $PE_{HP,y}$ = 0 tCO_2/year.

Leakage calculation (LE_y)

According to the methodology, "*no leakage emissions are considered. The main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, and transport). These emissions sources are neglected"*. Therefore, leakage of *REB Cassino* Wind Energy Complex project is 0 tCO_2.

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

Data / Parameter:	$EF_{CO2,m,i,y}$
Data unit:	tCO_2/GJ

Description:	CO2 emission factor of fossil fuel type *i* used in power unit *m* in year *y*
Source of data used:	IPCC default values at the lower limit of the uncertainty at a 95% confidence interval as provided in table 1.4 of Chapter1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories
Value applied:	Large amount of data. Please refer to the emission factor calculation spreadsheet which is attached to the PDD.
Justification of the choice of data or description of measurement methods and procedures actually applied :	As per the recommendation of the *"Tool to calculate the emission factor for an electricity system"*. IPCC default values are being used since this information is neither provided by fuel suppliers nor regional and/or local default values are publicly available.
Any comment:	

Data / Parameter:	$EG_{m,y}$ **and** $EG_{k,y}$
Data unit:	MWh
Description:	Net electricity generated by power plant/unit *m* or *k* in year *y*
Source of data used:	Official publications. Data from the Electric System National Operator was used.
Value applied:	Large amount of data. Please refer to the emission factor calculation spreadsheet which is attached to the PDD.
Justification of the choice of data or description of measurement methods and procedures actually applied :	Once for each crediting period using the most recent three historical years for which data is available at the time of submission of the CDM-PDD to the DOE for validation (*ex-ante* option).
Any comment:	For methodological choices details, please refer to section B.6.1.

Data / Parameter:	$\eta_{m,y}$
Data unit:	-
Description:	Average net energy conversion efficiency of power unit *m* in year *y*
Source of data used:	Default values provided in Annex 1 of the *"Tool to calculate the emission factor for an electricity system"*
Value applied:	Large amount of data. Please refer to the emission factor calculation spreadsheet which is attached to the PDD.
Justification of the choice of data or description of measurement methods and procedures actually applied :	As per the recommendation of the *"Tool to calculate the emission factor for an electricity system"*.
Any comment:	For methodological choices details, please refer to section B.6.1.

Data / Parameter:	$EF_{grid,OM-adj,y}$
Data unit:	tCO_2/MWh
Description:	Simple adjusted operating margin CO_2 emission factor in year *y*
Source of data used:	Official publications (data from ONS), IPCC default values and default values provided by the *"Tool to calculate the emission factor for an electricity system"*

Value applied:	0.2609
Justification of the choice of data or description of measurement methods and procedures actually applied :	The *ex-ante* calculation vintage of this parameter was chosen as per the procedures of the *"Tool to calculate the emission factor for an electricity system"*.
Any comment:	For methodological choices details, please refer to section B.6.1.

Data / Parameter:	$EF_{gridBM,2010}$
Data unit:	tCO_2/MWh
Description:	Build Margin CO_2 emission factor in year *y*
Source of data used:	Official publications (data from ONS), IPCC default values and default values provided by the *"Tool to calculate the emission factor for an electricity system"*
Value applied:	0.1166
Justification of the choice of data or description of measurement methods and procedures actually applied :	The *ex-ante* calculation vintage of this parameter was chosen as per the procedures of the *"Tool to calculate the emission factor for an electricity system"*.
Any comment:	For methodological choices details, please refer to section B.6.1.

Data / Parameter:	$EF_{gridCM,y}$
Data unit:	tCO_2/MWh
Description:	Combined Margin CO_2 emission factor in year *y*
Source of data used:	Calculated according to the *"Tool to calculate the emission factor for an electricity system" (version 2.2.1)*
Value applied:	0.2248
Justification of the choice of data or description of measurement methods and procedures actually applied :	The *ex-ante* calculation vintage of this parameter was chosen as per the procedures of the *"Tool to calculate the emission factor for an electricity system"*.
Any comment:	For methodological choices details, please refer to section B.6.1.

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

Baseline emissions (BE_y)

The quantity of net electricity generation supplied by the project plants/units to the grid in year *y* ($EG_{faciclity,y}$, in MWh/yr) was determined, for the purpose of *ex-ante* estimative, as being equal to the installed capacity of each plant multiplied by the capacity factor (as determined by the Wind Certification performed by Garrad Hassen Ibérica S.L.U.) and by the numbers of hours the plants were operational in the year *y*. The capacity factor was defined in accordance with the "*Guidelines for the reporting and validation of plant load factor*" (EB 48, Annex 11), paragraph 3(b), i.e, by a third party contracted by the project participants. The result for each of the plants is presented below in Table 16. In total, the three plants considered in this CDM

Project Activity will generate 244,579 MWh/year.

Table 16: Net electricity generation by the wind power plants of the CDM Project Activity

Wind Power Plant	*Assured Energy (MW_{ave}/yr)*	*Net electricity generation (MWh/yr)*
EOL REB Cassino I	9.77	85,568
EOL REB Cassino II	8.56	74,986
EOL REB Cassino III	9.59	84,026
TOTAL	27.92	244,579

Additionally, the calculation of the combined margin CO_2 emission factor for grid connected power generation ($EF_{grid,CM,y}$), considering the *ex-ante* vintage, follows the steps established in the "*Tool to calculate the emission factor for an electricity system*". The results are presented below.

- **STEP 1 -** Identify the relevant electric power system

Following Resolution #8, issued by the Brazilian DNA on May, 26th 2008, the Brazilian Interconnected Grid corresponds to the system to be considered. It covers all the five macro-geographical regions of the country (North, Northeast, South, Southeast and Midwest) as presented in the figure below.

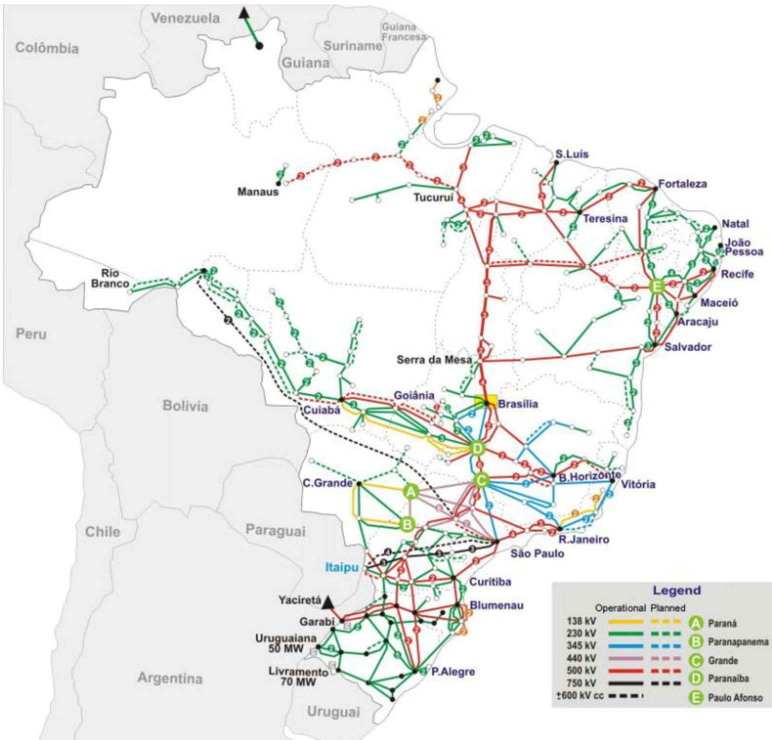

Figure 7 Brazilian Interconnected System. (*Source:* Electric System National Operator).

- **STEP 2** – *Choose whether to include off-grid power plants in the project electricity system (optional)*

Option I was chosen and only grid connected power plants are considered.

- **STEP 3 -** *Select a method to determine the operating margin (OM)*

As mentioned above, the simple adjusted operating margin *ex-ante* vintage was the method chosen for the calculation of this parameter. Please refer to section B.6.1. for the proper justification.

- **STEP 4 -** Calculate the operating margin emission factor according to the selected method

A spreadsheet containing all data used to determine the operation margin emission factor *ex-ante* vintage was supplied to the DOE. The result is presented below.

$EF_{grid,OM\text{-}adj,y} = 0.2609\ tCO_2e/MWh$

- **STEP 5** Calculate the builf margin (BM) emission factor

As described above in section B.6.1., the *ex-ante* vintage was the option chosen to determine the build margin emission factor (option 1).

The sample group of power units *m* used to calculate the build margin was identified following the procedure provided by the tool. The result is discussed below and is detailed presented in the spreadsheet supplied to the DOE which is also attached to the PDD.

(a) *Identify the set of five power units, excluding power units registered as CDM project activities, that started to supply electricity to the grid most recently ($SET_{5\text{-}units}$) and determine their annual electricity generation ($AEG_{SET\text{-}5\text{-}units}$, in MWh);*

From the most recent consolidated information the $SET_{5\text{-}units}$ are: UTE Linhares, UHE Salto Pilão, UTE Camaçari, UTE Tocantinópolis and UTE Viana. The electricity generated by these set of plants ($AED_{SET\text{-}5\text{-}units}$) in 2010 was 662,143 MWh.

(b) *Determine the annual electricity generation of the project electricity system, excluding power units registered as CDM project activities (AEG_{total}, in MWh). Identify the set of power units, excluding power units registered as CDM project activities, that started to supply electricity to the grid most recently and that comprise 20% of AEG_{total} (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation) ($SET_{\geq 20\%}$) and determine their annual electricity generation ($AEG_{SET\text{-}\geq 20\%}$, in MWh);*

Not considering the CDM project activities, in 2010, the Brazilian electricity System generated (AEG_{total}) 465,919,678 MWh. A large amount of plants comprise 20% of AEG_{total}. This information ($SET_{\geq 20\%}$) can be checked in the calculation spreadsheet attached to this PDD. The annual electricity generation of $SET_{\geq 20\%}$, corresponding to the parameter $AEG_{SET\text{-}\geq 20\%}$, is 93,183,936 MWh.

(c) *From $SET_{5\text{-}units}$ and $SET_{\geq 20\%}$ select the set of power units that comprises the larger annual electricity* *generation (SET_{sample}); Identify the date when the power units in SET_{sample} started to supply electricity to the grid. If none of the power units in SET_{sample} started to supply electricity to the grid more than 10 years ago, then use SET_{sample} to calculate the build margin. Ignore steps (d), (e) and (f).*

From data presented in items (a) and (b), it can be observed that $SET_{\geq 20\%}$ is greater than $SET_{5\text{-}units}$. Therefore, SET_{sample} corresponds to $SET_{\geq 20\%}$. The oldest plant comprised in SET_{sample} started to supply electricity to the grid in January 1998. Hence, steps *(d), (e)* and *(f)* of the tool are applicable.

(d) Exclude from SET_{sample} the power units which started to supply electricity to the grid more than 10 years ago. Include in that set the power units registered as CDM project activity, starting with power units that started to supply electricity to the grid most recently, until the electricity generation of the new set comprises 20% of the annual electricity generation of the project electricity system (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation) to the extent is possible. Determine for the resulting set ($SET_{sample\text{-}CDM}$) the annual electricity generation ($AEG_{SET\text{-}sample\text{-}CDM}$, in MWh);

Plants which have started to supply electricity to the grid more than 10 years ago were excluded. Four registered CDM Projects were included in the SET_{smaple}. The electricity generation by resultant set of plants, corresponding to the parameter $AEG_{SET\text{-}sample\text{-}CDM}$, is 74,902,471MWh.

If the annual electricity generation of that set is comprises at least 20% of the annual electricity generation of the project electricity system (i.e. $AEG_{SET\text{-}sample\text{-}CDM} \geq 0.2 \times AEG_{total}$), then use the sample group $SET_{sample\text{-}CDM}$ to calculate the build margin. Ignore steps (e) and (f).

From the results presented above, $AEG_{SET\text{-}sample\text{-}CDM}$ is lower than AEG_{total}. Then, steps (e) and (f) were applied.

(a) Include in the sample group $SET_{sample\text{-}CDM}$ the power units that started to supply electricity to the grid more than 10 years ago until the electricity generation of the new set comprises 20% of the annual electricity generation of the project electricity system (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation);

(b) The sample group of power units m used to calculate the build margin is the resulting set ($SET_{sample\text{-}CDM\text{->}10yrs}$).

Five power plants that have started to supply electricity to the grid more than 10 years ago were included. The resultant set is $SET_{sample\text{-}CDM\text{->}10yrs}$ is identified in the grid emission factor calculation spreadsheet.

The build margin emission factor was calculated following the same approach described above in Step 4 and considered the set of plants identified above. As mentioned previously, this parameter will be validated since the *ex-ante* option was chosen. The result is presented below.

$EF_{grid,BM,y} = 0.1166\ tCO_2e/MWh$

- **STEP 6** – Calculate the combined margin (CM) emissions factor EF_y.

Applying the results presented above in Steps 4 and 5 above to the Equation 6 presented in section B.6.1. and considering the weights $w_{OM} = 0.75$ and $w_{BM} = 0.25$ we obtain,

$$EF_y = w_{OM} \cdot EF_{OM,y} + w_{BM} \cdot EF_{BM,y}$$

$EF_y = 0.75 \times 0.2609 + 0.25 \times 0.1166$

$EF_{grid,CM,y} = 0.2248\ tCO_2e/MWh$

Finally, baseline emissions can be determined applying the results of $EG_{facility,y}$ and $EF_{grid,CM.y}$ to Equation 2 as follows:

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

$EG_{PJ,y} = EG_{facility,y}$ = 244,579 MWh

BE_y =*244,579* MWh/year x 0.2248 tCO_2/MWh

BE_y = *54,978* tCO_2

Project Emissions (PE_y)

As explained above in section B.6.1. project emissions by the proposed project activity are **zero**.

PE_y = 0 tCO_2e

Leakage emissions (LE_y)

The calculation of leakage emissions is not required by the methodology.

LE_y = 0 tCO_2

Emission reductions (ER_y)

Applying the results discussed above to Equation 1 we obtain,

$ER_y = BE_y – PE_y$

ER_y = 53,864 tCO_2

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

Table 17: Summary of the ex-ante estimation of emission reductions.

Years*	**Estimation of baseline emissions** (tonnes of CO_2e)	**Estimation of project activity emissions** (tonnes of CO_2e)	**Estimation of leakage** (tonnes of CO_2e)	**Estimation of overall emission reductions** (tonnes of CO_2e)
2013	54,978	0	0	54,978
2014	54,978	0	0	54,978
2015	54,978	0	0	54,978
2016	54,978	0	0	54,978

2017	54,978	0	0	54,978
2018	54,978	0	0	54,978
2019	54,978	0	0	54,978
2020	54,978	0	0	54,978
2021	54,978	0	0	54,978
2022	54,978	0	0	54,978
Total (tonnes of CO_2e)	**549,780**	**0**	**0**	**549,780**

* *From January, 1st 2013 to December, 31st 2022*

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

B.7.1 Data and parameters monitored:

Data / Parameter:	$EG_{REB\ Cassino\ I,y}$
Data unit:	MWh
Description:	Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y*.
Source of data to be used:	Onsite measurements
Value of data applied for the purpose of calculating expected emission reductions in section B.5	*EOL REB Cassino I* – 85,568
Description of measurement methods and procedures to be applied:	The quantity of electricity delivered to the grid by the project will be quantified through the energy meter located at the substation. Information provided by Project Participants can be crosschecked using the reports issued the local power utility and/or *CCEE – Câmara de Comercialização de Energia Elétrica*, a Brazilian governmental entity which monitors the quantity of electricity in the national interconnected grid.
QA/QC procedures to be applied:	Energy metering QA/QC procedures are explained in section B.7.2 (the equipment used have, by legal requirements, an extremely low level of uncertainty – 0.2 precision class). In addition, there will be another meter at the substation (backup) to ensure that electricity will be properly measured.
Any comment:	Since the proposed project activity is a greenfield plant, as explained above in section B.6.1. this parameter corresponds to $EG_{PJ,y}$ used to determine baseline emissions.

Data / Parameter:	$EG_{REB\ Cassino\ II,y}$
Data unit:	MWh
Description:	Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y*.
Source of data to be used:	Onsite measurements
Value of data applied for the purpose of calculating expected emission reductions in	*EOL REB Cassino II* – 74,986

section B.5	
Description of measurement methods and procedures to be applied:	The quantity of electricity delivered to the grid by the project will be quantified through the energy meter located at the substation. Information provided by Project Participants can be crosschecked using the reports issued the local power utility and/or *CCEE – Câmara de Comercialização de Energia Elétrica*, a Brazilian governmental entity which monitors the quantity of electricity in the national interconnected grid.
QA/QC procedures to be applied:	Energy metering QA/QC procedures are explained in section B.7.2 (the equipment used have, by legal requirements, an extremely low level of uncertainty – 0.2 precision class). In addition, there will be another meter at the substation (backup) to ensure that electricity will be properly measured.
Any comment:	Since the proposed project activity is a greenfield plant, as explained above in section B.6.1. this parameter corresponds to $EG_{PJ,y}$ used to determine baseline emissions.

Data / Parameter:	$EG_{REB\ Cassino\ III,y}$
Data unit:	MWh
Description:	Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y*.
Source of data to be used:	Onsite measurements
Value of data applied for the purpose of calculating expected emission reductions in section B.5	*EOL REB Cassino III* – 84,026
Description of measurement methods and procedures to be applied:	The quantity of electricity delivered to the grid by the project will be quantified through the energy meter located at the substation. Information provided by Project Participants can be crosschecked using the reports issued the local power utility and/or *CCEE – Câmara de Comercialização de Energia Elétrica*, a Brazilian governmental entity which monitors the quantity of electricity in the national interconnected grid.
QA/QC procedures to be applied:	Energy metering QA/QC procedures are explained in section B.7.2 (the equipment used have, by legal requirements, an extremely low level of uncertainty – 0.2 precision class). In addition, there will be another meter at the substation (backup) to ensure that electricity will be properly measured.
Any comment:	Since the proposed project activity is a greenfield plant, as explained above in section B.6.1. this parameter corresponds to $EG_{PJ,y}$ used to determine baseline emissions.

B.7.2. Description of the monitoring plan:

The Project owner will proceed with the necessary monitoring measures as established in the procedures from the Electric System National Operator (ONS – from the Portuguese *Operador Nacional do Sistema*), Brazilian Electricity Regulatory Agency (ANEEL from the Portuguese *Agência Nacional de Energia Elétrica*) and the Electric Power Commercialization Chamber (CCEE form the Portuguese *Câmara de Comercialização de Energia Elétrica*).

The ONS is the entity responsible for coordinating and controlling the operation of generation and transmission facilities in the National interconnected Power System (NIPS) under supervision and regulation of ANEEL[36] which is the regulatory agency providing favourable conditions for the electric power market to develop a balance between the agents and the benefit of society[37]. CCEE is a not-for-profit, private, civil organization company that is in charge of carrying out the wholesale transactions and commercialization of electric power within the NIPS, for both Regulated and Free Contracting Environments and for the spot market[38].

The total electricity exported to the grid will be monitored following the procedures and requirements established by ONS which defines the technical characteristics and precision class (0.2% of maximum permissible error) of the electricity meters to be used[39]. In addition, ONS also rules about the electricity meter calibration requirements (every two years)[40].

There will be two energy meters (principal and backup) located at the substation, as specified by CCEE. Before the operation starts, CCEE demands that these meters are individually registered within their system and calibrated by an entity with Rede Brasileira de Calibração (RBC) credential. Beyond that, energy information will be controlled in real time by CCEE. Once the measurement points are physically defined and the invoice measurement system and the communication infrastructure are installed, the measurement points will be registered in the SCDE (System of Energy Data collection) managed by CCEE.

As mentioned before, CCEE makes feasible and regulates the electricity energy commercialization in Brazil. In a process called Accounting Commensuration Aggregation (from the Portuguese, *Agregação Contábil da Medição*) CCEE compares the energy generation reported by every seller connected to the national grid with the consumption registered during the month under consideration. After the adjustments due to energy losses occurring in the transmission system are made, CCEE issues several official reports certifying the amount of energy generated by each seller.

Moreover, to confirm CCEE’s information, every month the company auditing CCEE’s reports randomly selects a sample of sellers that have to provide detailed information of their Power Purchase Agreement(s) and energy generation during the month being analyzed. Then the auditors analyse the information, check whether CCEE’s calculation is correct and issue an opinion. The independent auditors’ statements confirming CCEE’s information are available at CCEE’s website.

The final results of electricity generation are published at CCEE’s website and are publicly available. Hence, CCEE’s information - which is an official and publicly available source – is going to be used to cross-check information monitored by the project participant.The company that owns the wind farms will be the responsible for data collection and archiving as well as the calibration and maintenance of the monitoring equipment, for dealing with possible monitoring data adjustments and uncertainties, review of reported results/data, internal audits of GHG project compliance with operational requirements and corrective actions.

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[36] Information available at <http://www.ons.org.br/institucional/modelo_setorial.aspx?lang=en>.

[37] Information available at <http://www.aneel.gov.br/>.

[38] Information available at <http://www.ccee.org.br/cceeinterdsm/v/index.jsp?vgnextoid=25afa5c1de88a010VgnVCM100000aa01a8c0RCRD>.

[39] ONS – Operador Nacional do Sistema. Procedimentos de Rede – Módulo 12: Medição para faturamento / Submódulo 12.2: Instalação do sistema de medição para faturamento. Available at http://www.ons.org.br/procedimentos/modulo_12.aspx.

[40] ONS – Operador Nacional do Sistema. Procedimentos de Rede – Módulo 12: Medição para faturamento / Submódulo 12.3: Manutenção do sistema de medição para faturamento. Available at http://www.ons.org.br/procedimentos/modulo_12.aspx.

Also, it is responsible for project management, as well as for the organising and training of the staff in the appropriate monitoring, measurement and reporting techniques.

It is important to mention that ANEEL can visit the plants to inspect the operation and maintenance of the facilities at any time.

All data monitored and required for verification and issuance will be kept for two years after the end of the crediting period in electronic format or the last issuance of CERs for this project activity, whichever occurs later.

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):

Date of completing the final draft of this baseline section and the monitoring methodology: 27/07/2011

Name of person/entity determining the baseline:

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Ecopart Asserssoria em Negócios Empresariais Ltda. is the Project Advisor and also a Project Participant.

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:

According to the CDM Glossary of Terms the starting date of a CDM project activity is "*the earliest date at which either the implementation or construction or real action of a project activity begins*". Furthermore the guidance also clarifies that "*the start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity (...), for example, the date on which contracts have been signed for equipment or construction/operation services required for the project activity*".

Considering the above information, in order to determine project activity's starting date the date or the forecasted date for the following events were considered: **financing agreement, Power Purchase Agreement, major equipment orders, the start date of construction and the Construction License Issuance**.

Table 18: Main actions related to *EOL REB Cassino I, II* and *III.*

Actions	*EOL REB Cassino I, II and III*

Power Purchase Agreement (PPA)	09/08/2011
Construction Permit Issuance	20/10/2011
Alteration in the wind power plants configuration	26/01/2012
Major Equipment Orders	15/02/2012
Starting Date of Construction	01/04/2012
*Financing Agreement**	01/09/2012
*Starting date of operation**	01/01/2013

* *Estimated*

Commonly, several necessary steps to build the wind power plants, such as the financing contract, are only obtained after the signature of the Power Purchase Agreement. Nevertheless, if the company decides not to build the plant after the signature of the PPA there would be relevant penalties.

Hence, although this event neither can be considered as the financial closure nor represents a significant expenditure related to the implementation of the plant, the project developer have committed itself to the terms of the contract assuming that the wind power plant was in fact going to be implemented. Therefore, the PPA signature will be considered the project starting date.

From the above, the identified project starting date of this project activity is 09/08/2011.

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

20 years, 0 months.

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:

Not applicable.

C.2.1.2. Length of the first crediting period:

Not applicable.

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

01/01/2013

C.2.2.2. Length:

10y, 0m.

SECTION D. Environmental impacts

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

In Brazil, the sponsor of any project that involves construction, installation, expansion or operation of any polluting or potentially polluting activity or any other activity capable of causing environmental degradation is obliged to secure several permits from the relevant environmental agency (federal and/or local, depending on the project).

The environmental permit process and the environmental impact assessment was implemented by the Law nr. 6,938 dated August, 31st 1981 - the National Environmental Policy (from the Portuguese *Política Nacional do Meio Ambiente – PNMA*[41]). Additionally, other norms and laws were issued in order to regulate the permitting process and the environmental impact assessment according to the activity characteristics. Additionally, other norms and laws were issued by the (National Environmental Council Resolution (from the Portuguese *Conselho Nacional do Meio Ambiente - CONAMA*) and local state agencies created to regulate the process.

CONAMA nr. 001[42], issued on January, 23rd 1986, states that power plants with installed capacity greater than 10 MW of installed capacity must apply the permitting process, do the Environmental Impact Assessment (from the Portuguese *Estudo de Impacto Ambiental*) and submit it to the respective environmental state agency in order to obtain the necessary permits for the project.

Also, *CONAMA* nr. 237[43], issued on December, 19th 1997, requires the following permits as part of the permitting process:

- The Preliminary Permit (*Licença Prévia* or LP);
- The Construction Permit (*Licença de Instalação* or LI); and
- The Operation Permit (*Licenca de Operação* or LO).

The process starts with a previous analysis (preliminary studies) by the local environmental department. In turn, if the project is considered environmentally feasible, the sponsors have to prepare the Environmental Assessment.

The result of those assessments is the Preliminary Permit (LP), which reflects the local environmental agency positive understanding regarding the environmental project concepts.

[41] Available at: http://www.planalto.gov.br/ccivil_03/leis/L6938.htm
[42] Available at: http://www.mma.gov.br/port/conama/res/res86/res0186.html
[43] Available at: http://www.mma.gov.br/port/conama/res/res97/res23797.html

In order to obtain the Construction Permit (LI) it is necessary to present (a) additional information related to the previous assessment; (b) a new simplified assessment; or (c) the Environmental Basic Project, according to the environmental agency decision informed at the LP.

The Operation Permit (LO) is a result of pre-operational tests during the construction phase to verify if all demands made by environmental local agency were completed.

Besides, *CONAMA* nr. 279[44], issued on June, 27th 2001, establishes procedures concerning the simplified permitting process. The simplified permitting process is applied for activities that present small environment impact. Also, this resolution states that wind power plants presents low environment impact and therefore can apply the simplified permitting process and present the environmental impact assessment through the Simplified Environmental Report (from the Portuguese *Relatório Ambiental Simplificado - RAS*).

In this sense, all the plants presented the Simplified Environmental Report in order to obtain the necessary permits to implement the wind power plants. The Preliminary Permit and the Construction Permit were issued by *Rio Grande do Sul* Environmental Agency (*FEPAM – Fundação Estadual de Proteção Ambiental Henrique Luiz Roessler*). Also, *FEPAM* issued the Preliminary Permit to the Transmission Line. Information related to the *LP* and *LI* are described below:

Table 19: Wind Power Plants and Transmission Line Preliminary Licenses data.

Wind Power Plant	Permit	Number	Issuance Date	Expiry Date
EOL REB Cassino I, II and III	Preliminary Permit	395/2010-DL	13/04/2010	22/10/2011
	Construction Permit	1231/2011-DL	20/10/2011	19/10/2016
Transmission Line	Preliminary Permit	218/2011-DL	28/02/2011	27/02/2013

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:

The growing global concern regarding the sustainable use of resources is driving a requirement for more sensitive environmental management practices. Increasingly this is being reflected in countries' policies and legislation. In Brazil the situation is no different; environmental rules and licensing process policies are very strict in line with the best international practices.

As mentioned in section D.1, power plants with installed capacity greater than 10 MW have to do an environmental impact assessment in order to obtain the necessary licenses to the project. Considering the low environmental impact generated by the wind power plants, a simplified environmental impact assessment

[44] Available at: http://www.mma.gov.br/port/conama/res/res01/res27901.html

was developed to evaluate the possible impacts occurring during two different phases of the project implementation: construction and operation. The impacts were also classified according to its effect (positive or negative), duration (short term or long term), scope (local or regional), reversibility (reversible or not). Depending of the identified impact, mitigation measures were proposed.

Negatives impacts are mostly expected to occur during the implementation phase and are related to influences in the soil, air quality, and vegetation. Examples of these impacts are the increase in the particulate matter production due to the construction, noise, fauna disturbances and erosion. However, the duration of these impacts is short (only while the project is being constructed) and the majority of them are fully reversible.

Irreversible negative impacts are expected to occur during the operation of the plant and are connected to the landscape modification, interferences on birds (collision, habitat disturbances, among others) and cultural influence in local communities. However, mitigation measures were proposed to decrease magnitude of these impacts and are all contemplated in the wind power plants' environmental monitoring plan.

Positive impacts are mostly expected to be observed in the socio-economic field. The implementation of wind farms commonly increases job opportunities and municipal income trough the payment of royalties. In contrast with the negative aspects, these impacts are forecasted to occur in the operational phase of the project, have a long duration and a regional influence.

Project sponsor has already presented the environmental impact assessment study to the local environmental agency and already received the preliminary and construction permits. Given the project already possesses both permits, it can be concluded that even the implementation of the wind power plants cause environmental impacts in the region where they will be implemented, project sponsor are in compliance with the environmental regulation and fulfilling the conditions established in the permits issued by the environmental state agency of *Rio Grande do Sul (FEPAM)*.

SECTION E. Stakeholders' comments

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

According to Resolution nr. 7, issued on March 5th 2008[45], Brazilian Designated National Authority (*Comissão Interministerial de Mudanças Globais do Clima – CIMGC)*, requests, among other documents, comments from local stakeholders in order to provide the Letter of Approval for a project.

The Resolution determines that the project proponent has to invite for comments, at least, the following agents involved in and affected by project activity:

- Municipal governments and City Councils;
- State and Municipal Environmental Agencies;
- Brazilian Forum of NGOs and Social Movements for Environment and Development;
- Community associations;

[45] Available at: <http://www.mct.gov.br/>.

– State Attorney for the Public Interest (state and federal);

The same resolution also requires that at the time these letters are sent, a version of the PDD in the local language and a declaration stating how the project contributes to the sustainable development of the country must be made available to these stakeholders at least 15 days previous to the starting of the Global Stakeholder Process (GSP). The Portuguese version of the PDD was published at the internet website <http://sites.google.com/site/consultadcp/> on 17/08/2011 which is also the date when the invitation letters were sent to the following agents:

– *Prefeitura de Rio Grande* (Rio Grande City Hall)

– *Câmara Municipal de Rio Grande* (Municipal Assembly of Rio Grande)

– *Secretaria do Meio Ambiente de Rio Grande* (Environmental Agency of Rio Grande)

– *Sindicato dos Trabalhadores Rurais de Rio Grande* (Comunitarian Association of Rio Grande)

– *Fundação Estadual de Proteção Ambiental Henrique Luiz Roessler – FEPAM* (Rio Grande do Sul Environmental Agency)

– *Ministério Público Federal* (State Attorneys for the Public Interest of Brazil)

– *Ministério Público do Rio Grande do Sul* (State Attorneys for the Public Interest of Rio Grande do Sul state)

– *Fórum Brasileiro de ONGs e Movimentos Sociais para o Desenvolvimento e Meio Ambiente* (Brazilian Forum of NGOs and Social Movements for the Development and Environment)

Up to date no concerns have been raised in the public invitations regarding the project.

E.2. Summary of the comments received:

No comments have been received yet.

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

No comments have been received yet.

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 present project.

This project is not a diverted ODA from an Annex 1 country.

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Annex 3

BASELINE INFORMATION

This section is intentionally left blank. For details please refer to section B.6.1. and B.6.3. above.

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Annex 4

MONITORING INFORMATION

This section is intentionally left blank. For details please refer to section B.7.2. above.

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