Project design document form
(Version 10.1)

Complete this form in accordance with the instructions attached at the end of this form.

BASIC INFORMATION	
Title of the project activity	Grid connected electricity generation from renewable source: Windfarm Complex Santa Vitória do Palmar and Chuí
Scale of the project activity	☒ Large-scale ☐ Small-scale
Version number of the PDD	4
Completion date of the PDD	24 September 2017
Project participants	Santa Vitória do Palmar Holding S.A. Chuí Holding S.A. WayCarbon Soluções Ambientais e Projetos de Carbono Ltda.
Host Party	Federative Republic of Brazil
Applied methodologies and standardized baselines	ACM0002 (version 12.2.0)
Sectoral scopes linked to the applied methodologies	01 – Energy industry (renewable source)
Estimated amount of annual average GHG emission reductions	616,133

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

The project activity consists in the implementation and operation of the Windfarm Complex Santa Vitória do Palmar and Chuí, constituted by 16 new wind electricity generation facilities (Chuí I, Chuí II, Chuí IV, Chuí V, Minuano I, Minuano II, Verace I, Verace II, Verace III, Verace IV, Verace V, Verace VI, Verace VII, Verace VIII, Verace IX and Verace X[1]) (Table 1), located in Santa Vitória do Palmar and Chuí Municipalities, in the Rio Grande do Sul State, Brazil. The project activity employ 201 horizontal-axis aerogenerators (model Gamesa G97), each with 2.0 MW (total nominal capacity: 402.0 MW).

Table 1: Windfarm Complex Santa Vitória do Palmar and Chuí's facilities.

Facility	Aerogenerators' model	Aerogenerators' quantity	Installed capacity (MW)	Electricity generation (MWh/year)	Plant load factor	Net capacity (MW)
Chuí I	Gamesa G97	12	24.0	98,319	46.8%	11.2
Chuí II		11	22.0	87,089	45.2%	9.9
Chuí IV		11	22.0	86,620	44.9%	9.9
Chuí V		15	30.0	119,148	45.3%	13.6
Minuano I		11	22.0	82,999	43.1%	9.5
Minuano II		12	24.0	90,234	42.9%	10.3
Verace I		10	20.0	77,643	44.3%	8.9
Verace II		10	20.0	75,691	43.2%	8.6
Verace III		13	26.0	100,809	44.3%	11.5
Verace IV		15	30.0	120,407	45.8%	13.7
Verace V		15	30.0	113,634	43.2%	13.0
Verace VI		9	18.0	69,280	43.9%	7.9
Verace VII		15	30.0	116,339	44.3%	13.3
Verace VIII		13	26.0	98,667	43.3%	11.3
Verace IX		15	30.0	115,727	44.0%	13.2
Verace X		14	28.0	110,787	45.2%	12.6
TOTAL		**201**	**402.0**	**1,563,393**	**44.4%**	**178.5**[2]

[1] There are several names representing the same facilities and companies that compound the project activity. In the results of the 12th Brazilian Auction of New Energy (*12º Leilão de Energia Nova - Leilão nº 02/2011*), the facilities were named as Chuí I, Chuí II, Chuí IV, Chuí V, Minuano I, Minuano II, Verace I, Verace II, Verace III, Verace IV, Verace V, Verace VI, Verace VII, Verace VIII, Verace IX and Verace X, as mentioned above in the PDD. Nevertheless, Chuí and Minuano facilities can be named as Chuí's facilities, as a set, since they are all located in Chuí Municipality; and the holding that owns these facilities is Chuí Holding S.A. Verace's facilities are owned by Santa Vitória do Palmar Holding S.A., since they are located in Santa Vitória do Palmar Municipality; additionally, Verace's facilities can be named also as Geribatu's facilities.

[2] It should be noted that the Windfarm Complex Santa Vitória do Palmar and Chuí's current configuration with 201 aerogenerators, 402.0 MW of installed capacity, plant net load factor of 44.4% and consequently net capacity of 178.5 MW (estimated electricity generation of 1,563,393 MWh/year) was utilized both in the investment analysis (section B.5 of this PDD) and in the *ex-ante* estimation of emissions reductions achieved by the proposed project activity (section B.6 of this PDD). This plant load factor of the project activity is determined by two electricity generation analysis:

1. The entrepreneurs contracted Inova Energy to analyze the estimated electricity generation in Verace's facilities, considering a total of 129 aerogenerators model Gamesa G90 2.0 MW, with a total installed capacity of 258.0 MW. The Inova Energy's wind report was made available to the entrepreneurs on 13/Apr/2011 (reference: Verace_InovaEnergy_20110413) and estimated a total net electricity generation of 998,984 MWh/year.

2. Similarly, the entrepreneurs contracted EREDA to analyze the estimated electricity generation in Chuí and Minuano's facilities, considering a total of 72 aerogenerators model Gamesa G97 2.0 MW, with a

The project activity is projected to deliver an average of 1,563,393 MWh/year[3] of renewable electricity to the National Interconnected System (*Sistema Interligado Nacional* - SIN). In the baseline[4], electricity delivered to the grid by the project activity would have 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. Hence, the project activity will promote GHG emissions reductions by displacing fossil fuel-based electricity generation that would otherwise occur.

The project boundary includes CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. Project and leakage emissions are not expected.

The project activity contributes the host country's sustainable development in the following ways:

- **Contribution to local environmental sustainability**: The project activity will produce renewable electricity from low environmental impact wind power plants;
- **Contribution to the net workplace generation**: New job posts will be created by the project activity, especially during project implementation;
- **Contribution towards the diversification of the electric mix and towards energetic security**: The period when there is the greatest abundance of wind resources is coincident with the period of the smallest hydraulic availability, in Brazil. Hence, wind-based electricity generation is complementary to hydroelectricity, which is the major electricity source in the Brazilian electrical system, contributing to the security of renewable electricity supply throughout the year and, hence, to the diminishment of the dependence upon fossil fuels during the dry season[5].

- **Contribution to wind electricity generation sector's development in Brazil**: This type of project can stimulate similar initiatives inside the Brazilian energy sector and encourage the development of modern and more efficient renewable energy units throughout Brazil.

A.2. Location of project activity

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Federative Republic of Brazil
State: Rio Grande do Sul
Municipalities: Santa Vitória do Palmar and Chuí

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total installed capacity of 144.0 MW. EREDA´s wind report was made available to the entrepreneurs on 19/02/2014 (reference: IT-1402-MBF-CertificacionProduccionChui-05) and estimated a total net electricity generation of 564,409 MWh/year.

[3] Considering the plant load factors defined in Inova Energy's study for Verace's facilities and in EREDA's study for Chuí and Minuano's facilities. A detailed description of the plant load factor of the project activity is presented in footnote 2 of this PDD.

[4] The baseline scenario is the same as the scenario existing prior to the start of implementation of the project activity.

[5] ANEEL (Brazilian Electricity National Agency – Agência Nacional de Energia Elétrica) – Brazilian Electricity Atlas (Atlas de Energia Elétrica no Brasil). Available at http://www.aneel.gov.br/aplicacoes/Atlas/download.htm. Accessed on 27/Dec/2011.

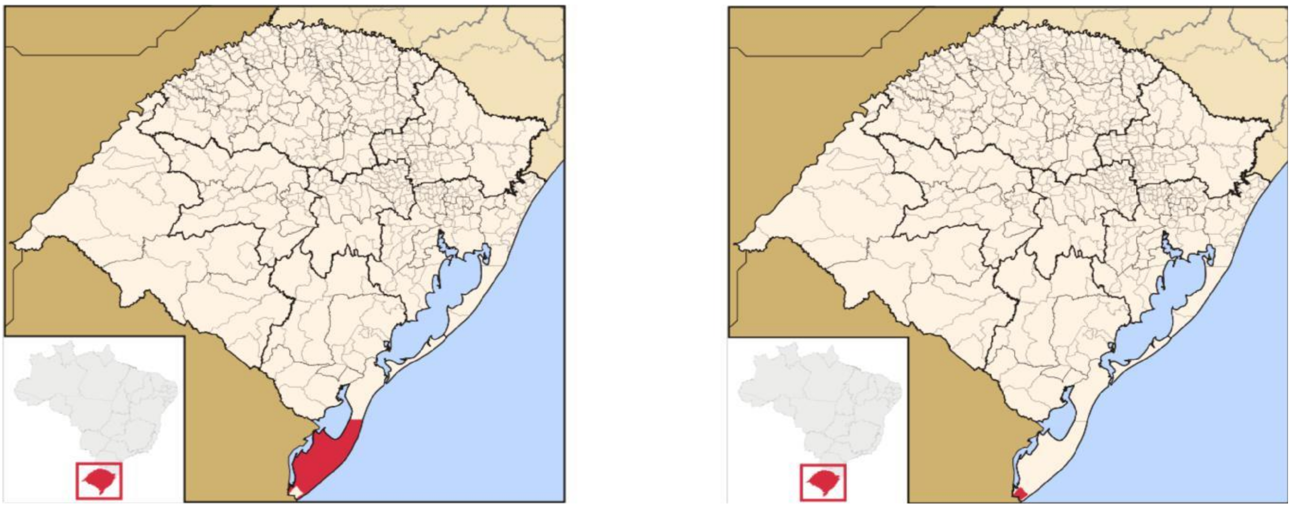

Figure 1: Geographic location of the project activity. Bottom-left panel in both figures: depicts the position of Rio Grande do Sul State in the Federative Republic of Brazil. Main left panel: depicts Santa Vitória do Palmar Municipality within Rio Grande do Sul State. Main right panel: depicts Chuí Municipality within Rio Grande do Sul State.

The reference geographic coordinates of the project activity are depicted in Table 2.

Table 2: Project facilities’ reference geographic coordinates.

Facility	Type (Datum SIRGAS2000, 22S)	Latitude	Longitude
Chuí I	UTM	6,272,978 m	278,124 m
	Degrees	- 33°39’35”.8261	- 53°23’34”.2523
Chuí II	UTM	6,272,638 m	277,423 m
	Degrees	- 33°39’46”.3286	- 53°24’01”.7541
Chuí IV	UTM	6,271,959 m	276,022 m
	Degrees	- 33°40’07”.2966	- 53°24’56”.7231
Chuí V	UTM	6,271,619 m	275,322 m
	Degrees	- 33°40’17”.7945	- 53°25’24”.1914
Minuano I	UTM	6,265,987 m	277,429 m
	Degrees	- 33°43’22”.0991	- 53°24’07”.5259
Minuano II	UTM	6,266,662 m	276,662 m
	Degrees	- 33°42’59”.6211	- 53°24’36”.6908
Verace I	UTM	6,291,509 m	289,019 m
	Degrees	- 33°29’42”.5793	- 53°16’15”.7864
Verace II	UTM	6,290,313 m	288,112 m
	Degrees	- 33°30’20”.7380	- 53°16’51”.9279
Verace III	UTM	6,288,498 m	288,350 m
	Degrees	- 33°31’19”.7952	- 53°16’44”.2549
Verace IV	UTM	6,285,283 m	293,316 m
	Degrees	- 33°33’07”.6087	- 53°13’34”.5595
Verace V	UTM	6,287,117 m	286,656 m
	Degrees	- 33°32’03”.3882	- 53°17’51”.0596
Verace VI	UTM	6,286,170 m	288,608 m
	Degrees	- 33°32’35”.5107	- 53°16’36”.2414
Verace VII	UTM	6,283,510 m	291,543 m
	Degrees	- 33°34’03”.8931	- 53°14’44”.7545

Verace VIII	UTM	6,285,104 m	285,803 m
	Degrees	- 33°33'08".0836	- 53°18'25".8421
Verace IX	UTM	6,282,745 m	286,505 m
	Degrees	- 33°34'25".1257	- 53°18'00".6700
Verace X	UTM	6,280,557 m	290,986 m
	Degrees	- 33°35'39".3113	- 53°15'08".8325

Sources:

- UTM: *Ficha de Dados EPE* (EPE's data sheet; EPE =*Empresa de Pesquisa Energética* = Brazilian Energetic Research Enterprise) (references: EPEDataSheet_Chui1; EPEDataSheet_Chui2; EPEDataSheet_Chui4; EPEDataSheet_Chui5; EPEDataSheet_Minuano1; EPEDataSheet_Minuano2; EPEDataSheet_Verace1; EPEDataSheet_Verace2; EPEDataSheet_Verace3; EPEDataSheet_Verace4; EPEDataSheet_Verace5; EPEDataSheet_Verace6; EPEDataSheet_Verace7; EPEDataSheet_Verace8; EPEDataSheet_Verace9; EPEDataSheet_Verace10).
- Degrees: conversion from UTM data by ProGrid Brazilian official program (program available at http://www.ibge.gov.br/home/geociencias/geodesia/param_transf/default_param_transf.shtm, accessed on 05/Dec/2011; conversion reference: ProGriD_0147_SIRGAS2000_Lat_Long_Chui1; ProGriD_0147_SIRGAS2000_Lat_Long_Chui2; ProGriD_0147_SIRGAS2000_Lat_Long_Chui4; ProGriD_0147_SIRGAS2000_Lat_Long_Chui5; ProGriD_0147_SIRGAS2000_Lat_Long_Minuano1; ProGriD_0147_SIRGAS2000_Lat_Long_Minuano2; ProGriD_0147_SIRGAS2000_Lat_Long_Verace01; ProGriD_0147_SIRGAS2000_Lat_Long_Verace02; ProGriD_0147_SIRGAS2000_Lat_Long_Verace03; ProGriD_0147_SIRGAS2000_Lat_Long_Verace04; ProGriD_0147_SIRGAS2000_Lat_Long_Verace05; ProGriD_0147_SIRGAS2000_Lat_Long_Verace06; ProGriD_0147_SIRGAS2000_Lat_Long_Verace07; ProGriD_0147_SIRGAS2000_Lat_Long_Verace08; ProGriD_0147_SIRGAS2000_Lat_Long_Verace09; ProGriD_0147_SIRGAS2000_Lat_Long_Verace10)

A.3. Technologies/measures

Wind energy is defined as the kinetic energy contained by moving air masses (wind). Its use for the production of electricity occurs by means of the conversion of translational kinetic energy in rotational kinetic energy and, then, by means of the conversion of the former form of energy into electricity, by means of the employment of wind turbines or aerogenerators[5].

Environmental pros of wind-based electricity generation recognizably include contribution for atmospheric emissions reduction (including non-GHG gases) by thermoelectric plants, smaller demand for the construction of new large hydropower plants reservoirs, and the reduction of the risk derived from hydrological seasonality, in light of the aforementioned complementary nature of wind-based and hydroelectric electricity generation in Brazil[5].

Negative environmental impacts of wind power plants are relatively limited, but might arise from noise generated by the movement of the blades. Also, electromagnetic interference with data transmission systems (radio, television, etc.) is possible. Additionally, possible interference upon bird routes should be considered[5].

The proposed project activity consists in the implementation and operation of the Windfarm Complex Santa Vitória do Palmar and Chuí, constituted by 16 new wind electricity generation facilities (Chuí I, Chuí II, Chuí IV, Chuí V, Minuano I, Minuano II, Verace I, Verace II, Verace III, Verace IV, Verace V, Verace VI, Verace VII, Verace VIII, Verace IX and Verace X) (Table 1), located in Santa Vitória do Palmar and Chuí Municipalities, in the Rio Grande do Sul State, Brazil. The project activity will employ 201 horizontal-axis aerogenerators (129 aerogenerators model Gamesa G97 in Verace's facilities and 72 aerogenerators Gamesa 97 in Chuí and Minuano's facilities), each with 2.0 MW (total nominal capacity: 402.0 MW).

The project activity is projected to deliver an average of 1,563,393 MWh/year[6] of renewable electricity to the National Interconnected System (*Sistema Interligado Nacional* - SIN). In the baseline[7], electricity delivered to the grid by the project activity would have 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. Hence, the project activity will promote GHG emissions reductions by displacing fossil fuel-based electricity generation that would otherwise occur.

With an experience of more than 15 years, Gamesa is a global technological leader in the design, manufacture, installation and maintenance of wind turbines, with 23,000 MW installed in 30 countries and 15,000 MW under maintenance. The company has its own wind turbine design and development capacity and it is vertically integrated; it covers the entire process from conception, manufacturing and installation of wind generators, including manufacturing of blades, molds, blade roots, multipliers, generators, converters and towers, as well as assembly, logistics and installation. Gamesa has more than 30 production facilities in Spain (supplying mainly the European market), US, Asia (China and India) and Brazil (since mid-2011). In Brazil, the company has begun construction of a nacelle assembly plant in the Bahia State (300 MW)[8].

Gamesa is a world leader in the development, construction and sale of wind farms. By the end of 2010, the company had completed over 170 wind farms in 11 countries, with a total installed capacity of 4,100 MW, and another 22,661 MW in various stages of development in Europe, America and Asia. Gamesa's wind farm development division undertakes all the activities associated with wind generation projects, including site identification, wind measurement, obtaining the necessary permits and licenses for wind farm construction and commissioning, final sale of wind farms, and operation and maintenance of operational farms[8].

Multi-megawatt turbines from the Gamesa G9X-2.0 MW platform improve competitive investment ratios per MW installed and Cost of Energy produced due to their versatile combination of a 2.0 MW unit power wind turbine and 4 different sized rotors: 80, 87, 90 and 97 m diameters, to achieve maximum output in all types of settings and wind conditions.

The reliability of the Gamesa G8X – 2.0 MW, backed by broad experience and proven capacity to adapt, are joined with the Gamesa G9X – 2.0 MW technological advances, providing notable improvements in performance, optimized models, a new tower portfolio and an upgraded image. The Gamesa G9X – 2.0 MW bases its operational improvements from its speed control and variable pitch technology enhancements, and other hardware and software design upgrades to extract the maximum amount of energy from the wind and to do it as efficiently as possible. The Gamesa G9X – 2.0 MW incorporates improved and increased mechanical capacity in key wind turbines components such as the yaw system, the framework, main axis and blade bearings.

[6] Considering the plant load factors defined in Inova Energy's study for Verace's facilities and in EREDA's study for Chuí and Minuano's facilities. A detailed description of the plant load factor of the project activity is presented in footnote 2 of this PDD.
[7] The baseline scenario is the same as the scenario existing prior to the start of implementation of the project activity.
[8] Gamesa's website. Available at http://www.gamesacorp.com/en/gamesaen/. Accessed on 29/Dec/2011.

These improvements guarantee maximum reliability of the equipment and allow larger rotors to be used to increase the electricity generated[9].

In relation to the technology to be employed in the project activity, it's important to emphasize that no technology transfer and know-how are previewed for the present project activity. Also, at least 60% of the technology employed in the project activity will be provided by the host country (Brazil), in accordance with the requirements of FINAME (Industrial Financing Special Agency) / BNDES (Brazilian Development Bank), the lender agent of the project.

The overview of the Gamesa aerogenerator's technical characteristics is provided in Table 3.

Table 3: Gamesa G97's technical overview[10, 11].

Operational data	
Rated power	2.0 MW
Wind class - IEC[12]	IIA / IIIA
Rotor	
Diameter	97 m
Swept area	7,390 m^2
Rotor speed range	9.6 – 17.8 rpm
Speed regulation	Variable pitch and speed technology
Generator	
Type	Doubly-fed machine
Voltage	690 V
Frequency	60 Hz
Brake system	
Type	Joint action of primary aerodynamic brakes and emergency brake with an hydraulic control system

It is noteworthy that the entrepreneurship is in accordance with all the determinations established by the Brazilian, State and Municipal Environmental Law. Moreover, possible interference with environment will be also minimized through the adoption of mitigation and environmental control measures[10]. The environmental aspects of the project activity are discussed in the Environmental Impact Assessment on the project activity, summarized in Section E.

The information provided above demonstrates that the project activity employs environmentally safe and sound technology.

[9] Gamesa G9X – 2.0 MW: Technical Evolution. Reference: GamesaG9X-2.0MW_TechnicalDescription.

[10] Chuí, Minuano and Verace's Simplified Environmental Report (*Relatório Ambiental Simplificado* – RAS) (references: Chui_RAS; Minuano_RAS; Verace_RAS).

A.4. Parties and project participants

Parties involved	Project participants	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
Federative Republic of Brazil (host)	Santa Vitória do Palmar Holding S.A. Chuí Holding S.A. WayCarbon Soluções Ambientais e Projetos de Carbono Ltda.	No

A.5. Public funding of project activity

There is no public funding from Parties included in Annex 1 involved on this project activity.

A.6. History of project activity

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The project activity is not included as a component project activity nor is a project activity that has been deregistered.

A.7. Debundling

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Not applicable

SECTION B. Application of selected methodologies and standardized baselines

B.1. Reference to methodologies and standardized baselines

Approved consolidated baseline and monitoring methodology ACM0002: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", Version 12.2.0.

Furthermore, it was used the latest approved versions of the following tools:

- "Tool to calculate the emission factor for an electricity system". Latest approved version at the time of conclusion of the PDD: 02.2.1;
- "Tool for the demonstration and assessment of additionality". Latest approved version at the time of conclusion of the PDD: 06.0.0.

B.2. Applicability of methodologies and standardized baselines

In accordance with the applicability conditions of ACM0002 version 12.2.0, the proposed project activity consists in the installation of a grid-connected renewable power generation facility at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant).

Furthermore, the project activity fulfills all the applicability conditions of ACM0002/Version 12.2.0 in the following ways:

- "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".

Outcome: applicability condition is fulfilled, considering that the project activity is the installation of a "wind power plant/unit".

- "In case of capacity additions, retrofits or replacements (except for wind, solar, wave or tidal power capacity addition projects which use Option 2 of page 11 to calculate the parameter $EG_{PJ,y}$): the existing plant started commercial operation prior to start of a minimum historical reference of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity".

  Outcome: since the proposed project does not involve capacity addition, retrofits or replacements, this applicability condition is not applied.

- "In case of hydro power plants, one of the following conditions must apply:
  - o The project activity is implemented in an existing single or multiple reservoirs, with no change in the volume of any of reservoirs; or
  - o 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; or
  - o 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".

  Outcome: taking into account that the proposed project activity is based in a wind-based source, this applicability condition is not applied.

- 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 all the following conditions must apply:
  - o The power density calculated for the entire project activity using equation 5 is greater than 4 W/m^2;
  - o Multiple reservoirs and hydro power plants located at the same river and where are designed together to function as an integrated project that collectively constitute the generation capacity of the combined power plant;
  - o Water flow between multiple reservoirs is not used by any other hydropower unit which is not a part of the project activity;
  - o Total installed capacity of the power units, which are driven using water from the reservoirs with power density lower than 4 W/m^2, is lower than 15MW;
  - o 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.

  Outcome: taking into account that the proposed project activity is based in a wind-based source, this applicability condition is not applied.

- "The methodology is not applicable to the following:

- Project activity 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 continued use of fossil fuels at the site;

- Biomass fired power plants;

- A hydro power plant that result in the creation of a new single reservoir or in the increase in an existing single reservoir where the power density of the power plant is less than 4 W/m^2"

Outcome: applicability condition fulfilled. The project activity does not involve fuel switch; biomass fired power plants; and is not a hydro power plant.

- "In case of retrofits, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is the "continuation of the current situation, i.e. to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance"".

  Outcome: applicability condition fulfilled. The project activity does not involve retrofit, replacement or capacity addition.

Therefore, this methodology is applicable to the project activity.

B.3. Project boundary, sources and greenhouse gases (GHGs)

The spatial extent of the project boundary includes the project power plants (constituted by Chuí I, Chuí II, Chuí IV, Chuí V, Minuano I, Minuano II, Verace I, Verace II, Verace III, Verace IV, Verace V, Verace VI, Verace VII, Verace VIII, Verace IX and Verace X) and all power plants connected physically to the electricity system that the CDM project power plant is connected to, i.e., SIN. Emission sources and gases included in the project boundary are depicted in the table below.

	Source	GHG	Included?	Justification/Explanation
Baseline	Power plants supplying energy to SIN (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	Main emission source.
		N_2O	No	Main emission source.
		---	---	---
	For geothermal power plants, fugitive emissions of CH_4 and CO_2 from non-condensable gases contained in geothermal steam.	CO_2	No	Not applicable.
		CH_4	No	Not applicable.
		N_2O	No	Not applicable.
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	CO_2 emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants.	CO_2	No	Not applicable.
		CH_4	No	Not applicable.
		N_2O	No	Not applicable.
		---	---	---
	For hydro power plants, emissions of CH_4 from the reservoir.	CO_2	No	Not applicable.
		CH_4	No	Not applicable.
		N_2O	No	Not applicable.
Project activity	Power plants supplying energy to SIN (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	Main emission source.
		N_2O	No	Main emission source.
		---	---	---
	For geothermal power plants, fugitive emissions of CH_4 and CO_2 from non-condensable gases contained in geothermal steam.	CO_2	No	Not applicable.
		CH_4	No	Not applicable.
		N_2O	No	Not applicable.
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	CO_2 emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants.	CO_2	No	Not applicable.
		CH_4	No	Not applicable.
		N_2O	No	Not applicable.
		---	---	---
	For hydro power plants, emissions of CH_4 from the reservoir.	CO_2	No	Not applicable.
		CH_4	No	Not applicable.
		N_2O	No	Not applicable.

A flow diagram of the project boundary, physically delineating the project activity, representing emissions sources and gases included in the project boundary and the monitoring variables, is depicted in Figure 2.

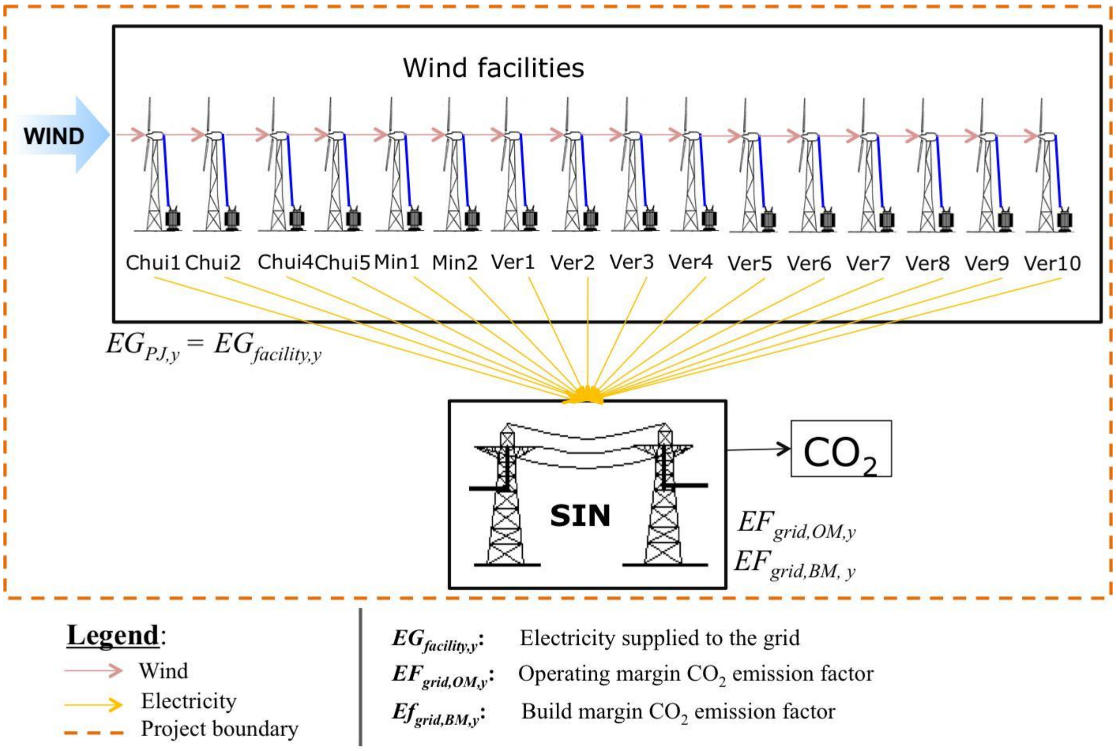

Figure 2: Project boundary. Monitored variables are depicted. Baseline emissions consist of CO_2 emissions from fossil fuel combustion for the electricity generation by the plants connected to SIN, as reflected in its combined margin.

B.4. Establishment and description of baseline scenario

As per ACM0002/Version 12.2.0, since the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

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

B.5. Demonstration of additionality

Project Starting Date

According to the Glossary of CDM 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*” and “*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. This, for example, can be the date on which contracts have been signed for equipment or construction/operation services required for the project activity. Minor pre-project expenses, e.g. the contracting of services /payment of fees for feasibility studies or preliminary surveys, should not be considered in the determination of the start date as they do not necessarily indicate the commencement of implementation of the project*”.

Taking into account the definition of Starting Date provided above, the Project Starting Date only occurred after project registration. During the 12th Brazilian Auction of New Energy (*12º Leilão de Energia Nova - Leilão nº 02/2011*[11]), the wind electricity generation of this project activity has been contracted; nevertheless, the Power Purchase Agreement (PPA) established in the auction do not necessarily commit the entrepreneurs to the wind electricity generation facilities' implementation, since it is possible to sell the PPA to other part yet. Besides not representing a major financial commitment, the land lease agreements do not necessarily bind the entrepreneurs to the implementation of the project activity either, as each one of them will only come into force when the respective windfarm starts operation as a whole. During the auction, the entrepreneurs negotiated the costs of the Windfarm Complex implementation and finally dealt the final costs with the equipment suppliers and with the company responsible for implementing the facilities. However, these deals have not been officialised yet (i.e. there is no official contracts that commit entrepreneurs to the equipment suppliers and to the companies responsible for implementing the facilities). The entrepreneurs and the involved parts are drawing up the respective Memorandum of Understandings and contracts; these documents will formalize the financial and technical conditions of the deal made between entrepreneurs and IMPSA, Gamesa and Schahin, related to the implementation of the project activity. The signature of the first of these documents, which will formalize financial penalties if entrepreneurs do not follow them, will define the Starting Date of the project activity.

<u>Demonstration and assessment of prior consideration of the CDM</u>

As per the "Guidelines on the demonstration and assessment of prior consideration of the CDM" (Version 4 - Annex 13/EB62), "for project activities with a starting date on or after 02 August 2008, the project participant must inform a Host Party DNA and the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status".

Project participants have informed the Brazilian DNA and the UNFCCC Secretariat of the commencement of the project activity and of their intention in seeking the CDM status. Such notification was made within six months of the project activity starting date (in fact, the project starting date has not occurred yet for this project activity) and contained a brief description of the project activity and the precise geographical location of the project plant. The notifications, using the standardized form F-CDM-Prior Consideration, were sent for Brazilian DNA and UNFCCC Secretariat on 06/01/2012[12], and the receipt of such documents has been confirmed.

Documental evidences of these notifications were made available to DOE during validation.

A summary of milestones is presented in Table 4.

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[11] 12th Brazilian Auction of New Energy (12º *Leilão de Energia Nova - Leilão nº 02/*2011). Available at http://www.ccee.org.br/cceeinterdsm/v/index.jsp?vgnextoid=38820a6c2930f210VgnVCM1000005e01010aRCRD. Accessed in 07/Dec/2011. Reference: 12thNewEnergyAuction_Results

[12] Notifications sent to UNFCCC Secretariat: Prior Consideration Form (reference: UNFCCCPriorConsideration_Form_20120106) and e-mail (UNFCCCPriorConsideration_Email_20120106; UNFCCCPriorConsideration_EmailReceipt_20120109). Notifications' sent to Brazilian DNA: Prior Consideration Form (reference: DNAPriorConsideration_Form_20120106) and DNA's confirmation of form receipt (reference: DNAPriorConsideration_Receipt_20120109).

Table 4: Timeline of the project activity until project registration date.

Date	Object	Related part	Document reference	Observation
2008	Chuí and Verace's Simplified Environmental Report (RAS – *Relatório Ambiental Simplificado*)	MAIA Meio Ambiente Consultoria Ambiental	Chui_RAS; Verace_RAS	Environmental impact assessment from Chuí and Verace's facilities, necessary to obtaining Prior License
21/11/08	Chuí's Prior License (LP – *Licença Prévia*)	FEPAM - Environmental Agency in charge of LP issuance	LP_Chui	LP valid until 20/11/2010
2009	Minuano's Simplified Environmental Report (RAS – *Relatório Ambiental Simplificado*)	MAIA Meio Ambiente Consultoria Ambiental	Minuano_RAS	Environmental impact assessment from Minuano's facilities, necessary to obtaining Prior License
25/02/10	Verace's Prior License (LP – *Licença Prévia*)	FEPAM - Environmental Agency in charge of LP issuance	LP_Verace	LP valid until 02/02/2011
29/06/10	Minuano's Prior License (LP – *Licença Prévia*)	IBAMA - Environmental Agency in charge of LP issuance	LP_Minuano	LP valid until 28/06/2012
16/03/11	Verace's Installation License (LI – *Licença de Instalação*)	FEPAM - Environmental Agency in charge of LI issuance	LI_Verace	LI valid until 15/03/2016
13/04/11	Inova Energy's wind report utilizing Gamesa's aerogenerators in Verace's facilities	Inova Energy	Verace_InovaEnergy _20110413	The entrepreneurs contracted Inova Energy to analyze the estimated electricity generation in Verace's facilities, considering a total of 129 aerogenerators model Gamesa G90 2.0 MW, with a total installed capacity of 258.0 MW. The Inova Energy's wind report estimated a total net electricity generation of 998,984 MWh/year.

16/08/11	MegaJoule's wind report utilizing IMPSA's aerogenerators in Chuí and Minuano's facilities	MegaJoule	ChuiMinuano_Meg a Joule_20110816	The entrepreneurs contracted MegaJoule to analyze the estimated electricity generation in Chuí and Minuano's facilities, considering a total of 72 aerogenerators model IMPSA IPW-100 2.0 MW, with a total installed capacity of 144.0 MW. The MegaJoule's wind report estimated a total net electricity generation of 626,760 MWh/year.
14 – 17/08/11	Budget provided by aerogenerators' suppliers (IMPSA and Gamesa) to the entrepreneurs	IMPSA and Gamesa	IMPSABudget_201 1 0814; GamesaBudget_20 11 0817	The project developer requested budgets to IMPSA and Gamesa, aiming the acquisition of the aerogenerators required to the project activity.
17/08/11	Budget provided by turnkey implementation company (Schahin) to the entrepreneurs	Schahin (turnkey implementatio n company)	Schahin_20110817	The project developer requested budget to Schahin, in order to obtain the potential costs of turnkey implementation of the project activity.
17/08/11	12th Brazilian Auction of New Energy (*12º Leilão de Energia Nova - Leilão nº 02/2011*)	-	12thNewEnergyAu ct ion_Results	Date on which the wind electricity generation of this project activity has been contracted (i.e., the entrepreneurs agreed to sell the future electricity generation of the Windfarm Complex Santa Vitória do Palmar and Chuí); nevertheless, the Power Purchase Agreement (PPA) established in the auction does not necessarily commit the entrepreneurs to the wind electricity generation facility's implementation. This date is the moment of the investment decision.
19/08/1 1	Schahin's document formalizing the project's costs negotiated before and during the auction	Schahin (turnkey implementatio n company)	Schahin_Negotiated Costs_20110819	The costs of turnkey implementation of the project activity's facilities presented by Schahin on 17/08/2011 were negotiated during the auction. The final costs established in this negotiation were formalized by means of a document from Schahin to the entrepreneurs.
17/11/1 1	Contract signed with the CDM consultant	WayCarbon	Chui1_WayCarbon C ontract; Chui2_WayCarbon C	Entrepreneurs contracted WayCarbon in order to develop the CDM project.

			ontract; Chui4_WayCarbon C ontract; Chui5_WayCarbon C ontract; Minuano1_WayCar b onContract; Minuano2_WayCar b onContract; Verace1_WayCarbo n Contract; Verace2_WayCarbo n Contract; Verace3_WayCarbo n Contract; Verace4_WayCarbo n Contract; Verace5_WayCarbo n Contract; Verace6_WayCarbo n Contract; Verace7_WayCarbo n Contract; Verace8_WayCarbo n Contract; Verace9_WayCarbo n Contract; Verace10_WayCarb o nContract	
06/01/1 2	Prior Consideration of CDM	Brazilian DNA and UNFCCC Secretariat	UNFCCCPrior consideration_For m_ 20120106; UNFCCCPrior consideration_Emai l _20120106; UNFCCCPrior consideration_Emai l Receipt_20120109; DNAPrior consideration_For m_ 20120106; DNAPrior consideration_Rec eip t_20120109	Accordingly, project participants informed the Brazilian DNA and the UNFCCC Secretariat of the commencement of the project activity and of their intention in seeking the CDM status. Such notification was made within six months of the start date of project activity (in fact, the project starting date has not occurred yet for this project activity) and contained a brief description of the project activity and the precise geographical location of the project plant.

23/01/12	Chuí's Prior License (LP – *Licença Prévia*)	FEPAM - Environmental Agency in charge of LP issuance	LP_Chui_current	A new LP was emitted in order to extend the former LP in Chuí's facilities. New LP valid until 22/01/2014.

<u>Demonstration and assessment of additionality</u>

As per ACM0002/Version 12.2.0, the additionality of the project activity shall be demonstrated and assessed using the latest version of the "Tool for the demonstration and assessment of additionality".

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

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

The identified realistic and credible alternative scenarios available to the project participants are:

- The project activity undertaken without being registered as a CDM project activity;
- The continuation of the current situation (no project activity undertaken).

Outcome of step 1a: two realistic and credible alternative scenarios were identified.

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

All identified alternatives are in accordance with laws and regulations.

Outcome of step 1b: both scenarios identified are in compliance with mandatory legislation and regulations taking into account the Brazilian enforcement and EB decisions on national and/or sectoral policies and regulations.

Step 2: Investment analysis

The investment analysis determines whether the proposed project activity is not economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs).

The investment analysis was conducted according to the "Tool for the demonstration and assessment of additionality" (version 06.0.0) and the "Guidelines on the Assessment of Investment Analysis" (version 05). Therefore, the following sub-steps shall be undertaken:

Sub-step 2a. Determine appropriate analysis method:

The project activity generates incomes other than CDM related income, hence simple cost analysis cannot be applied. Investment comparison analysis is not used as there is no evidence that the proposed baseline scenario leaves project proponents no other options than to make an investment to supply the same (or substitute) product or service. Hence, benchmark analysis (Option III) will be used.

Sub-step 2b – Option III. Apply benchmark analysis:

<u>Identification of the financial indicator</u>

The method of the Equity Internal Rate of Return (Equity IRR) was considered as the most appropriate, once it is the most suitable for the project type and decision context. Real Equity IRR was the financial indicator based on which the project developer made the investment decision.

Identification of the benchmark

The cost of equity (K_e), calculated in real terms, was defined as the benchmark in accordance to the "Guidelines on the Assessment of Investment Analysis" (Version 5), paragraph 12: "Required/expected returns on equity are appropriate benchmarks for an equity IRR".

Real K_e was calculated using the Capital Asset Pricing Model (CAPM), a widely used pricing model in finance, as described below. Data used are publicly available and assumptions, sources and calculation steps used in benchmark development are described in detail in documents made available during validation.

Real K_e was calculated according to Equation (1):

(1) $K_e = R_f + \beta (R_m - R_f)$[13]

Where:

R_f = Risk Free Rate (%) Data used: Long Term Brazilian Treasury Bond (type NTN-B) yields, in real terms, of years 2006 (from August to December), 2007, 2008, 2009, 2010 and 2011 (from January to July), taking into account the investment decision date by the project owner.[14] Rationale: Governments control currency printing, which reduces probability of default, approximating to a risk free asset concept. The Treasury bond used is NTN-B (maturity date: 15/May/2035), which is a long-term bond that reflects a comparable horizon to an investment in a wind energy project in Brazil. Source: Publicly Available - Brazilian National Treasury: http://www.tesouro.fazenda.gov.br/tesouro_direto/;

β = Investment risk compared to the market (dimensionless). It is estimated as a proxy and measured as the sensitivity of the asset's returns to market returns calculated through Equation (2);

[13] All formulae used in the Capital Asset Pricing Model – Equations (1), (2), (3) and (4) – are publicly available in papers and reports such as "Cost of Capital to Small Hydroelectric Power Plants (SHPPs) in the Clean Development Mechanism Context". Available at http://www.abce.org.br/downloads/ingles.PDF. Accessed on 06/Feb/2012

[14] A 5-year historical series was used to calculate the benchmark (from August 2006 to July 2011) with the intention of reflecting the existing Brazilian market expectations at the moment of investment decision (August 2011). Period used is considered adequate as shorter periods could have biased the results towards the short term economic conjuncture in detriment of the medium to long term economic structure, while longer periods would add together substantially different macroeconomic structures and regulatory regimes, also potentially adding high volatility to the calculation and biases to results.

Besides, whereas longer historical series cannot be considered appropriated because they may not reflect accurately the economic environment of the investment decision, adopting shorter periods in the calculation of the benchmark is not considered a conservative approach because of the recent occurrence of a world economic crisis since 2008 and 2009, which has affected countries' lines of action and their results. Although Brazil has not suffered consequences in the same magnitude as developed countries, using punctual data could have deviated Brazilian conditions in the medium term.

Moreover, historical data for the Long Term Brazilian Treasury Bond returns (type NTN-B, with maturity date of 15/May/2035), adopted as risk free rate in the CAPM calculation, are available from 12/Apr/2006 onwards, reflecting the starting date of the bond's transaction. That is a good example that domestic markets have been growing in liquidity, since government bonds can be bought directly by project proponents.

R_m = Expected Return on a Risky Asset (Market Return) (%). Data used: Daily Return of Bovespa Index of years 2006 (from August to December), 2007, 2008, 2009, 2010 and 2011 (from January to July). Rationale: According to BMF&Bovespa website: "The *Bovespa Index* is the main indicator of the Brazilian stock market's average performance. Ibovespa's relevance comes from two facts: it reflects the variation of BM&FBOVESPA's most traded stocks and it has tradition, having maintained the integrity of its historical series without any methodological change since its inception in 1968". Therefore it is a credible index to reflect returns on risky assets (market return). Source: Publicly Available - BMF&BOVESPA: http://www.bmfbovespa.com.br;

Note: In order to obtain market return rates (**R_m**) in real terms, Fisher equation was used: Real R_m = [(1+Nominal R_m) / (1 + Inflation Rate)] – 1. The inflation index used is the National Index of Prices for the General Consumer (*Índice Nacional de Preços ao Consumidor Amplo* – IPCA), which is the most consistent rate once it is the index for annual energy price inflation adjustments and the inflation type used to calculate NTN-B public bond nominal yield.

R_i = Expected Return on an Energy Sector Asset (%) Data used: Daily Return of BMF&Bovespa's Electric Power Index of years 2006 (from August to December), 2007, 2008, 2009, 2010 and 2011 (from January to July). Rationale: According to the "Tool for the demonstration and assessment of additionality", Sub-Step 2b, Paragraph 5: "When applying Option II or Option III, the financial/economic analysis shall be based on parameters that are standard in the market, considering the specific characteristics of the project type, but not linked to the subjective profitability expectation or risk profile of a particular project developer". The BMF&Bovespa's Electric Power Index (Índice de Energia Elétrica - IEE) satisfies this applicable additionality tool, since according to BMF&Bovespa the index has "the purpose of providing a segmented view of the stock market performance. They are composed by the most significant publicly-held companies of specific economic sectors, representing the aggregated performance of the sector considered". Source: Publicly Available - BMF&BOVESPA: http://www.bmfbovespa.com.br;

Note: All data related to year 2011 considers the period from 01/Jan to 31/Jul in order to reflect information available at the investment decision date of the project activity in August 2011.

(2) $$b = \frac{Cov(R_i, R_m)}{s_m^2}$$

Where:

Cov (R_i,R_m) = Covariance of the Asset Return (R_i) and the Market Return (R_m) (percentage points);
σ_m^2 = Variance of Market Return (percentage points).

Equation (2), which divides the covariance of the daily returns of BMF&Bovespa's Electric Power Index and the daily returns of Bovespa Index by the variance of the daily returns of Bovespa Index, yields β_{IEE} = 0.40. However, as β_{IEE} refers to companies that perform the same activity as the project activity, it needs to be adjusted to reflect the specific leverage proposed for the Windfarm Complex Santa Vitória do Palmar and Chuí. That involves the calculation of an unleveraged and of a (re)leveraged β through Equations (3) and (4), respectively.

(3) $$\beta_{unleveraged} = \frac{\beta_{IEE}}{\left[1+\frac{w_{dIEE}}{w_{eIEE}} \times (1-Income\ Taxes)\right]}$$

Where:

β_{IEE} = β calculated through Equation (2) (dimensionless);
W_{dIEE} = debt in IEE companies' capital structure (%);
W_{eIEE} = equity in IEE companies' capital structure (%);
Income Taxes = income tax rate under the real profit regime.

Equation (3) subtracts from β_{IEE} the percentage of risk related to the capital structure of companies that are part of the Electricity Index (IEE). Besides, it nullifies the effects of taxation applied to these companies (real profit fiscal regime, under which an income tax rate of 34% is applied to companies' gross revenues)[15]. The result ($\beta_{unleveraged}$) is a value that does not take into account leverage and that is not biased towards the conditions of larger and differently financially structured companies.

(4) $\beta_{leveraged} = \beta_{unleveraged} \times \left(1 + \frac{w_d}{w_e}\right)$

Where:

W_d = debt in the project activity's capital structure (%);
W_e = equity in the project activity's capital structure (%).

Equation (4) incorporates the risk related to the capital structure that will actually be used in the project activity. The percentage considered is 63.5%[16], which corresponds to the average leverage of renewable energy projects funded by BNDES, according to the BNDES presentation from August 2011. As a result, $\beta_{leveraged}$ is the value that reflects the investment risk compared to the market in a more accurate way.

ii) Benchmark established

The required/expected rate of return described and calculated in the Benchmark spreadsheet and reproduced below is K_e = 14.75% p.y., in real terms (Table 5). This is the benchmark defined to assess the additionality of the project activity and will be used in the comparison with the Equity IRRs.

Table 5: Assumptions and results of CAPM.

Year	R_f	Months	Beta	R_m	R_m-R_f
2011 (Jan-Jul)	5.94%	7		-27.71%	-33.66%
2010 (Jan-Dec)	6.13%	12		-4.59%	-10.72%
2009 (Jan-Dec)	6.67%	12	1.11	75.11%	68.44%

[15] The reason why the income tax rate has been considered in Equation (3) but not in Equation (4) consists in differences between Real Profit and Assumed Profit taxation regimes. Because companies under Real Profit regime pay income taxes based on actual profits earned, financial expenses (interest payment and debt amortization) are tax deductible for these companies. On the other hand, under Assumed Profit regime, income taxes are calculated over the companies' revenues. Therefore, the payment of financial expenses does not affect these companies' tax base. In order to reflect the inexistence of this fiscal benefit for companies under Assumed Profit regime, the term *(1-Income Taxes)* has not been included when releveraging Beta (Equation (4)).

[16] BNDES presentation on the Banks's support to renewable energy projects. Available at http://www.fiesp.com.br/energia/pdf/tema6-painel2-antonio-andrada-tovar.pdf. Accessed on 06/Feb/2012.

2008 (Jan-Dec)	7.19%	12		-44.50%	-51.69%
2007 (Jan-Dec)	6.66%	12		37.52%	30.86%
2006 (Aug-Dec)	7.99%	5		53.92%	45.94%
Average	6.69%	-	-	-	7.28%
k_e (real terms)	14.75%				
w_e	36.50%				
w_d	63.50%				

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

The detailed analysis is provided in the Financial Analysis spreadsheets (one for Verace and another for Chui-Minuano)[17], in which a full description of all the variables and assumptions is available. The "Guidelines on the Assessment of Investment Analysis" (version 05) was thoroughly observed in the elaboration of the financial analysis whose results are reported below.

<u>Assumptions and calculation of the Equity IRRs:</u>

<u>Electricity generation:</u>

At the time of the investment decision, the annual amount of electricity generation estimated for the 10 Verace's facilities was 114.0 MW, or 998,984 MWh[18]. In order to achieve this electricity generation, the weighted net load factor projected to the 10 plants at that moment was 44.2%.

As mentioned in Appendix 7 – the project underwent post registration changes. The additionality section has been updated to reflect the effect on additionality due to project design changes in relation to the Chui and Minuano facilities (please refer to Appendix 7 for further details). Therefore, the annual amount of electricity generation estimated for the 6 Chuí and Minuano's facilities was 64.4 MW, or 564,409 MWh. In order to achieve this electricity generation, the weighted net load factor projected to the 6 plants was 44.7%.

Taking into account the project activity as a whole, the amount of electricity generation is estimated as 178.5 MW, or 1,563,393 MWh. In order to achieve this electricity generation, the weighted net load factor projected to the 16 plants was 44.4%.

<u>Electricity tariff:</u>

The price of electricity considered in the analysis was obtained from the results of the 12th Brazilian Auction of New Energy (*12º Leilão de Energia Nova - Leilão nº 02/2011*, reference: 12thNewEnergyAuction_Results). Taking into account Verace's facilities, the price of energy is

[17] Two groups of windfarms can be clearly identified inside the Complex: Verace's facilities (Verace I, Verace II, Verace III, Verace IV, Verace V, Verace VI, Verace VII, Verace VIII, Verace IX and Verace X) and Chuí's facilities (Chuí I, Chuí II, Chuí IV, Chuí V, Minuano I and Minuano II). It should be understood that the investment analysis has been performed separately for each of these groups because the group composed by Verace's facilities was financially independent from the group of Chuí's facilities. Hence, the ten Verace windfarms could have been contracted in the 12th Brazilian Auction of New Energy in the regardless of the performance of Chuí's windfarms in the mentioned auction.

[18] For Verace's facilities, the electricity generation estimated on investment decision date was obtained from Table 8 of the Inova Energy's wind report made available to the entrepreneurs on 13/April/2011 (reference: Verace_InovaEnergy_20110413). For Chuí's facilities, the electricity generation was obtained from EREDA's wind report made available to the entrepreneurs on 19/Fev/2014 (reference: IT-1402-MBF-CertificacionProduccionChui-05) In both cases, the plant load factor of each windfarm can be calculated by dividing the annual energy generation by the facility's installed capacity and by 8760 (hours per year).

equal to R$ 98.22/MWh. For Chuí's facilities, it is equal to R$102.39/MWh. Considering all facilities of the project activity, the weighted average price is R$99.70/MWh. All prices correspond to the base date of August, 2011 and are subject to annual adjustments by the Extended National Consumer Price Index (*Índice Nacional de Preços Consumidor Amplo* – IPCA)[19].

<u>Capital Expenditures:</u>

The amount to be disbursed on aerogenerators is evidenced by the Gamesa's budget from 17/Aug/2011 (reference: GamesaBudget_20110817), for Verace's, for Chuí´s and for Minuano´s facilities.

The price of civil works is evidenced by the Schahin's budget from 17/Aug/2011 (reference: Schahin_20110817) and by the letter addressed by Schahin to entrepreneurs on 19/Aug/2011 (reference: Schahin_NegotiatedCosts_20110819), in which Schahin ratifies the values agreed by the parts during the auction.

Expenditures related to substations, transmission lines, trenching and transmission installation for shared connection stations are evidenced by the technical and commercial proposal addressed by ABB Ltda. to Eletrosul Centrais Elétricas S.A. on 16/Aug/2011 (reference: ABB_CommercialProposal_20110816).

It should be noted that on investment decision date the project was assumed to be eligible to the Special Incentive Regime for Infrastructure Development (*Regime Especial de Incentivo para Desenvolvimento de Infraestrutura* – REIDI), which would exempt its investments from collection of PIS and Cofins taxes. However, it shall also be noted that such exemption is only applicable to investments in infrastructure. Therefore, despite PIS and Cofins taxes have not been applied to the project's CAPEX, they are still levied on the project's revenues.

<u>Operation and Maintenance (O&M):</u>

O&M costs for Verace's, Chuí´s and Minuano´s facilities are evidenced by the Gamesa's budget from 17/Aug/2011 (reference: GamesaBudget_20110817).

<u>Transmission costs</u>

The values of the Use of Transmission System Tariff (*Tarifa de Uso do Sistema de Transmissão* – TUST), which refer to the transmission costs of the grid, were obtained from the Electricity Regulatory National Agency (*Agência Nacional de Energia Elétrica* – ANEEL) Homologation Resolution #1,179 from 18/Jul/2011 (reference: ANEEL_HomologationResolution1179). The tariff is levied on the installed power of the project and will be updated to account for inflation every tariff cycle. In addition, the project falls under the conditions displayed by Law #9,427, article 26, § 1st, from 26/Dec/1996. According to the text set by Law 11,488, from 15/Jun/2007, it establishes a reduction percentage not lower than 50% of TUST for certain wind power projects.

<u>National and/or sectoral policies:</u>

According to the Sub-step 2c of the "Tool for demonstration and assessment of additionality" in the calculation of the suitable financial indicator of the project activity "*include all relevant costs (including, for example, the investment cost, the operations and maintenance costs), and revenues (excluding CER revenues, but possibly including inter alia subsidies/fiscal incentives*[20]*, ODA etc, where applicable), and, as appropriate, non-market cost and benefits in the case of public*

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[19] It shall be highlighted that inflation rates have been applied to all items of the cash flow, resulting in values expressed in nominal terms. However, as the benchmark (k_e) had been calculated in real terms, inflation was discounted of all items of the cash flow in order to obtain a real-term financial indicator (Equity IRR).

[20] See EB guidance on the consideration of national/local/sectoral policies and measures for the baseline setting.

investors if this is standard practice for the selection of public investments in the host country". Regarding the "Clarifications on the consideration of national and/or sectoral policies and circumstances in baseline scenarios" (version 2), "*(b) 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)*", are considered a type E- policy. If this type of policy has been implemented since the adoption by the COP of the CDM M&P (decision 17/CP.7, 11 November 2001), it need not be taken into account.

Considering these clarifications from the Executive Board, the following specific sectoral policy was implemented in Brazil in order to provide incentives for implementation and diffusion of renewable energy plants:

Discount of 50% on electricity transmission tariffs:

One of the costs associated to the operation of power plants in Brazil refers to the transmission and distribution of the electricity generated by the power plants. In order to induce the implementation of renewable power plants by the private sector, the Brazilian government has created a specific incentive related to the transmission costs for different types of plants.

> The incentive mentioned created by the Brazilian Electricity Regulatory Agency (ANEEL) determines a sectoral policy of 50% reduction on tariffs for the use of electrical systems for transmission and distribution systems, by hydroelectric developments and for those based on solar, wind, biomass or qualified cogeneration, where the power injected into the transmission and distribution systems is less than or equal to 30,000 kW. This benefit was created on 26/Dec/1996, by the Law number 9,427, in which it was determined that ANEEL should stipulate a reduction not inferior to 50% on the tariffs of transmission.

The Normative Resolution number 77[21], issued on 18/Aug/2004, establishes the procedures related to tariff's reduction. The Normative Resolution number 271[22], from 3/Jul/2007 updates the text set by Normative Resolution number 77 and cites Law number 11,488 from 15/Jun/2007, which extends to the generation projects typified above the reduction on TUST.

As described above, these types of policy do not need to be taken into account in the calculation of the project activity financial indicator if it was created after the adoption of the CDM M&P. Considering that, the TUST (transmission tariff) discount was not taken into account in the calculation of the suitable financial indicator – Equity IRRs.

Regulatory costs:

For all the Windfarm Complex Santa Vitória do Palmar and Chuí the value of the Electric Services Inspection Tax (*Taxa de Fiscalização dos Serviços de Energia Elétrica* – TFSEE) is equivalent to 0.5% of the annual Unitary Typical Economic Benefit (*Benefício Econômico Típico Unitário*) – R$385.73 per installed KW – according to the ANEEL #4,080 Dispatch, from 27/Dec/2010 (reference: ANEEL_Dispatch4080), and the Presidency of the Republic Decree #2,410, from 28/Nov/1997 (reference: Decree2410).

Land lease:

Expenditures relating to land leasing correspond to 1.8% of the project's monthly net revenues, as evidenced by the land lease contracts signed between Verace Energia Eólica Ltda., Chuí Energia Eólica Ltda., Minuano Energia Eólica Ltda. and the land owners.

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[21] Normative Resolution number 77 issued on 18/Aug/2004 by ANEEL: http://www.aneel.gov.br/cedoc/bren2004077.pdf.

[22] Normative Resolution number 271 issued on 03/Jul/2007 by ANEEL: http://www.aneel.gov.br/cedoc/ren2007271.pdf.

Administrative expenditures:

Annual administrative expenditures were estimated as a fixed value for each group of facilities at the time of the investment decision and are consistent with information available for a publicly traded company focused on wind energy projects.

Financial structure:

By the time of the investment decision, fundraising through a BNDES Credit Line was considered for Verace and Chuí's facilities as its standard terms for wind farms facilities. The terms reflect the expectation of the decision makers and are in accordance to the conditions established by BNDES for wind projects, as per information collected from BNDES' website and from two presentations on the Banks's support to renewable energy projects (references: BNDES_RenewableEnergyProjectsPresentation and BNDES_RenewableEnergyProjectsPresentation_November2010)[23].

Taxes:

According to articles 516 to 528 of Income Tax Regulation (Decree 3,000 from 1999), Law 9,249 from 1995, Law 9,430 from 1996 and Law 10,637 from 2002, companies can apply to the assumed profit regime (which is a simplified income tax regime) as long as their gross revenues are not higher than R$48,000,000.00/year. As presented in the tab 'Revenues per plant' of the Financial Analysis spreadsheets (one for Verace and another for Chui-Minuano), the projected revenues of each individual plant do not exceed the established limit. Hence, all plants of Windfarm Complex Santa Vitória do Palmar and Chuí were considered as being eligible to the assumed profit regime.

In accordance with this taxation regime, the income tax rate of 15% is levied on the assumed profit of 8%, according to Decree Law 1,598, from 1977, and Laws 9,249 from 1995 and 9,430 from 1996. Therefore, income tax is not levied on the actual profit of companies under this regime[24]. As per the same Law, an additional income tax rate of 10% is levied on assumed profits that exceed R$ 240,000.00 per year.

Also according to the assumed profit taxation regime, the Social Contribution on Net Profits (*Contribuição Social sobre Lucro Líquido* - CSLL) rate is equal to 9% and is levied on 12% of gross revenues, according to Laws 9,430 from 1996 and 10,637 from 2002.

PIS and Cofins taxes correspond to 3.65% of gross revenues, according to Laws 10,637 from 2002 and 10,833 of 2003. As the project activity was assumed to be eligible to the REIDI, these taxes are levied only on revenues and not on CAPEX.

Period of assessment:

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[23] According to the references provided, the financial cost of the loan is composed by the Long Term Interest Rate (*Taxa de Juros de Longo Prazo* - TJLP, equal to 6% per year on investment decision date), the BNDES basic remuneration (0.9% per year) and the risk spread (calculated by the Bank within the range of 0.46% per year to 3.57% per year). The 1.6% risk spread was estimated by the entrepreneurs as an average value according to their perception on the risk of the project and based on their market expertise concerning energy generation and transmission projects. It shall be noted that there is no availability of public data concerning an average risk spread for renewable energy generation projects. However, the value considered in the analysis (1.6% per year) is inferior than the average of the maximum and the minimum values set by the Bank, which can be considered as a conservative approach.

[24] As per assumed profit regime, income tax is calculated on an assumed profit (calculated as a percentage of revenues), not on the company's actual profit. Because of that, depreciation has not been considered in the models (it should have been considered in case real profit had been calculated). However, loan rates and other financial costs are included in the models because Equity IRRs (the financial indicator chosen to demonstrate the project's additionality) take into account the funding provided by BNDES to the project.

As a conservative assumption in accordance with the "Guidelines on the Assessment of Investment Analysis" (Version 05), paragraph 3, the operational lifetime of aerogenerators presented in the ANEEL Electrical Sector Endowment Management Handbook (reference: ElectricalSectorEndowmentManagementHandbook_ANEEL_2009) and Articles 1.1.1 and 11.9.1.3.7 of the the 12th Brazilian Auction of New Energy's Public Notice (reference: 12thAuctionNewEnergy_Announcement), the period of analysis was considered as 20 years from the beginning of the plants operation onwards.

Result:
After applying the assumptions enumerated above and others described in the Financial Analysis spreadsheets, the Equity IRRs for Verace's facilities and for Chuí's facilities are, respectively, 6.30% p.y. and 4.94% p.y., in real terms.

Comparison of Equity IRRs and the Benchmark rates:

According to the Tool for the demonstration and assessment of additionality, Sub-step 2c, sub-item 10. (b): *"The financial benchmark, if Option III (benchmark analysis) is used. If the CDM project activity has a less favourable indicator (e.g. lower IRR) than the benchmark, then the CDM project activity cannot be considered as financially attractive".*

Thus, without the CDM revenues, the proposed CDM project is not financially feasible, that is, the Equity IRRs of 6.30% p.y. and 4.94% p.y.are lower than their reference of 14.75% p.y..

Verace's Equity IRR of 6.30% p.y. < Benchmark rate of 14.75% p.y.

Chuí-Minuano's Equity IRR of 4.94% p.y. < Benchmark rate of 14.75% p.y.

Sub-step 2d. Sensitivity analysis:

A sensitivity analysis was carried out for the project activity in order to demonstrate that the conclusion regarding financial unattractiveness is resilient to reasonable variations in the critical assumptions. Variables that constitute more than 20% of either total project costs or total revenues were subject to reasonable variation. The variables subjected to sensitivity analysis were:

- Revenues;
- Operational Expenditures (Opex);
- Capital Expenditures (Capex).

The results obtained through +10% and -10% variations in the parameters above are presented in Table 6 below.

Table 6: Sensitivity analysis - +/10% variations.

Facilities	Parameter	+/- 10% Variation	Result obtained	Original Equity IRR
Verace	Revenues	+10%	9.61%	6.30%
	OPEX	-10%	7.25%	
	CAPEX	-10%	9.57%	
Chuí and Minuano	Revenues	+10%	7.70%	4.94%
	OPEX	-10%	5.74%	
	CAPEX	-10%	7.44%	

Moreover, a breakeven point analysis was provided in order to show the required variation for Equity IRR to achieve the benchmark. The results obtained are presented in Table 7 below. As the Equity IRR has not overcome the benchmark within a variation range of +10% and -10% of the parameters, an assessment of the probability of occurrence of this scenario is not necessary, according to the "Guidelines on the Assessment of Investment Analysis" (Version 05).

Table 7: Sensitivity analysis considering variations required to achieve the benchmark.

Parameter	Variation required to achieve the benchmark	
	Verace	Chuí and Minuano
Revenues	+25.60%	+39.55%
OPEX	-96.13%	-155.04%
CAPEX	-19.29%	-26.80%

Sensitivity analysis shows that the investment analysis provided a valid argument in favor of the additionality of the proposed project activity, since it consistently supports, for a realistic range of assumptions, the conclusion that the project activity without CERs revenues is unlikely to be financially/economically attractive.

Outcome of step 2: after the sensitivity analysis, it is concluded that the proposed CDM project activity is unlikely to be financially/economically attractive.

Step 3: Barrier analysis

This step was not applied.

Step 4: Common practice analysis

There are 73 operating wind power plants in Brazil, summing 1.47 GW of installed capacity, which represents 1.26% of the total installed capacity in the country (Table 8).

Table 8: Electricity production entrepreneurships in operation in Brazil.

Type	Units	Verified installed capacity	
		kW	%
Mini and Micro Hydroelectric Plants (≤ 1 MW)	371	214,305	0.18%
Wind power plants	**73**	**1,471,192**	1.26%
Small hydroelectric plants (1 MW – 30 MW)	421	3,878,507	3.31%
Photovoltaic plants	8	1,494	0.00%

Large hydroelectric plants (≥ 30 MW)	180	78,277,779	66.83%
Thermoelectric plants	1,528	31,274,624	26.70%
Nuclear plants	2	2,007,000	1.71%
Total	**2,583**	**117,124,901**	100.00%

Source: National Electric Energy Agency (ANEEL - *Agência Nacional de Energia Elétrica*): Generation Database (BIG - *Banco de Informação de Geração*). Available at http://www.aneel.gov.br/aplicacoes/capacidadebrasil/capacidadebrasil.asp. Accessed on 14/Mar/2012 (reference: BrazilianElectricityGenerationMatrix_ANEEL_20120314).

The data depicted in Table 8 show that the participation of wind-based electricity is still not significant in the electric matrix in Brazil. Moreover, it should be noted that most wind-based electricity generation entrepreneurships in Brazil accrue from one of the following incentive mechanisms: CDM and PROINFA[25].

Since the project activity belongs to measure (b) described in paragraph 6 of the "Tool for the demonstration and assessment of additionality" (version 06.0.0), the common practice analysis was conducted according to the paragraph 47 of the aforementioned tool and to the "Guidelines on common practice" (version 01.0).

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

Since the installed capacity of the Windfarm Complex Santa Vitória do Palmar and Chuí is 402.0 MW, the upper limit of the output range of the common practice analysis is 603.0 MW (+50% installed capacity).

Aiming conservativeness, since the financial analysis was conducted separately for Chuí's facilities and Verace's facilities (144.0 and 258.0 MW of total installed capacity, respectively; see Table 1), the lower limit of the output range was determined considering the subset Chuí's facilities, i.e. the lower limit of the output range of the common practice analysis is 72.0 MW (-50% Chuí's installed capacity).

Therefore, the output range of the common practice analysis is 72.0 – 603.0 MW (+/-50% installed capacity).

The common practice analysis was conducted considering a single range, even with the financial analysis being conducted separately for Chuí's and Verace's facilities, because in that way the analysis covers a greater number of power plants, which makes it more conservative.

ANEEL (Brazilian National Electric Agency – *Agência Nacional de Energia Elétrica*) publishes the wind electricity generation plant units operating in Brazil (see the Common Practice analysis spreadsheet, column D). Nevertheless, in order to be consistent with the investment analysis and the *ex-ante* calculation of the project activity, the facilities complexes' installed capacity was considered in the output range determination (see the Common Practice analysis spreadsheet, column G), instead of individual plant units' installed capacity (see the Common Practice analysis spreadsheet, columns E and F).

[25] Programa de Incentivo às Fontes Alternativas de Energia Elétrica/ *Program of Incentive to Alternative Sources of Electric Energy*. Available at http://www.mme.gov.br/programas/proinfa. Accessed on 11/Jun/2010.

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 projects activities undergoing validation shall not be included in this step.

Considering the 2,497 electricity plants in operation in Brazil, 2,312 do not deliver the same capacity as the project activity, considering the output range established in step 1 above (see the Common Practice analysis spreadsheet, column H). 33 out of the remaining 185 plants are under CDM validation or already registered (see the Common Practice analysis spreadsheet, column I). Therefore, there are 152 electricity plants in operation in Brazil that deliver the same capacity as the project activity and are not under CDM validation or already registered (see the Common Practice analysis spreadsheet, column J).

N_{all} 152

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}.

According to the “Guidelines on common practice” (version 01.0), “different technologies are technologies that deliver the same output and differ by at least one of the following:

(i) Energy source/fuel;

(…)

(iv) Investment climate in the date of the investment decision, *inter alia*:

- Access to technology;
- Subsidies or other financial flows;
- Promotional policies;
- Legal regulations”.

Electricity plants being developed under PROINFA (detailed described below) are considered as plants that apply technology different that one applied in the project activity, accordingly to the aforementioned concept.

PROINFA (*Programa de Incentivo às Fontes Alternativas de Energia Elétrica* – Program of Incentive to Alternative Sources of Electric Energy) was launched in 2002 with the objective of increasing the participation of electricity produced from wind and biomass sources and from small hydroelectric plants in the National Interconnected System (SIN). PROINFA is based on feed in tariffs and was designed to have 2 phases. The first phase initially set a quota of 3.3 GW of new generation capacity equally distributed among wind, biomass and small hydro. After the program was launched, part of the quota of biomass was transferred to wind projects[26].

The program foresees the implementation of 144 plants, totaling 3,299.40 MW of installed capacity, being 1,191.24 MW from 63 small hydroelectric plants (1 MW - 30 MW), 1,422.92 MW from 54 wind plants and 685.24 MW from 27 biomass plants[29].

Projects developed under PROINFA have a 20-year Power Purchase Agreement signed with the state-owned electricity utility ELETROBRÁS[29]. PROINFA presets the price of the electricity paid to generators as a technology specific economic value, which is defined as the value that guarantee, for a defined timeframe and efficiency level, the economic feasibility of a typical project based on

[26] Alves de Brito, M.L. 2009. Investments in Wind Energy in Brazil: Comparing PROINFA and CDM project finance. Master Thesis. Graduate School of Humanities and Social Sciences. University of Tsukuba, Japan.

alternative sources of energy. It is worthy mentioning that the prices paid by PROINFA are higher than those currently practiced by the market (PROINFA's wind electricity minimum price is R$180.08 and maximum price is R$204.35, adjusted by the official inflation index IGPm)[29]. However, as PROINFA no longer allows the insertion of new projects within its incentive program, this project activity is not being developed under PROINFA.

Besides, electricity generation companies that had Electricity Purchase and Sale Contracts signed with ELETROBRÁS in the ambit of PROINFA could take up a loan from the National Development Bank (*Banco Nacional do Desenvolvimento* – BNDES). Under the so-called Program of Financial Support to Investments in Alternative Sources of Electric Energy in the Ambit of PROINFA (*Programa de Apoio Financeiro a Investimentos em Fontes Alternativas de Energia Elétrica no Âmbito do PROINFA*), borrowers could finance up to 70% of financeable items, where the first installment could be paid up to third month after the operation start date with up to 10-year amortization periods[27].

149 out of the 152 electricity plants in operation in Brazil that deliver the same capacity as the project activity and are not under CDM validation or already registered utilize other energy source than wind (see the Common Practice analysis spreadsheet, columns K and L), i.e. apply technology different that the one applied in the proposed project activity; 2 out of the 3 windfarms in operation in Brazil that deliver the same capacity as the project activity and are not under CDM validation or already registered are developed under PROINFA, i.e. also apply technology different that the one applied in the proposed project activity (see the Common Practice analysis spreadsheet, columns M and N).

$$N_{diff} = 151$$

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.*

$$F = 1 - \frac{N_{diff}}{N_{all}} \Rightarrow F = 1 - \frac{151}{152} \Rightarrow F = 0.01$$

Outcome of step 4: **Since** $F = 0.01$ **(i.e. lower than 0.2) and** $N_{all} - N_{diff} = 152 - 151 = 1$ (i.e. lower than 3), i.e. the proposed project activity is not a common practice within the sector in the applicable geographical area.

Since all steps above have been satisfied, the project activity is additional.

B.6. Estimation of emission reductions

B.6.1. Explanation of methodological choices

Project emissions

[27] Program of Financial Support to Investments in Alternative Sources of Electric Energy in the Ambit of PROINFA/*Programa de Apoio Financeiro a Investimentos em Fontes Alternativas de Energia Elétrica no Âmbito do PROINFA*. Available at http://www.mme.gov.br/programas/proinfa/galerias/arquivos/programa/resolproinfa.pdf. Accessed on 03/Jan/2012.

As per ACM0002/Version 12.2.0, since the project activity is neither a geothermal, solar nor a hydropower plant, PE_y □ 0.

Baseline emissions

The baseline emissions are to be calculated as follows:

(1) $BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$

Where:

BE_y : Baseline emissions in year y (tCO_2/yr);

$EG_{PJ,y}$: 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/yr);

$EF_{grid,CM,y}$: Combined margin CO_2 emission factor for grid connected power generation in year calculated using the latest version of the "Tool to calculate the emission factor for an electricity system" (tCO_2/MWh).

Calculation of $EG_{PJ,y}$

Since the project activity is the installation of a new grid-connected renewable power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield project), then:

(2) $EG_{PJ,y} = EG_{facility,y}$

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/yr);

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

Calculation of $EF_{grid,CM,y}$

The project plants will serve Brazilian Interconnected System (SIN). The Brazilian DNA has published the delineation of SIN to be adopted for the purposes of CDM projects. As per Resolution nº 8 of the Brazilian DNA, the electric grid considered in this project activity is considered as a single system consisted by the sub-markets of SIN as the definition of the electric system of the project. Off-grid plants will not be included in the calculation of $EF_{grid,CM,y}$.

$EF_{grid,CM,y}$ will be calculated using the latest version of the "Tool to calculate the emission factor for an electricity system". The following formulae apply:

(3) $EF_{grid,CM,y} = EF_{grid,OM,y} \times w_{OM} + EF_{grid,BM} \times w_{BM}$

Where:

$EF_{grid,CM,y}$: Combined margin CO_2 emission factor in year y (tCO_2/MWh);

$EF_{grid,BM,y}$: 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 (75%);

w_{BM}: Weighting of build margin emissions factor (25%).

The weighting factors for build and operating margin were selected according to guidance provided in the "Tool to calculate the emission factor for an electricity system".

For the first crediting period, the build margin emission factor will be updated annually, *ex-post*, as well as operating margin emission factor, including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which information is available.

The parameters $EF_{grid,OM,y}$ and $EF_{grid,BM,y}$ are calculated and published by the Brazilian Inter-ministerial Commission for Global Climate Change, the Brazilian Designated National Authority, according to the most recent version of the "Tool to calculate the emission factor for an electricity system". By using these published values and the yearly electricity generating ($EF_{PJ,y}$) it will be possible to calculate the associated baseline emissions (BE_y).

Leakage

According to ACM0002, version 12.2.0, *"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, transport). These emissions sources are neglected."*

Emission reductions

The emission reduction by the project activity during a given year y is calculated as follows:

(4) $$ER_y = BE_y - PE_y$$

Where:

ER_y : Emissions reductions of the project activity during the year y (tCO_2e)

BE_y : Baseline emissions during the year y (tCO_2e)

PE_y : Project emissions during the year y in (tCO_2e)

B.6.2. Data and parameters fixed ex ante

Data/Parameter	w_{OM}
Data unit	Fraction
Description	Weighting of operating margin emissions factor
Source of data	“Tool do calculate the emission factor for an electricity system”, Version 02.2.1
Value(s) applied	75%
Choice of data or measurement methods and procedures	Default value for wind power plants.
Purpose of data	Calculation of baseline emissions
Additional comment	This value will be applied in the subsequent crediting periods.

Data / Parameter	w_{BM}
Unit	Fraction
Description	Weighting of build margin emissions factor
Source of data	“Tool do calculate the emission factor for an electricity system”, Version 02.2.1
Value(s) applied	25%
Choice of data or Measurement methods and procedures	Default value for wind power plants.
Purpose of data	Calculation of baseline emissions
Additional comment	This value will be applied in the subsequent crediting periods.

B.6.3. Ex ante calculation of emission reductions

Emission reductions were *ex-ante* estimated as follows:

(1) $$BE_y = EG_{PJ,y} \times EF_{grid,CM,y}$$

Where:

BE_y: Baseline emissions in year y (616,133 tCO_2/yr);

$EG_{PJ,y}$: 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 (1,563,393 MWh/yr);

$EF_{grid,CM,y}$: 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” (0.3941 tCO_2/MWh, based on data provided by the Brazilian DNA for 2010).

As per ACM0002/Version 12.2.0 for this project activity, project emissions are zero ($PE_y = 0$) and leakage emissions are not considered.

(2) $$ER_y = BE_y - PE_y$$

Where:

ER_y : Emissions reductions of the project activity during the year y (616,133 tCO_2e)

BE_y : Baseline emissions during the year y (616,133 tCO_2e)

PE_y : Project emissions during the year y (0 tCO_2e)

See detailed calculation in the Ex-ante Calculation spreadsheet.

The parameters used for *ex-ante* calculations are compiled in Table 10.

Table 10: Parameters used for ex-ante calculations.

Parameter	Unit	Value	Description	Comment
ER_y	tCO_2/yr	616,133	Emissions reductions in the year y	Calculated
BE_y	tCO_2/yr	616,133	Baseline emissions in year y	Calculated
PE_y	tCO_2/yr	0	Project emissions in the year y	For this project activity (wind-based electricity generation project) emissions are null, as per ACM0002/Version 12.2.0
$EG_{PJ,y}$	MWh/yr	1,563,393	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	Estimated as the average total yearly net electricity generation by the project activity, as per Inova Energy's study for Verace's facilities (reference: Verace_InovaEnergy_20110413) and per EREDA's study for Chuí and Minuano's facilities (IT-1402-MBF-CertificacionProduccionChui-05)
$EG_{facility,y}$	MWh/yr	1,563,393	Quantity of net electricity generation supplied by the project plant/unit to the grid in year y	Estimated as the average total yearly net electricity generation by the project activity, as per Inova Energy's study for Verace's facilities (reference: Verace_InovaEnergy_20110413) and per EREDA's study for Chuí and Minuano's facilities (reference: IT-1402-MBF-CertificacionProduccionChui-05)
$EF_{grid,CM,y}$	tCO_2/MWh	0.3941	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"	Calculated accordingly formula (3) in section B.6.1 of this PDD, as stated in the "Tool to calculate the emission factor for an electricity system", version 02.2.1 in step 6 a (Calculate the combined margin emissions factor – Weighted average CM")
$EF_{grid,OM,y}$	tCO_2/MWh	0.4787	Operating margin CO_2 emission factor in year y	Operating margin emission factor of the National Interconnected System (2010), as published by the Brazilian DNA (http://www.mct.gov.br/index.php/content/view/327118.html#ancora, accession date 01/12/2011)

$EF_{grid,BM,y}$	tCO_2/MWh	0.1404	Build margin CO_2 emission factor in year y	Build margin emission factor of the National Interconnected System (2010), as published by the Brazilian DNA (http://www.mct.gov.br/index.php/content/view/327118.html#ancora, accession date 01/12/2011)
w_{OM}	Fraction	0.75	Weighting of operating margin emissions factor	Default value for wind-based electricity generation projects, as per "Tool to calculate the emission factor for an electricity system"
w_{BM}	Fraction	0.25	Weighting of build margin emissions factor	Default value for wind-based electricity generation projects, as per "Tool to calculate the emission factor for an electricity system"

B.6.4. Summary of ex ante estimates of emission reductions

Year	Baseline emissions ($t CO_2e$)	Project emissions ($t CO_2e$)	Leakage ($t CO_2e$)	Emission reductions ($t CO_2e$)
From January 2015	616,133	-	-	616,133
2016	616,133	-	-	616,133
2017	616,133	-	-	616,133
2018	616,133	-	-	616,133
2019	616,133	-	-	616,133
2020	616,133	-	-	616,133
Till December 2021	616,133	-	-	616,133
Total	**4,312,931**	**-**	**-**	**4,312,931**
Total number of crediting years	7			
Annual average over the crediting period	616,133	-	-	616,133

B.7. Monitoring plan

B.7.1. Data and parameters to be monitored

Data / Parameter	$EG_{facility,y} = EG_{PJ,y}$
Unit	MWh
Description	Quantity of net electricity generation supplied by the project plant to the grid in year y
Source of data	Measurements at project activity site.
Value(s) applied	1,563,393

Measurement methods and procedures	This parameter will be continuously analyzed and monitored. Values will be aggregated monthly and yearly. Corresponds to the total net electricity generation by the 16 facilities of the project activity. This parameter will be monitored in meters localized in the interconnection point with the Brazilian national grid (SIN); the total amount dispatched to the SIN monitored by these meters will be prorated between each project facility according to the proportional amount of electricity generation measured in the electrical substation for each facility (Figure 3). The monitoring method of this parameter is a PRC change and is better detailed in Appendix 7. $EG_{PJ,y}$ is calculated as the electricity metered by SPA TF3, pro-rated by the electricity generated by the project plants (CHUI I, CHUI II, CHUI IV, CHUI V, Minuano I, Minuano II, Verace I, Verace II, Verace III, Verace IV, Verace V, Verace VI, Verace VII, Verace VIII, Verace IX, Verace X) and the electricity generated by CHUI IX. The pro-rating formula is: $EG_{PJ,y} = \Sigma_h\{EG_{SPA\ TF3,h} * \Sigma_{project\_facility}(EG_{project\_facility,h}) / [\Sigma_{project\_facility}(EG_{project\_facility,h}) + EG_{Chui\ 9,h}]\}$ Where: $EG_{PJ,y}$ = Quantity of net electricity generation that is producded and fed into the grid as a result of the CDM project activity (MWh/yr); $EG_{SPA\ TF3,h}$ = Hourly electricity generation measured by the meter SPA TF3 (MWh/hour); $EG_{project\_facility,h}$ = Hourly electricity generation by the project plants (CHUI I, CHUI II, CHUI IV, CHUI V, Minuano I, Minuano II, Verace I, Verace II, Verace III, Verace IV, Verace V, Verace VI, Verace VII, Verace VIII, Verace IX, Verace X) measured by their respective individual meters located at subcollector substations Chui / Minuano or Verace (MWh/hour); $EG_{Chui\ 9,h}$ = Hourly electricity generation by CHUI IX measured by its individual meters located at subcollector substations Chui / Minuano (MWh/hour).
Monitoring frequency	Continuous measurement and monthly recording.
QA/QC procedures	Measurement obtained in the interconnection point with the Brazilian national grid will be crosschecked with the data provided by the Brazilian Electric Energy Commercialization Chamber (*CCEE – Câmara de Comercialização de Energia Elétrica*). This data is a third party and reliable information, since CCEE is the official Brazilian agency responsible for the activities and operations of the national electricity market.
Purpose of data	Calculation of baseline emissions
Additional comment	*Ex-ante* estimated as the predicted average total yearly net electricity generation by the project activity, i.e. the average total yearly net electricity generation by the project activity as per Inova Energy's study for Verace's facilities (reference: Verace_InovaEnergy_20110413) and per EREDA's study for Chuí and Minuano's facilities (reference: IT-1402-MBF-CertificacionProduccionChui-05). In this project activity, no electricity import will occur; therefore, this parameter does not have to be taken into consideration in the calculation of the emissions reductions of the project activity (ER_y).

Data / Parameter	$EF_{grid,\ CM,\ y}$
Unit	tCO_2/MWh
Description	Combined margin CO_2 emission factor in year y
Source of data	Calculated
Value(s) applied	0.3941
Measurement methods and procedures	As per the most recent version "Tool to calculate the emission factor for an electricity system".

Monitoring frequency	Annually
QA/QC procedures	As per the most recent version of the “Tool to calculate the emission factor for an electricity system”.
Purpose of data	Calculation of baseline emissions
Additional comment	Calculated accordingly formula (3) in section B.6.1 of this PDD, as stated in the “Tool to calculate the emission factor for an electricity system”, version 02.2.1 in step 6 a (Calculate the combined margin emissions factor – Weighted average CM”)

Data / Parameter	$EF_{grid, OM, y}$
Unit	tCO_2/MWh
Description	Operating margin CO_2 emission factor in year y
Source of data	Brazilian Interministerial Commission on Global Climate Change
Value(s) applied	0.4787
Measurement methods and procedures	As per the most recent version “Tool to calculate the emission factor for an electricity system”.
Monitoring frequency	Annually
QA/QC procedures	As per the most recent version of the “Tool to calculate the emission factor for an electricity system”.
Purpose of data	Calculation of baseline emissions
Additional comment	For the first crediting period, the operating margin emission factor will be updated annually, *ex-post*. *Ex-ante* estimated operating margin emission factor of the National Interconnected System (2010), as published by the Brazilian DNA (http://www.mct.gov.br/index.php/content/view/327118.html#ancora, accessed on 01/Dec/2011).

Data / Parameter	$EF_{grid, BM, y}$
Unit	tCO_2/MWh
Description	Build margin CO_2 emission factor in year y
Source of data	Brazilian Interministerial Commission on Global Climate Change
Value(s) applied	0.1404
Measurement methods and procedures	As per the most recent version “Tool to calculate the emission factor for an electricity system”.
Monitoring frequency	Annually
QA/QC procedures	As per the most recent version of the “Tool to calculate the emission factor for an electricity system”.
Purpose of data	Calculation of baseline emissions
Additional comment	For the first crediting period, the build margin emission factor will be updated annually, *ex-post*, including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which information is available. *Ex-ante* estimated build margin emission factor of the National Interconnected System (2010), as published by the Brazilian DNA (http://www.mct.gov.br/index.php/content/view/327118.html#ancora, accessed on 01/Dec/2011).

B.7.2. Sampling plan

There is no sampling plan involved in this project activity.

B.7.3. Other elements of monitoring plan

More details are provided on Appendix 5.

SECTION C. Start date, crediting period type and duration

C.1. Start date of project activity

09/08/2012

The Project Starting Date only occurred after project registration. During the 12th Brazilian Auction of New Energy (*12º Leilão de Energia Nova - Leilão nº 02/2011*[28]), the wind electricity generation of this project activity has been contracted; nevertheless, the Power Purchase Agreement (PPA) established in the auction do not necessarily commit the entrepreneurs to the wind electricity generation facilities' implementation, since it is possible to sell the PPA to other part yet. Besides not representing a major financial commitment, the land lease agreements do not necessarily bind the entrepreneurs to the implementation of the project activity either, as each one of them will only come into force when the respective windfarm starts operation as a whole. During the auction, the entrepreneurs negotiated the costs of the Windfarm Complex implementation and finally dealt the final costs with the equipment suppliers and with the company responsible for implementing the facilities. However, these deals have not been officialised yet (i.e. there is no official contracts that commit the entrepreneurs to the equipment suppliers and to the companies responsible for implementing the facilities). The project developers and the involved parts are drawing up the respective Memorandum of Understandings and contracts; these documents will formalize the financial and technical conditions of the deal made between entrepreneurs and IMPSA, Gamesa and Schahin, related to the implementation of the project activity. The signature of the first of these documents, which formalizes financial penalties if entrepreneurs do not follow them, defines the Starting Date of the project activity.

As of August 9, 2012, the entrepreneurs signed the first turn-key contract including Gamesa and Schahin for the implementation of VERACE I-X. This date defines the Starting Date of the project activity. The milestone is presented on Appendix 7, Table 9 – Timeline for implementation of registered project activity.

C.2. Expected operational lifetime of project activity

20 years and zero months[29].

[28] 12th Brazilian Auction of New Energy (12º *Leilão de Energia Nova - Leilão nº 02/*2011). Available at http://www.ccee.org.br/cceeinterdsm/v/index.jsp?vgnextoid=38820a6c2930f210VgnVCM1000005e01010aRCRD. Accessed on 07/Dec/2011. Reference: 12thNewEnergyAuction_Results

[29] ANEEL (*Agência Nacional de Energia Elétrica* – Brazilian Electricity National Agency) Electrical Sector Endowment Management Handbook (ElectricalSectorEndowmentManagementHandbook_ANEEL_2009, in page 215) establishes a 5%-per-year depreciation tax to aerogenerators, which corresponds to a lifetime of 20 years.

In addition, the Power Purchase Agreement (PPA) established in the 12th Brazilian Auction of New Energy (*12º Leilão de Energia Nova - Leilão nº 02/2011*) has a time frame of 20 years from the commissioning starting date (available at http://www.ccee.org.br/cceeinterdsm/v/index.jsp?qryARQUIVO-CD-CATEGORIA-ARQUIVO=0e26e027f7911310VgnVCM1000005e01010a&contentType=ARQUIVO&vgnextoid=01d20a6c2930f210VgnVCM1000005e01010aRCRD&x=11&y=7; reference: 12thAuctionNewEnergy_Announcement, items 1.1.1 and 11.9.1.3.7).

C.3. Crediting period of project activity

C.3.1. Type of crediting period

Renewable (First crediting period).

C.3.2. Start date of crediting period

01/01/2015

C.3.3. Duration of crediting period

7 years and zero months.

SECTION D. Environmental impacts

D.1. Analysis of environmental impacts

Environmental Licensing is the major tool in environmental policies implementation in Brazil, with the main objective of standardizing environmental impacts assessments and establishing control plans for polluting enterprises. The Brazilian Environmental National Council (CONAMA – *Conselho Nacional de Meio Ambiente*) Normative Deliberations numbers 01/86 and 237/97 state that environmental impact assessments must be undertaken before the installation of new entrepreneurships or before the expansion/modification of existing activities. The construction and operation of these entrepreneurships are not allowed until the issuance of environmental permits. According to Federal Regulation 9.433/1997, article 52nd, the State or Municipal environmental agencies are the authorities in charge to issue Environmental Licenses within each Federative Unit (States or Municipalities), or by the Federal environment agency (*Instituto Brasileiro de Meio Ambiente e dos Recursos Naturais Renováveis* – IBAMA – Brazilian Environmental and Renewable Natural Resources Institute) depending on the scope, scale and boundaries of the activity. In the Rio Grande do Sul State, the Environmental Protection Foundation of the Rio Grande do Sul State (*Fundação Estadual de Proteção Ambiental do Rio Grande do Sul - FEPAM*) is responsible for environmental licensing in the State level.

According to the Federal Resolution CONAMA 001/86, activities that utilize natural resources and that are considered as entrepreneurships with high degradation or pollution potential must have their environmental impact assessment and environmental impact report elaborated to obtain the environmental licenses. Electricity generation, independently of the energy source, with potential higher than 10 MW, is amongst these activities.

According to the Brazilian Regulation CONAMA no. 237/97[30], the Federal environment agency (IBAMA – *Instituto Brasileiro de Meio Ambiente e dos Recursos Naturais Renováveis* – Brazilian Environmental and Renewable Natural Resources Institute) has the responsibility of environmentally license entrepreneurships whose environmental impacts have the potential to overcome the Brazilian boundaries. Since Minuano's facilities are the nearest to Uruguai in the Windfarm Complex, Minuano has to be licensed by IBAMA; the other plants have to be licensed by the Environmental Protection Foundation of the Rio Grande do Sul State (*Fundação Estadual de Proteção Ambiental do Rio Grande do Sul - FEPAM*), which is responsible for environmental licensing in the State level.
Therefore the project activity Simplified Environmental Reports (*Relatório Ambiental Simplificado* – RAS) [31] , that describes environmental impacts that may be caused by project design,

[30] Brazilian Regulation CONAMA no. 237/97. Available at http://www.dnit.gov.br/planejamento-e-pesquisa/coordenacao-geral-de-meio-ambiente/licenciamento-ambiental/conama-237-97.pdf. Accessed on 02/Feb/2012.

[31] The Simplified Environmental Reports (*Relatório Ambiental Simplificado*) assesses the environmental impacts of project activity and is required by FEPAM and IBAMA for the Prior License (LP) granting in this type of project activity (references: Chui_RAS; Minuano_RAS; Verace_RAS).

implementation and operation, were submitted to FEPAM (Chuí and Verace's facilities) or to IBAMA (Minuano's facilities), in order to obtain the Prior License (*Licença Prévia* – LP).

The RAS enumerate the environmental impacts that may be associated to the project activity, and propose corresponding mitigation actions and programs, when necessary. The Prior License also presents mandatory actions to prevent or reduce the environmental impacts when designing the project activity's facilities. The main impacts associated to the project activity's operation are:

- Noise pollution: according to RAS, noise produced by aerogenerators does not reach large distances, affecting only Windfarm Complex's immediate vicinity. For that reason, aerogenerators will be installed at least 400 m apart from permanently occupied residences;
- Avifaunal losses: although the area directly affected by the entrepreneurship is outside the assessed birds' migratory routes, the aerogenerators will be installed at least 600 m apart from avifaunal relevant habitat. Furthermore, avifaunal corridors will be implemented in case of aerogenerators are located between two important avifaunal habitats located in the vicinity of the Windfarm Complex.

FEPAM (Chuí and Verace's facilities) or IBAMA (Minuano's facilities) emitted the Environmental Licenses for the project activity's facilities, identified as:

- Chuí I, Chuí II, Chuí IV and Chuí V: Prior License n^o 127/2012-DL, issued on 23/Jan/2012 and valid until 22/Jan/2014 (reference: LP_Chui_current);
- Minuano I and Minuano II: Prior License n^o 355/2010, issued on 29/Jun/2010 and valid until 28/Jun/2012 (reference: LP_Minuano);
- Verace I, Verace II, Verace III, Verace IV, Verace V, Verace VI, Verace VII, Verace VIII, Verace IX and Verace X:
  - Prior License n^o 201/2010-DL, issued on 25/Feb/2010 and valid until 02/Feb/2011 (reference: LP_Verace);

Installation License n^o 314/2011-DL, issued on 16/Mar/2011 and valid until 15/Mar/2016 (reference: LI_Verace).

By means of the Prior Licensing, the environmental agency evaluates the entrepreneurship's localization and conception, attesting the environmental viability and establishing the basic requirements to the next phases of licensing.

The Installation License authorizes the beginning of the entrepreneurship's implementation, in accordance with the plans and projects approved, including the environmental control procedures and other constraints imposed by FEPAM or IBAMA.

Simplified Environmental Reports (RAS) and Prior and Installations Licenses were made available to DOE during validation.

D.2. Environmental impact assessment

In case of a wind power plant, the environmental impact is very small when compared to other alternatives for power generation. The interventions on the physical environment by the project activity in its planning, implementation and operation phases were categorized and their associated environmental impacts were identified in the RAS, as required by the environmental agencies (FEPAM and IBAMA); actions to prevent, mitigate or compensate them were proposed in this document.

SECTION E. Local stakeholder consultation

E.1. Modalities for local stakeholder consultation

Stakeholders were communicated about this CDM project development and invited to comment on the project activity on 23/12/2011[32] following the Designated National Authority procedures for such purpose, defined by Resolution nº 07 of the Interministerial Commission for Global Climate Change (CIMGC).

Accordingly, the relevant stakeholders were mapped and invited to visit the website http://www.munduscarbo.com/projetos.htm in order to access the project documentation which includes the CDM-PDD and a correspondent version in Portuguese. This documentation will be accessible on the above mentioned website along the whole registration period.

The following stakeholders received letters communicating the CDM project activity:

- Mayors from project activity Municipalities;
- Representatives of the Legislative Chambers from project activity Municipalities;
- State environmental agencies;
- Municipal environmental agencies;
- Brazilian Forum of NGOs and Social Movements for the Environment and Development (FBOMS);
- Local community associations;

State and Federal Prosecutors.

E.2. Summary of comments received

Up to the date of conclusion of this document, the following comments have been received:

- Federal Prosecution[33]: despite of the project relevance, the Federal Prosecution is forbidden to play consultancy activities, i.e. the entity can not analyses the project;
- Chuí's Environmental Agency[34]: the Windfarm Complex will benefit Chuí Municipality by means of direct and indirect jobs generation and tourism and local development incentives.

E.3. Consideration of comments received

Considering the Section E.2 of the PDD, no action shall be taken by the project participants.

SECTION F. Approval and authorization

The letter of approval from the Host Party was issued on 17 October 2012 and is provided along with this PDD.

[32] Invitation letters: SantaVitoriaPalmarChui_StakeholdersInvitationLetters_ 20111223.

Post office's confirmation of letters receipt: SantaVitoriaPalmarChui_PostOfficeConfirmation_2011-2012

[33] Federal Prosecution comment. Reference: SantaVitoriaPalmarChui_BrazilianFederalProsecutionComment_20120105

[34] Chuí's Environmental Agency comment. Reference: SantaVitoriaPalmarChui_ChuiEnvironmentalAgencyComment_20120113

Appendix 1. Contact information of project participants

Organization name	Santa Vitória do Palmar Holding S.A.
Country	Brazil
Address	Deputado Antônio Edu Vieira Street, 999. Pantanal, Florianópolis, Santa Catarina State – 88040-901
Telephone	55 48 32317000
Fax	55 48 32344040
E-mail	jose.vieira@eletrosul.gov.br
Website	-
Contact person	José Renato Vieira

Organization name	Chuí Holding S.A.
Country	Brazil
Address	Deputado Antônio Edu Vieira Street, 999. Pantanal, Florianópolis, Santa Catarina State – 88040-901
Telephone	55 48 32317000
Fax	55 48 32344040
E-mail	jose.vieira@eletrosul.gov.br
Website	-
Contact person	José Renato Vieira

Organization name	WayCarbon Soluções Ambientais e Projetos de Carbono Ltda.
Country	Brazil
Address	Av. Paulista, 37, 10th floor, São Paulo, SP – 01311-902
Telephone	55 11 3372 9595
Fax	55 11 3372 9577
E-mail	contato@waycarbon.com
Website	www.waycarbon.com.br
Contact person	Matheus Lage Alves de Brito

Appendix 2. Affirmation regarding public funding

Not Applicable. No Public Funding Was Granted To The Project Activity.

Appendix 3. Applicability of methodologies and standardized baselines

All pertinent information is provided throughout the text.

Appendix 4. Further background information on ex ante calculation of emission reductions

All pertinent information is provided throughout the text.

Appendix 5. Further background information on monitoring plan

Description of the monitoring plan:

1. **General Considerations**

The objective of the monitoring plan is to ensure the complete, consistent, clear, and accurate monitoring and calculation of the emissions reductions achieved by the project activity during the whole crediting period. The entrepreneurs (that are the project developer and operator) will be responsible for the implementation of the monitoring plan, which is based in monitoring the net electricity dispatched to the grid and the emission factor of the electricity grid.

2. **Data and Parameters monitored**

Net electricity dispatched to the grid – $EG_{facility,y}$

Monitoring consists of metering, compiling and archiving the data that refers to the net electricity generated by the project activity and delivered to the Brazilian national grid (SIN). The net electricity dispatched to the grid ($EG_{facility,y} = EG_{PJ,y}$) will be monitored in the meters localized in the interconnection point with the Brazilian national grid (SIN); The electricity metered by these meters may also include energy generated by facilities outside the project boundary (currently, only CHUI IX, also referred as CHUI III, is connected, and not part of this project). The total amount dispatched to the SIN monitored by these meters will be prorated between each project facility according to the proportional amount of electricity generation measured in the electrical substation for each facility (Figure 3). Only the facilities within the project boundary will be considered for the ER calculations. This data will be crosschecked with the data provided by the Brazilian Electric Energy Commercialization Chamber (*CCEE – Câmara de Comercialização de Energia Elétrica*). This data is from a third party and reliable information, since CCEE is the official Brazilian agency responsible for the activities and operations of the national electricity market. Project operator will monitor this parameter continuously and data will be consolidated hourly and monthly. Monthly values will be used for crosschecking electricity dispatched in the interconnection point with the Brazilian national grid and the data provided by CCEE. Records pertaining to the meters used in the project activity (type, model and calibration reports) will be kept accordingly.

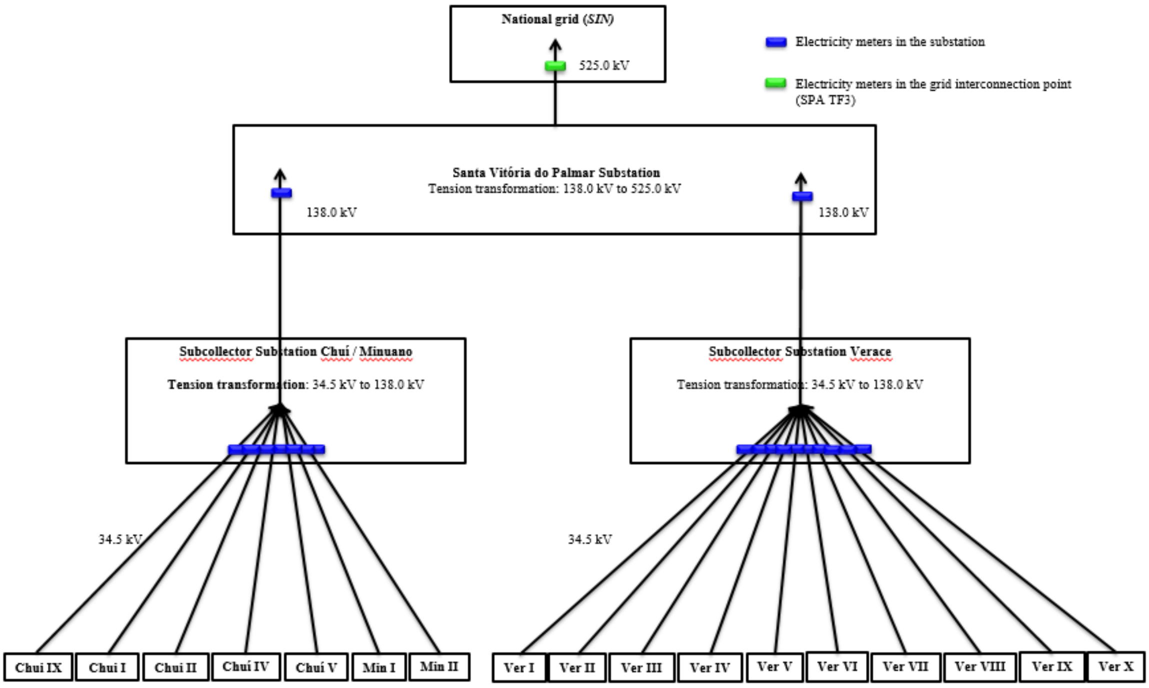

Figure 3: Simplified wiring diagram indicating the delivery point, location of the meters and tension transformation. Electricity meters in the interconnection point will be utilized in the emission reduction calculations; meters localized in the substation will be utilized for crosschecking.

The National Operator of the Electric System (*Operador Nacional do Sistema Elétrico - ONS*) regulates, by means of its Grid Procedures [35] (*Procedimentos de Rede*), *inter alia*, the measurements of electricity production for invoicing (12th module). For information related to this module, it is necessary to maintain the Measurement for Invoicing System (*Sistema de Medição para Faturamento – SMF*) according to the standard specified in the document Technical Specifications of Measurement for Invoicing (*Especificação Técnica das Medições para Faturamento*) to assure not only the control of energy accounting process by CCEE, but also the determination of demands by ONS[36].

SMF is a system composed of the main and backup measurers, by the potential and current transformers, the channels of communication between energy agent/project participant and CCEE, and the system for data collection and measurement for invoicing[37].

According to the ONS Grid Procedures – Submodule 12.1, the SMF should be installed in the connection of the plants with the energy grid to measure the net generation of these plants, which will be used for accounting and settlement of electricity in the CCEE.

Data stored on the meters is collected by the System of Energy Data Collection (*Sistema de Coleta de Dados de Energia – SCDE*) of CCEE, remotely and automatically through direct access to the meters of the project participant. These collected data are processed in SCDE for electricity

[35] National Operator of the Electric System (*Operador Nacional do Sistema Elétrico* - ONS). Grid Procedures (*Procedimentos de Rede*). www.ons.org.br/procedimentos/index.aspx. Accessed in 14/07/2010.

[36] National Operator of the Electric System (*Operador Nacional do Sistema Elétrico* - ONS). Grid Procedures (*Procedimentos de Rede*). Module 12 – Submodule 12.1 (*Módulo 12 - Submódulo 12.1*). www.ons.org.br/download/procedimentos/modulos/Modulo_12/Submodulo%2012.1_Rev_1.1.pdf.

[37] National Operator of the Electric System (*Operador Nacional do Sistema Elétrico* - ONS). Grid Procedures (*Procedimentos de Rede*). Module 12 – Submodule 12.2 (*Módulo 12 - Submódulo 12.2*). www.ons.org.br/download/procedimentos/modulos/Modulo_12/Submodulo%2012.2_Rev_1.1.pdf.

accounting by CCEE and are available to all energy market participants to control their respective incomes[37].

The energy meters shall be: multi-phase, 3 elements, 4 wire (for 4 wire systems), of system rated frequency, rated current according to the secondary of current transformer, nominal voltage according to the secondary of potential transformer. The meters shall have independence of elements and sequence of phases, ensuring the same performance in monophasic and three-phasic testing[37].

The measurement systems are designed and implemented in accordance with the standards of the Brazilian Association of Technical Standards (*Associação Brasileira de Normas Técnicas – ABNT*) or International Electrotechnical Commission - IEC, ensuring the quality of the system. In addition, the meters have certificate of conformity of design approved and issued by the National Institute of Metrology Standardization and Industrial Quality (*Instituto Nacional de Metrologia, Normalização e Qualidade Industrial – INMETRO*)[37].

Regarding the class of accuracy of energy meters, they meet all relevant metrological requirements prescribed in Metrological Technical Regulation (*Regulamento Técnico Metrológico – RMT*) for Class 0.2 of energy meters, approved by INMETRO. Class 0.2 of energy meter, also identified as index D energy meters admits error in measurements of up to ±0.2%[37].

The energy meters possess mass memory capable of storing the data of active, reactive and demand energy in a bidirectional manner, voltages and currents at intervals of integration programmable from 5 to 60 minutes during the minimum period of 32 days. These meters will also be equipped with a system of preservation and salvage of records in case of power loss, storing data in non-volatile memory for at least 100 hours. In addition, they possess at least two independent communication ports with concurrent access or that allow the prioritization of one of them. One will be for the exclusive use of the CCEE and the other for access of agents involved in the measurement point. The CCEE communication port will be coupled to a stable and good performance internet channel, which will be established under a VPN tunnel (Virtual Private Network) between the meter and the CCEE. The meters will be able to manage concurrent access to its communications ports in order to allow full time access to mass memory records of meters via CCEE communication port[37].

Besides electricity measurements are performed by the project owners, all the electricity dispatched to the grid by the project activity will be monitored online by CCEE. This entity is responsible for the monthly readings and keeping the records of the energy generated. If any problem happens at the local meter level, the reading lecture corresponding to the amount of energy during the time of the problem will not be lost due to online reading performed by CCEE. As mentioned before, in order to assure the quality of data used in the emission reductions calculation, the project proponents will provide access to the DOE of the records of CCEE databank, because the data from this entity will serve to crosscheck the electricity dispatched to the grid.

Backup meters are equal or equivalent to the main meters, installed on the same panel, with the same information for current and voltage and under the same technical standards.

In order to ensure the effectiveness operation of SMF, preventive maintenance must be carried out and, where necessary, also corrective maintenance. Inspections are also conducted in order to verify the correct operation of meters[37].

The frequency for preventive maintenance of the SMF is a maximum of two years. This schedule may be changed based on the historical occurrence observed in all plants, considering the

schedule of stops. The meter that after calibration displays errors outside the range specified by the standard must be replaced[38].

The calibration of meters shall be conducted by a qualified organization that must comply with national standards and industrial regulations to ensure the accuracy. After calibration, the meters must be sealed to assure the safety and the calibration certificates must be archived with the other monitoring records. The deadline for meter's calibration follows, therefore, the "Grid Procedures" from the ONS Module 12, Sub-module 12.3. By the time of completion of this document, the frequency of calibration is a maximum of two years, but in the case of any changes occurred in the ONS Grid Procedures, the project owners shall follow the rules from the relevant sector organizations (e.g. ONS, ANEEL, CCEE, etc).

All the meters installed will be tested and calibrated in accordance with regulations provided by CCEE. Moreover if any errors are detected in the measuring device, it will be immediately replaced by the backup meter, which will be previously calibrated. The damaged measuring device will be repaired, recalibrated and will return to the monitoring system.

In the case of any changes occurred in the ONS Grid Procedures and related documents, the project owners shall follow the rules from the relevant sector organizations (e.g. ONS, ANEEL, CCEE, etc) in the net electricity dispatched to the grid ($EG_{facility,y}$) monitoring. The monitoring procedure described above reflects what is demanded today by ONS. In case of changes of these requirements, the new procedures will supersede what is described here.

Emission Factor – $EF_{grid,OM,y}$, $EF_{grid,BM,y}$ and $EF_{grid,CM,y}$

The monitoring plan also includes parameters such as the operating margin CO_2 emission factor for power units in the top of the dispatch order ($EF_{grid,OM,y}$), the build margin CO_2 emission factor ($EF_{grid,BM,y}$) of SIN and the combined margin CO_2 emission factor ($EF_{grid,CM,y}$). These parameters will be obtained from the Brazilian Interministerial Commission for Climate Change (Brazilian DNA), which calculates and publishes $EF_{grid,OM,y}$ and $EF_{grid,BM,y}$ according to the most recent version of the "Tool to calculate the emission factor for an electricity system". These published parameters will be used for the calculation of the yearly combined margin ($EF_{grid,CM,y}$) and, ultimately, for the calculation of the emission reductions achieved by the project activity. In case the DNA ceases to publicize $EF_{grid,OM,y}$, $EF_{grid,BM,y}$ and/or $EF_{grid,CM,y}$, project proponents may choose to use its own or third-party calculated Emission Factors, which follow the "Tool to calculate the emission factor for an electricity system."

All data collected as part of monitoring will be archived and kept at least for 2 years after the end of the crediting period or 2 years after the last issuance of CER for this project activity, whichever occurs later.

3. Monitoring Structure

The operational and management structure that the project operator will implement in order to monitor emission reductions achieved by the project activity is as given in the flowchart in Figure 4.

[38] National Operator of the Electric System (*Operador Nacional do Sistema Elétrico* - ONS). Grid Procedures (*Procedimentos de Rede*). Module 12 – Submodule 12.3 (*Módulo 12 - Submódulo 12.3*). http://www.ons.org.br/download/procedimentos/modulos/Modulo_12/Submodulo%2012.3_Rev_1.1.pdf.

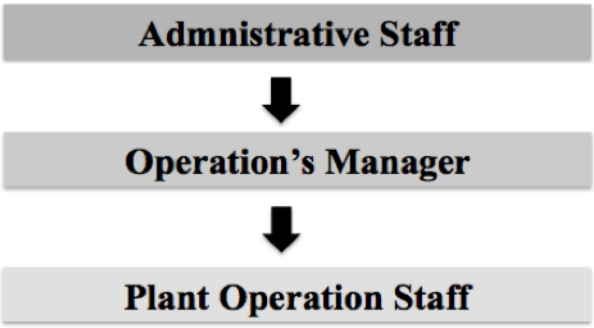

Figure 4: Operational and management structure that the project operator will implement in order to monitor emission reductions achieved by the project activity.

The roles and responsibilities within the structure outlined in Figure 4 are described in detail in the paragraphs below.

Administrative Staff: Responsible for go along with the auditor during the verification visit and provide all necessary documents related to the records of the net electricity supply to the grid. If applicable, at the time of verification by DOE, the Administrative Staff will provide access to the records of CCEE databank in order to demonstrate that electricity generation data is consistent and accurate. The Administrative Staff will forward all electronic media-based information to the CDM Consultancy Company at a minimum bimonthly frequency.

Operation's Manager: Responsible for the record keeping and indexing of the data pertaining to the net electricity supply to the grid. Its attributions also include ensuring that the monitored data pertaining to the net electricity generation is continuously sent (online) to the Electric Energy Commercialization Chamber (*CCEE – Câmara de Comercialização de Energia Elétrica*).

Plant Operation Staff: Responsible for the general supervision of the plant operation and for the supervision of the metering. Its attributions also include ensuring that meters included in the present monitoring plan are calibrated and undergo maintenance as per the applicable regulations and manufactures' recommendations. Any meter calibration procedures will be reported to the Administrative Staff.

Training procedures

In order to ensure accuracy of the monitored data and to guarantee the quality of the monitoring plan, the Administrative Staff will receive training on monitoring methodologies, procedures and archiving by WayCarbon Soluções Ambientais e Projetos de Carbono Ltda. Then, the CDM Manager will train the project staff in respect to the CDM monitoring. The training course covers initial training on CDM, monitoring methodology, monitoring procedures and requirements and archiving.

4. Compilation of Monitoring Reports

As previously mentioned, monitored data will be forwarded to the CDM Consultancy Company (WayCarbon Soluções Ambientais e Projetos de Carbono Ltda.) at a minimum bimonthly basis. Besides being responsible for collecting the information pertaining to the calculation of the grid emission factor ($EF_{grid,OM,y}$ and $EF_{grid,BM,y}$), the CDM Consultancy Company will compile monitoring reports and will be responsible for the calculation of the emission reductions achieved by the project activity.

Appendix 6. Summary report of comments received from local stakeholders

All pertinent information is provided throughout the text.

Appendix 7. Summary of post-registration changes

Changes to the start date of crediting period

At the registered PDD, the start date of crediting period was due 01/01/2014. As the energy generation of the project did not commence before 2015, the start date of the crediting period was changed to 1st January 2015.

Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

Change in the meter used to calculate $EG_{PJ,y}$

The registered version of the PDD indicates two pairs (a pair consists of a main and a backup meter) of meters as the ones that would monitor the electricity supplied to the grid. These meters are located at the Santa Vitória do Palmar Substation and would be the ones used to monitor the parameter $EG_{PJ,y}$. However, these meters measure the generated electricity prior to its transformation from 138 kV to 525 kV. Therefore, there is another meter pair that measures the generated electricity after the transformation to 525 kV, which is the voltage in which the electricity is actually supplied to the grid. Moreover, the formerly described meter pair is the one used by the Electricity Commercialization Chamber (*Câmara de Comercialização de Energia Elétrica* - CEEE) to account / invoice electricity sales.

In light of the above explanation, the revised monitoring plan will use the meter pair (a.k.a. SPA TF3) that monitors the generated electricity after its transformation to 525 kV as the metering point used to monitor the parameter $EG_{PJ,y}$ and to calculate the emission reductions of the project activity.

The figure below (Figure 3) represents the meter's configuration described in the registered version of the PDD, followed by Figure 4, representing the actual system configuration, containing the meter pair that measures the generated electricity after the transformation to 525kV (SPA TF3).

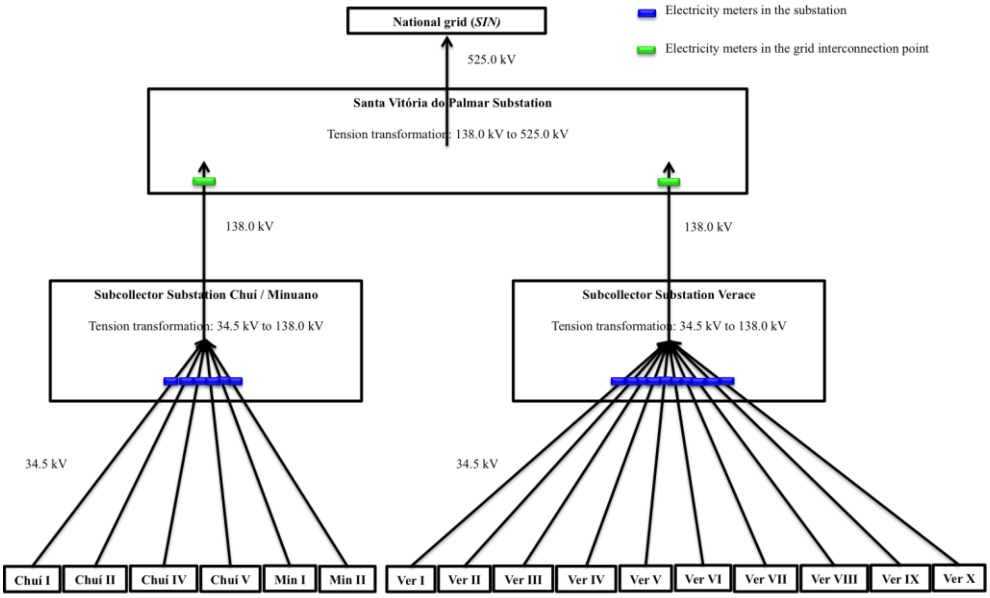

Figure 3: Simplified wiring diagram described in the registered version of the PDD.

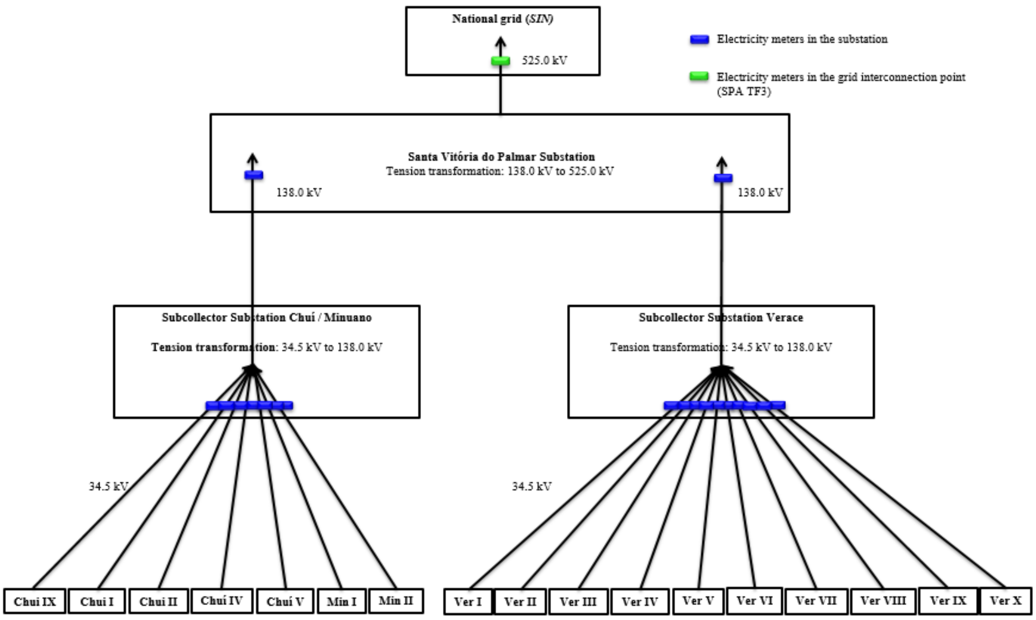

Figure 4: Simplified wiring diagram of actual system configuration, indicating the delivery point (SPA TF3).

Pro-rating of $EG_{PJ,y}$

Another wind power facility, namely CHUI IX, also referred as CHUI III (not included in the project activity), was connected to the subcollector substation Chuí/Minuano, where the project activity's facilities CHUI I, CHUI II, CHUI IV, CHUI V, Minuano I and Minuano II are connected to. Consequently, the electricity generated by CHUI IX will sum up into the amount metered by SPA TF3.

In light of that, in the revised monitoring plan, $EG_{PJ,y}$ is monitored as the electricity monitored by SPA TF3 pro-rated by the electricity generated by the project plants (CHUI I, CHUI II, CHUI IV, CHUI V, Minuano I, Minuano II, Verace I, Verace II, Verace III, Verace IV, Verace V, Verace VI, Verace VII, Verace VIII, Verace IX, Verace X) and the electricity generated by CHUI IX.

The pro-rating formula is:

$EG_{PJ,y} = \Sigma_h\{EG_{SPA\ TF3,h} * \Sigma_{project\_facility}(EG_{project\_facility,h}) / [\Sigma_{project\_facility}(EG_{project\_facility,h}) + EG_{Chui\ 9,h}]\}$

Where:

$EG_{PJ,y}$ = Quantity of net electricity generation that is producded and fed into the grid as a result of the CDM project activity (MWh/yr);

$EG_{SPA\ TF3,h}$ = Hourly electricity generation measured by the meter SPA TF3 (MWh/hour);

$EG_{project\_facility,h}$ = Hourly electricity generation by the project plants (CHUI I, CHUI II, CHUI IV, CHUI V, Minuano I, Minuano II, Verace I, Verace II, Verace III, Verace IV, Verace V, Verace VI, Verace VII, Verace VIII, Verace IX, Verace X) measured by their respective individual meters located at subcollector substations Chui / Minuano or Verace (MWh/hour);

$EG_{Chui\ 9,h}$ = Hourly electricity generation by CHUI IX measured by its individual meters located at subcollector substations Chui / Minuano (MWh/hour).

As described in the registered PDD, an analogous procedure is adopted by CCEE in order to account / invoice the electricity sales by each individual facility.

Changes to project design of registered project activity

As of August 9, 2012, the entrepreneurs signed the first turn-key contract including Gamesa and Schahin for the implementation of VERACE I-X. This date defines the Starting Date of the project activity.

The first registered PDD (Version 03, dated 22 June 2012) considers the same Windfarm Complex configuration in force as that of the investment decision date (i.e. the date of the 12th Brazilian Auction of New Energy). IMPSA would be the aerogenerator supplier to Chuí´s and Minuano´s plants, whereas GAMESA would be the aerogenerator supplier to Verace's plants

As presented in Table 9 – Timeline for implementation of registered project activity, on 24/09/2013 the entrepreneurs ceased the contract with IMPSA. The reasons for the contract caseation encompass the fact that this supplier would not be able to deliver the aerogenerators. At the time of project implementation, IMPSA was also responsible for supplying aerogenerators for several other wind power plants under construction in Brazil. Many were the cases of delivery default, thus causing a profound and negative impact in the Brazilian electricity sector. IMPSA soon went bankrupt leaving a default as high as 1580 MW wind power capacity in the country (reference: Caso Impsa_Energia Inteligente; Falencia IMPSA)

In light of these facts, the project developer was forced to change the aerogenerator supplier of Chuí and Minuano facilities after the project implementation had commenced. Gamesa was the new supplier of choice, since it was successfully delivering the aerogenerators for the other facilities of the project activity.

The equipment of the two suppliers have similar characteristics (2MW capacity) However, CHUÍ and MINUANO facilities, equipped with the GAMESA aerogenerators, are expected to deliver a lower net capacity than that of the registered PDD (plant load factor average of the windfarms was 46.2% and now is 44.4%, and the net capacity was 185.6 MW and now is 178.5 MW). Therefore, when compared to the previous configuration, the current project is expected to deliver a smaller amount of energy to the grid and, therefore, smaller-than-anticipated electricity revenues shall be observed. Moreover, this whole process was associated with not-anticipated costs and to delays in the start date of the electricity generation (and, therefore, cash inflow) (refer to Table 9 – Timeline for implementation of registered project activity).

Table 9 – Timeline for implementation of registered project activity.

Date	Object	Related part	Document reference	Observation
09/08/2012	Turn-key contracts signature for VERACE I-X implementation	GAMESA, Schahin	Contrato EPC - Geribatu X - EOL ST GB X 085 2012 // Contrato EPC - Geribatu VIII - EOL ST GB VIII 083 2012 // Contrato EPC - Geribatu VII - EOL ST GB VII 082 2012 // Contrato EPC - Geribatu VI - EOL ST GB VI 081 2012 // Contrato EPC - Geribatu V - EOL ST GB V 080 2012 // Contrato EPC - Geribatu IX - EOL ST GB IX 084 2012 // Contrato EPC - Geribatu IV - EOL ST GB IV 079 2012 // Contrato EPC - Geribatu III - EOL ST GB III 078 2012 // Contrato EPC - Geribatu II - EOL ST GB II 077 2012 // Contrato EPC - Geribatu I - EOL ST GB I 076 2012	Entrepreneurs contracted Gamesa and Schahin for project implementation.
23/11/2012	Turn-key contracts signature for CHUI I,II,IV, V and MINUANO I, II implementation	IMPSA, SCHAHIN	EOL CH CHVII 108 2012 CONSÓRCIO EPC // EOL CH CHV 144 2012 - CONSÓRCIO EPC // EOL CH CH VI 145 2012 - CONSÓRCIO EPC // EOL CH CH IV 143 2012 - CONSÓRCIO EPC // EOL CH CH II 142 2012 - CONSÓRCIO EPC // EOL CH CH I 141 2012 - CONSÓRCIO EPC	Entrepreneurs contracted IMPSA and Schahin for project implementation.
24/09/2013	Dissolution of turn-key contracts CHUI-IMPSA	IMPSA	`Termo de Acordo - IMPSA´ dated 7/02/2014 but entried into force in 24/09/2013	As IMPSA could not deliver the contracted aerogenerators, the IMPSA contract was terminated
21/10/2013	Turn-key contracts signature for CHUI IV, V and MINUANO I, II implementation	GAMESA, SCHAHIN	EOL CH CH VII 253 2013-253A1 EPC CHUI // EOL CH CH VI 252 2013-252A1 EPC CHUI // EOL CH CH V 251 2013-251A1 EPC CHUI // EOL CH CH IV 250 2013-250A1 EPC CHUI	After the IMPSA contract termination, a turn-key contract including GAMESA and SCHAHIN for the implementation was signed
03/02/2014	SCHAHIN cession of rights to PAVSOLO concerning turn-key contracts CHUI IV, V and MINUANO I, II	SCHAHIN, PAVSOLO, GAMESA	Aditivo aos EOLs 250 251 252 253	A complimentary agreement was signed to formalize SCHAHIN´s cession of rights to PAVSOLO concerning the turn-key contracts for CHUI IV, V and MINUANO I, II
12/02/2014	Turn-key contracts signature for CHUI I and II implementation	GAMESA	EOL CH CH I 316 2014 EPC CHUI // EOL CH CH II 317 2014 EPC CHUI	After the IMPSA contract termination, a turn-key contract including GAMESA for the implementation was signed

21/09/2013	Turn-key contract signature for VERACE I-X implementation	SCHAHIN, PAVSOLO	SP 509 2013 EPC PAVSOLO	Implementation contract between the entrepreneurs and the companies SCHAHIN and PAVSOLO
30/04/2014	Complementary agreement for construction works acceleration VERACE I-X	GAMESA	Acordo Complementar aos EOL's 076 077 078 079 080 081 082 083 084 085 - GAMESA	A complimentary agreement only to alter contract dates and targets
04/10/2014	Amendment to complementary agreement for construction works acceleration VERACE I-X	GAMESA	A1AC ST EOL's 076, 077, 078, 079, 080, 081, 082, 083, 084 e 085	Na amendment to the complimentary agreement for construction works was signed
19/09/2015	Turn-key contract termination (VERACE I-X)	GAMESA	TERMO DE ENCERRAMENTO CONT EPC GERIBATU	The turn-key contract for VERACE facilities was terminated. The contract termination is a legal tool to resolve disputes related to extraordinary costs.
19/09/2015	Turn-key contract termination (CHUI I,II,IV, V; Minuano I and II)	GAMESA	TERMO DE ENCERRAMENTO CONT EPC CHUÍ	The turn-key contract for CHUI and MINUANO facilities was terminated. The contract termination is a legal tool to resolve disputes related to extraordinary costs.

The project started delivering energy to the National Interconnected System on February 2015.

Facility	Operation start
Verace I	Feb/2015
Verace II	Feb/2015
Verace III	Feb/2015
Verace IV	Feb/2015
Verace VI	Feb/2015
Verace VII	Feb/2015
Verace VIII	Feb/2015
Verace IX	Feb/2015
Verace X	Feb/2015
Chui I	May/2015
Chui II	May/2015
Chui IV	May/2015
Chui V	Apr/2015
Minuano I	Apr/2015
Minuano II	Apr/2015

The impacts of the changes to the registered PDD are described below, in accordance to paragraph 243 and 244 of the Project Standard:

(a) The applicability and application of the applied methodologies and, where applicable, the applied standardized baselines, with which the project activity has been registered;

The applicability of the methodologies remains the same as presented in Section B.2 of this PDD: In accordance with the applicability conditions of ACM0002 version 12.2.0, the proposed project activity consists in the installation of a grid-connected renewable power generation facility at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant).

Furthermore, the project activity fulfills all the applicability conditions of ACM0002/Version 12.2.0.

(b) The compliance of the monitoring plan with the applied methodologies and, where applicable, the applied standardized baselines;

The compliance of the monitoring plan with the applied methodologies was not altered with the project design change.

(c) The level of accuracy and completeness in the monitoring of the project activity compared with the requirements contained in the registered monitoring plan;

The level of accuracy and completeness in the monitoring of the project activity compared with the requirements contained in the registered monitoring plan was not altered with the project design change.

(d) The additionality of the project activity;

The impact of the change on the additionality was demonstrated by modifying only the key parameters in the original spreadsheet calculations (energy generation according to the new load factor, turbine and O&M costs), in order to prove that the changes in the project configuration did not adversely impact the additionality of the project activity.

The Financial Analyses resulted in an equity IRR of 4.94% for the project, which is lower than the Benchmark rate (14.75%).

(e) The scale of the project activity.

The scale of the project activity remains the same. The demonstration was performed through the revision of the original ER spreadsheet, using the new plant configuration load factor (Gamesa turbines). The estimated reductions amount obtained was 616,113 tCO_2, so the project activity still falls into the CDM definition of large-scale project activity.

In conclusion, the project design change does not adversely affect additionality of this project as presented in section B.5 of this PDD.

Document information

Version	*Date*	*Description*
10.1	28 June 2017	Revision to make editorial improvement.

Version	*Date*	*Description*
10.0	7 June 2017	Revision to: • Improve consistency with the "CDM project standard for project activities" and with the PoA-DD and CPA-DD forms; • Make editorial improvement.
09.0	24 May 2017	Revision to: • Ensure consistency with the "CDM project standard for project activities" (CDM-EB93-A04-STAN) (version 01.0); • Incorporate the "Project design document form for small-scale CDM project activities" (CDM-SSC-PDD-FORM); • Make editorial improvement.
08.0	22 July 2016	EB 90, Annex 1 Revision to include provisions related to automatically additional project activities.
07.0	15 April 2016	Revision to ensure consistency with the "Standard: Applicability of sectoral scopes" (CDM-EB88-A04-STAN) (version 01.0).
06.0	9 March 2015	Revision to: • Include provisions related to statement on erroneous inclusion of a CPA; • Include provisions related to delayed submission of a monitoring plan; • Provisions related to local stakeholder consultation; • Provisions related to the Host Party; • Make editorial improvement.
05.0	25 June 2014	Revision to: • Include the Attachment: Instructions for filling out the project design document form for CDM project activities (these instructions supersede the "Guidelines for completing the project design document form" (Version 01.0)); • Include provisions related to standardized baselines; • Add contact information on a responsible person(s)/ entity(ies) for the application of the methodology (ies) to the project activity in B.7.4 and Appendix 1; • Change the reference number from F-CDM-PDD to CDM-PDD-FORM; • Make editorial improvement.
04.1	11 April 2012	Editorial revision to change version 02 line in history box from Annex 06 to Annex 06b.
04.0	13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the project design document form for CDM project activities" (EB 66, Annex 8).
03.0	26 July 2006	EB 25, Annex 15
02.0	14 June 2004	EB 14, Annex 06b
01.0	03 August 2002	EB 05, Paragraph 12 Initial adoption.

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