Validation Report

Report for:

Tractebel Energia S.A.
and
Central Eólica Porto das Barcas S.A.

Validation of CDM project for Porto do Delta Wind Power Plant CDM Project

LRQA Reference	:	TCMAI110178_SUEPD_B version 5
Date	:	30 March 2012
Work carried out by	:	Iuri de A. Barroso Márcio Pragana
Work verified by	:	Talita Beck Javier Vallejo Drehs Karuna Moorthy

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1 Executive Summary

Lloyd's Register Quality Assurance Limited has been contracted Tractebel Energia S.A., representing the project participants (PP), to undertake validation of the proposed project activity "Porto do Delta Wind Power Plant CDM Project". The validation has been performed through a process of document review based on the project design document Version 01, dated 15 September 2011, initially submitted for validation and the subsequent revisions, follow-up interviews with the stakeholders, resolution of outstanding issues and issuance of the validation report.

Porto do Delta Wind Power Plant CDM Project is a greenfield project located in the municipality of Parnaíba, state of Piauí, Brazil. The project will generate electricity by implementing and operating 13 horizontal-axis wind turbines, with a total nominal capacity of 30 MW. In the baseline, 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. The project activity will promote GHG emission reductions by displacing fossil fuel-based electricity generation that would otherwise have occurred.

The fulfilment of the requirements as set forth in Article 12 of the Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC), the modalities and procedures for a CDM (CDM M&P) and relevant decisions of the Conference of the Parties, serving as meeting of the Parties to the Kyoto Protocol (COP/MOP) and the Executive Board of the CDM (CDM-EB) have been evaluated and conformance to the validation requirements were confirmed based on the given information. A risk based approach was taken to conduct the validation and corrective action requests (CARs) and clarifications (CLs) were raised for relevant actions by the PP.

The validation team has found through the validation process 3 CARs 5 CLs. The PPs have taken actions and submitted to LRQA all necessary additional explanations, evidence and document revisions. The validation team is of the opinion that the proposed project activity as described in the project design document version 3 dated 30 January 2012 meets all the relevant UNFCCC requirements for the CDM, as well as the host country's national requirements, except for the pending LoA.

Prior to the submission of the Project Design Document and the Validation Report to the CDM Executive Board, the project shall receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the Project assists the country in achieving sustainable development. For details about the validation host country approval please refer to the Validation protocol in Appendix F section 1.

If implemented as designed, the project is likely to achieve the emission reductions and contribute to the sustainable development of the host country. LRQA therefore will request the registration “Porto do Delta Wind Power Plant CDM Project” to the CDM Executive Board as a CDM project activity once the LoA by the Brazilian DNA is issued.

Lloyd’s Register Quality Assurance Ltd
Hiramford
Middlemarch Office Village
Siskin Drive

Registered office:
Lloyd’s Register
71 Fenchurch Street
London EC3M 4BS
United Kingdom

Abbreviations

ANEEL	Host country´s electric energy national agency
BE	Baseline emissions
BNDES	National Bank of Economic and Social Development
CAPM	Capital Asset Pricing Model
CARs	Corrective action requests
CAPEX	Capital Expenditure
CCEE	Brazilian Electric Energy Clearing Chamber
CDM	Clean development mechanism
CDM-EB	Executive board of clean development mechanism
CDM M&P	Modalities and procedures for a clean development mechanism
CDM VVM	CDM Validation and Verification Manual
CEPEL	ELETROBRAS´s Research Center for Electric Power
CEPRAM	Environmental State Board, state of Bahia
CER	Certified emission reductions
CIMGC	Brazilian Interministerial Commission on Global Climate Change
CLs	Clarification requests
COP/MOP	Conference of the Parties serving as meeting of the Parties to the Kyoto Protocol
CSLL	Social contribution on net profit
DNA	Designated national authority
DOE	Designated operational entity
EF	Emission factor
EIA	Environmental impacts assessment
ELETROBRAS	Publicly traded company controlled by the Brazilian government, which operates in the areas of generation, transmission and distribution of electricity
ERPA	Emissions reduction purchase agreement
FAR	Forward action requests
GHG	Greenhouse gas
GSP	Global stakeholders' consultation process
ICG	Shared transmission system that connects a plant with the National Interconnected Electric Energy Generation and Transmission System (SIN)
IPCC	Intergovernmental panel on climate change
IRR	Internal rate of return
KP	Kyoto Protocol of the United Nations Framework Convention on Climate Change
kW / kWh	Kilowatt / Kilowatt hour
LE	Leakage emissions
LoA	Letter of approval
LR	Lloyd's Register
LRQA	Lloyd's Register Quality Assurance Limited
MW / MWh	Megawatt / Megawatt hour
NCV	Net calorific value
NGO	Non-governmental organization
ODA	Official development aid
OPEX	Operational Expenditure
PDD	Project design document
PE	Project emissions

PIS/COFINS	Social contribution tax, payable by legal entities, in order to finance the payment of unemployment insurance and allowance for workers
PP	Project participant
PROINFA	Brazilian Incentive Program for Alternative Sources of Electric Energy
SIN	National Interconnected Electric Energy Generation and Transmission System
tCO_2e	Tonnes of carbon dioxide equivalent
TUST	Tariff paid for the use of the electric energy transmission system
UNFCCC	United Nations Framework Convention on Climate Change
WPP	Wind Power Plant

2 Introduction

The project participant (PP) represented by Tractebel Energia S.A. has contracted with Lloyd's Register Quality Assurance Limited (LRQA) to undertake validation of the proposed project activity "Porto do Delta Wind Power Plant CDM Project". This report summarizes the findings of the validation process that has been conducted on the validation requirements of the CDM.

The validation has been undertaken by the team formed of the qualified personnel of LRQA as follows:

Iuri de A. Barroso	LRQA Brazil	Team Leader / CDM Lead Validator / Host country expert
Márcio Pragana	External Expert	Sector Expert
Talita Beck	LRQA Brazil	Technical reviewer (UT)
Javier Vallejo Drehs	LRQA Ltd	Technical reviewer and Decision Maker
Karuna Moorthy	External Expert	Sector Expert for Technical Review

Personnel being engaged in a CDM project validation are qualified based on the established procedures of LRQA to assure the resource requirements satisfy all the requirements of competence criteria for an AE/DOE under CDM (CDM-Accreditation Standard version 03). LRQA is designated as an operational entity and holds the full responsibility of decision-making regarding the validation, in accordance with the accreditation requirements of the CDM-EB. The certificate of appointment of the team personnel is attached to this report.

2.1 Objective

Validation is the process of an independent third party evaluation of a project activity on the basis of the PDD, against the requirements of the CDM as set out in Article 12 of the Kyoto Protocol, the CDM M&P, the present annex, subsequent decisions made by the COP/MOP and CDM-EB, and other rules applicable to the proposed project activity including the host country's legislation and its specific requirements for sustainable development. The validation follows the requirements of the current version of the CDM validation and verification manual (CDM VVM) to ensure the quality and consistency of the validation work and the report.

2.2 Scope

The scope of validation is an independent and objective review of the project design. Review of the PDD is conducted against the requirements of the Kyoto Protocol, the CDM M&P and relevant decisions of the COP/MOP and the CDM-EB. LRQA follows a risk-based approach in the validation focusing on the identification of significant risks for project implementation and generation of CERs. Validation is not meant to provide any consulting towards the PP, however, the corrective actions requests (CARs) and clarifications requests (CLs) might provide input for improvement of the project design. A validation conclusion shall become final subject to the decision maker's review by LRQA Ltd.

2.3 GHG Project Description

Porto do Delta Wind Power Plant CDM Project is a greenfield project located in the municipality of Parnaíba, state of Piauí, Brazil. The project will generate electricity by implementing and operating 13 horizontal-axis wind turbines, with a total nominal capacity of 30 MW and an estimated net electricity generation of 134,494 MWh/year. In the baseline, 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. The project activity will promote GHG emission reductions by displacing fossil fuel-based electricity generation that would otherwise have occurred.

The Starting Date of the project activity, 06 May 2011, is the date of issuance by the Project Owner of the Notice to Proceed for the project´s supply and construction works, according to Clause 20 of the Wind Turbine Generator and Tower Supply, Transportation, Installation and Commissioning Agreement (WTS contract) between Central Eólica Porto das Barcas Ltda. and Siemens Ltda. This Notice to Proceed legally determines the WTS contract´s entry into force and bounds the project owner with the first project expenditures.

The amount of GHG emission reductions from the project is estimated to be 371,028 tCO_2e during the first renewable 7-year crediting period.

3 Methodology

3.1 Review of documents

The validation is performed primarily based on the review of the project design document (PDD) and the other supporting documentation.

The PDD Version 1 dated 15 September 2011 was initially reviewed. LRQA requested the PP to present supporting information and documents relating to the project design and such additional information and documents were also reviewed by LRQA.

Through the process of the validation, the PDD and its supporting documents were evaluated to confirm the actions taken by the PP to the CARs and CLs issued by LRQA. The documents reviewed by LRQA are listed in Appendix B. LRQA reviewed the final version of the PDD version 3 dated 30 January 2012 to confirm that all changes agreed had been incorporated.

3.2 Site Visit & Follow-up interviews

A visit to Tractebel's head office was conducted as detailed in the schedule as below:

Date	Location/ Address	Party Interviewed	Subjects Covered	Team Members on Site
16 Nov 2011	Tractebel head office, Florianópolis, SC, Brazil	Tractebel	• Project description, boundaries and coordinates • Engineering, procurement and construction • Applicability of baseline and monitoring methodology / Baseline identification • Algorithms and formulae used to determine emission reductions	Iuri A Barroso , (team leader) Márcio Pragana (sector expert)
17 Nov 2011			• Determination of additionality • CER calculations	
18 Nov 2011			• Environmental study and mitigation measures/ environmental permits • Stakeholdes consultation / response to comments received • Monitoring plan and QA/QC procedures • Modalities of communication	

Since, according to the project´s owner, there were no relevant structures such as towers, turbines or generators installed on the project site by the time of the validation site-visit, the validation team decided to undertake a full desk review and a visit to Tractebel's head office.

A full list of persons interviewed is shown in Appendix C.

For details of all the findings of the desk review and the visit to Tractebel's head office, please refer to the Validation Protocol and Findings in Appendix F.

3.3 Resolution of clarification and corrective action requests

LRQA applies the risk based approach aimed at focusing on high risk issues to the validation results whilst not omitting any part of the mandatory processes.

Findings identified in the process are indicated under the titles corrective action requests (CARs) and clarification requests (CLs) and forward action requests (FARs). CARs and CLs require the PP to take relevant actions. Criteria for judging items as CAR or CL are as follows:

Corrective action request (CAR):

- the project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions
- the CDM requirements have not been met, or
- there is a risk that emission reductions cannot be monitored or calculated.

Clarification request (CL):

- information is insufficient or not sufficiently clear to determine whether the applicable CDM requirements have been met.

FARs would be raised to highlight issues related to project implementation that require review during the first verification of the project activity. FARs do not relate to CDM requirements for registration.

CARs and CLs are to be resolved or closed out if the PP modifies the project design, rectifies the PDD or provides adequate additional explanations or evidence that satisfies the concerns. If this is not completed, the project activity cannot be recommended for registration to the CDM Executive Board.

For details of the nature of the issues raised, the nature of the responses provided, the means of validation of such responses and the resulting changes in the PDD or supporting annexes please refer to the Validation Protocol and Findings in appendix F.

3.4 Internal quality control

A technical review by a qualified person independent from the validation team and a review by an authorized decision maker were conducted prior to the submission of the validation report to the PP and prior to requesting the registration of the project activity.

4 Validation protocol and conclusions

This section provides an overview of the validation activities undertaken by LRQA in order to arrive at the final validation conclusions and opinion. It includes general conclusions based on the Clean Development Mechanism Validation and Verification Manual. Further details in relation to each element of the protocol and each finding are shown in the Validation Protocol and Findings – Appendix F.

The protocol is structured based on the main validation requirements as follows:

- Approval by the Parties involved
- Participation requirements
- Project design document
- Project description
- Baseline and monitoring methodology
  - Applicability of the selected methodology
  - Project boundary
  - Baseline identification

  - Algorithms and/or formula used to determine emission reductions
- Additionality of a project activity
  - Prior consideration of the CDM
  - Identification of alternatives
  - Investment analysis
  - Barrier analysis
  - Common practice analysis
- Monitoring plan
- Local stakeholder consultation
- Environmental impacts.

4.1 *Approval*

A CDM project shall be approved by the Parties involved.

To be completed after presentation of the LoA, at the final stage of validation. According to the Brazilian DNA´s rules, the issuance of the Letter of Approval is conditioned to the presentation of the DOE´s validation report by PP to the DNA (Resolution No. 1 of 11th September 2003).

The host Party of the proposed project is Brazil.

Brazil ratified the Kyoto Protocol on 23rd August 2002. The Designated National Authority (DNA) is the Interministerial Commission Global Climate Change (CIMGC).

The project has currently been proposed as a unilateral CDM project and the Annex I Party has not yet been identified. In line with the provision of paragraph 57 of the 18th meeting of the CDM-EB, registration of a project activity can take place without an Annex I party being involved at the stage of registration.

This Validation Report will be updated to reflect the receipt of the LoA and any requirements specified therein.

For details relating to this section, please refer to the Validation Protocol in Appendix F section1.

4.2 *Participation requirements*

The project participants, Tractebel Energia S.A and Central Eólica Porto das Barcas S.A, are private entities having their registered offices in Brazil.

The project has currently been proposed as a unilateral CDM project and the Annex I Party has not yet been identified.

The contact details of the PPs are correctly provided in Annex 1 of the PDD.

Participation of the PPs in the project activity has yet to be authorized and confirmed in the LoA issued by the DNA of the Parties concerned. The team has yet to confirm that no entities other than the authorized entities are indicated as project participants in the PDD.

For details relating to this section, please refer to the Validation Protocol in Appendix F section 2.

4.3 Project design document

The PDD version 3 was checked and confirmed as complete against the Guidelines for completing the project design document (CDM-PDD) and the proposed new baseline and monitoring methodologies (CDM-NM) referring to the latest version applicable to the validation.
A valid form of the CDM-PDD is used, being the current form as available on the CDM website.

For details relating to this section, please refer to the Validation Protocol in Appendix F section 3.

4.4 Project description

Porto do Delta Wind Power Plant CDM Project is a greenfield project located in the municipality of Parnaíba, state of Piauí, Brazil. The project will generate electricity by implementing and operating 13 horizontal-axis wind turbines, with a total nominal capacity of 30 MW and an estimated net electricity generation of 134,494 MWh/year. In the baseline, 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. The project activity will promote GHG emission reductions by displacing fossil fuel-based electricity generation that would otherwise have occurred.

The reference geographic coordinates (SIRGAS 2000, UTM 24M) of the project activity´s wind turbines, validated through the comparison with the values presented in the wind certification report, are given below:

Wind Turbine #	Decimals		SIRGAS 2000, UTM 24M	
	Latitude (S)	Longitude (W)	Latitude	Longitude
1	-2,844122	-41,694678	200 406	9 685 286
2	-2,849659	-41,688336	201 113	9 684 675
3	-2,851426	-41,686291	201 341	9 684 480
4	-2,853274	-41,684201	201 574	9 684 276
5	-2,855150	-41,682021	201 817	9 684 069
6	-2,840766	-41,692252	200 675	9 685 658
7	-2,842515	-41,690171	200 907	9 685 465
8	-2,844336	-41,688180	201 129	9 685 264
9	-2,846139	-41,686216	201 348	9 685 065
10	-2,847969	-41,684198	201 573	9 684 863
11	-2,849664	-41,682009	201 817	9 684 676
12	-2,851314	-41,679810	202 062	9 684 494
13	-2,852775	-41,677549	202 314	9 684 333

LRQA confirms that the project description included in the PDD version 3 is accurate and complete. This description provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation.

The project description was validated by document review including wind certification report, land lease contracts, EPC (engineering, procurement and construction) contracts and interviews.

Sustainable development

The host Party's DNA has yet to confirm the contribution of the project activity to the sustainable development of the host Party.

For details relating to this section, please refer to the Validation Protocol in Appendix F section 1.

4.5 *Baseline and monitoring methodology*

Applicability of the selected methodology to the project activity

The project activity applied the approved baseline and monitoring methodology ACM0002, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", Version 12.2.0. The "Tool for the demonstration and assessment of additionality" Version 6.0.0 and the "Tool to calculate the emission factor for an electricity system" Version 2.2.1, both referenced in the methodology, were also applied.

LRQA confirms that the selected methodology is applicable to this project activity. The project applicability was confirmed against each condition in the approved methodology selected. Appendix F includes the list of each applicability condition, the steps taken to validate each one and the conclusions about its applicability to the proposed project activity.

For details relating to this section, please refer to the Validation Protocol in Appendix F section 5.

Project boundary

The project boundary has been validated through the documentation review of the preliminary environmental permit and wind certification report and by interviews, which confirmed that the project is a greenfield plant and, as result, there are no processes or equipment affected by the project activity.

Emissions related to the construction, transportation of employees and supporting facilities (e.g. restaurant) were identified and ignored, according to the approved methodology ACM0002 version 12.2.0. No significant emission sources were identified that may be affected by the project activity and that are not addressed by the selected approved methodology. This was confirmed by the comparison with the similar CDM registered project activities Osório Wind Power Plant Project – Brazil, ref. 0603, Liaoning Fuxin Gaoshanzi 100.5MW Wind Power Project – China, ref. 3344 and Zafarana 8 - Wind Power Plant Project, Arab Republic of Egypt, ref. 3501.

Through the processes taken, the validation team confirmed that the identified project boundary, the selected sources and the gases were justified for the project activity and that they meet the requirements of the approved methodology.

For details of whether any discrepancy was identified and the processes taken, e.g. issued CAR or requested clarification of, revision to or deviation from the approved methodology for approval by the CDM-EB before completion of the validation, please refer to the Validation Protocol in Appendix F section 5a.

Baseline identification

The baseline scenario identified in the PDD has been assessed against the requirements in the approved methodology ACM0002, version 12.2.0, "Consolidated

baseline methodology for grid-connected electricity generation from renewable sources".
LRQA can confirm that the procedure included in this methodology to identify the most reasonable baseline scenario has been correctly applied.

The steps taken to assess the baseline identification are described in the Validation protocol in Appendix F section 5b.

LRQA confirms that:

- All the assumptions and data used by the project participants are listed in the PDD, including their references and sources;
- All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD;
- Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;
- Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD;
- The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.

Algorithms and/or formula used to determine emission reductions

LRQA has confirmed that the steps taken and the equations applied to calculate project emissions, baseline emissions and emission reductions comply with the requirements of the approved methodology ACM0002 version 12.2.0.

The steps taken to assess the algorithms and/or formula used to determine emission reductions are described in the Validation protocol in Appendix F section 5.c.

LRQA confirms that:

- All assumptions and data used by the project participants are listed in the PDD, including their references and sources;
- All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD;
- All values used in the PDD version 3 are considered reasonable in the context of the proposed CDM project activity;
- The baseline methodology has been correctly applied to calculate project emissions, baseline emissions, leakage and emission reductions;
- All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.

4.6 Additionality of a project activity

The project additionality was demonstrated by the PP using the "Tool for the demonstration and assessment of additionality", Version 6.0.0.

Prior consideration of CDM

The prior consideration of the benefits of the CDM in the decision to undertake the project activity was assessed by the validation team, following the Guidance on the Demonstration and Assessment of Prior Consideration of the CDM EB62 Annex 13, version4.

The starting date of the project activity, 06 May 2011, is the issuance date of the Notice to Proceed for supply and construction works, as established in the contract signed between the PP and the supplier of the wind turbines.

The project activity started after 2 August 2008. The PP has informed the host country DNA and the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status. Such notification was made to UNFCCC secretariat and the host country DNA on 30 June 2010, before the project activity start date. Through the process of validation, LRQA confirms that the proposed project activity complies with the requirement of the Guidelines on the demonstration and assessment of prior consideration of the CDM.

The steps taken to assess the prior serious consideration of the CDM are described in the Validation protocol in Appendix F section 6a.

Identification of alternatives

The list in the Validation Protocol – Appendix F section 6.b, shows the alternatives given in the PDD, and clearly states how LRQA has validated whether these alternatives are credible and complete.

It is the opinion of LRQA that the list of alternatives provided in the PDD version 3 are credible and complete considering the technology and circumstances of the proposed project activity as well as the investor business.

Investment analysis

The Investment analysis option has been used to demonstrate the additionality of the proposed project activity. LRQA confirms that the PDD provides evidence that this project activity would not be the most economically or financially attractive alternative.

The PPs have shown that the project activity is additional by demonstrating that the financial returns of the proposed project activity would be insufficient to justify the required investment (equity IRR *versus* Benchmark).

For assessing the additionality of this project activity LRQA has complied with the latest version of the “Guidance on the Assessment of Investment Analysis” as provided by the CDM Executive Board and with other relevant guidance including the latest “Guidelines for the reporting and validation of plant load factors”.

For details about the validation of the parameters used in the financial calculations and assessment of the benchmark applied, please refer to the Validation protocol in Appendix F section 6c.

LRQA confirms that the underlying assumptions for the investment analysis are appropriate and that the financial calculations are correct.

Common practice analysis

LRQA confirms that the proposed CDM project activity is not widely observed and commonly carried out in Brazil.

The common practice analysis presented in the PDD version 3 followed the latest version of the Guidelines on Common Practice and the Tool for the Demonstration and Assessment of Additionality. Reasonable arguments were presented for considering that there are essential distinctions between these activities and the proposed CDM project.

For details about the validation of the geographical scope, the assessment of the existence of similar projects and also the assessment of the essential distinctions between the proposed project activity and any similar projects, please refer to the Validation protocol in Appendix F section 6e.

4.7 Monitoring Plan

The PDD version 3 includes a Monitoring Plan based on the approved consolidated methodology ACM0002, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", version 12.2.0.

LRQA confirms that the Monitoring Plan described in the PDD version 3 complies with the requirements in the Monitoring Methodology and that the PPs will be able to apply this Monitoring Plan following the monitoring arrangements described in it.

For details about the validation of the Monitoring Plan, please refer to the Validation protocol in Appendix F section 7.

4.8 Local stakeholder consultation

The PPs invited Local Stakeholders to comment on the proposed project activity on the 19 August 2010, prior to the publication of the PDD version 1 on the UNFCCC website. Copies of invitations for comments posted by the PP to the local stakeholders, as well as the corresponding acknowledgments of receipt, were assessed and found in accordance with the Brazilian DNA´s resolution No. 7 of 05th March 2008.

LRQA confirms that the stakeholder consultation process targeted stakeholders and was appropriate for identifying stakeholders' opinions about the project and collecting their views.

For details about the steps taken to assess the adequacy of the Stakeholder consultation, please refer to the Validation protocol in Appendix F section 8.

4.9 Environmental impacts

LRQA has confirmed that the PPs have undertaken an analysis of environmental impacts.

The PPs have submitted documentation to LRQA on the analysis of the environmental impacts of this project activity in accordance with paragraph 37 (c) of the CDM modalities and procedures.

For details about the document review and determination of whether the PPs have undertaken the analysis of environmental impacts, please refer to the Validation protocol in Appendix F section 9.

4.10 Summary of Changes

Significant changes made to the original PDD published for Global Stakeholder Consultation Process are summarised below. The PDD version 1 dated 15 September 2011 was modified and several changes occurred due to the result of validation process. The PDD version 3 dated 30 January 2012 includes all these changes.

Technical description of the project activity: the project´s location, initially given only in the SIRGAS 2000, UTM 24M system, was also given in degrees with decimal places.

Investment analysis: the references for the calculation of the benchmark used in the financial analysis were changed (please refer to CAR 01). It has also been included in the PDD an explanation regarding the mentioned historical underperformance of the wind power generation projects and why such behaviour should reasonably also be expected from the proposed project activity.

Common practice: changes were made to conform the common practice analysis to the new revision of the Guideline on Common Practice EB63 annex 12 (please refer to CAR 02). Further explanation on why the project activity did not benefit from PROINFA was included in the PDD, due to comments raised during the validation report´s technical review.

Monitoring plan: further detailing was added to the PDD on the measurement of the electricity energy supplied to the grid (please refer to CAR 04)**.** The description of the measurement procedures, crosschecks and calibrations was also detailed, due to comments raised during the validation report´s technical review.

Ex-ante calculation of emission reductions: The PP has included in the PDD B.6.3 the calculated value of $EF_{grid,OM,y}$ and has explained that it is calculated through the simple arithmetic average of the monthly $EF_{grid,OM,y}$ published by Brazilian DNA.

Environment: details on the environmental impacts and mitigation and control measures were added in section D.2 of PDD.

For details about the results of the responses to CARs and CLs, discussions on revisions to project documentation and the detailed changes to the PDD coming from the validation process, please refer to the Validation Findings Log in the Validation Protocol in Appendix F.

5 Comments by parties, stakeholders and NGOs

In accordance with the requirement of the Procedures for Processing and Reporting on Validation of CDM project activities, the PDD is to be made publicly available for 30 days subject to confidentiality provisions agreed with the PP, to enable comments to be received from Parties, stakeholders and UNFCCC accredited NGOs on the validation and registration requirements.

The PDD was made publicly available in accordance with the requirements of the procedure for the period of 01 October 11 – 30 October 11 as per http://cdm.unfccc.int/Projects/Validation/DB/BNKKV1LE997PL13AVXOE3OQDJP9KDT/view.html.

No comment was received.

6 Validation Opinion

LRQA has undertaken the validation of the proposed project activity "Porto do Delta Wind Power Plant CDM Project" based on the requirements of CDM as set out in Article 12 of the Kyoto Protocol, the CDM M&P, the present annex, subsequent decisions made by the COP/MOP and CDM-EB, and the other rules applicable to the proposed project activity including the host country's legislation and its specific requirements for sustainable development.

The proposed activity is a greenfield project located in the municipality of Parnaíba, state of Piauí, Brazil. The project will generate electricity by implementing and operating 13 horizontal-axis wind turbines, with a total nominal capacity of 30 MW and an estimated net electricity generation of 134,494 MWh/year.
In the baseline, 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. The project activity will promote GHG emission reductions by displacing fossil fuel-based electricity generation that would otherwise have occurred.

The project participants are Tractebel Energia S.A and Central Eólica Porto das Barcas S.A. The project applies the approved baseline and monitoring methodology ACM0002 Version 12.2.0, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources".

In order to arrive at the final validation conclusions and opinion, LRQA carried out desk review, visit to the PP´s head office, interview with the staff involved and independent research of alternative information sources in order to cross check and validate the information, assumptions, calculations and statements presented in the PDD.

The assessment team concluded that the description of the project activity in the PDD version 3 is accurate and complete and that all applicability criteria of the methodology ACM0002 Version 12.2.0 are met; the baseline scenario has been correctly identified and the assumptions adopted are sound; the monitoring plan complies with the applicable methodology, with feasible arrangements and sufficient means of implementation to ensure that the emission reductions resulting from the proposed CDM project activity can be reported ex post and verified.

The Project Activity is additional as demonstrated by the financial and common practice analysis; all parameters used in the emission reductions calculations had their sources verified, were correctly interpreted and are conservative choices.

It is reasonably demonstrated that the project is not a probable baseline scenario and that emission reductions attributable to the project are additional to any that would have occurred in the absence of the project activity.

Local stakeholders, such as the Town Council, the City Hall, the Brazilian forum of NGOs, neighbouring community representatives and the state and federal prosecutors were invited to comment on the project, in accordance with the requirements of Resolution 7 of the Brazilian DNA, as verified by the correspondent protocols of receipt. As declared by the PP, no comment was received from the local stakeholders consultation.

There are no project components or issues excluded from the validation other than the LoA, which has yet to be issued following DNA review of the Validation Report.

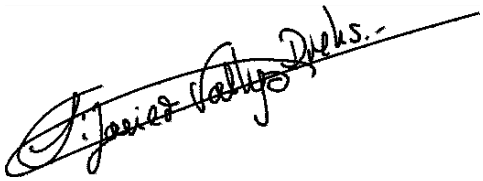
Through the validation process, the validation team identified 3 CARs and 5 CLs. The PP has taken action on the raised issues and submitted to LRQA the revised PDD and other supporting evidence. Further details on this can be found in the section "Findings", at the end of Appendix F.

The validation team is of the opinion that the proposed project activity conforms to all the relevant UNFCCC requirements for the CDM as well as the host country's national requirements except for the absence of LoA.

Prior to the submission of the Project Design Document and the Validation Report to the CDM Executive Board, the project shall receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the Project assists the country in achieving sustainable development.

If implemented as designed, the project is likely to achieve the validated emission reductions of 53,004 tCO2e as annual average during the first crediting period. LRQA would request the registration of the activity "Porto do Delta Wind Power Plant CDM Project" to the CDM Executive Board as a CDM project activity, after the issuance of LoA following DNA review of the Validation Report.

Decision Maker



Javier Vallejo Drehs

CDM Quality Manager
11/04/2012

7 Appendices

7.1 Appendix A: Letter of approval for the project by the host and investing country DNA

5 Letter of Approval from the *Comissão Interministerial de Mudança Global do Clima* has yet to be received

7.1 Appendix B: List of documents reviewed

Category A documents (documents prepared by the PP)

1. Prior consideration forms to the DNA and UNFCCC: "Prior Considerarion DNA_CIMGC - Porto do Delta.pdf" and "Prior Consideration to UNFCCC_Porto do Delta I.doc"
2. Project starting date: "Notice to Proceed .pdf"
   Letters to local stakeholders :
3. "associacao comercial.pdf"
4. "camara municipal.pdf"
5. "FBOMS.pdf"

6. “ministerio publico piaui.pdf”
7. “ministerio publico federal.pdf”
8. “prefeitura municipal.pdf”
9. “sec_municipal_MA.pdf”
10. “SEMAR.pdf”

Letters to local stakeholders_ Acknowledgements of receipt :

11. “AR Associacao Comercial.jpg”
12. “AR Associacao Comercial.jpg”
13. “AR FBOMS.jpg”
14. “AR Associacao Comercial.jpg”
15. “AR Associacao Comercial.jpg”
16. “AR Prefeitura.jpg”
17. “AR Sec Estadual de Meio Ambiente.jpg”
18. “AR Secret de Meio Ambiente.jpg”
19. Project Design Document “Porto do Delta _PDDV01.pdf” and “Porto do Delta_PDDV02.pdf”
20. Wind turbine generator and tower supply, transportation, installation and commissioning agreement: “TSA_master_final- flexeiras.pdf”
21. Amendment to the wind turbine generator and tower supply, transportation, installation and commissioning agreement “First Amendment TSA Porto das Barcas_signed version”
22. Amendment to the wind turbine generator and tower supply, transportation, installation and commissioning agreement “Third Amendment TSA Porto das Barcas_signed version”
23. Wind certification report “Wind certification_CGE- Porto do Delta I.pdf”
24. Estimation of energy production and systemic losses: “WPP Generation .xls” and “Systemic Losses.pdf”
25. Investment analysis worksheets “Cash Flow_ Porto do Delta.xls”, “Cash Flow_Porto do Delta V02” and “Global CAPM electricity generation 2011.xls”
26. Energy price estimation: EPE, Empresa de Pesquisas Energéticas (Energy Research Company), Alternative Energy Sources Auction results,
    i. http://www.epe.gov.br/leiloes/Paginas/Leil%C3%A3o%20de%20Fontes%20Alternativas%202010/Leil%C3%B5esdeFontesAlternativascontratam89usinas,com2892,2MW.aspx?CategoriaID=6695

CAPEX:

27. “First Amendment TSA Porto do Delta _signed version.pdf”;
28. “Third Amendment TSA Porto do Delta _signed version.pdf”;
29. “TRS 214-10-R3 - Proposta Comercial TRACTEBEL.pdf” ;
30. “Porto do Delta _civil works.pdf”
31. Land lease costs: “Porto do Delta _land lease contract .pdf”
32. Owner´s engineering: "ENG001-PRJ-DC-0128-000.pdf",
33. Operational costs estimation: “O&M Eolica_REFERENCE.pdf”
34. Insurance costs: “Wind Projects - Insurance budget.xls”
35. Other costs: “Custos de MSO Trairi 4 sites mar10.xls”
36. Electricity transmission costs: Federal resolution from ANEEL # 907, 11 Nov 2009
37. BNDES, financing condition for energy generation projects in general:http://www.bndes.gov.br/SiteBNDES/bndes/bndes_pt/Institucional/Apoio_Financeiro/Produtos/FINEM/energia_eletrica_geracao.html
38. BNDES, financing condition for renewable energy generation projects: http://www.bndes.gov.br/SiteBNDES/bndes/bndes_pt/Institucional/Apoio_Financeiro/Produtos/FINEM/energias_alternativas.html

39. ANEEL´s Energy Generation Data Bank, http://www.aneel.gov.br/aplicacoes/capacidadebrasil/GeracaoTipoFase.asp?tipo=7&fase=3), on 03 December 2012
40. ANEEL, Number of wind power plants in Brazil: http://www.aneel.gov.br/aplicacoes/capacidadebrasil/GeracaoTipoFase.asp?tipo=7&fase=3 (on 03 December 2012)
41. ANEEL, information on the operation starting dates from the site http://www.aneel.gov.br/area.cfm?idArea=37&idPerfil=2, "link "Usinas Eólicas", file "Cronograma_Eventos_EOL_dezembro_2011.xls")
42. Ministry of Mines and Energy, projects that benefited from PROINFA (http://www.mme.gov.br/programas/proinfa/galerias/arquivos/apresentacao/PROINFA-ANEXO1-InstitucionalMME.pdf, slide # 13)
43. Environmental impact analysis report: "RIMA_Porto do Delta.pdf"
44. Environmental permit (preliminary) "Licença Prévia Porto do Delta_Renovacao jul 2011
45. Modalities of Communication Form
46. Rotor-Nacelle Assembly Component Certificate, Det Norske Veritas, file "WTG 20Lifetime.pdf"
47. CAPM calculation, file "Global CAPM Power Sector 2011"
48. Letter from BNDES on the adopted load factor for financing purposes, file "Plant load factor value P90_PP requirement and response from BNDES"
49. Wind turbine generators spare parts costs, file "PCA_Signed version"
50. Brazilian Energy Research Company (*Empresa de Pesquisa Energética*), "Abatimento das emissões relacionadas à produção e ao uso da energia no Brasil até 2020"

Category B documents (other documents referenced)

1. "Clean Development Mechanism Validation and Verification Manual", version 01.2
2. CDM "Guidelines for Completing the Project Design Document and the Proposed New Baseline and Monitoring Methodologies", version 7
3. CDM "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", ACM0002, version 12.2.0.
4. CDM "Tool for the Demonstration and Assessment of Additionality", version 06.0.0
5. CDM "Guidelines on the Demonstration and Assessment of Prior Consideration of the CDM", version 04
6. CDM "Guidelines on the Assessment of Investment Analysis", version 05.
7. CDM Methodologies Panel Information Note "Default Values for equity return for CDM projects" (50 Meeting, Annex 8)
8. CDM "Guidelines on Common Practice" version 01.0
9. CDM "Tool to calculate the emission factor for an electricity system", version 02.2.1
10. CDM "Guidelines for the Reporting and Validation of Plant Load Factors", version 01.0.
11. Brazilian Interministerial Commission on Global Climate Change, Resolution No. 1 of 11 September 2003
12. Electric Energy National Agency (ANEEL), law No. 10438 of 26 April 2002 (Electricity Transmission System usage fee)
13. Electric Energy National Agency (ANEEL), resolution #77, 18 Aug 2004 (Electricity Transmission System usage fee)

14. Electric Energy National Agency (ANEEL), resolution #907, 11 Nov 2009 (Electricity Transmission System usage fee)
15. Federal Law # 9427 / 1996 (transmission concession inspection fee)
16. Electric Energy National Agency (ANEEL), Order # 4080 /2010 (transmission concession inspection fee)
17. CIMGC_Clarification note regarding the emission factors of the national integrated system
18. PDD of the CDM registered project "Osório Wind Power Plant Project", ref. 0603, http://cdm.unfccc.int/Projects/DB/DNV-CUK1158843861.54/view
19. PDD of the CDM registered project "Liaoning Fuxin Gaoshanzi 100.5MW Wind Power Project – China, ref. 3344 http://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1265184701.98/view
20. PDD of the CDM registered project "Zafarana 8 - Wind Power Plant Project - Arab Republic of Egypt, ref. 3501, http://cdm.unfccc.int/Projects/DB/DNV-CUK1268916200.69/view
21. OPEX: Schaeffer, R.; Szklo, S.A., 2000. Future electric power technology choices of Brazil: a possible conflict between local pollution and global climate change, Energy Policy 29 (2001) 355-369

7.2 Appendix C: List of persons interviewed

Alice de Moraes Falleiro	Enerbio Consult.	Project Analyst
Anamélia Medeiros Santos	IPR GDF Suez	Project Manager
Aline T. de Souza	Tractebel	Operation Proc. Analyst
Diego M. Silveira	Tractebel	Project Analyst
Eduardo B. de S. Leão	Enerbio Consult.	Director
Eduardo T. Guiyotoku	Tractebel	Commercial Planning Analyst
Fernando A. de Alencar	IPR GDF Suez	Financial Advisor

7.3 Appendix D: How due account has been taken to the public input made to the validation requirements

The PDD version 1 was made publicly available in accordance with the requirements of the Procedures for processing and reporting on validation of a CDM project activity for the period of 01 October 2011 – 30 October 2011 as per http://cdm.unfccc.int/Projects/Validation/DB/201B1MWAZJQGX7TCZ5VJ9SEJZW5YCG/view.html

No comment was received during this period. No further changes on the PDD were necessary.

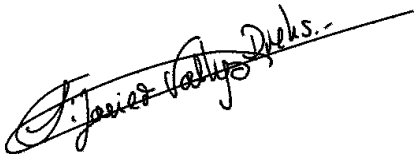
7.5 Appendix E: Certificate of Appointment

Validation of "Porto do Delta I Wind Power Plant CDM Project"

We hereby certify that the following personnel have engaged in the validation process that has fully satisfied the competence requirements of the validation of the CDM project activity.

Name of Person	Assigned Roles
Iuri de A. Barroso	Team Leader
Márcio Pragana	Sector expert supporting the validation team
Talita Beck	Technical Reviewer (UT)
Javier Vallejo Drehs	Technical Reviewer and Decision Maker
Karuna Moorthy	Sector expert supporting the technical review

Signed by



CDM Quality Manager
Decision Maker
11/04/2012

7.6 Appendix F: Validation Protocol and findings log

	Validated situation	Conclusion
SECTION 1. Approval		
Host Country Approval		
1. Has the Host country DNA provided a written approval?	Yes ☐ No ☐ NA☐ [1] According to the Brazilian DNA´s rules, the issuance of the Letter of Approval is conditional on the presentation of the DOE´s validation report by PP to the DNA (Resolution No. 1 of September 11, 2003).	Pending
2. Confirm that the letter has been issued by the Party's DNA and is valid for the proposed CDM project activity under validation	Yes ☐ No ☐ NA☐ According to the Brazilian DNA´s rules, the issuance of the Letter of Approval is conditional on the presentation of the DOE´s validation report by PP to the DNA (Resolution No. 1 of September 11, 2003).	Pending
3. Mention the means of validation employed to assess the authenticity of the Letter of Approval. Indicate the source of the LoA (e.g. PP or directly from the DNA)	To be completed after presentation of LoA, at the final stage of validation.	Pending

[1] For each section and question where a YES/NO/NA answer is required, explain your choice.

	Validated situation	Conclusion
4. Does the written Letter of Approval confirm the following: (a) The Party is a Party to the Kyoto Protocol (including ratification); (b) Participation is voluntary; (c) The proposed CDM project activity contributes to the sustainable development of the country; (d) It refers to the precise proposed CDM project activity title in the PDD being submitted for registration.	Yes ☐ No ☐ NA☐ To be completed after presentation of LoA, at the final stage of validation.	Pending
5. Is the letter of approval unconditional with respect of (a) to (d) above	Yes ☐ No ☐ NA☐ To be completed after presentation of LoA, at the final stage of validation.	Pending
6. Does the LoA from the host party acknowledge the bundle activity (if applicable)	Yes ☐ No ☐ NA☐ To be completed after presentation of LoA, at the final stage of validation.	Pending
Annex I Party Approval		
7. Has the Annex I country DNA provided a written approval?	Yes ☐ No ☒ NA☐ The project has currently been proposed as a unilateral CDM project and the Annex I Party has not yet been identified. In line with the provision of paragraph 57 of the 18th meeting of the CDM-EB, registration of a project activity can take place without an Annex I party being involved at the stage of registration.	NA
8. Confirm that the letter has been issued by the Party's DNA and is valid for the proposed CDM project activity under validation	Yes ☐ No ☐ NA☒	NA

	Validated situation	Conclusion
9. Mention the means of validation employed to assess the authenticity of the Letter of Approval Indicate the source of the LoA (e.g. PP or directly from the DNA)	Yes ☐ No ☐ NA☒	NA
10. Does the written Letter of Approval confirm the following: (a) The Party is a Party to the Kyoto Protocol (including ratification); (b) Participation is voluntary; (c) It refers to the precise proposed CDM project activity title in the PDD being submitted for registration.	Yes ☐ No ☐ NA☒	NA
11. Is the letter of approval unconditional with respect of (a) to (c) above	Yes ☐ No ☐ NA☒	NA
Host Country and Annex I Party Approval		
12. Do any of the Letters of Approval contain additional specification of the project activity? Like: - PDD Version number - Validation report version number Make sure that the request for registration is made on the basis of the documents specified in any of the letters.	To be completed after presentation of LoA, at the final stage of validation.	Pending

		Validated situation		Conclusion
SECTION 2. Participation				
1	Confirm that the PPs are listed in a tabular form in section A.3 of PDD and that this information is consistent with the contact details provided in Annex 1 of the PDD and with the contact details in the MoC.	Host Party PP name in PDD/ A.3	Tractebel Energia S.A and Central Eólica Porto das Barcas S.A	OK
		Host Party PP name in PDD/ Annex 1	Tractebel Energia S.A and Central Eólica Porto das Barcas S.A	
		Host Party PP name in MoC	Tractebel Energia S.A and Central Eólica Porto das Barcas S.A	
		Annex 1 Party PP name in PDD/ A.3	The project has currently been proposed as a unilateral CDM project and the Annex I Party has not yet been identified. In line with the provision of paragraph 57 of the 18th meeting of the CDM-EB, registration of a project activity can take place without an Annex I party being involved at the stage of registration.	
		Annex 1 Party PP name in PDD/ Annex 1		
		Annex 1 Party PP name in MoC		
2	Confirm that each of the PPs has been approved by at least one Party involved	Yes ☐ No ☐ NA☐ To be completed after presentation of LoA, at the final stage of validation.		Pending

		Validated situation	Conclusion
3	Confirm that no entities other than those approved as PPs are included in section A.3 of PDD.	Yes ☐ No ☐ NA☐ To be completed after presentation of LoA, at the final stage of validation.	Pending
4	Ensure that the approval of participation has been issued from the relevant DNA and if in doubt verify this with the corresponding DNA.	To be completed after presentation of LoA, at the final stage of validation.	Pending

	Validated situation	Conclusion
5 Has the MoC been completed as per the latest "Procedures for MoC between the project participants and the Executive Board"? - No modifications to the template/form should be made and each document should be clearly dated - Title of the project and names of project participants and focal points should be fully consistent with those indicated in all other project documentation - Focal point scopes should be clearly and correctly indicated - Contact details and specimen signatures of focal point entities including those of project participants in Annex 1 should be correctly entered. Only one telephone, fax, e-mail contact should be entered per authorized signatory. In cases where additional contact details are included, only the first indicated information will be taken into account and only the official business address of the proposed entity should be provided on the F-CDM-MOC form. - The Statement of Agreement in Section 3 should be signed by one authorized signatory for each project participant; signatures made available in Section 3 should correspond to those indicated in the related Annex 1 document; focal point entities who are not designated as project participants should not sign Section 3.	Yes ☒ No ☐ NA☐ **CL 05** (for more details please refer to section Findings, at the end of Appendix F): Issue raised: a signed MoC had not been provided by the PP. The signed MoC was provided by the PP. CL 05 has been closed. The document "Porto do Delta Wind Power Plant MoC.pdf" was assessed and approved. Sole focal point authority was assigned to Tractebel Energia S.A. (primary signatory Mr. Carlos Alberto Gothe and no alternate signatory). The Statement of Agreement was appropriately signed by the PPs. MoC is consistent with the PDD and the information is in accordance with the form F-CDM-MOC and the requirements of the procedures. The authority of the MoC signatory has been validated. The sole focal point authority and primary authorised signatory of the MoC on behalf of Tractebel Energia S.A., Mr. Carlos Alberto Gothe, has also signed the wind generator and tower supply contract (on behalf of Central Eólica Porto das Barcas Ltda), as can be seen in the file "First Amendment TSA Porto das Barcas_signed version.pdf", mentioned in the appendix B. The wind generator and tower supply contract involves most of the total CAPEX.	CL 05, closed OK

	Validated Situation	Conclusion
SECTION 3. Project design document		
1. Is the project activity Small Scale or Normal Scale	Normal Scale ☒ Small Scale ☐ Bundled Small Scale ☐ Nominal power > 15 MW (decision 17 CP.7).	OK
2. Has the PDD used the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM Website? Check outputs from the completeness check.	Yes ☒ No ☐ The PP has used the template F-CDM-PDD - Project Design Document form version 03.0 and the "Guidelines for completing the project design document (CDM-PDD) and the proposed new baseline and monitoring methodologies" Version 7, http://cdm.unfccc.int/Reference/Guidclarif/pdd/index.html. Although a new F-CDM-PDD version 04 was published, the form version used by the PP is in the period of grace for the submission of the project for registration.	OK

	Validated situation	Conclusion
SECTION 4. Project description		
1. Describe the process undertaken to validate that the description of the proposed CDM project activity as contained in the PDD sufficiently covers all relevant elements, is accurate and that it provides the reader with a clear understanding of the nature of the proposed CDM project activity.	The project boundaries, the argumentation regarding the contribution to sustainable development and the technical description of the project activity were assessed against the approved methodology (ACM0002). The PP´s statement that the project is greenfield was considered credible, after interviews with PP´s personnel and documental review. The preliminary environmental permit, the environmental impact report and the land lease contract don't mention any installation already present in the project´s area. For more details on the documentation reviewed, please refer to Appendix B, "documents prepared by the PP", items 27, 26, 14 and respectively. The installed capacity and the net energy produced were verified and comply with the Guidelines for the Reporting and Validation of Plant Load Factors, item 3(b). For more details please refer to Section 6c. "Investment analysis", in the table of inputs to the investment analysis, parameter "Net Energy Produced". The WTG lifetime was validated from the Rotor-Nacelle Assembly Component Certificate, Det Norske Veritas, file "WTG 20Lifetime.pdf". Please refer to Appendix B, "documents prepared by the PP". The installed capacity, net electricity generation and plant load factor were verified and validated. For more details please refer to Section 6c. The coordinates of each wind turbine were checked in the PDD, page 6, A.4.1.4 Table 02, against the values in the wind study. As a reference, similar registered projects (Osório Wind Power Plant Project – Brazil, ref. 0603, Liaoning Fuxin Gaoshanzi 100.5MW Wind Power Project – China, ref. 3344 and Zafarana 8 - Wind Power Plant Project, Arab Republic of Egyp, ref. 3501), were considered as a way to confirm that no material information was missing.	OK

	Validated situation	Conclusion
2. Confirm that the exact project location is provided in the PDD with Geographical coordinates and check the accuracy of them. Please include here the Geographical coordinates:	The exact project location is provided in the PDD. The Geographical coordinates were validated by the comparison with the values presented in the wind certification carried out by Megajoule (document in Portuguese "Wind certification_CGE-Porto do Delta.pdf", page 7, "Dados de vento de referência". • According to the study, the location of the wind speed measurement station is 197,094 E; 9,688,842m S (SIRGAS2000, UTM24M) • The coordinates of each wind turbine were checked in the PDD, A.4.1.4 Table 02, against the values in the wind study. The geographical coordinates, initially provided by the PP only in the system SIRGAS 2000, UTM 24M were after technical review converted by the PP to decimals, with the aid of a conversion worksheet , available on the site http://www.uwgb.edu/dutchs/UsefulData/UTMConversions1.xls. The conversion was checked by the assessment team and found to be correct.	OK
3. Confirm that the physical site inspection reflects the description in the PDD of the proposed CDM project activity.	It was confirmed through interviews with PP´s personnel that the site reflects the description in the PDD, and no renewable power plant was operating prior to the implementation of the project activity (greenfield plant). Please refer to questions 4.1 and 5.a.1.	OK

	Validated situation	Conclusion
4. If the team did not undertake a physical site inspection, describe the justification as approved by the CDM Quality Manager. (VVM 01.2: 60-61) Describe briefly the physical site inspection: Travel details and installations, facilities and buildings visited.	Considering that, according to the PP´s, the project activity is a greenfield plant and no relevant construction works (such as towers, turbines or generators)had been started by the time of the visit, the validation team decided to conduct the visit in the PP´s office, where evidence of the present stage of the project were assessed. It was confirmed through interviews with PP´s personnel that the site reflects the description in the PDD, i.e., that no renewable power plant was operated prior to the implementation of the project activity (greenfield plant). The land lease contract does not mention any installation already present in the project´s area. According to the PP the environmental installation permit, which legally grants the PP the permission to start the installation of the project, had not been issued by the time of the visit to Tractebel's head office. For more details on the documentation reviewed, please refer to Appendix B, "documents prepared by the PP". As declared by the PP, the installation licence had not been issued by the time of the last stages of the validation. All elements of the project description were validated during the visit to the PP´s head office. The PP has provided the wind studies for determining the net energy produced, where the description of the methodology applied is described, including the wind monitoring equipment and references to the sources of raw data. The contracted engineering company has a good reputation in the sector and was considered trustworthy. The process of local stakeholders consultation was validated through the letters of invitation and the corresponding confirmations of receipt. As stated in the validation protocol on appendix F section 8, the team confirmed during the visit that the consultation process was conducted as per resolution no 7 of the Brazilian DNA. The PP´s approach to the environmental issues (installation permits, environmental impacts assessment and mitigation measures plan) was validated during the visit to Tractebel's head office, as stated in the validation report on appendix F section 9.	OK

	Validated situation		Conclusion
5. If the proposed CDM project activity involves the alteration of an existing installation or process, ensure that the project description clearly states the differences resulting from the project activity compared to the pre-project situation.	Pre-project	Project activity	OK
	NA. The project activity does not involve the alteration of an existing installation or process. According to the PDD and as confirmed during the visit to the PP´s office, 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).		
6. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance (ODA).	As discussed during the visit to Tractebel's head office, there will be no public funding from Annex I parties or from ODA. The validation team confirms that the BNDES has been the only financing source for all intensive capital investments in the energy sector in Brazil.		OK
7. If the project activity is a small scale one, confirm that it is not a debundled component of a large scale project, in accordance with appendix C of the simplified M&P for SSC CDM project activities and the Guidelines for assessment of de-bundling for SSC project activities.	The project is not a small scale one. The output capacity (total nominal capacity: 30 MW, according to PDD A.2 and A.4.3) is greater than 15 MW (decision 17 CP.7).		OK

	Validated situation	Conclusion
SECTION 5. Baseline and monitoring methodology		
1. Has the baseline and monitoring methodologies selected by the project participants been previously approved by the CDM Executive Board, i.e. does it appear on the methodologies page of the UNFCCC website?	Yes ☒ No ☐ NA☐ Consolidated baseline methodology for grid-connected electricity generation from renewable sources ACM0002 Version 12.2.0 is applied. http://cdm.unfccc.int/methodologies/DB/C505BVV9P8VSNNV3LTK1BP3OR24Y5L The methodology refers to the below methodological tools. • Tool to calculate the emission factor for an electricity system; • Tool for the demonstration and assessment of additionality; • Combined tool to identify the baseline scenario and demonstrate additionality; • Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion. The project activity follows the "Tool for the demonstration and assessment of additionality" and the "Tool to calculate the emission factor for an electrical system". Combined tool to identify the baseline scenario and demonstrate additionality is not applied. The Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion is not applied as the project activity does not involve fossil fuel combustion.	OK
2. If the project activity is a Small Scale one; does it qualify within the threshold of the three possible types of small scale projects? Confirm information provided in the PDD.	The project is not a small scale one. The output capacity (total nominal capacity: 30 MW, according to PDD A.2) is greater than 15 MW (acc. to decision 17 CP.7).	OK

<table>
<tr><th></th><th>Validated situation</th><th>Conclusion</th></tr>
<tr><td>3. If the project activity is a Small Scale one; which approved small scale methodology does the project apply? Confirm that the SSC meth is applied in conjunction with the general guidelines to SSC CDM methodologies.</td><td>The project is not a small scale one. The output capacity (total nominal capacity: 30 MW, according to PDD A.2) is greater than 15 MW (acc. to decision 17 CP.7).</td><td>OK</td></tr>
<tr><td>4. Determine whether the methodology selected is applicable to the project activity including that the used version is valid
Describe steps taken to assess the relevant information contained in the PDD in the table below</td><td>The proposed project activity was confirmed to meet the applicability conditions of the selected methodology and methodological tools as below.
Out of the tools referenced in the applied methodology, the Combined tool to identify the baseline scenario and demonstrate additionality and the Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion are not used in the project.
<table>
<tr><th>Methodology/Tool</th><th>Version of AM/ AT mentioned in the PDD version 3</th><th>Number/date of latest version</th><th>Validation of the version adopted in the PDD</th></tr>
<tr><td>ACM0002</td><td>12.2.0</td><td>12.3.0, 02 March 2012</td><td>OK, the adopted version is in the grace period</td></tr>
<tr><td>Tool for the demonstration and assessment of additionality</td><td>6.0.0</td><td>06.0.0, 25 Nov 11</td><td>OK, the latest version is being used</td></tr>
<tr><td>Tool to calculate the emission factor for an electricity system</td><td>2.2.1</td><td>2.2.1, 29 Sep 11</td><td>OK, the latest version is being used</td></tr>
</table></td><td>OK</td></tr>
</table>

No.	Applicability conditions in the ACM0002 Version 12.2.0.	Information in the PDD	Steps taken to assess PDD information	Conclusion

Applicability condition of ACM0002				
1	*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.*	*PDD B.2: "… the project is a grid-connected renewable power plant that will consist of a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity…", "The project is a wind power plant".*	The project activity has been confirmed as installation of wind power plant through the review of document "Third Amendment TSA Porto das Barcas_signed version". Please refer to appendix B, documents prepared by the PP.	OK
2	*In the case of capacity additions, retrofits or replacements (except for wind, solar, wave or tidal power capacity addition projects which use Option 2: on page 10 to calculate the parameter $EG_{PJ,y}$): the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity 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.*	*PDD B.2: "… the project is a grid-connected renewable power plant that will consist of a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity…"; "The project is a wind power plant"; "the project activity does not involve capacity addition or retrofit of (an) existing plants, nor involves a replacement of (an) existing plants."*	The project activity has been confirmed as installation of wind power plant through the review of document "Third Amendment TSA Porto das Barcas_signed version". Please refer to appendix B, documents prepared by the PP.	OK
3	*In case of hydro power plants, one of the following conditions must apply:* • *The project activity is implemented in an existing reservoir, with no change in the volume of reservoir; or* • *The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m2; or* • *The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m2.*	*PDD B.2:" The project is a wind power plant (therefore it is neither a biomass plant nor a hydro power plant with power density less than 4 W/m2) and it does not involve switching from fossil fuels to renewable energy at the site of the project activity."*	NA	OK
Inapplicability condition of ACM0002				
4	*Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity,*	*PDD B.2:" The project is a wind power plant (therefore it is neither a*	The project activity is a greenfield development of a wind power plant	OK

	since in this case the baseline may be the continued use of fossil fuels at the site.	*biomass plant nor a hydro power plant with power density less than 4 W/m2) and it does not involve switching from fossil fuels to renewable energy at the site of the project activity."*	and no fossil fuel fired power plant existed at the project site. This was confirmed by reviewing the project documentation and interviewing the PP.	
5	*Biomass fired power plants.*		NA	OK
6	*Hydro power plants that result in new reservoirs or in the increase in existing reservoirs where the power density of the power plant is less than 4 W/m^2.*		NA	OK
Applicability condition of "Tool to calculate the emission factor for an electricity system"				
7	*This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity, i.e. where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).*	*PDD B.2:" …the project is a grid-connected renewable power plant …"*	The project activity has been confirmed as a grid connected power plant by reviewing the project documentation ("Wind certification_CGE-Porto do Delta", see appendix B) and interviewing the PP.	OK
Inapplicability condition of the "Tool to calculate the emission factor for an electricity system"				
8	*In case of CDM projects the tool is not applicable if the project electricity system is located partially or totally in an Annex I country.*	*PDD A.2: "The project is located in the northeast of Brazil"*	The location of the project was confirmed by reviewing the project documentation ("Wind certification_CGE-Porto do Delta", see appendix B) and interviewing the PP.	OK

	Validated situation	**Conclusion**
5. Confirm that any specific guidance provided by the CDM Executive Board in respect to an approved methodology has been correctly applied.	The methodology sets the clear criteria to check the applicability conditions and each condition is checked as detailed above.	OK

	Validated situation	Conclusion
6. If a determination regarding the applicability of the selected methodology to the proposed CDM project activity can not be made, request clarification of the methodology in accordance with the guidance provided by the CDM Executive Board Describe the clarification request and response.	NA	OK
7. If the Validation Team determines that the proposed CDM project activity does not comply with the applicability conditions of the methodology the Team may proceed by means of requesting revision to or deviation from the methodology in accordance with the guidance provided by the CDM Executive Board. Describe the request for revision or deviation and approval by the CDM Executive Board.	NA	OK
8. If there are any GHG emissions occurring within the proposed CDM project activity boundary, which are not addressed by the applied methodology and which are expected to contribute more than 1% of the overall expected average annual emissions reductions as a result of the implementation of the project but a determination is made that the approved methodology(ies) is/are applicable to the project activity, provide here information about them in relation to the applicability criteria and justify the determination.	There were not identified emissions from the project activity besides those addressed by the methodology, as validated by LRQA´s sector expert during the visit. Also, according to the description of the project activity and registered PDDs of similar project activities (Osório Wind Power Plant Project, Brazil, ref. 0603; Liaoning Fuxin Gaoshanzi 100.5MW Wind Power Project, China, ref. 3344 and Zafarana 8 - Wind Power Plant Project, Arab Republic of Egypt, ref. 3501), no other relevant emission is expected.	OK

	Validated situation	Conclusion
SECTION 5a. Project boundary		

	Validated situation	Conclusion
1. Does the project boundary include physical, geographical site of the industrial facility, processes or equipment that are affected by the project activity?	Yes ☒ No ☐ NA☐ The project boundary was described in the PDD, section B.3, as being the entire National Interconnected System. This is in accordance with the adopted methodology ACM0002, which states that "the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to." The PP´s statement that the project is a greenfield renewable wind power plant and, therefore, there are no processes or equipment affected by the project activity was considered credible, after interviews with PP´s personnel and documental review. The land lease contract does not mention any installation already present in the project´s area. For more details on the documentation reviewed, please refer to Appendix B, "documents prepared by the PP".	OK
2. Confirm that all sources and GHGs required by the methodology have been included within the project boundary. Describe here if any emission source that will be affected by the project activity and is not addressed by the approved methodology, has been identified. In such case request clarification of, revision to or deviation from the methodology in accordance with EB guidance. Use the table below for this purpose:	All sources and GHGs required by the methodology have been included within the project boundary. (CO_2 from the grid for the baseline; No emissions for the project activity). No additional emission source was identified during the desk review or the visit to the PP´s head office. As a zero emission electricity generation project, CO_2 emissions in the baseline scenario only are the gas and emission source included in the project boundary. This was confirmed appropriate as detailed below.	OK

Gases And Sources Included In The Project Boundary						
	Source	**Gas**	**Inc./Exc. PDD**	**Justification PDD**	**Steps Taken To Assess PDD Justification**	**Conclusion**

BASELINE	Power plants supplying energy to SIN	CO_2	Yes	Main emission source	The selected baseline is justified, since the project has been confirmed as a greenfield plant and the installation of a new grid-connected renewable power plant/unit (please refer to question #1 above). The declared baseline sources are in accordance with the baseline scenario determined by the adopted methodology ACM0002 and the Tool to calculate the emission factor for an electricity system	OK
		CH_4	No	Main emission source		OK
		N_2O	No	Main emission source		OK
PROJECT	For geothermal power plants, fugitive emissions of CH_4 and CO_2 from non-condensable gases contained in geothermal steam.	CO_2, CH_4 and N_2O	No	Not applicable	Verification during the visit to Tractebel's head office through interviews with the PP and review of the preliminary environmental permit "Licença Prévia Porto do Delta_Renovacao jul 2011.pdf". The project sources are in accordance with the similar registered project Osório Wind Power Plant Project,ref 0603.	OK
	CO_2 emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plants.	CO_2, CH_4 and N_2O	No	Not applicable		OK
	For hydro power plants, emissions of CH_4 from the reservoir.	CO_2, CH_4 and N_2O	No	Not applicable		OK

	Validated situation	**Conclusion**
SECTION 5b. Baseline identification		

	Validated situation	Conclusion
1. Determine whether the PDD provides a verifiable description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity.	The identified baseline scenario and the description of the activities that would take place in the absence of the proposed CDM project activity are clearly described in item B.4 of PDD and are in accordance with ACM0002 version 12.2.0.	OK
2. Confirm that any procedure contained in the methodology to identify the most reasonable baseline scenario, has been correctly applied.	Yes ☒ No ☐ NA☐ According to the Tool for the demonstration and assessment of additionality, project activities that apply the Tool in context of approved consolidated methodology ACM0002 only need to identify that there is at least one credible and feasible alternative that would be more attractive than the proposed project activity. Among other alternative scenarios, provision of equivalent amount of electricity by the grid system is considered as a credible and feasible alternative that satisfies the requirement of the methodology/tool. According to the ACM0002, if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following: *Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system".*	OK

	Validated situation	Conclusion
3. Check each step in the procedure described in the PDD to identify the baseline scenario against the requirements of the methodology. (Note that if the methodology requires use of tools, i.e. such as the tool for the demonstration and assessment of additionality and the combined tool to identify the baseline scenario and demonstrate additionality, the guidance in the methodology shall supersede it in the tool.)	Since the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is determined by applied methodology, as stated in the PDD.	OK
4. Based on financial expertise and local and sectoral knowledge, determine whether all scenarios that are considered by the project participants and are supplementary to those required by the methodology, are reasonable in the context of the proposed CDM project activity and that no reasonable alternative scenario has been excluded. Use the table below for this purpose:	As confirmed above, provision of equivalent amount of electricity by the grid system is considered as a credible and feasible alternative that satisfies the requirement of the methodology/tool. The PP does not consider any scenario supplementary to those required in the methodology. No reasonable alternative scenario was excluded.	OK

Alternative Scenario Ref.	Description in the PDD	Cross-checked with	Validation Opinion
The baseline scenario is determined by the applied methodology and no further analysis is necessary according to VVM para 105.			

5. Determine whether the baseline scenario identified is reasonable by validating the assumptions, calculations and rationales used, as described in the PDD. It shall be ensured that documents and sources referred to in the PDD are correctly quoted and interpreted. Cross check the information provided in the PDD with other verifiable and credible sources, such as local expert opinion. The table above may be used for this purpose.	The baseline scenario identified in PDD, i.e., the operation of grid-connected power plants and the addition of new generation sources, is the current practice and conforms to the methodology applied (ACM002 version 12.2.0) No other plausible and credible alternatives to the project activity were identified, which are economically attractive and technically feasible. Provision of equivalent amount of electricity by the grid system, is considered as a credible and feasible alternative and it satisfies the requirement of the methodology/tool.	OK
6. Is the identified baseline scenario in line with regulatory or legal requirements and takes into account relevant national and/or sectoral policies?	Yes. The energy generation, transmission and distribution is done by the SIN (Integrated National System), which is regulated in the host country by a governmental body (ANEEL). The electricity delivered to the grid by the project would necessarily, in the baseline scenario, be produced by the operation of grid-connected power plants under SIN. The scenario is legally compliant and is current practice.	OK
7. Is this identification supported by official and/or verifiable documents (e.g. studies, web pages, certificates, etc?	Yes. Please see above. More information can be found in the ANEEL web page, http://www.aneel.gov.br/. The scenario is legally compliant and is current practice.	OK

	Validated situation	**Conclusion**
SECTION 5c. Algorithms and/or formulae used to determine emission reductions		

	Validated situation	Conclusion
1. Compare the equations and parameters in the PDD to those in the selected approved methodology and determine if they have been correctly applied to calculate project emissions, baseline emissions, leakage and emission reductions. Confirm that adequate justification has been provided for selection between different options.	The equations and parameters in the PDD were compared to those in the methodology ACM002 version 12.2.0 and were found correctly applied. According to ACM0002, there are no project emissions ($PE_y = 0$) and the baseline emissions are $BE_y = EG_{PJ,y} \cdot EF_{grid, CM,y}$, where $EF_{grid, CM,y}$ is calculated using the latest version of the "Tool to calculate the emission factor for an electricity system". The PP chose to use the values of $EF_{grid, CM,y}$ supplied by the Brazilian Designed National Authority (DNA), which calculates the emission factors of the SIN according to the tool and makes them available to the public. This source of information was validated by consulting the DNA´s site http://www.mct.gov.br/index.php/content/view/72764.html. The PP applied the latest available values of $EF_{grid, BM,y}$ and $EF_{grid, OM,y}$ by the date of *ex-ante* calculation of emission reductions (year of 2010). The build margin of 2011 is not available yet. Still according to ACM0002, the leakage emissions were left out of account.	OK

<table>
<tr><th></th><th>Validated situation</th><th>Conclusion</th></tr>
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2. Verify the justification given in the PDD for the choice of data and parameters used in the equations to determine estimated emission reductions.

If data and parameters will not be monitored throughout the crediting period and will remain fixed, assess that all data sources and assumptions are appropriate and calculations are correct, applicable to the proposed CDM project activity and will result in a conservative estimate of the emission reductions.

If data and parameters will be monitored on implementation and hence become available only after validation of the project activity, confirm that the estimates provided in the PDD for these data and parameters are reasonable.

List all data and parameters provided in the PDD in the tables in next column.

</td><td>

Data/Parameter title: $EG_{facility,y}$	Comments
Title in line with methodology?	yes
Fixed throughout the crediting period?	No
Data unit correctly expressed?'	yes
Appropriate description of parameter?	yes
Source clearly referenced?	yes
Value provided is considered reasonable?	yes (ex ante value)
Has this value been verified?	yes (ex ante value)
Choice of data correctly justified?	yes
Measurement method correctly described?	yes

Data/Parameter title: $EF_{grid,CM,y}$	Comments
Title in line with methodology?	yes
Fixed throughout the crediting period?	No
Data unit correctly expressed?	yes
Appropriate description of parameter?	yes
Source clearly referenced?	yes
Value provided is considered reasonable?	yes (ex ante value)
Has this value been verified?	yes (ex ante value)
Choice of data correctly justified?	yes
Measurement method correctly described?	yes

The estimates provided in the PDD for these data and parameters were validated. The ex-ante value of $EG_{facility,y}$ is based on the wind certification reports and systemic losses. All calculations were verified. Please refer to appendix B, "documents prepared by the PP". For more details please refer to section 6.c, table of inputs to the investment analysis, variable "Total Energy Sold".
The $EF_{grid,CM,y}$ is calculated according to the "Tool to calculate the emission factor for an electricity system": $EF_{grid,CM,y} = F_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM}$

where, for wind and solar power generation project activities: $w_{OM} = 0.75$ and $w_{BM} = 0.25$ for the first and the subsequent crediting periods.The ex-ante calculation of $EF_{grid,CM,y}$ was checked against the values on the official site of the DNA (CIMGC), http://www.mct.gov.br/index.php/content/view/327118.html#ancora

</td><td>OK.</td></tr>
</table>

	Validated situation	Conclusion
3. Confirm that all assumptions and data used by PPs are listed in the PDD including their references and sources, and that the documentation used as the basis for these assumptions and source of data is correctly quoted and interpreted in the PDD.	All assumptions and data used by PPs are mentioned in the PDD section B.6., including their references and sources, and are in accordance with ACM0002. $BE_y = EG_{facility,y} * EF_{grid,CM,y}$ Still according to ACM0002, the leakage emissions were left out of account.	OK
4. Confirm that all estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.	The calculation of estimates of the baseline emissions were cross-checked based on the data sources mentioned in the PDD section B.6.3.	OK

	Validated situation	Conclusion
SECTION 6. Additionality of a project activity		
1. Does the PDD clearly describe how the proposed CDM project activity is additional?	Yes ☒ No ☐ - CDM prior consideration (prior consideration form sent to the Host Party DNA on 16 July 2010) was videnced from the Brazilian DNA letter dated 26/07/2010 (appendix B, "documents prepared by the PP", reference 1) confirming the receipt of the notification. The UNFCCC secretariat was notified on 30 June 2010 and the Publication of the Project activity's' "Prior CDM Consideration" on the UNFCCC website was made on 12th July 2010 (http://cdm.unfccc.int/Projects/PriorCDM/notifications/index_html), according with the Guidance on the Demonstration and Assessment of Prior Consideration of the CDM. - The identification of alternative scenarios, investment analysis and discussion of common practice were assessed during the desk review and the visit to Tractebel's head office. For details, please refer to the items 6.a to 6.e below in this protocol.	OK
2. List the documents and tools provided by the CDM Executive Board used to demonstrate the additionality	1. Tool for the demonstration and assessment of additionality 2. Guidance on the demonstration and assessment of prior consideration of the CDM 3. Guidelines on the assessment of investment analysis	OK

	Validated situation	Conclusion
SECTION 6a. Prior consideration of the clean development mechanism		

	Validated situation	Conclusion
1. Does the PDD clearly indicate the start date of the project activity in format: dd/mm/yyyy and it is in accordance to the Glossary of CDM Terms?	Yes ☒ No ☐ The starting date of the project activity (06 May 2011), is the issuance date of the Notice to Proceed for supply and construction works , as established in the contract signed between the Central Eólica Porto das Barcas S.A and Siemens, its third amendment and the Notice to Proceed. See appendix B, "documents prepared by the PP". Based on the aforementioned documents, the contract would enter into force if one of the following conditions were satisfied: (i) the effective sales of the electricity under a Power Purchase Agreement signed as a result of regulated auctions **or** (ii) the issuance of an authorization for starting construction works (Notice to Proceed). The PP decided to issue the Notice to Proceed, which committed him to expenditures related to the implementation of the project activity.	OK
If the PDD was published for Global Stakeholder Consultation process after the start date, check that the CDM benefits were considered necessary in the decision to undertake the project activity as a CDM project, following the below queries.		
2. For a project activity with a start date on or after the 2nd August 2008, confirm that the PPs have informed the host party DNA and the UNFCCC secretariat in writing of their intention to seek CDM Status If such a notification has not been provided by the PPs within six months of the project activity start date, determine that the CDM was not seriously considered in the decision to implement the project activity	The start date of the project activity is after 02/08/2008 (06 May 2011). The prior consideration form was sent to the Host Party DNA on 16 July 2010 and to the UNFCCC secretariat on 30 June 2010. The project activities' Prior CDM Consideration communication form was published on the UNFCCC website on 12 July 2010 (http://cdm.unfccc.int/Projects/PriorCDM/notifications/index_html). The prior consideration of the benefits of the CDM in the decision to undertake the project activity was assessed and validated by the assessment team following the Guidance on the Demonstration and Assessment of Prior Consideration of the CDM. The issuance of the Notice to Proceed for supply and construction works, as established in the contract signed between the Central Eólica Porto das Barcas S.A and Siemens, as well as the amendments to the contract, were assessed and considered an appropriate project start date milestone. As the DNA and UNFCCC were notified before the project activity start date, the prior consideration requirement is therefore validated.	OK

	Validated situation	Conclusion
3. For a project activity with a start date before the 2nd August 2008, check the following requirements through document reviews to assess the PPs prior consideration of the CDM: (a) Evidence that must indicate that awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project. (b) Reliable evidence from project participants that must indicate that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation. The time gap between the documented evidence of prior CDM consideration and continuing and real actions shall be within the period required by the Guidance on prior consideration of the CDM If evidence to support the serious prior consideration of the CDM as indicated above that is authentic is not available, determine that the CDM was not considered in the decision to implement the project activity.	NA	NA

	Validated situation	Conclusion
SECTION 6b. Identification of alternatives		

	Validated situation	Conclusion
1. Does the PDD identify credible alternatives to the project activity, in order to determine the most realistic baseline scenario? Assess this list of alternatives and ensure that: (a) The list of alternatives includes as one of the options that the project activity is undertaken without being registered as a proposed CDM project activity; (b) The list contains all plausible alternatives considered to be viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity; (c) The alternatives comply with all applicable and enforced legislation.	Since the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is determined by applied methodology, as stated in the PDD. Please refer to the discussion in the section 5b above.	OK. .

	Validated situation	Conclusion
SECTION 6c. Investment analysis		
1. Verify the accuracy of financial calculations carried out for the investment analysis: (a) Conduct a thorough assessment of all parameters and assumptions used in calculating the relevant financial indicator, and determine the accuracy and suitability of these parameters; (b) Cross-check the parameters against third-party or publicly available sources, such as invoices or price indices; (c) Review feasibility reports, public announcements and annual financial reports related to the proposed CDM project activity and the project participants;	**CAR 03** (for more details please refer to section Findings, at the end of Appendix F): CAR03 was raised concerning the conservativeness of the values of plant load factor and the justification of an exceedance probability value of P90. The arguments presented by the PP were regarded reasonable by the validation team. CAR 03 was closed. **CL 02** (for more details please refer to section Findings, at the end of Appendix F): The validation team asked the PP to further substantiate the statement on the expected underperformance of the wind power generation projects. The issues raised have been adequately explained in the PDD. CL 02 was closed.	CAR 03, closed CL 02, closed OK

	Validated situation	Conclusion
1. (continuation)	**CL 03** (for more details please refer to section Findings, at the end of Appendix F): Issue raised: Regarding the transmission fees TUST and TUSD, the PDD did not state which one is considered in the financial analysis and why. The nature of the transmission fees was adequately explained in the PDD. CL 03 has been closed. The financial assumptions, parameters and calculations were assessed during the desk review and the visit and were considered reasonable and accurate. A 20 year operation period was considered in the financial analysis with no residual value, which is in accordance with the 20 year lifetime validated by the sector expert and the Rotor-Nacelle Assembly Component Certificate, pg. 2of4 (please refer to appendix B, "documents prepared by the PP"). Special attention was given to the assessment of the determination of the plant load factor, whose underestimation could adversely impact the financial analysis and demonstration of additionality, as well as the ex-ante baseline emission calculations. The adopted plant load factor ex-ante estimation is according to the Guidelines for the Reporting and Validation of Plant Load Factors, option 3b. The adoption of a load factor estimation with 90% probability of exceedance (P90), instead of a more conservative probability as, for example, P50, was regarded reasonable by the validation team, considering the historical underperformance of the wind power plants in the region, as confirmed by the publication from ANEEL, "Boletim_Eolica_out-2011", pg. 5 Table 2, available on http://www.ons.org.br/download/resultados_operacao/boletim_mensal_geracao_eolica/Boletim_Eolica_out-2011.pdf. Furthermore, a letter was provided by the PP, sent by the head of the Alternative Power Sources Department of BNDES, stating that the P90 load factor has been uniformly applied by BNDES since the first wind farm financing approved in 2005". This letter is mentioned in Appendix B, "Category A documents". No objective guideline or rule was found by the validation team which prevents or obliges the use of a different probability of exceedance in the determination of the plant load factor. The gross energy produced and the systemic losses were determined by a third party contracted by the project participants, according to the CDM Guidelines for the Reporting and Validation of Plant Load Factors version 01, option 3 (b). The energy production was validated through the assessment of the studies of energy production forecast, prepared by Megajoule.	CL 03, closed OK

	Validated situation	Conclusion
1.(continuation)	The expertise of the subcontractor that conducted the studies was assessed through the consultation to sites on the internet (http://www.pr.com/press-release/246311 and http://windenergyforum.ro/sponsors/). All other investment analysis inputs were cross-checked against third-party or publicly available sources, as detailed in the table below. Application of E- policies, according to the "Clarifications on the consideration of national and/or sectoral policies and circumstances in baseline scenarios" (EB22, annex 3).: Two kinds of incentives received by the project activity were identified, which give comparative advantages to less emission-intensive over more emission-intensive technologies and were implemented after 11th November 2001: - law No. 10438 of 26 April 2002 from the Brazilian Electricity Regulatory Agency (ANEEL), which determines a policy of 50% reduction on tariffs for the use of electrical systems for energy transmission and distribution by wind power plants, among others, - Reduction of the basic loan remuneration (basic spread) from 1.8% to 0.9%, granted by BNDES to the generation of electric energy from sustainable sources. This is an instrument used by BNDES to promote the expansion of clean energy generation in the country, as confirmed by the Brazilian Research Company (EPE) in the technical note "*Abatimento das emissões relacionadas à produção e ao uso da energia no Brasil até 2020*", (Abatement of GHG emissions due to the production and use of energy in Brazil up to 2020), page 16, footnote 12 (please refer to appendix B, "documents prepared by the PP"). The validation team agrees that, based on EB22 annex 3 paragraph 7 (b), 88 the investment analysis presented to demonstrate the additionality of the project activity does not have to consider those two mentioned benefits.	OK
2. Assess the correctness of computations carried out and documented by the project participants	The financial assumptions, parameters and calculations (worksheets "Cash Flow_Porto do Delta.xls" and "Global CAPM electricity generation 2011.xls") were assessed during the desk review and the visit to the PP´s head office and were considered reasonable and accurate.	OK

	Validated situation	Conclusion
3. Assess the sensitivity analysis by the project participants to determine under what conditions variations in the result would occur, and the likelihood of these conditions	The choice of the variables considered in the sensitivity analysis, the calculations and the reasoning presented in the PDD were assessed. Project´s revenues: The sensitivity analysis indicates that a mean revenue increase of 42.90% above the one projected would be necessary, all through the project´s lifetime, to achieve the benchmark. The likelihood of such increase on each of the two parameters that compose the revenue, the amount of Energy Sold and the Energy Price, was assessed: a. Energy price: the validation team considered as a reference for comparison the value of the weighed mean price achieved in the similar energy auction (wind energy) occurred just before the project start date: 26 August 2010, Alternatives Sources Auction, weighed mean price 122.69 R$ /MWh, http://www.acendebrasil.com.br/archives/files/20100827_AnalisePos_EReservaFAlternativas_Rev2.pdf, page 5, table 7 The energy price considered by the PP in the investment analysis was of R$ 130.00 R$/MWh. The breakeven value is 42.90% higher, which means that the energy would have to reach a price of 175.32 R$/MWh for the project to reach the IRR. The validation team considers that an energy price of 175.32 R$/MWh would be considered very unlikely, from an investment decision maker´s point of view, at the time of the project´s starting date.	OK

	Validated situation	Conclusion
3.(continuation)	b. Energy sold: the annual amount of energy produced and delivered to the grid considered in the investment analysis was of 134.494 GWh. The breakeven value is 42,90% higher, which means that the annual energy amount would have to reach a value of 192.192 GWh for the project to reach the IRR. The validation team considered as a reference for comparison the scenario in which a more conservative load factor of P50 had been applied. The wind certification study indicates a P50 value of 168.039 GWh with 13.1% uncertainty. The systemic losses are estimated by the same engineering company as 12.8% (refer to the Appendix B, "List of documents reviewed", "documents prepared by the PP"). The resulting estimated energy production, adding up the uncertainties and discounting the operational losses would be of [168.039 x (1 + 0.131)] x (1 – 0.128). The estimated energy amount under such more conservative conditions would then be of 165.725 GWh, considerably lower than the energy to reach the benchmark, 192.192 GWh. Furthermore, the improbability that the amount of energy produced reaches the breakeven point is even greater if we consider the historical underperformance of the wind power plants in the region, as confirmed by the publication from ANEEL, "Boletim_Eolica_out-2011", pg. 5 Table 2, available on http://www.ons.org.br/download/resultados_operacao/boletim_mensal_geracao_eolica/Boletim_Eolica_out-2011.pdf . For the reasons presented above, the validation team agrees with the unlikeliness of a project´s revenue increase that could reach the breakeven point. CAPEX: Regarding the CAPEX, the validation team agrees that a decrease of 38.52% in CAPEX from original projections is not a realistic scenario, considering that the WTG supply and installation contracts have already been signed and correspond to more than 60% of CAPEX. The CAPEX values in these contracts were considered in the investment analysis. O&M and Loan Cost: The project´s cash flow shows that the variations on operational or financing costs have little effect on the equity IRR. Even an extreme and completely hypothetical situation of zero operational or financing costs (- 100% variation) would not elevate the Project IRR to the required benchmark.	OK

Use the table below to list all the inputs to the investment analysis and to describe how each parameter has been validated:

Parameter/input	Symbol/Unit	Value	Source	Means of validation	Conclusion
Risk Free Rate nominal US Treasury Yield (2006-2010)	%	4.46	Federal Reserve, http://www.federalreserve.gov/datadownload/Output.aspx?rel=H15&series=b56abb6d9cc35f28ccf86b8a0188e948&lastObs=&from=&to=&filetype=csv&label=include&layout=seriescolumn	The source of data is reliable (U.S. Federal Reserve). The file downloaded from the site presents the values of market yield on U.S. Treasury securities at 30-year constant maturity, and was used by the PP as a basis for the calculation of the average nominal Risk Free Rate in the period of 02 January 2006 to 31 December 2010. The calculation is available in the worksheet provided by the PP. Please refer to appendix B, List of documents reviewed, “documents prepared by the PP”, (file Global CAPM Power Sector 2011, worksheet “FRB_H15”, cell D8850). All calculations were verified.	OK
US inflation (US Consumer Price Index, 2006-2010)	%	2.18	U.S. Department of Labor, ftp://ftp.bls.gov/pub/special.requests/cpi/cpiai.txt	The source of data is reliable (U.S. Department of Labor) and the calculation of the average inflation within the period 2006-2010 was verified. The calculation is also available in the worksheet provided by the PP. Please refer to appendix B, List of documents reviewed, “documents prepared by the PP”, (file Global CAPM Power Sector 2011, worksheet “CPI Index”, cell B146).	OK
Equity Risk Premium	%	6.03	Equity Risk Premium as calculated and published by Damodaran, http://pages.stern.nyu.edu/~adamodar/	The site Damodaran is largely used in the financial sector and is considered a reliable source. To find the source of data, select in the page the links: Updated Data (left pane) / Historical Returns on Stocks, Bonds and Bills (under Data Sets). The PP considered the arithmetic average in the period 1928-2010, and provided the file Global CAPM Power Sector 2011, worksheet “Equity Risk Premium”, with the calculation (please see cell	OK

				G97). This file in mentioned in the appendix B, List of documents reviewed, “documents prepared by the PP”. All calculations were verified.	
Country Risk Premium	%	3%	Country Risk Premium as calculated and published by Damodaran, http://pages.stern.nyu.edu/~adamodar/	The site Damodaran is largely used in the financial sector and is considered a reliable source. To find the source of data, select in the page the links: Updated Data (left pane) / Risk premiums for other markets/01 2010 (under Data Sets). Please see cell F37.	OK
Unlevereged market weighted average Beta	-----	0.78	Damodaran website http://people.stern.nyu.edu/adamodar/New_Home_Page/datafile/Betas.html	The data source was considered reliable. The value of unleveraged beta was verified. The last 5 years of data are used for the estimation, as can be seen on http://people.stern.nyu.edu/adamodar/New_Home_Page/datafile/variable.htm	OK
Leveraged Beta	-----	1.56	The adopted Debt/Equity ratio for the calculation of Beta was the same as the project´s (D/E=100%).	The assumption of D/E=100% is reasonable and in accordance with the Guidelines on the Assessment of Investment Analysis, guidance #18. The calculation was verified. Betaleveraged = (Betaunleveraged *(1+D/E)), applied to companies under the presumed profit regime.	OK
Project´s debt/equity finance structure (Leverage ratio)	%	50.0	Guidance on the assessment of investment analisys, version 05	The value of leverage ratio is in accordance with Guidance#18	OK
Installed capacity	MW	30	TSA_master_final - porto_do - Delta.pdf	The values of installed capacity were checked against the Final Master Form of Agreement with Siemens Ltda. Page 3 “13 Wind Turbine Generators” and page 18 ““Wind Turbine Generator” means a SWT-2.3-101 model wind turbine generator (with increased actual rating to 2.308MW)”	OK
Gross Energy	MWh/y	143,737	Megajoule, “Wind certification_CGE-Porto do	The wind study “Wind certification_CGE-Porto	OK

Produced			Delta"	do Delta" page 10 gives the estimated Gross Energy produced. The documents is mentioned in the Appendix B, Category A documents. The energy produced is the parameter primarily determined in wind certification studies. The ex-ante determination of the Gross Energy Produced conforms to the "Guidelines for the reporting and validation of plant load factors" item II.3.(b).	
Systemic losses	%	12.1	Letter from Megajoule regarding the systemic losses, "Systemic Losses".	Letter from Megajoule regarding the systemic losses, "Systemic Losses". The documents is mentioned in the Appendix B, Category A documents.	OK
Net Energy Produced (average)	GWh	134.494	• Wind certification report , "*Certificado de Consistência da Campanha de Medições Anemométricas e da Estimativa Anual de Produção*" • Letter from Megajoule, "Systemic Losses"	The Net Energy Produced was provided by Megajoule in two documents: the wind study, "Wind certification_CGE- Porto do Delta" page 10 gives the Gross Energy and the Letter from Megajoule regarding the systemic losses, "Systemic Losses", gives the losses due to equipment operational unavailability, losses in the transmission lines, etc.. The value of Gross Energy produced adopted by the PP (143,737 MWh/y, see file "WPP Generation") was in fact greater than the value stated in the Megajoule´s wind certification (139,753 MHh/y) which is conservative from the additionality standpoint. The value of systemic losses adopted by the PP (6.43%, see file "WPP Generation") was in fact smaller than the value stated in this letter (12.1%), which is conservative from the additionality standpoint. The Net Energy Produced, as calculated by the PP, equals the Gross Energy produced (MWh)	OK

				x (1-Systemic losses). The documents above are mentioned in the Appendix B, Category A documents.	
Energy price	BRL/MWh	130	EPE, Empresa de Pesquisas Energéticas (Energy Research Company), Alternative Energy Sources Auction results, http://www.epe.gov.br/leiloes/Paginas/Leil%C3%A3o%20de%20Fontes%20Alternativas%202010/Leil%C3%B5esdeFontesAlternativascontratam89usinas,com2892,2MW.aspx?CategoriaID=6695	The energy prices achieved during the operation of the project are not known in advance, once the energy will be sold in the Free Contracting Environment (ACL, Ambiente de Contratação Livre). As a reference, the energy prices achieved in other energy auctions, carried out before the project starting date (06 May 2011) were consulted: - Existing Energy Auction, 10 December 2010, weighed mean price R$ 105.04/MWh (http://www.acendebrasil.com.br/archives/files/20101210_AnalisePos_EnergiaExistente_009_2010_Rev0.pdf) - Adjustment Energy Auction, 17 February 2011, , weighed mean price R$ 109.84/MWh (http://www.acendebrasil.com.br/archives/files/20110217_AnalisePos_LeilaodeAjuste_v1.pdf) - Hydroelectric Energy Auction, 30 July 2010, , weighed mean price R$ 99.50/MWh (http://www.acendebrasil.com.br/archives/20100730_AnalisePos_A5_Rev4.pdf) The PP have adopted as a reference the average energy price achieved during the energy auction, occurred immediately before the project start date, which was deemed reasonable by the validation team since it is significantly higher than the average prices	OK

				achieved in the previous auctions.	
Land Lease: Operational Phase	% of gross revenues	1.8	Lande lease contract " Land Lease Contract_Porto do Delta_2009_06_16.pdf"	Paragraph 4.2 of the land lease contract	OK
Total of Sectoral Taxes	BRL/year	67,000	The Inspection Fee of Electric Energy Services according to Law N°9427/1996; the rates with the ONS (National System Operator / Operador Nacional do Sistema) and with the Commercialization Energy Chamber (CCEE – Câmara de Comercialização de Energia) were budgeted according to previous experience of the company with the Ibitiúva Biomass Power Plant.	• According to the Federal Law # 9427 / 1996 chapter II paragraph 1 and the Order from ANEEL # 4080 /2010, and considering the installed capacity of 30.0 MW, the transmission concession inspection fee Tfg= 0.5% x 30.0 MW x 385.73 BRL/KW/year→ Tfg= BRL 57,860 /year The value of the remaining fees (BRL 9,140.00/year) was estimated by the PP based on his experience with similar projects, as shown to the validation team during the visit to the PP´s head office.	OK
OPEX	BRL/(kW.year)	88.0	Introductory course prepared by the wind CEPEL (Research Center for Electric Power), "O&M Eolica_REFERENCE.pdf", pg.14	The course presented by the PP was sent to the PP by CEPEL, as evidenced by emails changed. CEPEL is a reference on research in this area. The validation team has consulted an external reference, the paper Future Electric Power Technology Choices of Brazil (Energy Policy 29, 2001pag 35-369). Information available in page 13 (O&M for wind generation, in $/MWh. According to this paper, the estimated cost of O&M for wind power projects is 10 US$/MWh, (87.6 US$/KWy or 157.7 BR$/KWy , considering an exchange rate of approx.. 1.8 BR$/US$). The PP has adopted a smaller value, which is conservative.	OK
CAPEX	MBRL	139.817		The total CAPEX adopted by the PP, 4,660,566 R$/MW, was compared and is very close to the CAPEX of the similar registered project activity Osório Wind Power Plant	

				Project , ref 0603, which is 4,303,553.00 R$/MW (the only similar CDM registered project up to the moment). All the costs considered in the financial analysis were checked and considered reasonable as presented below:	
			WTG: contract “First Amendment TSA Porto das Barcas_signed version.pdf”, clause 4.1	WTG: The WTG cost is according to contract clause 4.1. The value of WTG costs corresponds to the contracted value per MW times the nominal capacity, with taxes (PIS/COFINS).	
			WTG Spare parts: contract “ PCA_Signed version”, paragraph 11. Electrical : comercial proposal “TRS 214-10-R3 - Proposta Comercial TRACTEBEL.pdf”, pg.9 Civil Works: file “Porto do Delta_civil works.pdf”	WTG Spare parts: The contract refers to costs for the plants Fleixeiras, Guajiru, Trairi, Porto do Delta and Mundaú. The costs are in accordance with the contract, paragraph 11, and were calculated *pro rata* based on the number of turbines of each plant. Electrical: The costs are in accordance with the contract, pg. 12. Civil works: verification of the budget presented by the engineering company Cortez Engenharia, file “Porto do Delta_civil works.pdf”.	
			Other costs: Estimation from Tractebel, file "Custos de MSO Trairi 4 sites mar10.xls" - Spreadsheet Others - CAPEX"		
			Owner's Engeneering: , Commercial proposal on	Other costs: It was adopted the same value of the costs estimated for the other 4 PP´s plants, Trairi, Fleixeiras, Guajiru and Mundaú. File "Custos de MSO Trairi 4 sites mar10.xls" -	

			the project management, file "ENG001-PRJ-DC-0128-000.pdf", Insurance: Estimation from Tractebel, file "Wind Projects - Insurance budget.xls	Spreadsheet Others - CAPEX" (Pro-rata based on installed capacity of each of the 4 plants). Owner's Engeneering: The cost (1.5 % of CAPEX, except the contingencies cost) was checked on file "ENG001-PRJ-DC-0128-000.pdf", pg. 3 Insurance: the estimated costs in the file "Wind Projects - Insurance budget.xls were assessed, and represent less than 1% of total CAPEX.	
TUSD (distribution tariff)	BRL/kW.month	Variable, from 6.055 to 3.585	Resolution from ANEEL No. 117/2004 http://www.aneel.gov.br/cedoc/ren2004117.pdf and http://www.aneel.gov.br/area.cfm?idArea=97&idPerfil=2	The calculation of the transmission tariff depends on the specific arrangement of all energy generation plants connected to a given node. The resolution from ANEEL # 907, 11 Nov 2009 established the criteria and assumptions for the assembly of the database program for calculating nodal tariffs for long-term use of the Transmission System. The calculations carried out by the PP were discussed during the visit to Tractebel's head office and were considered sound. The PP have presented the calculations of TUST-D, performed from the simulation with the Nodal Program, which uses as input the network configuration, represented by its transmission lines, substations, generation and load, a total revenue to be collected and some parameters established by the Resolution No. 117/ 2004. Obs.: The validation team agrees that the incentive created by the Brazilian Electricity	OK

				Regulatory Agency (which determines a policy of 50% reduction on tariffs for the use of electrical systems for energy transmission and distribution by wind power plants, among others, can be classified as a Type E- policy, according to the "Clarifications on the consideration of national and/or sectoral policies and circumstances in baseline scenarios" (EB22, annex 3,version 2).	
Debt interest	%	TJLP (long term interest rate) + 1.8% + 1.1%	BNDES, financing condition for energy generation projects in general: http://www.bndes.gov.br/SiteBNDES/bndes/bndes_pt/Institucional/Apoio_Financeiro/Produtos/FINEM/energia_eletrica_geracao.html BNDES, financing condition for renewable energy generation projects: http://www.bndes.gov.br/SiteBNDES/bndes/bndes_pt/Institucional/Apoio_Financeiro/Produtos/FINEM/energias_alternativas.html BNDES, value of TJLP (long term interest rate): http://www.bndes.gov.br/SiteBNDES/bndes/bndes_pt/Institucional/Apoio_Financeiro/Custos_Financeiros/Taxa_de_Juros_de_Longo_Prazo_TJLP/index.html and http://www.bndes.gov.br/SiteBNDES/bndes/bndes_pt/Institucional/Apoio_Financeiro/Custos_Financeiros/Composicao/	The total debt interest is the sum of the Long Term Interest Rate (6.5%), the basic loan remuneration (1.8%) and the risk pread (1.1%). The Long Term Interest Rate has been validated as 6.5%, from the official sites of BNDES http://www.bndes.gov.br/SiteBNDES/bndes/bndes_pt/Institucional/Apoio_Financeiro/Custos_Financeiros/Taxa_de_Juros_de_Longo_Prazo_TJLP/index.html/ and http://www.bndes.gov.br/SiteBNDES/bndes/bndes_pt/Institucional/Apoio_Financeiro/Custos_Financeiros/Composicao/. According to the BNDES (see http://www.bndes.gov.br/SiteBNDES/bndes/bndes_pt/Institucional/Apoio_Financeiro/Produtos/FINEM/energia_eletrica_geracao.html), the basic loan remuneration is 1.8% for fossil fuel energy sources. An incentive tax reduction to 0.9% is granted to sustainable energy sources. Still according to BNDES, the risk spread may be up to 3.7%. The PP has assumed a 1.1% risk spread, which the validation team has considered reasonable. Obs.: The validation team agrees that the incentive created by BNDES (which	OK

				determines a sectoral policy of 50% reduction on basic loan remuneration) can be classified as a Type E- policy, according to the "Clarifications on the consideration of national and/or sectoral policies and circumstances in baseline scenarios" (EB22, annex 3,version 2).	
Deductions from Revenues (Cofins, Contribution to Social Security Financing and PIS, Social Integration Program)	%	3.65	http://www.receita.fazenda.gov.br/principal/Ingles/SistemaTributarioBR/Taxes.htm, "Tax Table-2007", columns "COFINS" (3%) and "PIS" (0.65%).	The source provided by the PP was considered reliable, since it is an official source.	OK
Income Taxes	%	25% over a presumed profit of 8% of revenues	http://www.receita.fazenda.gov.br/pessoajuridica/dipj/2000/orientacoes/DeterminacaoLucroPresumido.htm; see under "Percentuais", letter b) (Presumed profit base of 8%) and http://www.receita.fazenda.gov.br/aliquotas/contribpj.htm, see letter **a)** (15% up to a real profit of R$ 240,000.00 /year) and "Adicional" (additional 10% on the remaining profit). The PP has chosen to consider in the cash flow a homogeneous tax of 25% on all profits for simplification purposes, which is also conservative from the CMD additionality standpoint.	The source provided by the PP was considered reliable, since it is an official source.	OK
CSLL (social contribution on net income)	%	9% over a presumed profit of 12% of revenues	http://www.portaltributario.com.br/guia/lucro_presumido_csl.html, See under "Adições à Base de Cálculo", "Observação 1:" (presumed profit base of 12% of revenues) and "Alíquotas de Contribuição Social" (social contribution of 9% over the presumed profit)	The source provided by the PP was considered reliable, since it is an official source.	OK

	Validated situation	Conclusion
4. Confirm the suitability of any benchmark applied in the investment analysis: (a) Determine whether the type of benchmark applied is suitable for the type of financial indicator presented; (b) Ensure that any risk premiums applied in determining the benchmark reflect the risks associated with the project type or activity; (c) Determine whether it is reasonable to assume that no investment would be made at a rate of return lower than the benchmark by, for example, assessing previous investment decisions by the project participants involved and determining whether the same benchmark has been applied or if there are verifiable circumstances that have led to a change in the benchmark.	**CAR 01** (for more details please refer to section Findings, at the end of Appendix F): The validation team asked the PP to provide further references to justify the benchmark value adopted. The PP provided additional explanations and changed some of the sources of the parameters adopted, which were accepted by the validation team. CAR 01 was closed. (a) The validation team has validated the benchmark as suitable to the type of financial indicator (equity IRR after taxes). The return risks in the benchmark are compatible with the risks in the project´s sector. (b) The risk premium applied in determining the benchmark reflects the risks associated with the project activity. The market weighted average Beta value considered in the benchmark calculation is derived from the electricity power sector´s rates of return. (c) Although the new GUIDELINES ON THE ASSESSMENT OF INVESTMENT ANALYSIS version 5 was published after the project starting date, the default value presented in it as an approximate expected return on equity was considered as a basis for comparison with the project´s benchmark value. The project fits in group 1 (energy industries). The expected return on equity according to the guideline is of 11.75% (in real terms), which is higher than the equity IRR of 3.24% calculated on the decision-making date.	CAR 01, closed OK

	Validated situation	Conclusion
5. In case the project participants rely on values from a Feasibility Study Report (FSR) approved by any national authority, the team is required to ensure that: (a) The FSR has been the basis of the decision to proceed with the investment in the project, i.e. that the period of time between the finalization of the FSR and the investment decision is sufficiently short for the DOE to confirm that it is unlikely in the context of the underlying project activity that the input values would have materially changed; (b) The values used in the PDD and associated annexes are fully consistent with the FSR, and where inconsistencies occur the DOE should validate the appropriateness of the values; (c) On the basis of its specific local and sectoral expertise, confirmation is provided, by cross-checking or other appropriate manner, that the input values from the FSR are valid and applicable at the time of the investment decision. Use the table below to cross-check input values and describe here the results of the comparison.	N.A.	NA

Comparison to similar registered project in the region: there is only one similar CDM registered project in the region, as shown below. Other two registered projects (Agua Doce, ref. 0575 and Horizonte, ref. 0486) are small scale projects and for this reason were not considered similar the project activity. Despite the scarce information available on this similar project, one can observe that the investment cost per output (4,303,553.00 R$/MW) is very close to the projects activity´s (4,660,566.00 R$/MW).

CDM Ref	Investment cost	Tariff	O&M cost	Capacity	Output	Investment cost per output	Load factor	O&M relative to investment	O&M per output
Osório Wind Power Plant Project , ref 0603[2]	645,533.000.00	Not available	Not available	150 MW	425GWh/year	4,303,553.00 R$/MW	Not available	Not available	Not available

	Validated situation	Conclusion
SECTION 6d. Barrier analysis		
1. Does the PDD demonstrate that the proposed project activity faces barriers that prevent its implementation and do not prevent at least the implementation of one of the alternatives? Provide here an overall determination of the credibility of the barrier analysis. Use the below table to list each barrier considered in the PDD and to describe how the team undertake their validation.	The barrier analysis was not applied, once the investment sensitivity analysis concluded that the proposed CDM project activity is unlikely to be financially attractive	NA
Barriers are issues in project implementation that could prevent a potential investor from pursuing the implementation of the proposed project activity. The identified barriers are only sufficient grounds for demonstration of additionality if they would prevent potential project proponents from carrying out the proposed project activity undertaken without being registered as a CDM project activity.		

Type of Barrier	Description in the PDD	Determination			Conclusion
		Barriers are real	Prevent implementation of PA	Do not prevent implementation of BL	

[2] The Osório Wind Power Plant is the only similar registered project in the country, as can be seen on http://cdm.unfccc.int/Projects/projsearch.html

Access to finance	N.A.
Risks related barriers	
Technological	
Due to prevailing practice	
Other	
First of its kind	

	Validated situation	Conclusion
SECTION 6e. Common practice analysis		
1. Describe how the geographical scope of the common practice analysis has been validated. Assess whether the geographical scope (e.g. the defined region) of the common practice analysis is appropriate for the assessment of common practice related to the project activity's technology or industry type.	The common practice analysis followed the latest version of the Guidelines on Common Practice. All the projects currently operating in Brazil were considered in the analysis. The host country (Brazil) was considered as the geographical scope for the analysis. This scope was validated, once all projects in the country have similar access to financing and technology and are all subject to the same regulatory environment .The operational requirements are defined and controlled by ANEEL. There are no significant differences within the country regarding the environmental control exerted by the government. All projects in the country deliver the energy to the same integrated transmission system (SIN).	OK

	Validated situation	Conclusion
2. Determine to what extent similar and operational projects (e.g. using similar technology or practice), other than CDM project activities, have been undertaken in the defined region	**CAR 02** (for more details please refer to section Findings, at the end of Appendix F): The analysis of common practice in the PDD was not in accordance with the latest Guidelines on Common Practice (EB63 annex 12). Additionally, the PP was asked to give further details on subsidies received by other projects considered by the PP as being different from the proposed project activity. Sufficient references on the benefits were added to the PDD in the common practice analysis section. The PDD was revised to conform to the latest version of the Guidelines on Common Practice (EB63 annex 12). CAR 02 was closed. The options presented in the PDD which satisfy the criterion of +/- 50% (from 15.0 to 45.0 MW) of the project activity´s design output (30.0 MW) were validated from ANEEL´s Energy Generation Data Bank, http://www.aneel.gov.br/aplicacoes/capacidadebrasil/GeracaoTipoFase.asp?tipo=7&fase=3), on 03 December 2012 : 1. Number of wind power plants in Brazil: 71 plants (consultation to the official site of ANEEL, http://www.aneel.gov.br/aplicacoes/capacidadebrasil/GeracaoTipoFase.asp?tipo=7&fase=3, on 03 December 2012 : 2. Non CDM and within +/- 50% project´s capacity and with operation starting date before the project´s start date: →7 plants (information on the operation starting dates from the site http://www.aneel.gov.br/area.cfm?idArea=37&idPerfil=2, “link “Usinas Eólicas”, file “Cronograma_Eventos_EOL_dezembro_2011.xls”)	CAR 02, closed OK

	Validated situation	Conclusion
2.(continuation)	Seven non CDM wind power plants with operation start before the project´s starting date and within the +/- 50% project´s capacity range, as follows • Parque Eólico de Beberibe • Praia do Morgado • Volta do Rio • Eólica Praias de Parajuru • Pedra do Sal • Parque Eólico Enacel • Taíba Albatroz It was confirmed, from the official site of the Ministry of Mines and Energy, that the seven projects above have benefited from PROINFA (http://www.mme.gov.br/programas/proinfa/galerias/arquivos/apresentacao/PROINFA-ANEXO1-InstitucionalMME.pdf, slide # 13), i.e., that these projects differ from the proposed project activity by the subsidies received from the government. It was also confirmed that the participation in PROINFA was not available to the project activity on the project´s starting date. According to the Federal Decree 4541 of 23 December 2002, Article 8, the deadline for the inscription in the program was 29 April 2004. A research was made by the validation team on the site of the Brazilian Ministry of Mines and Energy (http://www.mme.gov.br/programas/proinfa/) regarding the current availability of PROINFA. No evidence of a second phase of the program was found.	OK
3. If similar and operational projects, other than CDM project activities, are already widely observed and commonly carried out in the defined region, assess whether there are essential distinctions between the proposed CDM project activity and the other similar activities	The validation team has concluded, as shown above, that no similar and operational projects, other than CDM project activities, have been undertaken in the defined region.	OK

	Validated situation	Conclusion

SECTION 7. Monitoring plan				
1. *Compliance of the monitoring plan with the approved methodology.* Confirm that the MP contains all the necessary parameters and that they are monitored in accordance to the approve Methodology using the following table:				
Parameter	**Monitoring Meth description**	**PDD description**	**Validated situation**	**Conclusion**

$EG_{facility,y}$	**Data unit:** MWh/yr **Description:** Quantity of net electricity generation supplied by the project plant/unit to the grid in year *y* **Source of data:** Project activity site **Measurement procedures (if any):** Electricity meters. Procedures defined by the Electric System National Operator (ONS) **Monitoring frequency:** Continuous measurement and at least monthly recording **QA/QC procedures:** Cross check measurement results with records for sold electricity	**Data Unit:** MWh/yr **Description:** Quantity of net electricity generation supplied by the project plant/unit to the grid in year y **Source of data to be used:** Electricity meters installed at the project activity site **Value of data:** The value used to calculate the expected emission reductions is 134,494 MWh/yr. This data was defined according to the gross energy production and systemic losses of the project. **Description of measurement methods and procedures to be applied:** The information can be confronted with information of generation provided by CCEE – Chamber of Electrical Energy Commercialization. Class 0.2S power meters will be used in accordance with the established Grid Procedures defined by the Electric System National Operator (ONS)39 and Commercialization Procedures by the CCEE. Continuous measurement and, at least monthly, recording will be the monitoring frequency. The quantity of net electricity supplied to the grid by the plant is registered every 5 minutes. Meters calibration will be performed according to the ONS Grid Procedures (Sub-module 12.3). **QA/QC procedures:** The level of uncertainty of these data is low. They will be used to calculate emission reductions. Data of electricity generation will be monitored byTractebel Energia and counter-checked with spreadsheets provided by CCEE. Principal meters of the plant have backup meters. In case of failure, the backup meter will register the electricity. More details related to measurement procedures are described in the item B.7.1.	Data unit and description are described correctly. Procedures applicable for the calculation are described for this parameter as appropriate. The ex-ante value is indicated based on the generation estimated by the third party during the plant load factor study.	OK

$EF_{grid,CM,y}$	**Data unit**: tCO2/MWh **Description:** 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. **Source of data:** As per "Tool to calculate the emission factor for an electricity system". **Measurement procedures (if any):** As per "Tool to calculate the emission factor for an electricity system". **Monitoring frequency:** As per "Tool to calculate the emission factor for an electricity system". **QA/QC procedures:** As per "Tool to calculate the emission factor for an electricity system".	**Data Unit:** tCO_2/MWh **Description:** Combined margin CO2 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". **Source of data to be used:** Ex-post emission factor will be calculated by the Brazilian DNA, by Tractebel Energia or third parties, through ONS data. The variables $EF_{grid,OM,y}$ and $EF_{grid,BM,y}$, necessary for $EF_{grid,CM,y}$ calculation, will also be monitored and calculated through the Dispatch Data of the National Interconnected System. In case the Brazilian DNA discontinues the publication of these data during the monitoring period, they will be calculated by the project participants. **Value of data:** The value of Combined Margin CO2 Emission Factor ($EF_{grid,CM,y}$) which was used for ex-ante estimation of emission reductions of Porto do Delta Wind Power Plant Project is 0.3941, as per the Brazilian DNA. **Description of measurement methods and procedures to be applied:** As per the "Tool to calculate the emission factor for an electricity system". **QA/QC procedures:** As per the "Tool to calculate the emission factor for an electricity system". The uncertainty level for these data is low.	The $EF_{grid,CM,y}$ will be calculated according to the "Tool to calculate the emission factor for an electricity system": $EF_{grid,CM,y} = F_{grid,OM,y} \times w_{OM} + EF_{grid,BM,y} \times w_{BM}$ where, for wind and solar power generation project activities: $w_{OM} = 0.75$ and $w_{BM} = 0.25$ for the first and the subsequent crediting periods. The Brazilian DNA publishes only the monthly operating margin emission factor. The annual operating margin emission factor $EF_{grid,OM,y,}$ as stated in the PDD B.6.3, will be calculated by the PP as the simple arithmetic average of the monthly $EF_{grid,OM}$ values published by the Brazilian DNA. This calculation method is coherent with the DNA´s practice, which calculates the monthly $EF_{grid,OM}$ from the simple arithmetic average of the daily values, and was deemed appropriate by the validation team. The calculation of the value of $EF_{grid,CM,y}$ was checked against the values on the the official site of the DNA (CIMGC), http://www.mct.gov.br/index.php/content/view/327118.html#ancora	OK

2. *Implementation of the plan.* confirm that the monitoring arrangements described in the monitoring plan are feasible within the project design Described the steps undertaken to assess this.	The feasibility of the monitoring plan was assessed through the cross check with other similar registered projects (Osório Wind Power Plant Project, ref. 0603,and Água Doce Power Generation Project, ref. 0575). The arrangements proposed in the PDD are common practice and must follow, for all grid connected projects in the country, the procedures of Brazil´s electric energy national agency for the monitoring of $EG_{facility,y}$. The values of $F_{grid,OM,y}$ and $EF_{grid,BM,y}$ are obtained by all projects from the same source, the Brazilian Interministerial Commission on Global Climate Change. The validation team concluded that the arrangements proposed in the PDD are sound.	OK
3. Implementation of the Plan: confirm that the means of implementation of the MP, including the data management and quality assurance and quality control procedures, are sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified	**CL 01** (for more details please refer to section Findings, at the end of Appendix F): The PP was asked to give details on the monitoring arrangements (location, failure modes, calibration frequency). All the corrections/inclusions were made to the PDD. CL 01 was closed. The validation team concluded that the arrangements proposed in the PDD are sound.	CL 01, closed OK

3.(continuation)	• $EG_{facility,y}$: :the fact that the produced energy will be sold to the National Electric System Operator (ONS) bounds the PPs to its official monitoring and measurement procedures (ref.: "Grid Procedures Module 12, Measurement for Invoicing", which covers in detail, among others, the arrangements and procedures required for o Installation of measurement system for invoicing o Maintenance of measurement system o Measuring data collection o Certification of work measurement standards o Configuration of measurement system for invoicing Measurement: technical requirements according to the Brazilian Association of Technical Standards and the International Electrotechnical Commission – IEC. Accuracy of energy meters according to Metrological Technical Regulation (*Regulamento Técnico Metrológico – RMT*) for Class 0.2 of energy meters (error in measurements of up to ± 0.2%). QA/QC: electricity measurements cross checked against the records for sold electricity and/or with the data provided in the Electricity Commercialization Chamber (*Câmara de Comercialização de Energia Elétrica* – CCEE) database. Verified source of Grid Procedures Module 12: http://www.ons.org.br/procedimentos/modulo_12.aspx • $EF_{grid,CM,y}$: The Brazilian DNA is responsible for calculating the OM and BM emission factors in Brazil. It applies the Tool to calculate the emission factor for an electricity system. http://www.mct.gov.br/index.php/content/view/74689.html If the Brazilian DNA discontinues the publication of OM and BM emission factors, the PPs will calculate themselves based on data provided by National Electric System Operator (ONS). Based on the monitoring arrangements, required monitoring procedures by the ONS and the experience of PPs in operation of power plants connected to the grid, the validation team confirms the ability of project participants to implement the monitoring plan.	OK

	Validated situation	Conclusion
SECTION 8. Local stakeholder consultation		
1. Determine whether comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity, have been invited	Copies of invitations for comments posted by the PP to the local stakeholders, as well as the corresponding acknowledgments of receipt (post receipt), were assessed and found in accordance with DNA´s Resolution No. 7 of 05th March 2008. It was found evidence of acknowledgments of receipt of invitations made to: - Parnaíba City Hall; - Parnaíba City Assembly; - State Department of Environment (SEMAR) - Parnaíba Municipal Secretariat of Environment - State Federal Attorney of Public Interest - Federal Attorney of Public Interest - Forum of Brazilian NGO and Social Movements for Environment and Development - Comercial Association Please refer to Appendix B, “documents prepared by the PP”. The PDD was made available in Portuguese on the site http://www.grupoenerbio.com.br/v2/projetos/index.php?id=3&idCategoria=15 The Local stakeholder consultation was conducted in accordance with the DNA’s requirements and therefore deemed appropriate.	OK
2. Confirm that the summary of the comments received as provided in the PDD is complete	According to the PDD, no comment was received from the local or global stakeholder process.	OK
3. Confirm that the project participants have taken due account of any comments received and have described this process in the PDD	According to the PDD, no comment was received from the local stakeholder process. No comment was received from the global stakeholder process. http://cdm.unfccc.int/Projects/Validation/DB/BNKKV1LE997PL13AVXOE3OQDJP9KDT/view.html	OK

	Validated situation	Conclusion
SECTION 9. Environmental Impacts		
1. Is an EIA required by the environmental legislation of the host country? Describe the legislation applicable.	**CL 04** (for more details please refer to section Findings, at the end of Appendix F: The PP did not mention in the PDD the environmental risks identified in the analysis of environmental impacts and the corresponding mitigation and control measures which are or will be implemented. The PP appropriately explained in the PDD the mitigation and control measures related to the significant environmental impacts. CL 04 was closed. According to the federal resolution CONAMA 237/97, the agency responsible for the environmental control shall determine the kind of environmental impact study necessary. The preliminary environmental permit, issued on 13 July 2011 and valid until the 13 July 2012 and the environmental impact assessment report were assessed.	CL 04, closed OK
2. Confirm whether the project participants have undertaken an analysis of environmental impacts and, if required by the host Party, an environmental impact assessment	An analysis of environmental impact, with the recommendation of mitigation measures, was undertaken according to the Federal Resolution CONAMA 237/97, as verified by the validation team (RIMA_Porto do Delta.pdf).	OK
3. Confirm that environmental impacts considered significant by the PPs or the Host country are described in the PDD, including mitigation measures.	The environmental impacts considered significant by the PPs and the Host country, in accordance with the analysis of environmental impact, are described in the PDD section D.2 including the mitigation measures.	OK

Findings

1. Grade / Ref:	CAR 01	2. Date:	25/Nov/2011	3. Status:	Closed
4. Requirement:		Tool for the demonstration and assessment of additionality ver. 05.2.1, sub-step 2b(d) Guidelines on the assessment of investment analysis ver. 5 paragraph 12.			

5. Nature of the Issue Raised:

The PP has not provided references to justify the benchmark value adopted. The publication from the Brazilian Ministry of Mines and Energy dates back to 2003 and is obsolete. The second reference (World Bank´s summary report "Environmental Licencing for Hidroelectric Projects in Brazil) does not refer to wind power projects. The additional third reference mentioned in the PDD, the publication "Economia da Mudança do Clima no Brasil: Custos e Oportunidades"21, from January 2010, is not supplied by a national authority.

6. Nature of responses provided by the project participants (1):

In complementation to the arguments and references provided, the project participant also developed a Capital Asset Price Model (CAPM) to determine the benchmark based on parameters that are standard in the market and taking into account the specific provisions of Guidance 9, 15 and 17/18 of the *"Guidelines on the Assessment of Investment Analysis – Version 05*", as well as the CDM Methodologies Panel Information Note *"Default Values for equity return for CDM projects"* (50 Meeting, Annex 8). To facilitate validation by the DOE, the CAPM was developed by using the parameters defined by the Methodologies Panel for the risk free rate, the market risk premium, as well as for the Brazilian country risk premium, while the beta for the CAPM has been derived from Damodaran Online, a prestigious and public web resource to obtain standard market references.
The project proponents have calculated the benchmark based on standard parameters by considering the specific variables defined by the CDM Methodologies Panel in combination with the unleveraged market weighted average beta of the US power sector, re-leveraged to the specific debt / equity structure assumed for the project activity on the basis of Guidance 17/18.
A detailed calculation spreadsheet with all references is provided. The result of 15,35% (real terms/post tax) obtained on the basis of the CAPM for calculating the return on equity for the energy industry is slightly above, but still fully compatible with the minimum rate of return defined by the Brazilian Government as well as the other references that were provided.

Consequently the results corroborate the selection and definition of the hurdle rate as an adequate benchmark for demonstrating the project's additionality as per the CDM rules.
In conclusion all references indicated provide compatible values and were issued or developed and endorsed by relevant governmental entities. Furthermore, a CAPM model elaborated using parameters that were defined by the CDM Methodologies Panel to be standard in the market provides a compatible rate of return on equity investment in renewable electricity in Brazil. Based on these mutually supporting evidence PPs believe that they adequately support the benchmark used in the project activity.

7. Assessment of such responses (1):

Comment from the TL: the PP has chosen to adopt the Guidance 15 letter b) of the "Guidelines on the Assessment of Investment Analysis". The adopted sources for the values of Risk Free Rate , Equity Risk Premium , Country Risk Premium, Leveraged Beta and Project´s debt/equity finance structure have been validated. The validation team agrees that the presented application of capital asset pricing model (CAPM), which is a widespread model for equity value determination, supports the benchmark value adopted by the PP .

Comment from the Technical reviewer: please explain how it has been validated that using a government bond of 2008 from Moody's rating used in the calculation of the default factor of benchmarks in the "Guidelines on the Assessment of Investment Analysis – Version 05" for an investment decision taken in May 2011 is following Guidance 6 of the same "Guidelines". Please check and explain the same for the other two parameters used from the same source.

8. Nature of responses provided by the project participants (2):

The PP have now adopted the parameters defined by the Risk Free Rate nominal US Treasury Yield (2006-2010), the Equity Risk Premium as calculated and published by Damodaran, http://pages.stern.nyu.edu/~adamodar/, as well as for the Brazilian Risk Premium as calculated and published by Damodaran, http://pages.stern.nyu.edu/~adamodar/. The beta for the CAPM has been derived from Damodaran Online, http://pages.stern.nyu.edu/~adamodar/.
A detailed calculation spreadsheet with all references is provided. The result of 14.64% (real terms/post tax) obtained on the basis of the CAPM for calculating the return on equity for the energy industry is fully compatible with the minimum rate of return defined by the Brazilian Government as well as the other references that were provided.

9. Assessment of such responses (2):

The CAPM parameters now adopted by the PP satisfactorily address the concern with respect to their actuality.

10. References to resulting changes in the PDD or supporting annexes:

The argumentation on the benchmark has been changed in the PDD (version 3).
Detailed CAPM calculation file "Global CAPM electricity generation 2011" and the cash flow worksheet "Cash Flow_Porto do Delta V02" was made available to the DOE. CAR 01 was closed.

1. Grade / Ref:	CAR 02	2. Date:	25/Nov/2011	3. Status:	Closed
4. Requirement:		CDM Guidelines on Common Practice version 01.0, EB63 Annex 12			
5. Nature of the Issue Raised:					
a. Seven projects are considered in the PDD, page 34 “Criteria 04”, as being different from the proposed project activity due to incentives received from PROINFA. The PDD does not provide clear reference on the mentioned subsides received by those projects. b. The analysis of common practice in the PDD does not follow the steps presented in the last version of Guidelines on Common Practice (EB63 annex 12).					
6. Nature of responses provided by the project participants:					
The common practice analysis was modified according to the tool for the demonstration and assessment of additionality, version 06.0.0. References on PROINFA benefits were added to the PDD in the common practice analysis section.					
7. Assessment of such responses:					
Sufficient references on PROINFA benefits have been added to the PDD in the common practice analysis section. The PDD has been revised to conform to the last version of the Guidelines on Common Practice (EB63 annex 12). CAR 02 has been closed.					
8. References to resulting changes in the PDD or supporting annexes:					
References on PROINFA benefits have been added to the PDD in the common practice analysis section. The PDD has been revised to conform to the last version of the Guidelines on Common Practice (EB63 annex 12).					

1. Grade / Ref:	CAR 03	2. Date:	25/Nov/2011	3. Status:	Closed
4. Requirement:		Validation and Verification Manual version 01.2 paragraphs 30 and 95.			
5. Nature of the Issue Raised:					
Regarding the values of plant load factor in the financial analysis, the PP has not justified why the use of an exceedance probability value of P90 can be considered conservative.					
6. Nature of responses provided by the project participants:					

According to the generation monitoring reports published by Brazil's National Interconnected System Operator [1] (Operador Nacional do Sistema Elétrico - ONS),for the period from 2007 until October 2011, among 13 wind power plants centrally dispatched 11 plants have a verified capacity factor below the original load factor projection. If only plants located in the northeast region, where this project activity is located, effectively all plants have shown significant underperformance when compared to the original capacity factor estimation. In fact, over their entire generation period, their performance is only 67% of the plant load factor originally projected.

The fact of structural underperformance is also discussed in a recent report published by PSR [2], one of the most prestigious consulting firms of the energy sector in Brazil. Their analysis shows that during the year 2010 the production of all complementary renewable energy sources in Brazil (small hydropower plants, biomass and wind power plants) was almost 40% below the original projections. The study further informs that during the period between 2007 and 2010, the generation of 11 wind power plants of the PROINFA was on average 8% below the volume contracted by the program. In fact nine of the eleven plants presented underproduction of 13% on average, one was in line with the projections, and only one plant had a overproduction as is discussed on page 03 of this study in Graph 2: *Production Frustration of the PROINFA Wind Power Plants on the basis of the 2007 – 2010 average*. Further the study discusses that this is not only a phenomena of the PROINFA and the Brazilian plants, but that US American studies also appoint to a structural underperformance of Wind Power Plants and that the P50 is not an adequate investment criteria.

- [1] ONS Report "Acompanhamento mensal da geração de energia das usinas eolioelétricas com programação e despacho centralizado pelo ONS" and Excel spreadsheet "Geração Eólicas", Outubro/2011. Document "Boletim_Eolica_out-2011", available on http://www.ons.org.br/download/resultados_operacao/boletim_mensal_geracao_eolica/Boletim_Eolica_out-2011.pdf
- [2] PSR Market Report – July 2011, available in the data room, folder < Findings\CAR 03>.

7. Assessment of such responses:

The adoption of a load factor estimation with 90% probability (P90) of a higher actual load factor, instead of a more conservative probability as, for example, P50, was regarded reasonable by the validation team, considering the historical underperformance of the wind power plants in the region, as confirmed by the publication from ANEEL, "Boletim_Eolica_out-2011", pg. 5 Table 2, available on http://www.ons.org.br/download/resultados_operacao/boletim_mensal_geracao_eolica/Boletim_Eolica_out-2011.pdf .
CAR 03 has been closed.

8. References to resulting changes in the PDD or supporting annexes:

No changes have been made to the PDD due to CAR 03.

1. Grade / Ref:	CL 01	2. Date:	25/Nov/2011	3. Status:	Closed

4. Requirement:	Validation and Verification Manual version 01.2 paragraph 123.

5. Nature of the Issue Raised:

a. The PDD does not mention which are the meters located in the substation, which are located on the point of connection with the national integrated transmission system (SIN) and which metering equipment will be used for the measurement of the electricity supplied to the grid ($EG_{facility,y}$). This distinction is also not clear regarding the QA/QC procedure.
b. It is not mentioned in the PDD how the net energy provided by each of the four plants (Fleixeiras WPP, Guajiru WPP, Trairi WPP and Mundau WPP) to the grid will be measured, once all the four plants are connected to the same measurement equipment in the point of connection with the SIN.
c. The PDD does not describe the main failure modes identified in the monitoring plan and how those failures are prevented/controlled by the QA/QC procedures.
d. The PP does not provide the references for the determination of the energy meters calibration frequency.
e. The monitoring frequency is not stated in the PDD section B.7.1, parameter $EG_{facility,y}$, , under “Description of measurement methods and procedures to be applied”.

6. Nature of responses provided by the project participants:

- Information was added in the sections B.7.1 and B.7.2 of the PDD.
- Information was added in the section B.7.2 of the PDD.
- Information was added in the section B.7.2 of the PDD.
- PDD V01 already provided information that energy meters calibration follows ONS Grid Procedures (Sub-module 12.3). The sub-module 12.3 is supplied to DOE.
- The monitoring frequency of parameter EGfacility,y, under “Description of measurement methods and procedures to be applied”was added to the PDD.

7. Assessment of such responses:

All the corrections/inclusions have been made to the PDD.
CL 01 has been closed.

8. References to resulting changes in the PDD or supporting annexes:

- Information was added in the sections B.7.1 and B.7.2 of the PDD.
- Information was added in the section B.7.2 of the PDD.
- Information was added in the section B.7.2 of the PDD.

- PDD V01 already provided information that energy meters calibration follows ONS Grid Procedures (Sub-module 12.3). The sub-module 12.3 is supplied to DOE.

The monitoring frequency of parameter EGfacility,y, under “Description of measurement methods and procedures to be applied”was added to the PDD.

1. Grade / Ref:	CL 02	**2. Date:**	25/Nov/2011	**3. Status:**	Closed
4. Requirement:		Validation and Verification Manual version 01.2 paragraph 95.			

5. Nature of the Issue Raised:

a. The causes of underperformance of the wind power generation projects under PROINFA (PDD page 29) are not presented, as well the reason why such behaviour should reasonably also be expected from the proposed project activity.
b. The PP did not present in the PDD the basis for the statement “Such underperformance is a material risk in the free market as the contracts, different from the PROINFA, do not allow delivering less energy than projected” (PDD page 29).

6. Nature of responses provided by the project participants:

a - Please see the answer of CAR 03 to understand the causes of underperformance of the wind power generation projects in Brazil (also plants under PROINFA). PDD does not say that this underperformance is expected. It is expressed that electricity generation presents uncertainties. Estimation based on P90 adopted by Project Owners tries to minimize the uncertainties. Two possible reasons for the underperformance of the wind power generation projects under PROINFA were added to the PDD.

b -Under the standard PROINFA PPA, Eletrobrás is required to buy 100% of the energy produced at a fixed price which is indexed to inflation (IGPM). The PPA assures that the project will receive at least 70% of the initially Contracted Energy set in the PPA during the financing period with BNDES. After the end of financing period, there will be no lower limits for the revenues. While the PPA is a direct obligation of Eletrobrás, it does not bear the financial burden of the PROINFA program as all related costs are passed on to the customers through the Energy Distribution Companies by means of a special tariff in each bill.

According to ANEEL Resolution 062/2004, the PPA Contracted Energy is subject to revision in two cases:

i) The Contracted Energy will be evaluated every 12 months since the Commercial Operation Date, and shall be reviewed downwards when the average generated energy is lower than 70% of the actual Contracted Energy; **ii)** The Contracted Energy shall be reviewed downwards if the average generated energy of the first 24 months of operation is lower than 85% of the actual Contracted Energy; The Contracted Energy can also be reviewed upwards, when the WPP generates above the Contracted Energy. This is a decision of the Mines and Energy Ministry (MME). In case of generation above the Contracted Energy, independent of the decision of MME to review it upwards, the WPP will be paid for all the generated and delivered energy: In the free Market, if the electricity contracted is not delivered, the buyer has the right to terminate the contract. Generally, when this situation occurs, the seller can either (i) to buy electricity in the market (being exposed to the market price variation) or (ii) to pay penalties due to delivery failure. Information regarding this explanation was added to page 30 of the PDD.
7. Assessment of such responses:
The issues raised have been adequately explained in the PDD. CL 02 has been closed.
8. References to resulting changes in the PDD or supporting annexes:
It has been included in the PDD, in the investment analysis, an explanation regarding the mentioned historical underperformance of the wind power generation projects and why such behaviour should reasonably also be expected from the proposed project activity.

1. Grade / Ref:	CL 03	**2. Date:**	25/Nov/2011	**3. Status:**	Closed
4. Requirement:		Validation and Verification Manual version 01.2 paragraph 95.			
5. Nature of the Issue Raised:					
Regarding the transmission fees TUST and TUSD, the PDD does not state which one is considered in the financial analysis and why.					
6. Nature of responses provided by the project participants:					
Information about the transmission fees was added to table 10 of the PDD.					
7. Assessment of such responses:					
The nature of the transmission fees has been adequately explained in the PDD. CL 03 has been closed.					

8. References to resulting changes in the PDD or supporting annexes:
Information about the transmission fees was added to table 10 of the PDD.

1. Grade / Ref:	CL 04	2. Date:	25/Nov/2011	3. Status:	Closed
4. Requirement:		Validation and Verification Manual version 01.2 paragraph 132.			
5. Nature of the Issue Raised:					
The PP does not provide the environmental risks identified in the analysis of environmental impacts and the corresponding mitigation and control measures which are or will be implemented.					
6. Nature of responses provided by the project participants:					
A table with environmental impacts and mitigation and control measures was added in section D.2 of PDD.					
7. Assessment of such responses:					
The PP has appropriately explained in the PDD the mitigation and control measures related to the significant environmental impacts. CL 04 has been closed.					
8. References to resulting changes in the PDD or supporting annexes:					
A table with environmental impacts and mitigation and control measures was added in section D.2 of PDD.					

1. Grade / Ref:	CL 05	2. Date:	25/Nov/2011	3. Status:	Closed
4. Requirement:		PROCEDURES FOR MODALITIES OF COMMUNICATION ver. 01			
5. Nature of the Issue Raised:					
A signed MoC was not provided by the PP.					
6. Nature of responses provided by the project participants:					
The MoC has been provided.					
7. Assessment of such responses:					
10 January 2012: The PP hasn´t provided the validation team with the MoC up to the moment. The documentation will be submitted to technical review with this CL still opened. 23 January 2012: The signed MoC has been provided by the PP. CL 05 has been closed up.					

8. References to resulting changes in the PDD or supporting annexes: