



**CDM Project Activity Registration
and Validation Report Form**

(By submitting this form, designated operational entity confirms that the proposed CDM project activity meets all validation and registration requirements and thereby requests its registration)

Section 1: Request for registration

Name of the designated operational entity (DOE) submitting this form	SGS United Kingdom Ltd.
Title of the proposed CDM project activity (Section A.2 of the attached CDM-PDD) submitted for registration	Horizonte Wind Power Generation Project (HWPGP)
Project participants (Name(s))	CENAEEL – Central Nacional de Energia Eólica S.A. Econergy Brasil Ltda.
Sector in which project activity falls	1 Energy industries (renewable - / non-renewable sources)
Is the proposed project activity a small-scale activity?	<u>Yes</u> / No

Section 2: Validation report

List of documents to be attached to this validation report (please check mark):	
<p><input checked="" type="checkbox"/> The CDM-PDD of the project activity</p> <p><input checked="" type="checkbox"/> An explanation by the submitting designated operational entity of how it has taken due account of comments on validation requirements received, in accordance with the CDM modalities and procedures, from Parties, stakeholders and UNFCCC accredited non-governmental organizations;</p> <p><input type="checkbox"/> The written approval of voluntary participation from the designated national authority of each Party involved, including confirmation by the host Party that the project activity assists it in achieving sustainable development:</p> <p style="padding-left: 40px;"><input type="checkbox"/> (Attach a list of all Parties involved and attach the approval (in alphabetical order)) N/A</p> <p style="padding-left: 40px;">Host Party:</p> <p style="padding-left: 40px;"><input checked="" type="checkbox"/> Brazil</p> <p><input checked="" type="checkbox"/> Other documents, including any validation protocol used in the validation</p> <p style="padding-left: 40px;"><input checked="" type="checkbox"/> Comprehensive list of documents attached clearly referenced</p> <p style="padding-left: 40px;"><input checked="" type="checkbox"/> List of persons interviewed by DOE validation team during the validation process</p> <p style="padding-left: 40px;"><input checked="" type="checkbox"/> Any other documents. Please refer to list of documents attached.</p> <p><input checked="" type="checkbox"/> Information on when and how the above validation report is made publicly available.</p> <p><input type="checkbox"/> Banking information on the payment of the non-reimbursable registration fee</p> <p><input type="checkbox"/> A statement signed by all project participants stipulating the modalities of communicating with the Executive Board and the secretariat in particular with regard to instructions regarding</p>	

allocations of CERs at issuance allocations of CERs at issuance.

Executive Summary and Introduction, including

- **Description of the proposed CDM project activity**
- **Scope of validation process (include all documentation that has been reviewed and name persons that have been interviewed as part of the validation, as applicable)**
- **DOE Validation team (list of all persons involved in the validation, describing functions assumed in the validation)**

Description of the proposed CDM project activity

Central Nacional de Energia Eólica (CENAEEL) is a Brazilian private wind power developer. The Horizonte Wind Power Generation Project (HWPGP) is a small scale CDM project and consists in generating renewable energy through wind power resource and in selling the generated output to the Brazilian South-Southeast-Midwest Grid. The wind power project contributes to the reduction of greenhouse gas emissions substituting fossil fuel power plants generating electricity from clean wind energy.

The wind farm it is located in the city of Agua Doce – State of Santa Catarina, at Rodovia PRT 280 – km 94,3, about 500 km away from the state capital, Florianópolis. The project consists of 8 turbines of 600kW each one for a total generating capacity of 4.8 MW. The project expects to generate 84,2 GWh of electricity during the first credit period, between February 2004 – January 2011.

The total amount of emission reductions for the first crediting period is 43.587 tCO₂e

Baseline Scenario:

No investment in clean power generation; electricity generation by fossil fuel sources.

With-project scenario:

The project activity consists of the installation of 8 aero-turbines with installed capacity of 4.8 MW, generating renewable energy through wind power resource and in selling the generated output to the Brazilian South-Southeast-Midwest Grid.

Leakage:

No leakage is anticipated.

Environmental and social impacts:

There is an environmental license for the project, issued by the environmental state agency (FATMA-SC, *Fundação do Meio Ambiente*, LO n°. 1221/2004, issued on 1st December 2004). It was verified during validation assessment that the project contribute to the sustainable development by generation of renewable energy power. The project increases the share of renewable power generation at the national grid, consequently reducing other power generation industry pollutants. The project creates job opportunities in the project area and is creating a tourism attraction in the region.

Scope

The scope of the validation is the independent and objective review of the project design document, the baseline study and monitoring plan and other relevant documents of the Horizonte Wind Power Generation Project (HWPGP). The information in these documents is reviewed against the criteria defined in the Marrakech Accords (Decision 17) and the Kyoto Protocol (Article 12) and subsequent

guidance from the CDM Executive Board.

The validation is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

Overview of documentation that has been reviewed and names of persons that have been interviewed as part of the validation

Please refer to Annex 3.

DOE Validation team

Name	Role
Áurea Nardelli	Team leader / lead assessor
Fabian Gonçalves	Local assessor
John Miles	Technical reviewer

Description of methodology for carrying out validation

- **Review of CDM-PDD and additional documentation attached to it**
- **Assessment against CDM requirements (e.g. by use of a validation protocol)**
- **Report of findings by the DOE, e.g. by use of type of findings (e.g. corrective action requests, clarifications or observations). Please explain the way findings are "labelled" during validation.**
- **Include statements or assessments in the section "Conclusions, final comments and validation opinion" below.**

Review of CDM-PDD and additional documentation

The validation was performed primarily as a document review of the publicly available project documents (see Annex 2 for the list of documents). The assessment was carried out by trained assessors using a customised validation protocol.

A site visit was required to verify assumptions in the baseline. Additional information was required to complete the validation, which was obtained through telephone, e-mail and face-to-face interviews with the project developers and their consultants. These were performed by local assessor from the SGS do Brazil. The results of the site visit carried out on 6th January 2006 and 3rd February 2006 are summarised in Annex 6 to this report.

Assessment against CDM requirements

In order to ensure transparency, a validation protocol was customised for the project. The protocol shows requirements, means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- § it organises, details and clarifies the requirements the project is expected to meet; and
- § it documents both how a particular requirement has been validated and the result of the validation.

The validation protocol consists of several tables. The different columns in these tables are described below.

<i>Checklist Question</i>	<i>Means of verification (MoV)</i>	<i>Comment</i>	<i>Draft and/or Final Conclusion</i>
<i>The various requirements are linked to checklist questions the project should meet.</i>	<i>Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.</i>	<i>The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.</i>	<i>This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). New Information Request (NIR) is used when the validation team has identified a need for further clarification.</i>

The completed validation protocol for this project is attached as Annex 4 to this report.

Report of findings and use of type of findings.

As an outcome of the validation process, the team can raise different types of findings.

Where insufficient or inaccurate information is available and clarification or new information is required the Assessor shall raise a **New Information Request (NIR)** specifying what additional information is required.

Where a non-conformance arises that requires the Project Developer to do something (for example correct something in the PDD) the Assessor shall raise a **Corrective Action Request (CAR)**.

Observations may also be raised which are for the benefit of future projects and future verification or validation actors. These have no impact upon the completion of the validation or verification activity.

New Information Requests and Corrective Action Request are raised in the draft validation protocol and detailed in a separate form (Annex 5). In this form, the Project Developer is given the opportunity to “close” NIRs and CARs.

For this project, the *New Information Requests (NIR)* and the *Corrective Action Request* were closed out through communication between validation team and HWPGP manager and its consultants. Changes to the project design were necessary to clarify the issues raised.

Explanation by the submitting designated operational entity of how it has taken due account of comments on validation requirements received, in accordance with the CDM modalities and procedures, from Parties, stakeholders and UNFCCC accredited non-governmental organizations;

- Description of how and when the PDD was made publicly available
- Description of how comments were received and made publicly available
- Explanation of how due account has been taken of comments received
- Compilation of all comments received (Identify the submitter)

In accordance with the CDM modalities and procedures, the project design document of this proposed CDM project activity has been made publicly available and comments have been invited

from Parties, stakeholders and UNFCCC accredited non-governmental organizations. This process is described in Annex 1 to this report, which is available as a separate document.

Conclusions, final comments and validation opinion

- Provide conclusions on each requirement under paragraph 37 of the CDM modalities and procedures, describing how these requirements have been met. This shall include assessments and findings (e.g. corrective action requests, clarifications or observations) in relation to each requirement, including a confirmation that all issues raised have been addressed to the satisfaction of the DOE.
- Final comments and validation opinion

Participation requirements

Host Party: Brazil is listed as the host Party. Brazil has ratified the Kyoto Protocol on 23rd August 2002 (http://unfccc.int/files/essential_background/kyoto_protocol/application/pdf/kpstats.pdf).

At time of the draft validation, no Letter of Approval from the host country had been provided. The Letter of Approval will be signed when the DNA of Brazil has received the validation report.

Eligibility as a small scale project activity

HWPGP uses renewable wind power to supply electricity to a distribution system (Brazilian South-Southeast-Midwest interconnected grid) and has an installed capacity of 4.8 MW.

This activity confirms with category I.D Renewable electricity generation for a grid, that comprises renewable energy generation units that supply electricity to an electricity distribution system that is or would have been supplied by at least one fossil fuel or non-renewable biomass fired generation unit.

To qualify as a small-scale project as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM, the project activity must meet the following criteria:

- (i) Renewable energy project activities with a maximum output capacity equivalent of up to 15 megawatts (or an appropriate equivalent);
- (ii) Energy efficiency improvement project activities which reduce energy consumption, on the supply and/or demand side, by up to the equivalent of 15 gigawatt-hours per year;
- (iii) Other project activities that both reduce anthropogenic emissions by sources and directly emit less than 15 kilotonnes of carbon dioxide equivalent annually;

The capacity of the wind power plant is 4.8 MW and is therefore fully eligible as a small-scale project.

A new information request (NIR 2) was raised asking clarification about the other CDM project near to HWPGP that CENAEEL is responsible for. The following information was provided by CENAEEL, to explain that the project is not a debundled component of a larger activity:

The projects Horizonte and Água Doce had been created and executed at different times and conditions. The choice for the elaboration of two distinct projects, even so similar, if gave for the following factors:

- a) The projects of Horizonte and Água Doce have different chronograms. The project of Horizon had its beginning of operation in 2004, and Água Doce will starts in November of 2006. Soon, the period of credits to be considered for the projects is distinct;
- b) The energy PPA is distinct. The PPA of the project Horizon was a bilateral contract firmmed between CENAEEL and CELESC. The PPA of the project Água Doce was a contract firmmed between CENAEEL and ELETROBRÁS.
- c) The project Horizonte uses the CELESC transmission line, while the project Água Doce uses the COPEL transmission line (another company).
- d) The project Horizonte used proper capital of the CENAEEL to be constructed, while project Água

Doce used part of the capital from CENAEEL and part by financing of BNDES and BRDE.

The auditors accepted the justification provided. In addition, the UNFCCC website was verified and does not show another registered project with the same characteristics. Therefore, this project is not considered a debundled component of a larger activity and NIR 2 was closed out.

Baseline and monitoring methodology

The methodology applied to this Small Scale Project Activity is *Type 1: Renewable energy projects. Category, I.D.: Grid connected renewable electricity generation.*

The project consists of 8 aero-turbines, 600KW each one (total 4.8 MW). The project boundary encompasses the physical, geographical site of the wind power generation. The project boundary is acceptable.

In the methodology, the simplified baseline is the kWh produced by the renewable generating unit multiplied by an emission coefficient calculated in a transparent and conservative manner as: the average of the "approximate operating margin" and the "build margin".

For HWPGP, the baseline emission factor is calculated as a combined margin, consisting of the operating margin and the build margin of the relevant electricity system. For the purpose of determining the build margin and the operating margin emission factors, a project electricity system is defined by the spatial extent of the power plants that can be dispatched without significant transmission constraints. Similarly a connected electricity system is defined as one that is connected by transmission lines to the project and in which power plants can be dispatched without significant transmission constraints.

The data to calculate the emission factor were obtained from national agency, dispatch authority ONS (Operador Nacional do Sistema). The operating margin, build margin, and emission factor of the grid was calculated using ONS data information from years 2002, 2003 and 2004.

During desk study, detail about the determination of the emission factor (tCO_2/MWh) = 0.5258 (PDD, page 18) was presented.

This project does not create any leakage as defined in the methodology.

Emission reductions for the total project are calculated as the difference between baseline emissions and project emissions.

Additionality

According to simplified methodologies, project participants shall provide an explanation to show that the project activity would not have occurred anyway due to at least one pre-defined barrier.

The project demonstrated additionality by using the Attachment A to Appendix B from the CDM EB.

(a) Investment barrier: it was difficult to find partners and potential investors to develop this project, because the risks associated with wind energy in a region where no wind farms are commercially operating. The project was developed through CENAEEL funds.

(b) Technological barrier: the project needs to construct a 65 Km transmission line that increases the project costs. Another barrier is the technology and expertise availability. Wind power is a new energy source for Brazil and, as such, there is limited availability of good manufacturers, meteorologists and site engineers. This represents a strong barrier to the operation and maintenance of the project.

(c) Barrier due to prevailing practice: wind electricity costs are higher than any other kind in Brazil, particularly because the electricity in Brazil is predominantly from hydropower.

Monitoring plan

Monitoring shall consist of metering the electricity generated by the renewable energy. The monitoring plan of the project is in line with the monitoring methodology mentioned in category I.D. The data monitored in combination with an emission factor will give the opportunity to calculate the achieved emission reductions.

The monitoring plan for the project activity meets the applicability criteria for the simplified methodology. During site visit, it was verified how the electricity generation is measured. The quantity of energy exported to the grid is monitored through the energy invoice issued by CENAEEL to Celesc. The official measurement of electric energy is provided by CELESC, and then it is compared with the measurement of electric energy provided by CENAEEL in order to reach a final and mutually agreed amount of electricity produced. The agreed amount is used when issuing the invoice.

Regarding to data to be monitored, it was verified how the CO₂ emission factor, operating margin emission factor and build margin emission factor of the grid were calculated.

Environmental Impacts

The project has the legally required environmental licenses. The operating license was issued by the state environmental agency, FATMA-SC - *Fundação do Meio Ambiente*, LO n° 1221/2004, on 1st December 2004. The documents related to operational and environmental licensing were verified. There are environmental studies carried out in the area to comply with the requirements of FATMA, with the purpose of monitoring the environmental performance of the project. No significant adverse environmental impact is expected from the project.

Comments by local stakeholders

Local stakeholders have been invited by letters to comment on the HWPGP CDM project. The letters were sent in September 15th, 2005.

The invitation was sent to specific stakeholders:

- Prefeitura Municipal de Água Doce – SC / Municipality of Água Doce – SC;
- Câmara dos Vereadores de Água Doce – SC / Municipal Chamber of Água Doce – SC;
- Fórum Brasileiro de ONGs / Brazilian NGO Fórum;
- Ministério Público de Santa Catarina / Public Prosecution Service of Santa Catarina;
- Fundação do Meio Ambiente – FATMA / Santa Catarina State Environmental Agency;
- Sindicato dos Trabalhadores Rurais de Água Doce – SC / Rural Workers' Union of Água Doce;
- Câmara de Dirigentes Lojistas de Água Doce – SC / Local Chamber of Commerce of Água Doce

Doce – SC.

During the site visit, documented evidences of the stakeholders' consultation were verified, as copy of the letter sent by CENAEEL to respond the comments received and proofs of sending/receiving correspondence.

Other requirements

The project did not provide any information about training of its operators. NIR 1 was raised.

During site visit, it was verified that specific training to operate the wind farm is not necessary. The services and maintenance are provided by a company that has experience in wind power generation; this company contracted persons that lives in the locality and proved the training. NIR 1 has been closed out.

NIR 3 was raised requiring the information about the source/reference for the "Capacity factor" = 0,309 (see PDD, table E.2). It was clarified that the Capacity Factor is provided by the industry of the turbines (Wobben); the following information was inserted in the revised PDD, under the table E.2 (PDD version 2, 20 February, 2006): "Data related with the value of the "Capacity Factor = 0,309" was provided by Wobben Wind Power, the Brazilian subsidiary of German turbine manufacturer Enercon." NIR 3 was closed out.

A mistake in the PDD (Section A.4.3.1) was identified during the desk review; the project started on 01st February/2004 and the end of the 7 years crediting period will be on 31st January/2011, not in 31st December 2010 as presented in the PDD. CAR 4 was raised.

The PDD was revised to reflect the correct period and correct values for the credits (see tables in the sections A.4.3.1. and E.2, PDD version 2, issued on 20th February, 2006). CAR 4 was closed out.

Final comments and validation opinion

Steps have been taken to close out three NIRs and one CAR.

The Validation Opinion is based on the current and emerging rules surrounding Article 12 of the Kyoto Protocol.

The DOE declares herewith that in undertaking the validation of this proposed CDM project activity it has no financial interest related to the proposed CDM project activity and that undertaking such a validation does not constitute a conflict of interest which is incompatible with the role of a DOE under the CDM.

By submitting this validation report, the DOE confirms that all validation requirements are met.

Name of authorized officer signing for the DOE

The SGS will request the registration of the HWPGP as a CDM project activity, once the written approval by the DNA of the participating Parties and the confirmation by the DNA of Brazil that the project assists in achieving sustainable development has been received.

Date and signature for the DOE

20/02/2006

<i>Section below to be filled by UNFCCC secretariat</i>		
Date when the form is received at UNFCCC secretariat		
Date at which the registration fee has been received		
Date at which registration shall be deemed final		
Date of request for review, if applicable		
Date and number of registration	Date	Number