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	Braço Norte IV Small Hydro Plant
Project participants (Name(s))	Novo Mundo Energética S.A. (Private entity, Brazil). C-Trade Comercializadora de Carbono Ltda (Private entity, Brazil)
Sector in which project activity falls	1 Energy industries (renewable - / non-renewable sources)
Is the proposed project activity a small-scale activity?	**Yes** / No

Section 2: Validation report	
List of documents to be attached to this validation report (please check mark):	

☒ The CDM-PDD of the project activity

☒ 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;

☐ 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:

- ☐ (Attach a list of all Parties involved and attach the approval (in alphabetical order)) N/A

Host Party:

- ☒ Brazil

☒ Other documents, including any validation protocol used in the validation

- ☒ Comprehensive list of documents attached clearly referenced
- ☒ List of persons interviewed by DOE validation team during the validation process
- ☒ Any other documents. Please refer to list of documents attached.

☒ Information on when and how the above validation report is made publicly available.

☐ Banking information on the payment of the non-reimbursable registration fee

☐ 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

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

The Braço Norte IV is a small hydro plant with 14 MW installed capacity. The plant is in construction in the Braço Norte River, in the county of Novo Mundo, Mato Grosso, Brazil. It is located close to its sister plants, Braço Norte and Braço Norte II and III. This project has a small reservoir, 3.0 km^2, complying with Brazilian regulations for small hydro plants.

Novo Mundo Energética is the owner of Braço Norte IV. It is expected the plant will be in operation from 1st April 2007. The project will displace the thermal plants linked to the Brazilian National Integrated Grid (S-SE-CO/ South-Southeast-Midwest Grid).

The Braço Norte IV Project will improve the supply of electricity with clean, renewable hydroelectric power. It is expected that the plant will generate 594.983 MWh of electricity during the first credit period, between 1st April 2007 and 31st March 2014.

The total amount of emission reductions estimated for the first crediting period is 319.149 t CO_2 e.

Baseline Scenario:
No investment in renewable hydroelectric power generation; electricity generation by fossil fuel sources.

With-project scenario:
The project activity consists of the installation of a small hydro plant with installed capacity of 14 MW. The project will reduce emissions of greenhouse gas (GHG) by avoiding electricity generation by fossil fuel sources and its CO_2 emissions, which would be emitted in the absence of the project.

Leakage:
No leakage is anticipated.

Environmental and social impacts:

The environmental impact of the project activity is considered small considering the host country definition of small-hydro plants. With the use of hydropower facilities to generate electricity, the project will displace part of the electricity derived from fossil fuels and gives less incentive for the construction of large hydro plants which can have adverse environmental and social impacts.

Regarding the compliance with environmental legislation of the host country, it is not required an EIA for small hydro plants with this capacity and reservoir area.
The project sponsors are required to obtain the environmental licenses defined by the Brazilian environmental regulation, including: the preliminary license (Licença Prévia or LP), the construction

license (Licença de Instalação or LI); and the operating license (Licenca de Operação or LO).

The licenses - preliminary (LP) and construction (LI) were issued by FEMA-MT, the state environmental agency of the State of Mato Grosso. The following documents were verified during the site visit:

- Previous Environmental Study ("Diagnóstico Ambiental Prévio da PCH – Braço Norte IV"), December 2001.
- Previous license number 063/2002, issued by FEMA (18/03/2002).
- Installation license number 207/2005, issued by FEMA (01/04/2005).

It is expected that the project activity will contribute to improve the supply of electricity, while contributing to the environmental, social and economic sustainability.

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 Braço Norte IV Small Hydro Plant project.
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
Irma Lubrecht	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 3 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. These were performed by local assessor from the SGS do Brazil. The results of the site visit carried out on 9th and 10th March 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.

Checklist Question	*Means of verification (MoV)*	*Comment*	*Draft and/or Final Conclusion*
The various requirements are linked to checklist questions the project should meet.	*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.*	*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.*	*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.*

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 the project developers. 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 meet. 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

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 receive and analyse the validation report.

Eligibility as a small scale project activity

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 one of 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;

Braço Norte IV small hydro plant will use the renewable hydro potential of the Braço Norte River to supply electricity to the grid. It will displace energy generation from the thermal plants of the National Integrated System and avoid CO_2 emissions which would be emitted in the absence of the project. The installed capacity of 14 MW is under the eligibility limit of 15 MW for small scale projects.

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.

It was verified during site visit that the project activity is not a debundled of a larger activity. The project is located in the Braço Norte river, close to three other plants (Braço Norte, Braço Norte II and Braço Norte III). Braço Norte and Braço Norte II plants started their operation before year 2000 (they are not CDM projects). Braço Norte III is a CDM project (in validation process), operational since 2003. Braço Norte IV will start its operation only in April 01, 2007.

In addition, the UNFCCC website was verified and does not show another registered project with the same characteristics.

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.*

Baseline calculations are done according to Appendix B of the simplified modalities and procedures for small-scale CDM project activities.

As required by the methodology, the 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 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 used for calculating 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 calculation of the emission factor (0.5364 $kgCO_2e$ / kWh) was not clearly identified in the PDD and consequently, **a NIR (4)** was raised. To close out NIR 4, data were discussed during the site visit and verified by the local assessor. The PDD was revised to include additional information regarding the emission factor calculation.

The project emissions and leakage are "zero", as defined by methodology.

The emission reductions by the project activity, ER_y during a given year *y* is the product of the baseline emissions factor, EF_y , times the electricity supplied by the project to the grid, EG_y, as follows:

$ER_y = EF_y . EG_y$

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.

For the discussion of additionality, it was used the "Tool for the demonstration and assessment of additionality", (SSC projects can use simplified procedures - Attachment A to Appendix B, but the use of the "Tool" was acceptable).

It was verified that PDD presented a discussion on Step 0 of the additionality, which is not applicable to the project since it will be start to generate credits in 2007. A **CAR (2)** was raised.

The PDD was revised and the information in the step 0 was excluded and consequently CAR 2 was closed out.

The following aspects about additionality were provided in the PDD:

- The investment barrier: the investment analysis showed that without CER revenues, the project would reach lower rates of return than the benchmark rate. The benchmark rate employed is the SELIC, the Brazilian Prime Rate, which is the measure of value in the short-term credit market. During the validation process, the spreadsheets with the financial analyses and IRR calculation were presented and were discussed with the client to understand and confirm the project assumptions. Copies of the spreadsheets were provided to SGS.
The analyses showed that the IRR of the project would be 19.0% without CER revenues and 20.2% including them. It demonstrated that CER revenues are one of the important aspects of the feasibility of the project.

- Barrier due to prevailing practice: it was discussed that the projects such as Braço Norte IV are not widely observed and commonly carried out in the country. It was informed that, by the end of 2004, only 9 new small-hydro projects were authorized by the Brazilian regulatory agency.

It was concluded that the most likely alternative would have been not to construct the Braço Norte IV plant. Novo Mundo Energética S.A. would apply its resources in other activities.

Monitoring plan

The monitoring plan presented in the PDD is in line with the monitoring methodology mentioned in category I.D. Monitoring shall consist of metering the electricity generated by the renewable energy. The data monitored in combination with an emission factor will be used for calculation the achieved emission reductions.

The monitoring plan is not implemented yet as the SHP is not in operation. The information provided in the PDD (Section D.5) presents good practice but did not inform about calibration of meters. A **NIR (3)** was raised. To close out NIR 3, it was informed that the calibration procedures will comply with national regulatory specifications by ONS. The The Section D.5 of PDD was revised to include this information. An **Observation** was raised informing that it should be implemented before and during the crediting period.

Environmental Impacts

No significant adverse environmental impact is expected from the project.

It was verified that the project has received the environmental licenses legally required by the state environmental agency.

The following documents were verified by the local assessor during the site visit:

- Previous Environmental Study ("Diagnóstico Ambitental Prévio da PCH – Braço Norte IV"), December 2001.
- Previous license number 063/2002, issued by FEMA (18/03/2002).
- Installation license number 207/2005, issued by FEMA (01/04/2005).

It was confirmed that no EIA was required by environmental agency for the project.

Comments by local stakeholders

Local stakeholders were invited to comment on the Braço Norte IV Small Power plant project. The list of the organizations contacted was provided in the PDD.

During the site visit, documented evidences of the stakeholders' consultation were reviewed by the local assessor. Novo Mundo Energética sent letters to stakeholders, describing the project and inviting for comments, in accordance with Resolução nº1 (DNA requirement). It was verified that that representatives of the local communities or local NGOs and the Public Attorney were not invited for comments. **CAR 7** was raised.

To address CAR 7, documented evidences were provided that letters were sent to the Public Attorney (on 22/05/2006) and to local community representative (on 9/06/2006). CAR 7 was closed out.

No comments were received from the stakeholders consulted.

Other requirements

The project's starting date is not clearly defined or reasonable. A mistake in the PDD (Section A.4.3.1) was identified during the desk review. The starting date of crediting period was presented as 01/10/2003, before the starting date of the project (1 April 2007), which is not possible or acceptable. **A CAR (1)** was raised. To close out CAR 1, the PDD was revised. Starting date of the project was defined as 01/04/2007.

The assumed crediting time was not clearly defined. In the section A.4.3.1 (PDD) it was presented a period of 21 years; the data presented (amount of credits/year) did not considered the correct number of months in the first and the last year of each period. A **CAR (5)** was raised. To close out CAR 5, the table in the PDD was revised to include the correct figures.

It is not clear the information in Section B.3 of the PDD where Proinfa is mentioned, and the text in Section E.1.2.4, where a non-registered PDD (other project) was mentioned as reference for emission factor calculation. A **NIR (6)** was raised.
To clarify NIR 6, the PDD was revised and included an explanation that "… As other similar projects, despite its attractiveness, the Braço Norte IV project did not apply for participation in Proinfa." Regarding the emission factor calculation, the reference was changed and new information about EF calculation was provided (see also NIR 4).

Regarding initial training, as described in the PDD and verified by local assessor during the site visit, electricity generation is the core business of SHP Braço Norte IV. No additional management structure and extensive training will be required for the project. It is expected that operation, maintenance, monitoring and reporting will be aspects of the routine of the plant.

The other information presented in the PDD (location, specification and installed capacity of the SHP and sources of external data and references regarding baseline scenario and additionality) was accurate and reliable, as confirmed on site by the local assessor.

Final comments and validation opinion

Steps have been taken to close out three NIRs and four CARs.

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 Braço Norte IV Small Hydro Plant 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	

Section below to be filled by UNFCCC secretariat	
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