 CDM Project Activity Registration and Validation Report Form <i>(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)</i>	
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 III Small Hydro Plant
Project participants (Name(s))	Guarantã Energética Ltda (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?	<u>Yes</u> / No
Section 2: Validation report	
List of documents to be attached to this validation report (please check mark):	
<input checked="" type="checkbox"/> The CDM-PDD of the project activity <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; <input checked="" 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: <input type="checkbox"/> (Attach a list of all Parties involved and attach the approval (in alphabetical order)) N/A Host Party: <input checked="" type="checkbox"/> Brazil <input checked="" type="checkbox"/> Other documents, including any validation protocol used in the validation <input checked="" type="checkbox"/> Comprehensive list of documents attached clearly referenced <input checked="" type="checkbox"/> List of persons interviewed by DOE validation team during the validation process <input checked="" type="checkbox"/> Any other documents. Please refer to list of documents attached. <input checked="" type="checkbox"/> Information on when and how the above validation report is made publicly available. <input type="checkbox"/> Banking information on the payment of the non-reimbursable registration fee <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	

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

Braço Norte III is a run-of-river hydro plant with 14.16 MW installed capacity and a small reservoir (1.3 Km²). The project is installed and in operation in the Braço Norte River, in the county of Guarantá do Norte, Mato Grosso, Brazil.

Guarantã Energética Ltda is the owner of Braço Norte III plant. The hydro plant was constructed from May 2001 until September 2003. Commercial operation started on 3rd October 2003. The equipment installed in the plant consists in two sets of turbine-generators (turbines Kaplan S elbow). During 2004 it generated a total of almost 75 GWh. It is expected that the project will generate 522.331 GWh during the first credit period.

One important aspect of this project is the reduction of transmission losses and the stability of the system. The region has been integrated in the National Grid since 2003 and losses occur due to the very long distances between the gravity centre of the system and the regions towns. By adding local sources to the grid, transmission losses are reduced.

The project activity reduces emissions of greenhouse gas (GHG) by avoiding electricity generation by fossil fuel sources (and its CO₂ emissions), which would be emitted in the absence of the project.

The total amount of emission reductions estimated for the first crediting period is 280.179 t CO₂ e.

Baseline Scenario:

No investment in clean power generation; electricity generation from fossil-fuel thermal plants that would have otherwise been delivered to the interconnected grid.

With-project scenario:

The project activity consists of the installation of a run-of-river small hydro plant with installed capacity of 14.16 MW. It results in GHG emissions reductions avoiding the dispatch of same amount of energy produced by fossil-fuelled thermal plants to the grid.

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 run-of-river hydropower facilities to generate electricity, the project displaces part of the electricity derived from diesel, a finite fossil fuel, and gives less incentive for the construction of large hydro plants which can have major environmental and social impacts.

Regarding the compliance with environmental legislation of the host country, the Brazilian regulation requires an environmental licensing process, including: the preliminary license (Licença Prévia or LP), the construction license (Licença de Instalação or LI); and the operating license (Licença de Operação or LO).

The licenses for Braço Norte III Small Hydro Plant project were issued by the state environmental agency of the State of Mato Grosso (FEMA- Fundação Estadual do Meio Ambiente). The following documents were verified during the site visit:

- Preliminary Environmental Study “Diagnóstico Ambiental Prévio da PCH – Braço Norte III” (March 1999 and September 1999);
- Preliminary environmental license LP n° 035/99 (issued on 13/04/1999);
- Construction license LI n° 121/2002 (issued on 18/04/2002);
- Operation license LO n° 1948/2005 (issued on 22/11/2005).

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 Braço Norte III 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
Marco van der Linden	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 9 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.

<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 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 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

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).

A Letter of Approval was received from the DNA of Brazil following the analysis of a draft version of the validation report by that DNA. The Letter of Approval meets the requirements of the CDM Modalities.

Eligibility as a small scale project activity

Braço Norte III plant uses the renewable hydro potential of the Braço Norte River to supply electricity to the interconnected grid. Its installed capacity is 14.16 MW (less than the eligibility limit of 15 MW for small scale projects) which was confirmed from the contracts for the project.. This activity conforms with category I.D Renewable electricity generation for a grid.

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 other plants in operation (Braço Norte and Braço Norte II) and another one (Braço Norte IV) which is under construction on the same river. The plants Braço Norte and Braço Norte II started their operation before year 2000 (they are not CDM projects). Braço Norte IV is a CDM project, but separate from the Braço Norte III. Both plants are located in the same river but the distance between the 2 projects is more than 1 kilometer. 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.

The baseline calculation was done according to Appendix B of the simplified modalities and procedures for small-scale CDM project activities. It was calculated to reflect operating and built margins for the South-Southeast-Midwest subsystem. As defined in the methodology, the baseline is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kgCO₂e/kWh) calculated as the average of the “approximate operating margin” and the “build margin”.

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 were calculated using ONS data information from years 2002, 2003 and 2004. During desk study, the details about the determination of the emission factor (0.5364 kgCO₂e / kWh) were not clearly presented and consequently a NIR (02) was raised. To close out NIR 2, data were discussed during onsite visit and checked by the local assessor. The PDD was revised to include the most recent data available from ONS and the NIR was closed out.

The project emissions and leakage are considered “zero” in accordance with the methodology.

The emission reductions by the project activity during a given year is the product of the baseline emissions factor times the electricity supplied by the project to the grid This was applied correctly in the PDD.

Additionality

For the discussion of additionality, the project had selected to use the “Tool for the demonstration and assessment of additionality”. Small scale projects can under the simplified procedures use the barrier analysis from Attachment A to Appendix B but since the tool is considered as more rigorous and the project has therefore done more than necessary to demonstrate additionality, it was accepted.

The crediting period of the project starts prior to the registration of project activity and evidence was required that the starting date of the CDM project activity falls between 1 January 2000 and the date of the registration of a first CDM project and that the incentive from CDM was considered. The meeting minutes of a Guarantã board meeting dated on 10 September 2001 (“Ata de Reunião da Guarantã Energética Ltda”) were verified. According to these minutes, Guarantã Energética board considered the CDM incentive to mitigate the investments costs and to take the decision of continuing to invest in the construction of the Braço Norte III SHP. It was clarified that although the preliminary project was designed in 1999 (as evidenced by the preliminary environmental license), the construction and implementation of Braço Norte III SHP was carried out from May 2001 to September 2003 and the operation started in October 2003. This was confirmed by document review and by interviews with the project developers.

Additionality was discussed using a financial barrier. The investment analysis showed that without CER revenues, the project would reach lower rates of return than the benchmark rate. The assumptions and the spreadsheet used for IRR analysis were provided and discussed during the validation process. These assumptions render IRR values of 15.0% without CER revenues and 16.6% including them. The benchmark rate employed for the analysis is the Brazilian Prime Rate (SELIC), which is the rate used in the short-term capital market. The average annual SELIC value during 2001 (year when the plant started to be constructed) was 17.38%. Therefore CER revenues were considered as one of the crucial points in the project’s feasibility.

The PDD also discussed that small scale hydro projects are not common practice and that projects such as Braço Norte III SHP are not widely observed and commonly carried out in the country. It was confirmed that, by the end of 2004, only 9 new small-hydro projects were authorized by the Brazilian regulatory agency and that less than 1.5% of the country’s installed capacity is located in small plants.

Based on the discussion above it was concluded that the project is not the most likely business-as-usual scenario.

Monitoring plan

The monitoring plan of the project 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.

During the desk study, it was verified that no information was provided about calibration of the electricity meter. This meter is an important component of the monitoring system of the project activity. A NIR (5) was raised. The local assessor observed on site how the electricity generation is measured. It was verified that the measurements comply with national regulations for the electric sector that describe the technical specifications of measuring, reporting and archiving the data. It was informed in the PDD that the electricity meters calibration is carried out regularly following procedures defined by ONS. Considering the observations on site and information provided by the project developers, NIR 5 was closed out.

Environmental Impacts

An environmental study was carried out as part of the licensing process and indicated the mitigation measures to be adopted during the construction and operation phases of the plant. The project obtained the legally required environmental licenses. Documented evidences were verified during the site visit.

The following documents were provided:

- Preliminary Environmental Study “Diagnóstico Ambiental Prévio da PCH – Braço Norte III” (March 1999 and September 1999);
- Preliminary environmental license LP n° 035/99 (issued on 13/04/1999 by FEMA);
- Construction license LI n° 121/2002 (issued on 18/04/2002 by FEMA);
- Operation license LO n° 1948/2005 (issued on 22/11/2005 by FEMA).

Comments by local stakeholders

Local stakeholders were invited to comment on the Braço Norte III Small Hydro Plant project. The list of the organizations contacted was provided in the PDD. It was verified documented evidence of letters sent to local stakeholders on 30th January 2006. The following organizations were invited:

- Environment Secretary of the State of Mato Grosso;
- Climate Change Brazilian forum: Fórum Brasileiro de Mudanças Climáticas;
- NGOs’ Brazilian forum: Fórum Brasileiro de ONGs e Movimentos Sociais para o Meio Ambiente e Desenvolvimento;
- Environmental state agency: Fundação Estadual do Meio Ambiente (FEMA-MT);
- Mayor, President of the County Hall and Secretary in charge of Environment of the county of Guarantã do Norte.

The stakeholder consultation process is defined by Brazilian DNA in the Resolução n° 1. This regulation requires that, in addition to the list mentioned above, to invite the local communities and the Public Attorney. As they were not invited to comment, a CAR (3) was raised. To close out CAR 3, Guarantã Energética sent a invitation letter to the Public Attorney of Mato Grosso (letter sent on 15 May 2006) and to a local association of Guarantã do Norte (letter sent on 9 June 2006).

Concluding the consultation, no comments were received.

Other requirements

The project’s starting date (03rd October 2003) and operational lifetime (30 years) were defined in the PDD and are reasonable. It was assumed a renewable crediting period which will start on 3rd October 2003. The operational lifetime exceeds the crediting period.

A NIR (1) was raised during the document review relate to information that was not appropriately included in the PDD. Clarification was required in Section B.3 where Proinfa was 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. To clarify NIR 1, it was explained in the PDD that “... As other similar projects, despite its attractiveness, the Braço Norte III 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 2).

A mistake was identified during the desk study in the section A.4.3.1 of the PDD. The table showing the estimated amount of emission reduction did not present the correct period of credits. The annual estimation of ERs should be calculated for the correct period (for each year) and consequently, a CAR

(4) was raised. To close out CAR 4, the PDD was revised. The values for each year presented in the new table were checked. A spreadsheet with monthly data of energy generation was provided to check the total of CERs presented for each year.

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

As described in the PDD and verified by local assessor during the site visit, electricity generation is the core business of SHP "Braço Norte III. No additional management structure or extensive training has been required for the project. Operation, maintenance, monitoring and reporting are part of the routine of the plant.

The project design engineering reflects current good practices and is not likely to be substituted by other or more efficient technologies within the project period. Small hydro is considered to be one of the most cost effective power plants in Brazil.

Final comments and validation opinion

SGS has performed a validation of the project: "Braço Norte III Small Hydro Plant". The Validation was performed on the basis of the UNFCCC criteria and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

Using a risk based approach, the review of the project design documentation and the subsequent follow-up interviews have provided SGS with sufficient evidence to determine the fulfilment of the stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria. The project will hence be recommended by SGS for registration with the UNFCCC.


SGS has received confirmation by the host Party that the project activity assists it in achieving sustainable development.

By the displacement of fossil fuels with renewable energy sources for the generation of electricity, the project results in reductions of greenhouse gas emissions that are real, measurable and give long-term benefits to the mitigation of climate change. A review of the investment analysis and prevailing practice, demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. If the project is implemented as designed, the project is likely to achieve the estimated amount of emission reductions.

The validation is based on the information made available to SGS and the engagement conditions detailed in the report. The validation has been performed using a risk based approach as described above. The only purpose of this report is its use during the registration process as part of the CDM project cycle. Hence SGS can not be held liable by any party for decisions made or not made based on the validation opinion, which will go beyond that purpose.

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	M. van der Linden	
Date and signature for the DOE	21-09-2006 	
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