



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	Santa Lúcia II Small Hydro Plant
Project participants (Name(s))	Maggi Energia 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?	<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 <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 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. </p> <p> <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 </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

The Santa Lúcia II Small Hydro Plant is run-of-river hydro plant with 7.6 MW installed capacity. This run-of-river project does not have any dam or water storage, and therefore makes complete use of the water flow. The project is installed in the Juruena River, in the county of Sapezal, Mato Grosso, Brazil, in an isolated system that was originally supplied by a diesel fuelled thermal plant. From January 2006, the project displaces the thermal plants linked to the Brazilian National Integrated Grid (S-SE-CO/ South-Southeast-Midwest Grid).

Maggi Energia S.A. is the owner of Santa Lúcia II. The hydro plant was designed in 2001 and constructed and installed from January 2002 to April 2003. Commercial operation started in October, 2003. During the last two years it generated a total of 80 GWh.

The project expects to generate 280 GWh of electricity during the first credit period, between 1st October 2003 and 30th September 2010.

The total amount of emission reductions estimated for the first crediting period is 162,055 t CO₂ 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 run-of-river small hydro plant with installed capacity of 7.6 MW.

The project 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.

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, an Environmental Impact Assessment (EIA) is not required by law for hydropower plants of less than 10 MW.

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 (Licença de Operação or LO). The licenses for Santa Lúcia Small Hydro Plant project were issued by FEMA-MT, the state environmental agency of the State of Mato Grosso. The documents were verified during the site visit.

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 Santa Lucia II 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 8th 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).

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 following criteria:

- Renewable energy project activities with a maximum output capacity equivalent of up to 15 megawatts (or an appropriate equivalent);
- 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;
- Other project activities that both reduce anthropogenic emissions by sources and directly emit less than 15 kilotonnes of carbon dioxide equivalent annually;

Santa Lúcia II small hydro plant uses the renewable hydro potential of the Juruena River to supply electricity to the grid displacing diesel oil used in a local thermal plant.

It has an installed capacity of 7.6 MW (less than 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 that the project is not a debundled component of a larger activity. The project is located in the Juruena river, next to its "sister" plant - Santa Lúcia I. It is confirmed by the local assessor that Santa Lúcia I is not a CDM project. The Santa Lucia I plant has been in operation since year 2000. 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. Considering a system where all generators use exclusively fuel oil and/or diesel fuel, the baseline is the annual kWh generated by the renewable unit times an emission coefficient for a modern diesel generating unit of the relevant capacity operating at optimal load. Using the values defined in the methodology, the emission factors for diesel generator systems was defined as 0,8 kg CO₂equ/kWh.

This remains valid up to January, 2006, when the transmission line linking the Sapezal Substation to the National Grid was completed. From this date, the baseline was recalculated to reflect operating and built margins for the South-Southeast-Midwest subsystem.

For this second case (from January 2006), 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 determination of the emission factor (0.5364 kgCO₂e / kWh) was not clearly presented and consequently, a NIR (3) was raised. To close out NIR 3, data were discussed during onsite visit and checked by the local assessor. The PDD was revised to include additional information regarding the emission factor calculation.

The project emissions and leakage are “zero”.

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:

$$ER_y = EF_y \cdot EG_y$$

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. The project has done more than necessary to demonstrate additionality, but it is acceptable).

The project participant provided the following explanation about the project additionality:

- The investment barrier: the investment analysis showed that without CER revenues, the project would reach lower rates of return than the benchmark rate, concluding that CER revenues are one of the crucial points in the project's feasibility. The most likely alternative presented would have been not to build Santa Lúcia II. The Maggi's group would apply its resources in other activities.
- Barrier due to prevailing practice: considering the “Common practices analysis”, it was discussed that the projects such as Santa Lúcia II 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.

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 detailed procedure for data collection, archiving and reporting were provided in the PDD. A NIR (2) was raised. The local assessor observed onsite 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 also observed that the amount of electricity being generated passes through a double check (one automated and one manual reading by the operator in the control room of the plant). The Section D.5 of PDD was revised (see version 2) and included additional information regarding data collection, processing and reporting. It was also informed in the PDD that the electricity meters calibration is carried out regularly by the concessionary (utility) Cemate. Considering the observations onsite and information provided by the project developers, NIR 2 was closed out.

Environmental Impacts

No significant adverse environmental impact is expected from the project.

The project has the legally required environmental licenses.

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

- Installation licenses number 163/2000, 09/10/2000; 626/2001, 10/07/2001; 007/2002, 07/01/2002 issued by FEMA – Mato Grosso.
- Operation licenses number 173/2003, 03/04/2003; 698/2004, 29/07/2004; 2012/2005, 28/11/2005 issued by FEMA – Mato Grosso.

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 Santa Lucia II 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 verified by the local assessor. Maggi Energia issued letters to stakeholders, describing the project and inviting for comments, in accordance with Resolução nº1 (DNA requirement).

No comments were received.

Other requirements

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 (4) was raised.

To clarify NIR 4, it was explained in the PDD (version 2) that "... As other similar projects, despite its attractiveness, the Santa Lúcia II 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 3).

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 Santa Lúcia II. No additional management structure and extensive training were required for the project. Operation, maintenance, monitoring and reporting

are part of the routine of the plant.

A mistake in the PDD (Section A.4.3.1) was identified during the desk review. The project started on 01st October 2003 and the end of the 7 years crediting period should be on 30th September 2010. This information was not presented correctly and a CAR (1) was raised. To close out CAR 1, 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 2nd May, 2006).

The crediting period started prior to the registration of project activity. Documented evidence was provided to demonstrate that the incentive from CDM was considered by the project developers to take the decision of investing in the Santa Lucia II small hydropower plant project.

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, as confirmed onsite by the local assessor.

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 Santa Lúcia II 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