VALIDATION REPORT

CELTINS – Companhia de Energia Elétrica do Estado do Tocantins

CEMAT – Centrais Elétricas Mato-Grossenses S.A.

Celtins and Cemat grid connection of isolated systems

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Summary
SGS has performed a validation of the project: “Celtins and Cemat grid connection of isolated systems”. 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.

The objective of the project activity is the expansion of the interconnected grid to isolated systems in the States of Mato Grosso and Tocantins – Brazil.
As a result of the interconnection, the fossil fuel power generation in the isolated systems was displaced by more efficient and less carbon intensive.
The companies Celtins and Cemat are member of the Grupo Rede.
The project uses straight grid expansion technologies; high voltage 13.8kV to 138kV.

Total amount of emission reductions estimated for the first crediting period is 382,211 tCO_2e.

The only thing changed to this Validation Report is the Letter of Approval which was issued on 23 March 2007.

Subject.:			
CDM validation			**Indexing terms**
Work carried out by			
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Technical review			
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Authorized signatory			
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Abbreviations

AM	Approved Methodology
CAR	Corrective Action Request
CER	Certified Emission Reduction
DNA	Designated National Authority
MP	Monitoring Plan
NIR	New Information Request
PDD	Project Design Document
SGS	Société Générale de Surveillance
EF	Emission Factor

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1. Introduction

1.1 Objective

The Grupo Rede has commissioned SGS to perform the validation of the project: "Celtins and Cemat grid connection of isolated systems" with regard to the relevant requirements for CDM project activities. The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, the monitoring plan (MP) and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Certified Emission Reduction (CER). UNFCCC criteria refer to the Kyoto Protocol criteria and the CDM rules and modalities and related decisions by the COP/MOP and the CDM Executive Board.

1.2 Scope

The scope of the validation is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. SGS has employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

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.

1.3 GHG Project Description

This report summarizes the results of the validation of Celtins and Cemat grid connection of isolated systems project, performed on the basis of UNFCCC criteria. The validation has been performed as a desk review of the project documents presented by Grupo Rede and a site visit, located in Cuiabá/MT and Belém/PA, Brazil. During site visit, Grupo Rede managers and Ecoinvest consultant were interviewed.

The purpose of the project activity consists of expansion of the Brazilian interconnected grid to isolated systems in the States of Mato Grosso and Tocantins. The interconnection will result in the complete displacement of the previous fossil fuel power generation in the isolated systems by more efficient, less carbon intensive.

The project is now connected to interconnected grid NNE and SSECO.
Total amount of emission reductions estimated for the first crediting period is 382,211 tCO_2e.

Baseline Scenario:
No investment in transmission lines; electricity generation from fossil-fuel thermal plants in the isolated systems.

With-project scenario:
All fossil fuel thermal plants in the isolated systems are displaced and are being connected to the national interconnected Brazilian grid.

Leakage: Following the AM0045, the deforestation in the construction of interconnection lines is considered as leakage (change of carbon stocks as a result of clearing biomass).

Environmental and social impacts:

The environmental impact of the project activity is considered small.
Regarding the compliance with environmental legislation of the host country, the Brazilian regulation requires an environmental licensing process. Documented evidences were provided during the validation. Details about the area deforested were provided (area and vegetation).

1.4 The names and roles of the validation team members

Name	***Role***
Aurea Nardelli – SGS Brazil	*Lead Assessor*
Fabian Gonçalves – SGS Brazil	*Local Assessor*
Irma Lubrecht – SGS NL	*Technical Reviewer*

2. Methodology

2.1 Review of CDM-PDD and additional documentation

The validation is performed primarily as a document review of the publicly available project documents. The assessment is performed by trained assessors using a validation protocol.

A site visit is usually required to verify assumptions in the baseline. Additional information can be required to complete the validation, which may be obtained from public sources or through telephone and face-to-face interviews with key stakeholders (including the project developers and Government and NGO representatives in the host country). These may be undertaken by the local SGS affiliate. The results of this local assessment are summarized in Annex 1 to this report.

2.2 Use of the validation protocol

The validation protocol used for the assessment is partly based on the templates of the IETA / World Bank Validation and Verification Manual and partly on the experience of SGS with the validation of CDM projects. It 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 (**Y**), 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 2 to this report

2.3 Findings

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

In general, 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 the Assessor shall raise a **Corrective Action Request (CAR).**

A CAR is issued, where:

I. mistakes have been made with a direct influence on project results;
II. validation protocol requirements have not been met; or
III. there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be verified.

The validation process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a NIR may result in a CAR. Information or clarifications provided as a result of an NIR may also lead to a CAR.

Observations may 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.

Corrective Action Requests and New Information Requests are raised in the draft validation protocol and detailed in a separate form (Annex 3). In this form, the Project Developer is given the opportunity to "close" outstanding CARs and respond to NIRs and Observations.

2.4 Internal quality control

Following the completion of the assessment process and a recommendation by the Assessment team, all documentation will be forwarded to a Technical Reviewer. The task of the Technical Reviewer is to check that all procedures have been followed and all conclusions are justified. The Technical Reviewer will either accept or reject the recommendation made by the assessment team.

3. Determination Findings

3.1 Participation requirements

CELTINS - Companhia de Energia Elétrica do Estado do Tocantins, CEMAT - Centrais Elétricas Mato-Grossenses S. A. and Ecoinvest Carbon Brasil are the project participants.

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 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.

The Letter of Approval was issued on 23 March 2007.

At time of validation process, there is no Annex I parties in this project.

3.2 Baseline selection and additionality

The purpose of the project activity is the expansion of the Brazilian interconnected grid to isolated systems in the Brazilian states of Mato Grosso and Tocantins. The interconnection results in the complete displacement of the previous fossil fuel power generation in the isolated systems by more efficient, less carbon intensive power generation from the interconnected grid.

The methodology AM0045 defines specific procedures for identification of the baseline scenario. The assessment of alternative scenarios presented in the PDD (version 2) did not comply with the AM0045 requirements (the 3 steps of the methodology). CAR 8 was raised: The identification of barriers was only mentioned under section B.4 but was not discussed. This did not support the conclusion of "The presented barriers affect the Project Activity Scenario as well as all alternative scenarios similarly." It is required specify clearly which alternatives are prevented by at least one of the barriers previously identified and eliminate those alternatives from further consideration. The step 3 of the "Tool" should be used.

To address CAR 8, a revised version of the PDD was provided (version 4), with more information of the alternative scenarios, following the steps defined by AM0045. Four scenarios were identified:

- *Project Activity Scenario:* interconnection to the grid with CDM incentive.
- *Interconnection Scenario:* project activity without the CDM incentive (also implemented at a later point in time).
- *Reference Scenario:* Grupo Rede could continue operating under the current scenario of supplying energy to isolated communities through small and medium sized diesel fuelled power plants.
- *Overhaul Scenario:* Grupo Rede could upgrade its operation in the region by revamping and replacing the existing thermal plants with the new ones utilizing best available diesel-fired technology.

The barrier analysis applied for identification of the baseline scenario considered the following aspects: Low income - isolated areas have relatively low densities of energy demand; unfeasibility of expanding networks to isolated areas without substantial subsidies; difficulties in properly operating and maintaining power equipment in isolated areas; lack of uniformity which prevents standardized solutions and the regulatory framework of the electricity sector in Brazil, which establishes that distribution companies are compensated for the economic value of the assets they carry in their balance sheets.

The barrier analysis was complemented by investment analysis, performed as required by step 2 of the "Tool". The investment analysis compared all the scenarios identified and confirmed the baseline

scenario is no investment in transmission lines, with electricity generation from fossil-fuel thermal plants in the isolated systems.CAR 8 was closed out. Regarding investment analysis, see also CAR 9 closing out details.

The methodology requires the use of the "Tool for the demonstration and assessment of additionality".

During the desk study, a NIR (2) was raised asking additional information about the "step 0" (which is applicable for this project, as it is requesting for retroactive credits. Grupo Rede first submitted a new methodology proposal in mid 2005 but the version finally accepted for assessment at the MethPanel is the one from 28 December 2005 submitted through SGS).

It was verified that some transmission lines started the operation in June 2000 and it was not evidenced that the construction of these lines was effectively performed after 1st January 2000. It was also requested evidence that the generation of power using other energy sources than grid extension was considered and details of the investment analysis and clarification if the project activity has made use of incentives or subsidies from governmental programmes.

To close NIR 2, information about the governmental programmes was included in the PDD (version 4). The transmission lines with construction initiated either by the government or as a social counterpart in the privatization contract were excluded of the project (all lines of CELPA and some lines of CEMAT were excluded). It implied in significant changes in the PDD and reduction of the total amount of ERs estimated for the project.

Documents evidencing that the starting date of the CDM project activity falls after 1st January 2000 was provided (official documents from ANEEL (National Electricity Agency), MME (Ministry of Mines and Energy), Eletrobras (federally-owned Brazilian Power Utility) and Grupo Rede indicating the dates of deactivation of the diesel fuelled power plants; installation and operation licenses; records of work plan and budget for engineering project).

It was also provide evidence that Grupo Rede has assessed the possibility to obtain CDM incentives since mid 1999. Copy of a presentation prepared in 28 September 1999 about the risks and opportunities for Grupo Rede in the "CO_2 emission reduction market" was provided, with other references about meetings held in February 2000 to evaluate the impacts of possible CDM incentives for different projects of the Group. NIR 2 was closed out.

During the desk study, it was verified that the PDD did not follow all the steps required in the methodology to determine the additionality. The following non-conformities were identified and a CAR 9 was raised:

- Sub-step 1.(a): did not consider the alternative of the project be implemented without CDM incentives, as required by the "Tool";
- Sub-step 2 (c) and (d): were not clearly presented (the discussion of sub-step (c) was mixed with sub-step (b) and sub-step (d) was omitted.
- Sub-step 4: it was not supported by any sources of data or references.
- Sub-step 5: mentioned "barriers", but no barriers analysis was presented in the PDD.

To close out CAR 9, a new version of PDD was provided, including a complete discussion about additionality for the steps 1, 2, 4 and 5. The discussion was supported by spreadsheets with data, assumptions and calculations used for the investment analysis. Data used for investments analysis – as expenses, consumptions, costs - were verified on-site by the local assessor. The institutional arrangements in place which affect the project activity were described in the PDD, to provide the context for the investment analysis. It was verified that this context were adequately considered in the analysis (financial resources, governmental programmes, interest rates). The investment comparison analysis was applied using the following variables: EBTIDA, earnings and NPV for each electricity

company (CEMAT and CELTINS). A sensitivity analysis was carried out by changing the electricity and fuel costs (rising and reducing costs by 15%). The NPV for the project activity remained lower than the alternative scenarios. References (official data from governmental agencies and literature of the electricity sector) were provided for the information mentioned in the PDD. Following the steps required by the methodology and the "tool" – mainly the investment comparison analysis using the EBITDA (Earning before interest taxes depreciation and amortization), earnings, and NPV, it was concluded that the project is additional.

3.3 Application of Baseline methodology and calculation of emission factors

The project applies correctly the approved methodology AM0045 "Grid connection of isolated electricity systems (version 1, 22 December 2006). For the calculation of the CO_2 emission coefficient of the grid "AM0045" remits to ACM0002 – "Consolidated methodology for grid-connected electricity generation from renewable sources" (version 6, 19 May 2006).

AM0045 is applicable to grid connection of isolated systems, as is the case of the Grupo Rede project. All fossil fuel fired power plants in the isolated systems were displaced. Renewable energy based electricity generation in the isolated system was not displaced and its operation was not significantly affected, as the isolated system was composed for small and medium sized diesel fuelled power plants. Historical data of power generation and fuel consumption in the isolated systems are available to accurately estimate the most likely scenario in the absence of the project activity. The calculation of the project emissions, i.e., emissions for power generation in the grid that will displace off-grid power generation, is based on available official information. Copy of the spreadsheets with the data used for calculations were provided.

For the project activity, CO_2 emissions from the increase of electricity generation in power plants connected to the grid and emissions related to SF_6 used in the new equipments of the project activity have been taken into account. For the baseline determination, CO_2 emissions from electricity generation in fossil fuel fired plants in the isolated system, which are displaced by the project activity, have been considered, taking into account the increase of the demand and the remaining lifetime of the equipments. Spreadsheets with data used for calculation of the baseline emission factors were provided for analysis.

The deforestation in the construction of interconnection lines is considered as leakage (change of carbon stocks as a result of clearing biomass). Section B.6.3 of PDD mentioned that "The climatic zone of most of the project area is mostly classified as "savana arbórea aberta" according to "Brazilian National Communication". No complete references were provided about this source. It was also mentioned that " L_C *= 15.39 tC/ha",* but the source of this value was not provided. NIR 10 was raised.

To clarify NIR 10, the following reference was provided: "*Primeiro Inventário Brasileiro de Emissões Antrópicas de Gases de Efeito Estufa. Emissões e Remoções de Dióxido de Carbono Por Conversão de Florestas e Abandono de Terras Cultivadas. Ministério da Ciência e Tecnologia, Brasília (2006)*". This document was verified in order to confirm the information above. According to the reference, the vegetation of the area (define by geographical coordinates) is classified under the *bioma* "Amazonia". The sub-bioma (Savana-aberta) was classified from the environmental reports provided by the client (which characterize the vegetation under the transmission lines). NIR 10 was closed out.

3.4 Application of Monitoring methodology and Monitoring Plan

The project applied AM0045 – "Baseline and monitoring methodology - Grid connection of isolated electricity system" (version 1).

The methodology defines the data and parameters which should be defined at validation and that will be not monitored and a of parameters that should be monitored during the crediting period.

The methodology requires the monitoring of the following parameters:

- electricity generation from the project activity;
- data needed for recalculate the electricity Emission Factor, consistent with ACM0002;
- financing and institutional arrangements that could help the project to overcome identified barriers during the crediting period.

During the desk study and site visit, some issues were raised regarding the monitoring methodology and monitoring plan:

- CAR 3: it was verified that data and parameters that are available at validation (section B.6.2 of the PDD) and data and parameters monitored were not in compliance with AM0045. Version 2 of PDD had included and excluded parameters with out any justification. In addition, parameters 14 to 23 included in the PDD were highlighted on the text and their tables (with details about monitoring) had been not completed (see section B.6.2).

To close out CAR 3, a revised PDD was presented describing the parameters (to be monitored and that are available at validation) as required by the AM0045.
The calculation of EF grid was done applying the parameters defined by ACM0002. As the EF was calculated ex-ante, the parameters for this were included in the section B.6.2 ("parameters that are available at validation"). CAR 3 was closed out.

- CAR 12: The PDD version 2 did not provide complete information for the monitoring as required in the monitoring methodology and by the guidelines. Description of measurement methods and procedures were not complete. In the tables of section B.7.1 it was not specified, for example, the measurement methods, the equipment, the procedures for data collection, the calibration procedures etc for each parameter to be monitored.

A new version of PDD was provided (version 4). Additional information was included on the section B.7.1 and a reference to the regulatory requirements applicable for measurements was provided.
CAR 12 was closed out.

- CAR 4: The average annual quantity of SF6 leaks in the equipments during years verified during site visit do not corresponds to the value presented in the PDD version 1. The area of land deforested in the construction of the interconnection lines verified during site visit do not corresponds to the value 130 ha presented in the PDD version 1. Additional transmission losses estimated in the PDD (1%) should be according to the data calculated by Cemat, Celpa and Celtins.

To close out CAR 4, the average annual quantity of SF6 was revised and presented n a new version of PDD (version 2). Copy of the maintenance procedure was provided and the internal system was verified. The PDD adopted a conservative 10% leakage. This data will be monitored and can be confirmed during verification process. The deforested area was confirmed from data presented in the environmental reports and the area was 694 ha for CEMAT and 0 ha for CELTINS. The transmission lines of CELPA were excluded of the project, in response to NIR 2, so the deforested area by CELPA was also excluded of leakage calculation. The correct value was applied in the spreadsheets for calculation of the leakage and presented in the revised PDD (version 4). The calculation for the estimated transmission losses fo CEMAT and CELTINS were presented, copy was provided to SGS. The final calculation also excluded data from CELPA. CAR 4 was closed out.

- CAR 11: Although information about the management system was verified on-site by the local assessor, the monitoring plan (section B.7.2 of the PDD) was not complete as required by the guidance. Detailed description was required, indicating the responsibilities and procedures for data collection and archiving.

A new version of PDD (version 4) was provided. It was informed that the necessary operational and management structures necessary to monitor emissions reductions and any leakage effects generated by the project activity are common practice in the operation of the "Celtins and Cemat grid connection of isolated systems". The distribution of electricity in Brazil is a government concession and is regulated by the Brazilian Electricity Agency (ANEEL - Agência Nacional de Energial Elétrica), so the measurement methods and procedures carried out at "Celtins and Cemat grid connection of isolated systems" are in accordance with legal and regulatory requirements determined by ANEEL (see ANEEL, Resolução Normativa No 163, de 1o de Agosto de 2005). It was also included in the PDD that data will be collected and consolidated by the special projects department of Grupo Rede (at the headquarter of the company in São Paulo), with the support of Ecoinvest Carbon, for the preparation of the monitoring reports. The archiving time was defined as the crediting period + 2 years. CAR 11 was closed out.

3.5 Project design

The purpose of the project activity is the expansion of the Brazilian interconnected grid to isolated systems in the Brazilian states of Mato Grosso and Tocantins. The interconnection results in the complete displacement of the previous fossil fuel power generation in the isolated systems by more efficient, less carbon intensive power generation from the interconnected grid.

The project uses straight grid expansion technologies: high voltage (13.8 kV to 138 kV), high-strength composite conductors and power transformers. It is applied locally available technology which is not expected to be replaced within the crediting period. The project did not make use nor result in the diversion of ODA.

The project is requesting retroactive credits. Starting date of the project activity was 1st January 2001. The operational lifetime of the project is 30 years. A renewable crediting period of 7 years is selected, starting on 1st January 2001.

The following issues were raised during the validation, regarding the completion of the Project Design Document and compliance with the PDD CDM guidance:

- CAR 1: Section A.4.1.3 of the PDD did not include cities in the Cemat grid and the names of the cities of Tocantins State were not confirmed. The estimated amount of emission reduction over the crediting period (section A.4.4 of the PDD) did not include the cities not listed (but that are included in the project) and data verified during site visit. Section B.1 did not include the number, version and date of the methodology applied. According to the PDD version 1, the crediting period started before project activity.

To close out CAR 1, the PDD was revised. The cities were included in the section A.4.1.3 and geographical coordinates were revised. The estimated amount of emissions reduction was revised and copy of the CER calculation was provided to the validation team. It was included the information about

the name and version of the methodology (AM0045 version1, 22 December 2006). The revised starting date of the crediting period was included.

- CAR 6: It was verified that the PDD version 2 (23/01/2007) did not comply with the PDD guidances. The main non-compliances identified were:
- Section A.4.1.3 and A.4.1.4: the information was presented, but under a wrong iten. The detailed location with geographical coordinates was presented under A.4.1.3 and not under A.4.1.4.
- Section A.4.3: accordingly to the guidance, this section should include a description of how environmentally safe and sound technology, and know-how to be used, is transferred to the host Party(ies). No information about this was presented in the PDD under this header.
- Section B.1: it was not complete. It was not informed the methodologies or tools which the approved methodology draws upon and their version.
- Section B.8: the date of completion of the application of the baseline study and monitoring methodology was not informed.
- Annex 2: was excluded with no justification.
- Annex 4: it was informed that the project applies “the procedures set by the “Approved consolidated monitoring methodology ACM0002”. No references to AM0045.
To close out CAR 6, a new version of PDD was provided. A clear link was included to relate the sections A.4.1.3 and A.4.1.4 (details were kept on section A.4.1.3); section A.4.3, B.1 and B.8 was completed with the information required; Annex 2 and 4 were revised.

CAR 7: The project boundary should be consistent with the approved methodology. The Section B.3 (PDD version 2), the description of the sources and gases included in the project boundary was not complete, as required by AM0045 and was not presented as required by the guidelines. Section B.3 (PDD version 3) was revised to include the information required about project boundary. CAR 7 was closed out.

3.6 Environmental Impacts

The main environmental impacts of grid extension are related to clearing-road activities and transmission line construction. It was confirmed by the local assessor that part of the transmission lines were built using existing roadways to minimize environmental impacts not demanding deforestation of areas.

The environmental studies characterizing the vegetation before the clearance, the environmental plan and the environmental licenses of the lines included in the project were verified on-site. Copies were provided to the validation team.

The licenses issued by the Mato Grosso state and Tocantins state environmental agencies evidenced that the project activity complies with he Brazilian environmental legislation.

3.7 Local stakeholder comments

The local stakeholder consultation is required by Brazilian DNA. It is necessary invite the relevant stakeholders, before the validation process starts. During the site visit, it was verified that the stakeholders were invited by letters. Evidences that the following organizations were invited to comment on the CDM project were not available and a CAR (5) was raised:

Cemat: local communities (Claudia, União do Sul, Marcelândia, Canarana, Sapezal, Juína, Juara, Tabaporã); Prefeitura and Secretaria de Meio Ambiente (Juara); Ministério Público.

Celpa: local communities (Vizeu, Tucumã, São Félix); Câmara Vereadores (São Félix).

Celtins: local communities (Apinajé, Retiro, Lagoa do Tocantins, Mansinha, Mateiros, Trevo da Praia, Lizarda, São Félix, Centenário, Recursolândia); Câmara Vereadores (Principe, Mateiros).

To close out CAR 5, documented evidences were provided to SGS regarding the letters sent to the local stakeholders (copies of mail receipts). A period of 30 days was given for comments. The conclusion of the local consultation was included in the PDD (version 4). No comments were received. CAR 5 was closed out.

4. Comments by Parties, Stakeholders and NGOs

In accordance with sub-paragraphs 40 (b) and (c) of the CDM modalities and procedures, the project design document of a proposed CDM project activity shall be made publicly available and the DOE shall invite comments on the validation requirements from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available. This chapter describes this process for this project.

4.1 Description of how and when the PDD was made publicly available

The PDD and the monitoring plan for this project were made available on the SGS website http://cdm.unfccc.int/Projects/Validation/DB/G7AVSHB98WBGVFPKRNST0LLJI6Z8CD/view.html and were open for comments from 03 Jan 2007 until 01 Feb 2007. Comments were invited through the UNFCCC CDM homepage.

4.2 Compilation of all comments received

No comments were received.

4.3 Explanation of how comments have been taken into account

No comments were received.

5. Validation opinion

Steps have been taken to close out twelve findings. One observation was raised which does not preclude the validation opinion. .

SGS has performed a validation of project: “Celtins and Cemat grid connection of isolated systems”. The validation was performed on the basis of the UNFCCC criteria and host country criteria, as well as criteria given to provide consistent project operations, monitoring and reporting. Using a risk based approach, the validation 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.

By displacement of the previous fossil fuel power generation in the isolated systems by more efficient, less carbon intensive power generation from the interconnected grid, the project results in reducing greenhouse gas emissions that are real, measurable and give long-term benefits to the mitigation of climate change. A review of the investment analysis presented demonstrates that the proposed project activity was 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.

6. List of persons interviewed

Date	*Name*	*Position*	*Short description of subject discussed*
03-4/01/2007	Mituo Hirota	Consultant/Grupo Rede	Operational issues, findings, monitoring plan.
03-4/01/2007	Ricardo Esparta	Director/Ecoinvest	Validation process. Technical issues, operational issues, findings, monitoring plan, baseline, licenses.
03-4/01/2007	Antonio M. Dias	Manager/Cemat	Operational issues.
03-4/01/2007	Evandro X. Braga	Engineer/Cemat	Operational issues.
03-4/01/2007	Lutero Paes de Barros	Maintenance/Cemat	Operational issues, maintenance procedures.
03-4/01/2007	José Roberto Ferreira	Forest Engineer	Environmental Licenses.
03-4/01/2007	Pedro Murari Neto	System Operation/Cemat	Quality procedures.
03-4/01/2007	Celso Barreto	Engineering Department/Cemat	Quality procedures.
03-4/01/2007	Elisandro P. Azevedo	Comercial Department/Cemat	Monitoring plan, calibration.
03-4/01/2007	Alexandre Lazarin	Engineer/Celtins	Operational issues, findings, monitoring plan.

7. Document references

Category 1 Documents (documents provided by the Client that relate directly to the GHG components of the project, (i.e. the CDM Project Design Document, confirmation by the host Party on contribution to sustainable development and written approval of voluntary participation from the designated national authority):

/1/ Celtins and Cemat grid connection of isolated systems" , version 01, 26/12/2006; version 02, 23/01/2007; version 03, 27/02/2007; version 04, 07/03/2007.

/2/ Baseline and monitoring methodology AM0045 - "Grid connection of isolated electricity systems", Version 01.

Category 2 Documents (background documents used to check project assumptions and confirm the validity of information given in the Category 1 documents and in validation interviews):

/3/ Grupo Rede power and CER generation spreadsheet.

/4/ Celtins data CER calculation spreadsheet.

/5/ Cemat data CER calculation spreadsheet.

/6/ ANEEL deactivation resolutions (National Electricity Agency).

/7/ Calibration certificate and Measurement procedure.

/8/ Environmental licenses: Cemat and Celtins.

/9/ Operational procedures: Critério de Manutenção preventiva do Sistema de transmissão e Geração – PLA01; Crítica de Leitura; Fechamento do Balanço Energético.

/10/ Brazilian Grid Emission Factor – NNE 2003-2005 (spreadsheet).

/11/ Brazilian Grid Emission Factor – SSECO 2003-2005 (spreadsheet).

/12/ CDM Presentation and Plan of action – February 2000.

/13/ Investment Analysis MDL Cemat – 31/01/2007.

/14/ Investment Analysis MDL Celtins – 31/01/2007.

Insert the following documents here and delete this message:

Annex 1: Local assessment
Annex 2: Validation Protocol
Annex 3: Overview of findings

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Annex 1 - Local assessment checklist – CDM.Val0833

This checklist is designed to provide confirmation of in-country data and information provided in the Project Design Document. It serves as a "reality check" on the project. It is to be completed by a local assessor from SGS Brazil

Issue	Findings	Source /Means of Verification	Further action / clarification / information required?
Confirm the location of the project activity (States and Towns included in the system).	The site visit was performed at the Cemat and Celpa office. Verified the state map what cities are included in the project (Mapa Eletrogeográfico). See CAR 1: the list of locations are not complete in the PDD version 1.	Site visit/DR/I	CAR 1
Confirm Step 0: check documented evidence about the starting date of the project. How the date: 01/06/2000 can be confirmed?	It was informed (by interviews) that the project was implemented in beginning 2000. It was not provide documented evidences that the incentive from the CDM was seriously considered and that the construction of the transmission lines (those in operation since June 2000) were constructed after January 2000. See NIR 2	Site visit/DR	NIR 2
Check if there is any regulation or regulatory requirements related to the project activity implementation (it the project required to be implemented or incentived by governmental programmes?).	Verified during site visit and interview that there was no enforcement of legal requirements for the implementation of the project.	Site visit/DR	No
Check details about the system BEFORE the	Verified the following documents: - Internal report with oil consumption (Dados para	Site visit/DR	CAR 3

Issue	Findings	Source /Means of Verification	Further action / clarification / information required?
interconnection: thermo plants, fuel comsumption, energy generated in the baseline etc. Please describe the evidences collected on-site.	elaboração do projeto); - Thermo plants deactivated report (Usinas desativadas 2000-2006); - ANEEL Resolution that confirm the deactivation of the thermo plants and internal deactivation report that describes the thermo plant location, equipments, interconnection date. Data and parameters that are available at validation (section B.6.2 of the PDD) and Data and parameters monitored are not in compliance with AM0045.		
Check and described how the Emission factors estimated take into account the increase of demand of the isolated systems and the remaining lifetime of the equipments (it is a condition for applicability of AM0045).	The project considers the real demand where the data are available (internal data) and for future years the data were estimated, using the data in the last year for the future. The remaining lifetime of the equipments were calculated based on internal definition. The worksheet: Credito de Carbono_Cemat/Celpa/ Celtins was provided and included these conditions.	Site visit/DR	No
Verified and report evidences that all fossil fuel fired power plants in the isolated system are 100% displaced (it is a condition for applicability of AM0045).	The evidence that the fossil fuel plants were displaced is the ANEEL resolutions (official documents informing the deactivation of each plant included in the interconnection project).	Site visit/DR	No
Verify the investment analysis: ask for the	Data used for the analysis were verified on site. Copy of the spreadsheets was provided after the site	DR	NIR 2

Issue	Findings	Source /Means of Verification	Further action / clarification / information required?
spreadsheets with assumptions, data and formulas applied. Check evidences related to the data mentioned on these spreadsheets (as total of energy produced, EF diesel, costs, electricity prices etc).	visit.		
Verify how the EF grid was calculated; check complete data used for calculations.	Copy of the EF grid calculation was provided and verified by the local assessor. Data is according to the most recent value provided by System National Operator (ONS).	DR	No
Check the deforested area mentioned in the PDD. Collect evidences about the area (from documents/maps or environmental licenses).	The deforested areas were verified on-site by reviewing of environmental licenses, technical report from environmental agency, environmental plan and map. The area informed in the PDD version 1 did not agree with the area verified from the documents above. See CAR 4.	Site visit/DR	CAR 4
Verify data used to calculate CERs (worksheets with data, formula, where data was obtained, default values).	Verified the worksheet with CERs calculation (Crédito de Carbono – Celpa/Celtins/Cemat). The monitoring data available at the validation are presented in these worksheets.	Site visit/DR	No
Check values applied for transmission losses.	There is no official formula or specification for calculation of the transmission losses. The value applied was calculated according internal procedure (spreadsheet: Credito de Carbono_Cemat/Celpa/Celtins).	Site visit/DR	CAR 4

Issue	Findings	Source /Means of Verification	Further action / clarification / information required?
	The value informed on the PDD did not agree with the value verified on-site		
Check values of SF6 leaks	The average annual quantity of SF6 leaks in the equipments during years verified during site visit do not corresponds to the value presented in the PDD version 1. See CAR 4.	Site visit/DR	CAR 4
Described the evidences collected on-site which confirm that the proejct was installed as described in the PDD Please give details about the site visit and interviews.	All cities in this project were connected to the interconnected electricity grid until 2006. Substations with energy meter were installed where a thermoelectric was operational (isolated system). Verified the statistical information about: energy consumed in the isolated system and interconnected system; diesel consumption (official data available); date of the interconnection; lifetime of the deactivated equipments; map of the new interconnected cities. Documented evidences (official documents from ANEEL) were provided, which mention the deactivation of thermal plants of the isolated system. The site visit was performed on Cemat office (located in Cuiabá/MT and Celpa office (located in Belém/PA) where project staff and its consultant were interviewed.	Site visit/DR	Ok
Verify on-site the management system implemented for the project activity. Verify details about the	The energy meters are controlled by official governmental agency. The concessionaries has procedures for maintenance (verified the internal system), initial calibration/check of the meters. Documents were verified on-site.	Site visit/DR/I	CAR 11 (section 5.2 of the validation checklist)

Issue	Findings	Source /Means of Verification	Further action / clarification / information required?
monitoring system, responsibilities, training of personnel etc. Check procedures/manuals	The energy data is collected automatically in the energy meter and sent to the internal system of each concessionary.		
Check environmental licenses and if an EIA was required. Ask for copies of the licences and check conditions required by the environemtnal agencies (restoration of degraded areas?)	For more details, see annex 2 item 6.2 (checklist). Regarding Celtins: verified the installation license 1524/2006 issued by Naturatins, 16/12/2006. This is the license for the implementation of the transmission lines. Copies of the licenses were provided to SGS.	DR	Ok
Local stekeholder consultation: verify if it was carried out in compliance with DNA requirements. Check documented evidences that all relevant stakeholders were invited. Check the date of the consultation. Has it been completed?	See annex 2 section 7. and CAR 5. The consultation was not concluded when the on-site audit visit was carried out. Some local stakeholders had not been invited for comments. See CAR 5 details.	DR	CAR 5

Annex 2 - Validation Protocol

This validation protocol is designed to ensure that the project meets the requirements for CDM projects that are detailed in paragraph 37 of the CDM modalities and procedures. Each requirement is covered in a separate table. The following requirements are discussed in this protocol:

Requirement	Description	
Participation requirements	The participation requirements as set out in Decision 17/CP7 need to be satisfied	Covered in table 1
Baseline and monitoring methodology	The baseline and monitoring methodology complies with the requirements pertaining to a methodology previously approved by the Executive Board	Baseline methodology is covered in table 2 Monitoring methodology is covered in table 4
Additionality	The project activity is expected to result in a reduction in anthropogenic emissions by sources of greenhouse gases that are additional to any that would occur in the absence of the proposed project activity	Covered in table 3
Monitoring plan	Provisions for monitoring, verification and reporting are in accordance with relevant decisions of the COP/MOP	Covered in table 5
Environmental impacts	Project participants have submitted to the designated operational entity documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts and, if those impacts are considered significant by the project participants or the host Party, have undertaken an environmental impact assessment in accordance with procedures as required by the host Party;	Covered in table 6
Comments by local stakeholders	Comments by local stakeholders have been invited, a summary of the comments received has been provided, and a report to the designated operational entity on how due account was taken of any comments has been received;	Covered in Table 7
Other requirements	The project activity conforms to all other requirements for CDM project activities in relevant decisions by the COP/MOP and the Executive Board.	Covered in Table 8

Small sale projects and AR projects have specific requirements which are covered in Table 9-11. Small scale SSC projects have special requirements which might deviate from the requirements of

other CDM projects. These requirements are tested in table 9. Please note that some questions in table 9 overlap with questions in the other tables. Where the questions in table 9 contradict or overlap questions elsewhere in the checklist, the questions in table 9 shall prevail. For the validation of small scale projects, assessor is required to address the questions in table 9 first before starting with the questions in the other tables.

Further remarks on the use of this document:

- text in *italic blue* is meant as guidance for the assessor
- MoV = Means of Verification, DR= Document Review, I= Interview

This protocol should be adapted as required. For example, if the project is not a small scale project or an AR project, some tables can be deleted.

Table 1 Participation Requirements for Clean Development Mechanism (CDM) Project Activities (Ref PDD, Letters of Approval and UNFCCC website)

REQUIREMENT	MoV	Ref	Comment	Draft finding	Concl
1.1 The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3 and be entered into voluntarily.	DR	PDD	There is no Annex I in this project.	OK	Ok
1.2 The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof, and be entered into voluntarily	DR	PDD	No letter of approval from non Annex I, Brazil. The Letter of Approval was issued on 23 March 2007.	Send the validation report to DNA	Ok
1.3 All Parties (listed in Section A3 of the PDD) have ratified the Kyoto protocol and are allowed to participate in CDM projects	DR	PDD UNFCC web site	Yes. Brazil ratified the protocol on 23 August 2002	Ok	Ok
1.4 The project results in reductions of GHG emissions or increases in sequestration when compared to the baseline; and the project can be reasonably shown to be different from the baseline scenario	DR	PDD	Yes. About the discussion of the baseline scenario, see item 3.3 and CAR 8	Ok	OK
1.5 Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days (45	DR	PDD UNFCCC web	Yes, PDD was publicly available from 03 Jan 2007 to 01 Feb 2007 http://cdm.unfccc.int/Proj	Ok	Ok

REQUIREMENT	MoV	Ref	Comment	Draft finding	Concl
days for AR projects), and the project design document and comments have been made publicly available		site	ects/Validation/DB/G7AVSHB98WBGVFPKRNST0LLJI6Z8CD/view.html No comments were received.		
1.6 The project has correctly completed a Project Design Document, using the current version and exactly following the guidance	DR	PDD	No, see also table 8 and CAR 6 raised: - Section A.4.1.3 and A.4.1.4: the information was presented, but the detailed location with geographical coordinates was presented under A.4.1.3 and not under A.4.1.4. - Section A.4.3: accordingly to the guidance, this section should include a description of how environmentally safe and sound technology, and know-how to be used, is transferred to the host Party(ies). No information about this was presented in the PDD under this header. - Section B.1: It was not informed the methodology or tools which the approved methodology draws upon and their version. - Section B.8: the date of completion of the application of the baseline study and monitoring methodology was not informed. - Annex 2: was excluded with no justification. - Annex 4: it was informed that the project applies "the procedures set by the "Approved consolidated monitoring methodology ACM0002". No references to	CAR 6	OK

REQUIREMENT	MoV	Ref	Comment	Draft finding	Concl
			AM0045. A new version of PDD was provided (Ref.1). A link was included to relate the sections A.4.1.3 and A.4.1.4 (details were kept on section A.4.1.3); section A.4.3, B.1 and B.8 was completed with the information required; Annex 2 and 4 were revised. CAR 6 was closed out.		
1.7 The project shall not make use of Official Development Assistance (ODA), nor result in the diversion of such ODA	DR	PDD	The project does not made use of ODA.	Ok	Ok
1.8 For AR projects, the host country shall have issued a communication providing a single definition of minimum tree cover, minimum land area value and minimum tree height. Has such a letter been issued and are the definitions consistently applied throughout the PDD?			N/A		
1.9 Does the project meet the additional requirements detailed in: Table 9 for SSC projects Table 10 for AR projects Table 11 for AR SSC projects			N/A		
1.10 Is the current version of the PDD complete and does it clearly reflect all the information presented during the validation assessment.	DR	PDD	Yes, the current version was used.	Ok	Ok
1.11 Does the PDD use accurate and reliable information that can be verified in an objective manner?	DR	PDD	No, NIR 10 was raised: Section B.6.3. mentioned that "The climatic zone of most of the project area is mostly classified as "savana arbórea aberta" according to Brazilian National Communication". No complete references were provided about this source. It was also mentioned that " L_C = *15.39 tC/ha",* but the	NIR 10	Ok

REQUIREMENT	MoV	Ref	Comment	Draft finding	Concl
			source of this value was not provided. The following reference was mentioned on the revised PDD: "*Primeiro Inventário Brasileiro de Emissões Antrópicas de Gases de Efeito Estufa. Emissões e Remoções de Dióxido de Carbono Por Conversão de Florestas e Abandono de Terras Cultivadas. Ministério da Ciência e Tecnologia, Brasília (2006)"*. This document was verified in order to confirm the information above. According to the reference, the vegetation of the area (defined by geographical coordinates) is classified under the bioma "Amazonia". The sub-bioma (Savana-aberta) was classified from the environmental reports provided by the client (which characterize the vegetation under the transmission lines). NIR 10 was closed out.		

Table 2 Baseline methodology(ies) (Ref: PDD Section B and E and Annex 3 and AM)

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
2.1 Does the project meet all the applicability criteria listed in the methodology	PDD AM0045	DR	Yes. The project activity consists in the expansion of an interconnected electricity grid to isolated system in the states of Mato Grosso, Tocantins and Pará.	Ok	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			Verified the displacement of power generation in isolated systems (thermo plants using diesel) by more efficient, less carbon intensive power generation from the interconnected grid. It was confirmed by reviewing of official documents issued by ANEEL, where the date, name, capacity and location of each plant displaced could be cchecked (Ref. 6).		
2.2 Is the project boundary consistent with the approved methodology	PDD AM0 045	DR	No, CAR 7 was raised: The Section B.3 (PDD version 2), the description of the sources and gases included in the project boundary was not consistent with AM0045 and was not presented as required by the guidance. Section B.3 (PDD version 3) was revised to include the information required by AM0045 about project boundary (physical limits and sources and gases). The emissions in the baseline (Power generation) include only CO2, the main emission source. The project activity emissions include CO2 (from power generation) and emissions related to SF_6 used in the new equipments of the project activity CAR 7 was closed out.	CAR 7	Ok
2.3 Are the baseline emissions determined in accordance with the methodology described	PDD AM0 045	DR	Yes, the baseline emissions = baseline emission factor * electricity supplied to the isolated area (now connected to	Ok	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			the interconnected system).		
2.4 Are the project emissions determined in accordance with the methodology described	PDD AM0 045	DR	The formula presented in the PDD is correct. The project calculated the emission factor of the grid (EF-NNE and EF-SSECO grids) (Ref. 10 and 11), the emissions related to SF6 and than the project emissions. CAR 4: The average annual quantity of SF6 leaks in the equipments during years verified during site visit do not corresponds to the value presented in the PDD version 1. The average annual quantity of SF6 was revised in the PDD version 2, copy of the maintenance procedure was provided and the internal system was verified. CAR 4 was closed out (see also other issues under CAR 4 below)	CAR 4	Ok
2.5 Is the leakage of the project activity determined in accordance with the methodology described	PDD AM0 045	DR	The formula is correct, leakage = deforested area * carbon stock per unit area. CAR 4: The value applied for the deforested area mentioned in the PDD did not comply with the data about area verified on-site (from the environmental studies). PDD and the spreadsheets were revised. The deforested area was confirmed by the environmental reports. CAR 4 was closed out	CAR 4	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			(see also other issues under CAR 4 above).		
2.6 Are the emission reductions determined in accordance with the methodology described	PDD AM0 045	DR	Formulas described in PDD comply with the methodology. Verified how the data presented in the PDD were calculated (spreadsheets with formulas and assumptions were provided, Ref. 4 and 5).	Ok	Ok

Table 3 Additionality (Ref: PDD Section B3 and AM)

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
3.1 Does the PDD follow all the steps required in the methodology to determine the additionality	PDD AM0 045	DR	No, CAR 9 was raised: The PDD version 2 did not follow all the steps required in the methodology to determine the additionality. - Sub-step 1.(a): did not consider the alternative of the project be implemented without CDM incentives, as required by the "Tool"; - Sub-step 2 (c) and (d): were not clearly presented (the discussion of sub-step (c) was mixed with sub-step (b) and sub-step (d) was omitted. - Sub-step 4: it was not supported by any sources of data or references. - Sub-step 5: mentioned "barriers", but no barriers analysis was presented in the PDD. CAR 9 was closed out: A new version of PDD was provided, including a discussion about	CAR 9	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			additionality for the steps 1, 2, 4 and 5. See NIR 2 about step 0.		
3.2 Is the discussion on the additionality clear and have all assumptions been supported by transparent and documented evidence	PDD	DR	This project started the validation process when submitting a new methodology NM-152 on 28 December 2005, now approved as AM0045). NIR 2 was raised: it was not provide evidence for the Step 0 of the "Tool". Some transmission lines started the operation in June 2000. It is not evidenced that the construction of these lines was effectively performed after 1st January 2000. It was not provide evidence that the generation of power using other energy sources than grid extension was considered. It was not provide copy of the spreadsheets used for investment analysis. It should be clarify if the project activity has made use of incentives or special financing from "Luz para todos" or BNDES. - Clarify what was the EF applied for diesel. Two different values were verified on the spreadsheets provided: 2.68 tCO2/m³ and 2.75 tCO2/m³. NIR closing out details: - evidence that the generation of power using other energy sources than grid extension was considered.	NIR 2 CAR 9	Ok Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			- copy of the spreadsheets used for investment analysis was provided (Ref. 13 and 14). - Information about the governmental programmes was included in the PDD. - It was confirmed that the EF applied for diesel is: 2.68 tCO2/m³. Version 4 of the PDD was provided. The additional information provided implied in the exclusion of the project the lines of CELPA and some lines of CEMAT which did not comply fully with the additionality criteria. It also implied in significant changes in the PDD and reduction of the total amount of ERs estimated for the project. NIR 2 was closed out. See also CAR 9 details (item 3.1 above).		
3.3 Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	PDD AM0045	DR	No, CAR 8 was raised: the assessment of alternative scenarios presented in the PDD version 2 did not comply with the AM0045 requirements (see the 3 steps of the methodology). The identification of barriers was only mentioned under section B.4 but was not discussed. The discussion presented did not support the conclusion of "The presented barriers affect the Project Activity Scenario as well as all	CAR 8	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			alternative scenarios similarly." It is required specify clearly which alternatives are prevented by at least one of the barriers previously identified and eliminate those alternatives from further consideration. The step 3 of the "Tool" should be used. Version 4 of the PDD was provided, with more information of the alternative scenarios, following the steps defined by AM0045. Four scenarios were identified. The barrier analysis was complemented by investment analysis (ref. 13 and 14), performed as required by step 2 of the "Tool". The investment analysis compared all the scenarios identified and confirmed the baseline scenario as the current situation. CAR 8 was closed out.		
3.4 Is it demonstrated/justified that the project activity itself is not a likely baseline scenario	PDD	DR	No, see CAR 8 above. CAR 8 closing out information is detailed above.	CAR 8	Ok

Table 4 Monitoring methodology (PDD Section D and AM)

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
4.1 Does the project meet all the applicability criteria listed in the monitoring methodology	PDD AM0045	DR	Yes	Ok	Ok
4.2 Does the PDD provide for the monitoring of the baseline emissions as required in the monitoring methodology	PDD AM0045	DR	No, CAR 3 was raised: Data and parameters that are available at validation (section B.6.2 of the PDD) and Data	CAR 3	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			and parameters monitored are not in compliance with AM0045. PDD version 2 was verified. The parameters mentioned did not comply in full with those parameters required by the methodology as "data and parameters not monitored". Some of them were included and other excluded, with out any justification. In addition, parameters 14 to 23 included in the PDD are highlighted in red on the text and their tables have been not completed (see section B.6.2). A new version of PDD was provided. The version 3 described the parameters (to be monitored and that are available at validation) as required by the AM0045. The calculation of EF grid was done applying the parameters defined by ACM0002. As the EF was calculated ex-ante, the parameters for this were included in the section B.6.2 ("parameters that are available at validation"). CAR 3 was closed out.		
4.3 Does the PDD provide for the monitoring of the project emissions as required in the monitoring methodology	PDD AM0045	DR	See CAR 4 and closing out details on itens 2.4 and 2.5	CAR 4	Ok
4.4 Does the PDD provide for the monitoring of the leakage as required in the monitoring methodology	PDD AM0045	DR	See CAR 4 and closing out details on itens 2.4 and 2.5	CAR 4	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
4.5 Does the PDD provide for Quality Control (QC) and Quality Assurance (QA) Procedures as required in the monitoring methodology	PDD AM0 045	DR	Yes.	Ok	Ok

Table 5 Monitoring plan (PDD Annex 4)

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
5.1 Monitoring of Sustainable Development Indicators/ Environmental Impacts					
5.1.1 Does the monitoring plan provide the collection and archiving of relevant data concerning environmental, social and economic impacts?	PDD AM0 045	DR	The methodology does not require the monitoring of environmental or social indicators.	Ok	Ok
5.1.2 Is the choice of indicators for sustainability development (social, environmental, economic) reasonable?	PDD	DR	It is expected that the project will contribute to sustainable development: reducing the local air pollution, lowering the risk of diesel use, supplying electricity for the communities.	Ok	Ok
5.1.3 Will it be possible to monitor the specified sustainable development indicators?	PDD	DR	Not applicable.	Ok	Ok
5.1.4 Are the sustainable development indicators in line with stated national priorities in the Host Country?	PDD	DR	Not applicable.	Ok	Ok
5.2 Project Management Planning					
5.2.1 Is the authority and responsibility of project management clearly described?	PDD	I	Verified on-site that the engineering corporative department is responsible for all project information obtained from Cemat, Celpa and Celtins. This department is responsible for sending the information to the consultant responsible for	Ok	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			the CDM project.		
5.2.2 Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	PDD	DR I	No, CAR 11 was raised: Although information about the management system was verified on-site by the local assessor, the monitoring plan (section B.7.2 of the PDD) was not complete. PDD version 4 included the following information: - All necessary operational and management structures necessary to monitor emissions reductions and any leakage effects generated by the project activity are common practice in the operation of the Grupo Rede CDM Project. Furthermore, distribution of electricity in Brazil is a government concession and is regulated by the Brazilian Electricity Agency (ANEEL acronym from the Portuguese “Agência Nacional de Energial Elétrica”). Measurement methods and procedures carried out at Grupo Rede CDM Project are in accordance with legal and regulatory requirements determined by ANEEL (see ANEEL, Resolução Normativa No 163, de 1o de Agosto de 2005).” It was also included that data will be collected and consolidated by the special projects department of Grupo Rede (at the headquarter of the company in São Paulo), with the support of Ecoinvest Carbon, for	CAR 11	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			the preparation of the monitoring reports. The archiving time was defined as the crediting period + 2 years. CAR 11 was closed out.		
5.2.3 Are procedures identified for training of monitoring personnel?	PDD	I	Verified by interviews that the project is part of the Cemat, Celpa and Celtins activities. There are qualified personnel to perform monitoring activities.	Ok	Ok
5.2.4 Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	PDD	DR	No unintended emissions are expected.	Ok	Ok
5.2.5 Are procedures identified for calibration of monitoring equipment?	PDD	DR	The following procedures were verified during the site visit (Ref. 9): Cemat: CCEE procedure (Electric Energy Commercialization Chamber) is applied. The meters installed are Saga 1000, class 0,5. When the time of the interconnection new meters were installed. Celtins: the meters were calibrated according to INMETRO (National Institute of Metrology) standards. Celpa: operators are responsible to check any problem in the meters installed through the meter data. At the time of the installation the meters were checked internally (maintenance department), after installation the meters are	Ok	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			not calibrated, in case of problem the meter is substituted.		
5.2.6 Are procedures identified for maintenance of monitoring equipment and installations?	PDD	DR	In Cemat and Celtins - the maintenance department is responsible for the maintenance of the monitoring equipment and installations. The following documented procedures were verified (Ref.9): PI 0MMF01, Maintenance schedule, PI 02029, PI 2DIJ05, DGM-System (internal maintenance system). Verified in details the maintenance records of Cemat and it was not found any change in the meters or SF6 reposition (leakage) during period 2002-2006.	Ok	Ok
5.2.7 Are procedures identified for monitoring, measurements and reporting?	PDD	DR	The monitoring system required by the CDM project is part of the operational system of each concessionary (Cemat and Celtins). The energy data is generated automatically, there is no manual operation. All data is registered in the internal system: monthly report (Cemat) and monthly invoices (Celtins). Verified the operational instruction: Manual de Engenharia 3.1.3-PI-01.17/PI-01-01.26; Crítica de Leitura (see Ref.9).	Ok	Ok
5.2.8 Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to	PDD	DR/I	Verified on-site that the monitored data is controlled by the Department of Operation Systems. Verified the monthly consolidated	See CAR 11	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
process performance documentation)			report ("Boletim estatístico"). About data archiving, see also CAR 11 losing out details on 5.2.2. CDM data and records should be archived for + 2 years after the end of the crediting period.		
5.2.9 Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	PDD	I	As verified on-site, the systems operation department is responsible to check the energy data in all project locations (energy substation). The energy is verified in each check point in the interconnected grid (inside project boundary) to be sure that the official data obtained from the meter installed in the substation is correct.	Ok	Ok
5.2.10 Are procedures identified for review of reported results/data?	PDD	I	Verified during the site visit that there is person responsible for check the data provided by system operation department and commercial department.	Ok	Ok
5.2.11 Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	PDD	I	The management and review of data will be responsibility of Grupo Rede, with support of a specialized CDM consultant.	CAR 11	Ok
5.2.12 Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	PDD	I	See CAR 11: Data are verified internally and by the consultant company contracted.	CAR 11	Ok
5.2.13 Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	PDD	I	The data are checked internally (Celtins and Cemat) and by the consultant company contracted for the CDM project.	CAR 11	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl

Table 6 Environmental Impacts (Ref PDD Section F and relevant local legislation)

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
6.1 Has an analysis of the environmental impacts of the project activity been sufficiently described?	PDD	DR	The following information and documents were verified on-site (see Ref.8): - Cemat: an environmental analysis was presented (mainly related to deforestation area). - Celtins: verified that the analysis of environmental impacts were not required.	Ok	Ok
6.2 Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	PDD	DR	Cemat: To obtain the license EIA was not required, verified the environmental plan and environmental licenses. Celtins: licence from the State Environmental agency was provided	Ok	Ok
6.3 Will the project create any adverse environmental effects?	PDD	DR	No adverse environmental effects had been identified. The deforestation (around 800 ha) were assessed before and the clearance was authorized by the environmental agencies of the states Mato Grosso and Tocantins. Most of the areas were covered by secondary vegetation. (see Ref.8)	Ok	Ok
6.4 Are transboundary environmental impacts considered in the analysis?	PDD	DR	No transboundary environmental impacts had been identified.	Ok	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
6.5 Have identified environmental impacts been addressed in the project design?	PDD	DR	No significative environment impacts had been identified.	Ok	Ok
6.6 Does the project comply with environmental legislation in the host country?	PDD	DR	Yes, it was confirmed by the licences presented.	Ok	Ok

Table 7 Comments by local stakeholders (Ref PDD Section G)

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
7.1 Have relevant stakeholders been consulted?	PDD/ Letters	DR	CAR 5: The local stakeholder consultation is required by Brazilian DNA. It is necessary to send a letter to relevant stakeholders, before the validation process starts, if some letter is sent during validation process it is necessary to wait the 30 days period. Evidences that the following organizations were invited to comment on the CDM project were not provided: Cemat, local communities (Claudia, União do Sul, Marcelândia, Canarana, Sapezal, Juína, Juara, Tabaporã); Prefeitura and Secretaria de Meio Ambiente (Juara); Ministério Público. Celpa, local communities (Vizeu, Tucumã, São Félix); Câmara Vereadores (São Félix). Celtins, local communities (Apinajé, Retiro, Lagoa do Tocantins, Mansinha, Mateiros, Trevo da Praia, Lizarda, São Félix, Centenário, Recursolândia); Câmara Vereadores (Principe, Mateiros).	CAR 5	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			To close out CAR 5, letters were sent to the local stakeholders in January and beginning February 2007. Documented evidences were provided to SGS. A period of 30 days was given for comments. The conclusion of the local consultation was included in the PDD. No comments were received. CAR 5 was closed out.		
7.2 Have appropriate media been used to invite comments by local stakeholders?	PDD/ Letters	DR	Yes, verified the letters sent in local language to local stakeholders.	Ok	OK
7.3 If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	PDD	DR	No. See CAR 5.	CAR 5	OK
7.4 Is a summary of the stakeholder comments received provided?	PDD	DR	No. See CAR 5 (the consultation was not completed when the version 1 of PDD was issued. It was included in the PDD version 3. CAR 5 was closed out.	CAR 5	Ok
7.5 Has due account been taken of any stakeholder comments received?	PDD	DR	No. See CAR 5 (the consultation was not completed when the version 1 of PDD was issued. After 30 days of consultation, no comments had been received. CAR 5 was closed out.	CAR 5	OK

Table 8 Other requirements

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
8.1 Project Design Document					
8.1.1 Editorial issues: does the project correctly apply the PDD template and has the document been completed without modifying/adding headings or logo, format or font.	PDD	DR	See CAR 6 details on 8.1.2 below.	CAR 6	Ok
8.1.2 Substantive issues: does the PDD address all the specific requirements under each header. If requirements are not applicable / not relevant, this must be stated and justified	PDD	DR	CAR 1: Section A.4.1.3 of the PDD did not include cities in the Cemat grid and the name of the cities of Tocantins State were not confirmed. The estimated amount of emission reduction over the crediting period (section A.4.4 of the PDD) did not include the cities not listed (but that are included in the project) and data verified during site visit. Section B.1 did not include the number, version and date of the methodology applied. According to the PDD version 1, the crediting period started before project activity. Verified the PDD version 2: - Cities were included in the section A.4.1.3 and geographical coordinates were revised. - The estimated amount of emissions reduction was revised and copy of the CER calculation was provided. The PDD version presents the cities not included in the PDD version 1. - It was included the information, methodology AM0045 version1, 22	CAR 1 CAR 6	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			December 2006. - Revised starting date of the crediting period: 01/06/2000. CAR 1 was closed out. The issues raised in CAR 1 had been addressed in the version 2 of the PDD, but new issues related to the PDD template and requirements were identified in the version 2. CAR 6 was raised: - Section A.4.1.3 and A.4.1.4: the information was presented, but under a wrong iten. The detailed location with geographical coordinates was presented under A.4.1.3 and not under A.4.1.4. - Section A.4.3: accordingly to the guidelines, this section should include a description of how environmentally safe and sound technology, and know-how to be used, is transferred to the host Party(ies). No information about this was presented in the PDD under this header. - Section B.1: is not complete. It was not informed the methodologies or tools which the approved methodology draws upon and their version. - Section B.8: the date of completion of the application of the baseline study and monitoring methodology was not informed. - Annex 2: was excluded with no justification.		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			- Annex 4: it was informed that the project applies "the procedures set by the "Approved consolidated monitoring methodology ACM0002". No references to AM0045. A new version of PDD was provided (version 3). A link was included between the two sections to relate the sections A.4.1.3 and A.4.1.4 (details were kept on section A.4.1.3); section A.4.3, B.1 and B.8 was completed with the information required; Annex 2 and 4 were revised. CAR 6 was closed out.		
8.2 Technology to be employed					
8.2.1 Does the project design engineering reflect current good practices?	PDD	DR Visit I	Yes.	Ok	Ok
8.2.2 Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	PDD	DR Visit I	No.	Ok	Ok
8.2.3 Is the project technology likely to be substituted by other or more efficient technologies within the project period?	PDD	DR Visit I	It is not expected.	Ok	Ok
8.2.4 Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	PDD	DR Visit I	No, the project is part of the operational system of the Cemat, Celpa and Celtins.	Ok	Ok
8.3 Duration of the Project/ Crediting Period					
8.3.1 Are the project's starting date and operational lifetime clearly	PDD	DR	Project starting date: 01/01/2001	Ok	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
defined and reasonable?			Operational lifetime: 30 years		
8.3.2 Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max. two x 7 years or fixed crediting period of max. 10 years)?	PDD	DR	Renewable crediting period: 7 years.	Ok	Ok
8.3.3 Does the project's operational lifetime exceed the crediting period	PDD	DR	Yes.	Ok	Ok

Table 9 Additional requirements for SSC projects - NA

Table 10 Additional requirements for AR projects -NA

Table 11 Additional requirements for SSC AR projects - NA

Table 12 Additional information to be verified by local assessors / site visit

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
Confirm the location of the project activity (States and Towns included in the system).	PDD	S DR	The site visit was performed at the Cemat and Celpa office. Verified the state map what cities are included in the project (Mapa Eletrogeográfico). See CAR 1: the list of locations are not complete in the PDD version 1.	CAR 1	Ok
Confirm Step 0: check documented evidence about the starting date of the project. How the date: 01/06/2000 can be confirmed?	PDD AM0045	S DR I	It was informed (by interviews) that the project was implemented in beginning 2000. It was not provide documented evidences that the incentive from the CDM was considered and that the construction of the transmission lines (those in operation since June	NIR 2	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			2000) were constructed after January 2000. See NIR 2		
Check if there is any regulation or regulatory requirements related to the project activity implementation	PDD	S DR	Verified during site visit and interview that there was no enforcement of legal requirements for the implementation of the project.	Ok	Ok
Check details about the system BEFORE the interconnection: thermo plants, fuel consumption, energy generated in the baseline etc. Please describe the evidences collected on-site.	PDD	S DR	Verified the following documents: - Internal report with oil consumption (Dados para elaboração do projeto); - Thermo plants deactivated report (Usinas desativadas 2000-2006); - ANEEL Resolution that confirm the deactivation of the thermo plants and internal deactivation report that describes the thermo plant location, equipments, interconnection date (Ref. 6). See CAR 3: Data and parameters that are available at validation (section B.6.2 of the PDD) and Data and parameters monitored are not in compliance with AM0045	See CAR 3	Ok
Check and described how the Emission factors estimated take into account the increase of demand of the isolated systems and the remaining lifetime of the equipments (it is a condition for applicability of AM0045).	AM0045	S DR	The project considers the real demand where the data are available (internal data) and for future years the data were estimated, using the data in the last year for the future. The remaining lifetime of the equipments were calculated based on internal definition. The worksheet: Credito de Carbono_Cemat/ Celtins was provided and	Ok	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			included these conditions (Ref. 13 and 14).		
Verify and report evidences that all fossil fuel fired power plants in the isolated system are 100% displaced (it is a condition for applicability of AM0045).	AM0045	DR	The evidence that the fossil fuel plants were displaced is the ANEEL resolutions (Ref. 6: official documents informing the deactivation of each plant included in the interconnection project).	Ok	Ok
Verify the investment analysis: ask for the spreadsheets with assumptions, data and formulas applied. Check evidences related to the data mentioned on these spreadsheets (as total of energy supplied, EF diesel, costs, electricity prices etc).		DR I	Data used for the analysis were verified on site. Copy of the spreadsheets was provided after the site visit and data and formulas were checked (Ref. 13 and 14).	NIR 2	Ok
Verify how the EF grid was calculated; check complete data used for calculations.	AM0045 ACM0002 PDD	DR	Copy of the EF calculation was provided and verified by the local assessor (ref. 10 and 11). Data is according to the most recent value provided by System National Operator (ONS).	Ok	Ok
Check the deforested area mentioned in the PDD. Collect evidences about the area (from documents/maps or environmental licenses).	PDD	S DR	The deforested areas were verified on-site by reviewing of environmental licenses, technical report from environmental agency, environmental plan and map. The area informed in the PDD version 1 did not agree with the area verified from the documents above. See CAR 4.	CAR 4	Ok
Verify data used to calculate CERs (worksheets with data, formula, where data was obtained, default values).	PDD AM0045	DR	Verified the worksheet with CERs calculation (Crédito de Carbono – Celtins/Cemat; Ref. 3). The monitoring data	Ok	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			available at the validation are presented in these worksheets.		
Check values applied for transmission losses.	PDD	DR	There is no official formula or specification for calculation of the transmission losses. The value applied was calculated according internal procedure (spreadsheet: Credito de Carbono_Cemat/Celtins). The value informed on the PDD did not agree with the value verified on-site.	CAR 4	Ok
Check values of SF6 leaks	PDD AM0045	DR	The average annual quantity of SF6 leaks in the equipments during years verified during site visit do not corresponds to the value presented in the PDD version 1. See CAR 4.	CAR 4	Ok
Described the evidences collected on-site which confirm that the proejct was installed as described in the PDD (describe the site visit: where you visited? The company office, in what city etc. The control room of the interconected system? The site, where the lines were installed? Please give details about the site visit and interviews.	PDD	S DR I	All cities in this project were connected to the interconnected electricity grid until 2006. Substations with energy meter were installed where a thermoelectric was operational (isolated system). Verified the statistical information about: energy consumed in the isolated system and interconnected system; diesel consumption (official data available); date of the interconnection; lifetime of the deactivated equipments; map of the new interconnected cities. Documented evidences (official documents from ANEEL) were provided, which mention the	Ok	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			deactivation of thermal plants of the isolated system. The site visit was performed on Cemat office (located in Cuiabá/MT and Celpa office (located in Belém/PA) where project staff and its consultant were interviewed.		
Verify on-site the management system implemented for the project activity. Verify details about the monitoring system, responsibilities, training of personnel etc. Check procedures/manuals	PDD	S DR I	The energy meters are controlled by official governmental agency. The concessionaries has procedures for maintenance (verified the internal system), initial calibration/check of the meters. Documents were verified on-site. The energy data is collected automatically in the energy meter and sent to the internal system of each concessionary.	See CAR 11	Ok
Check environmental licenses and if an EIA was required. Ask for copies of the licences and check conditions required by the environmetnal agencies (restoration of degraded areas?)		DR	For more details, see annex 2 item 6.2 (checklist). Regarding Celtins: verified the installation license 1524/2006 issued by Naturatins, 16/12/2006. This is the license for the implementation of the transmission lines. Copies of the licenses were provided to SGS.	Ok	Ok
Local stekeholder consultation: verify if it was carried out in compliance with DNA requirements. Check documented evidences that all relevant stakeholders were invited. Check the date of the consultation. Has		DR I	See annex 2 section 7. and CAR 5. The consultation was not concluded when the on-site audit visit was carried out. Some local stakeholders had not	CAR 5	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
it been completed?			been invited for comments. See CAR 5 details.		

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Annex 3 - FINDINGS OVERVIEW

FINDINGS FROM VALIDATION OF – CDM.VAL0833

Each Table below represents a finding from the validation assessment. The findings are numbered consecutively, approximately in the order that they have been identified.

Description of table:

Type	Findings are either New Information Requests (NIR) or Corrective Action Requests (CAR). CARs are items that must be addressed before a project can receive a recommendation for registration. NIRs may lead to the raising of CARs. Observations are included at the end and may or may not be addressed. They are primarily to act as signposts for the verifying DOE.
Issue	Details the content of the finding
Ref	refers to the item number in the Validation Protocol
Response	Please insert response to finding, starting with the date of entry.

Rows for comments and further response will be appended to the table until the Findings has been addressed to the satisfaction of the Lead Assessor.

Please note that this is an open list and more findings may be added as validation progresses.

Date: 05/01/2007 Raised by: Fabian Gonçalves

No.	Type	Issue	Ref
1	CAR	Section A.4.1.3 of the PDD did not include cities in the Cemat grid and the name of the cities of Tocantins State were not confirmed. The estimated amount of emission reduction over the crediting period (section A.4.4 of the PDD) did not include the cities not listed (but that are included in the project) and data verified during site visit. Section B.1 did not include the number, version and date of the methodology applied. According to the PDD version 1, the crediting period started before project activity.	8.1.2

Date: 23/01/2007 – comments by A. R. J. Esparta

- To review section A.4.1.3 of the PDD to include cities in the Cemat grid and confirm the name and geographical coordinates in the cities of Tocantins State. Tables reviewed.
- To review the estimated amount of emission reduction over the crediting period (section A.4.4 of the PDD). To include cities not listed and data verified during site visit. The tables are reviewed; spreadsheets with the complete calculations provided to the DOE.
- To include the number, version and date of the methodology under section B.1 of the PDD. Information included in the new PDD version.
- To review the starting date of the crediting period, according to the PDD version 1, the crediting period started before project activity. Both are set to the same day: 01/06/2000.

Date: 31/01/2007 - Fabian Gonçalves

[Acceptance and close out] Verified the PDD version 2:

- Cities were included in the section A.4.1.3 and geographical coordinates were revised.
- The estimated amount of emissions reduction was revised and copy of the CER calculation was provided. The PDD version presents the cities not included in the PDD version 1 but that are included in the project.

- It was included the information, methodology AM0045 version1, 22 December 2006. - The revised starting date of the crediting period was included: 01/06/2000. CAR 1 was closed out.

Date: 05/01/2007 Raised by: Fabian Gonçalves

No.	Type	Issue	Ref
2	NIR	Additionality discussion: it was not provide evidence that the incentive from the CDM was seriously considered (Step 0 of the "Tool"). It was not provide evidence that the generation of power using other energy sources than grid extension was considered. It was not provide copy of the spreadsheets used for investment analysis.	3.2

Date: 24/01/2007 – comments by A. R. J. Esparta
Documental evidence and additionality analysis is being consolidated and will be sent soon to the validation team.

Date: 03/02/2007 – comments by A. R. J. Esparta
Additionality information reviewed in the PDD. Evidences of CDM consideration before project start supplied. Investment analysis worksheets sent.

Date: 02/03/2007 - comments by A. R. J. Esparta
New version of PDD was provided.

Date: 07/03/2007 - comments by A. R. J. Esparta
New version of PDD was provided, excluding lines built without fully consideration of market variables, for example, lines with construction initiated either by the government or as a social counterpart in the privatization contract.

Date: 20/02/2007 – Aurea Nardelli
[Acceptance and close out]: NIR 2 is not closed out. Additional information is required:
- See also CARs 8 and 9.
- Please also clarify if the project activity has made use of incentives or special financing from "Luz para todos" or BNDES.
- Please clarify what was the EF applied for diesel. Two different values were verified on the spreadsheets provided: 2.68 $tCO2/m^3$ and 2.75 $tCO2/m^3$.

Date: 05/03/2007 – Aurea Nardelli
[Acceptance and close out]: NIR 2 was not closed out.
Information about the governmental programmes was included in the PDD.
It was confirmed that the EF applied for diesel is: 2.68 $tCO2/m^3$
See closing out details of CARs 8 and 9 (also related to the additionality discussion).
It is not provided conclusive evidence about Step 0: some transmission lines started the operation in June 2000. It is not evidenced that the construction of these lines was effectively performed after 1st January 2000.

Date: 08/03/2007 – Aurea Nardelli
[Acceptance and close out]: Version 4 of the PDD was provided. The additional information provided implied in the exclusion of the project the lines of CELPA and some lines of CEMAT which did not comply fully with the additionality criteria. It also implied in significant changes in the PDD and reduction of the total amount of ERs estimated for the project. NIR 2 was closed out.

Date: 05/01/2007 Raised by: Fabian Gonçalves

No.	Type	Issue	Ref
3	CAR	Data and parameters that are available at validation (section B.6.2 of the PDD) and Data and parameters monitored are not in compliance with AM0045.	4.2

Date: 23/01/2007 – comments by A. R. J. Esparta

- Spreadsheets with the complete calculations provided to the DOE.
- Version 2 of PDD was provided.

Date: 02/03/2007 - comments by A. R. J. Esparta

- New version of PDD provided to DOE with complete data.

Date: 20/02/2007 – Aurea Nardelli
[Acceptance and close out] : CAR 3 is not closed out.
PDD version 2 was verified. The parameters mentioned did not comply in full with those parameters required by the methodology as "data and parameters not monitored". Some of them were included and other excluded, with out any justification. In addition, parameters 14 to 23 included in the PDD are highlighted in red on the text and their tables have been not completed (see section B.6.2).

Date: 05/03/2007 – Aurea Nardelli
[Acceptance and close out] : PDD version 3 described the parameters (to be monitored and that are available at validation) as required by the AM0045.
The calculation of EF grid was done applying the parameters defined by ACM0002. As the EF was calculated ex-ante, the parameters for this were included in the section B.6.2 ("parameters that are available at validation"). CAR 3 was closed out.

Date: 05/01/2007 Raised by: Fabian Gonçalves

No.	Type	Issue	Ref
4	CAR	The average annual quantity of SF6 leaks in the equipments during years verified during site visit do not corresponds to the value presented in the PDD version 1. The area of land deforested in the construction of the interconnection lines verified during site visit do not corresponds to the value 130ha presented in the PDD version 1. Additional transmission losses estimated in the PDD (1%) should be according to the data calculated by Cemat, Celpa and Celtins.	4.3

Date: 23/01/2007 – comments by A. R. J. Esparta

- The average annual quantity of SF6 leaks in the equipments during years verified during site visit do not corresponds to the value presented in the PDD version 1. The project's inventory indicates a total amount of around 113 kg of SF_6. The operating pressure of all equipments using SF_6 is checked annually and if necessary, i.e., if the operating pressure is below the minimum required, the equipment is recharged. The procedure is documented and archived in the companies' software management tool. During verification the documented charges will be used to determine $M_{SF6,\,y}$. In the PDD $PE_{SF6,\,y}$ is estimated assuming 10% leakage of the total amount of SF_6 yearly (11.3 kg or 0.0113 tonnes of SF_6).
- The area of land deforested in the construction of the interconnection lines verified during site visit do not corresponds to the value 130ha presented in the PDD version 1. Not all transmission lines demanded deforestation for its construction. When applicable, documented evidence of the deforested area (environmental impact assessment reports) are presented.

Total area is equal to 580 hectares for CEMAT, 293 hectares for CELPA and no deforestation for CELTINS (total of 873 ha for the project activity). • To review the additional transmission losses estimated in the PDD (1%) according to the data calculated by Cemat, Celpa and Celtins. Measured data and simulation were used to determine weighted average additional transmission losses in each subsystem (1.40% for CEMAT, 1.01% for CELPA and 1.00% for CELTINS). • To review these data and present copy of the documents. Documentation on the above provided to the DOE.
Date: 31/01/2007 – Fabian Gonçalves [Acceptance and close out] The average annual quantity of SF6 was revised in the PDD version 2, copy of the maintenance procedure was provided and the internal system was verified. The PDD adopted a conservative 10% leakage. This data will be monitored and can be confirmed during verification process. The deforested area can be confirmed by the environmental reports. Some lines were constructed beside the road or in previously deforested areas. Each concessionary presented the calculation for the estimated transmission losses, copy was provided. CAR 4 was closed out.

Date: 31/01/2007 Raised by: Fabian Gonçalves

No.	Type	Issue	Ref
5	CAR	The local stakeholder consultation is required by Brazilian DNA Resolution (Resolução n°4, 6 dezembro 2006). It is necessary to send a letter to relevant stakeholders, before the validation process starts, if some letter is sent during validation process it is necessary to wait the 30 days period. Evidences that the following organizations were invited to comment on the CDM project were not provided: Cemat: local communities (Claudia, União do Sul, Marcelândia, Canarana, Sapezal, Juína, Juara, Tabaporã); Prefeitura and Secretaria de Meio Ambiente (Juara); Ministério Público. Celpa: local communities (Vizeu, Tucumã, São Félix); Câmara Vereadores (São Félix). Celtins: local communities (Apinajé, Retiro, Lagoa do Tocantins, Mansinha, Mateiros, Trevo da Praia, Lizarda, São Félix, Centenário, Recursolândia); Câmara Vereadores (Principe, Mateiros).	7.1
Date: 02/02/2007 – comments by A. R. J. Esparta Over 100 letters were sent in the beginning of January 2007. Few letters were sent to wrong places due to imprecision in official documents (ANEEL resolutions) and were re-sent in the beginning of February 2007.			
Date: 05/03/2007 – Aurea Nardelli [Acceptance and close out]: Documented evidences were provided to SGS regarding the letters sent to the local stakeholders. A period of 30 days was given for comments. The conclusion of the local consultation was included in the PDD (version 3). CAR 5 was closed out.			

Date: 15/02/2007 Raised by: Aurea Nardelli

No.	Type	Issue	Ref
6	CAR	The project shall correctly complete a Project Design Document, using	1.6;

		the current version and exactly following the guidance. The PDD shall address all the specific requirements under each header. If requirements are not applicable / not relevant, this must be stated and justified It was verified that the PDD version 2 (23/01/2007) did not comply with the above-mentioned requirements . The main non-compliances identified are: - Section A.4.1.3 and A.4.1.4: the information was presented, but under a wrong iten. The detailed location with geographical coordinates was presented under A.4.1.3 and not under A.4.1.4. - Section A.4.3: accordingly to the guidelines, this section should include a description of how environmentally safe and sound technology, and know-how to be used, is transferred to the host Party(ies). No information about this was presented in the PDD under this header. - Section B.1: is not complete. It was not informed the methodologies or tools which the approved methodology draws upon and their version. - Section B.8: the date of completion of the application of the baseline study and monitoring methodology was not informed. - Annex 2: was excluded with no justification. - Annex 4: it was informed that the project applies “the procedures set by the “Approved consolidated monitoring methodology ACM0002”. No references to AM0045.	8.1.2
Date: 02/03/2007 – New version of PDD including the required information.			
Date: 05/03/2007 – Aurea Nardelli [Acceptance and close out]: A new version of PDD was provided (version 3). A clear link was included to relate the sections A.4.1.3 and A.4.1.4 (details were kept on section A.4.1.3); section A.4.3, B.1 and B.8 was completed with the information required; Annex 2 and 4 were revised. CAR 6 was closed out.			

Date: 15/02/2007 Raised by: Aurea Nardelli

No.	Type	Issue	Ref
7	CAR	The project boundary should be consistent with the approved methodology. The Section B.3 (PDD version 2), the description of the sources and gases included in the project boundary was not complete, as required by AM0045 and was not presented as required by the guidelines.	2.2
Date: 05/03/2007 - New version of PDD including the required information			
Date: 05/03/2007 – Aurea Nardelli [Acceptance and close out]: Section B.3 (PDD version 3) was revised to include the information required about project boundary. CAR 7 was closed out.			

Date: 15/02/2007 Raised by: Aurea Nardelli

No.	Type	Issue	Ref
8	CAR	The selected baseline shall represent the most likely scenario among	3.3

		other possible and/or discussed scenarios. The assessment of alternative scenarios presented in the PDD version 2 did not comply with the AM0045 requirements (see the 3 steps of the methodology). The identification of barriers was only mentioned under section B.4 but was not discussed.	
Date: 05/03/2007 – New version of PDD including the discussion of the alternative scenarios.			
Date: 05/03/2007 – Aurea Nardelli [Acceptance and close out]: <u>CAR 8 is not closed out</u> PDD Section B.4: the discussion presented did not support the conclusion of "The presented barriers affect the Project Activity Scenario as well as all alternative scenarios similarly." It is required specify clearly which alternatives are prevented by at least one of the barriers previously identified and eliminate those alternatives from further consideration. The step 3 of the "Tool" should be used. PDD version 3 (sent on 05 March) only mentioned 3 references but did not provided any information or an open discussion about the main issues related to the identified barriers, as required by AM0045 and the "Tool". Date: 08/03/2007 – Aurea Nardelli [Acceptance and close out]: Version 4 of the PDD was provided, with more information of the alternative scenarios, following the steps defined by AM0045. Four scenarios were identified. The barrier analysis was complemented by investment analysis, performed as required by step 2 of the "Tool". The investment analysis compared all the scenarios identified and confirmed the baseline scenario as the current situation. CAR 8 was closed out.			

Date: 15/02/2007 Raised by: Aurea Nardelli

No.	Type	Issue	Ref
9	CAR	The PDD version 2 did not follow all the steps required in the methodology to determine the additionality. - Sub-step 1.(a): did not consider the alternative of the project be implemented without CDM incentives, as required by the "Tool"; - Sub-step 2 (c) and (d): were not clearly presented (the discussion of sub-step (c) was mixed with sub-step (b) and sub-step (d) was omitted. - Sub-step 4: it was not supported by any sources of data or references. - Sub-step 5: mentioned "barriers", but no barriers analysis was presented in the PDD.	3.1
Date: 05/03/2007 – New version of PDD including the discussion of the additionality.			
Date: 05/03/2007 – Aurea Nardelli [Acceptance and close out] – A new version of PDD was provided, including a discussion about additionality for the steps 1, 2, 4 and 5. The discussion followed the required approach for each step. CAR 9 was closed out.			

Date: 15/02/2007 Raised by: Aurea Nardelli

No.	Type	Issue	Ref
10	NIR	The PDD version 2 did not use accurate and reliable information that can be verified in an objective manner. Section B.6.3. mentioned that "The climatic zone of most of the project area is mostly classified as "savana arbórea aberta" according to Brazilian National Communication". No complete references were provided about this source. It was also mentioned that " L_C = *15.39 tC/ha",* but the source of this value was not provided.	1.11
Date: 05/03/2007 – It was informed in the version 3 of PDD.			
Date: 05/03/2007 – Aurea Nardelli [Acceptance and close out]: The following reference was provided: "*Primeiro Inventário Brasileiro de Emissões Antrópicas de Gases de Efeito Estufa. Emissões e Remoções de Dióxido de Carbono Por Conversão de Florestas e Abandono de Terras Cultivadas. Ministério da Ciência e Tecnologia, Brasília (2006)*". This document was verified in order to confirm the information above. According to the reference, the vegetation of the area (define by geographical coordinates) is classified under the *bioma* "Amazonia". The sub-bioma (Savana-aberta) was classified from the environmental reports provided by the client (which characterize the vegetation under the transmission lines). NIR 10 was closed out.			

Date: 15/02/2007 Raised by: Aurea Nardelli

No.	Type	Issue	Ref
11	CAR	Although information about the management system was verified on-site by the local assessor, the monitoring plan (section B.7.2 of the PDD) was not complete as required by the guidelines: "*provide a detailed description of the monitoring plan. Describe the operational and management structure that the project operator will implement in order to monitor emission reductions and any leakage effects generated by the project activity. Clearly indicate the responsibilities for and institutional arrangements for data collection and archiving*".	5.2 and PDD guidelines
Date: 05/03/2007 – new version of PDD was provided.			
Date: 05/03/2007 – Aurea Nardelli [Acceptance and close out]: CAR 11 is not closed out The PDD informs: "All data will be electronically archived at least during the whole crediting lifetime of the project"). CDM data and records should be archived for + 2 years after the end of the crediting period. It was not informed in the PDD who will be responsible for calculations of CERs and preparing the monitoring reports for verification in the future. Date: 05/03/2007 – Aurea Nardelli [Acceptance and close out]: The PDD mentioned that "All necessary operational and management structures necessary to monitor emissions reductions and any leakage effects generated by the project activity are common practice in the operation of the Grupo Rede CDM Project. Furthermore, distribution of electricity in Brazil is a government			

concession and is regulated by the Brazilian Electricity Agency (ANEEL acronym from the Portuguese "Agência Nacional de Energial Elétrica"). Measurement methods and procedures carried out at Grupo Rede CDM Project are in accordance with legal and regulatory requirements determined by ANEEL (see ANEEL, Resolução Normativa No 163, de 1o de Agosto de 2005)." It was also included that data will be collected and consolidated by the special projects department of Grupo Rede (at the headquarter of the company in São Paulo), with the support of Ecoinvest Carbon, for the preparation of the monitoring reports. The archiving time was defined as the crediting period + 2 years.

Date: 15/02/2007 Raised by: Aurea Nardelli

No.	Type	Issue	Ref
12	CAR	The PDD version 2 did not provide complete information for the monitoring as required in the monitoring methodology and by the guidelines. Description of measurement methods and procedures were not complete. In the tables of section B.7.1 it was not specified, for example, the measurement methods, the equipment, the procedures for data collection, the calibration procedures etc for each parameter to be monitored.	4.2/4.3 PDD guidelines
Date: 05/03/2007 – New version of PDD was provided.			
Date: 05/03/2007 – Aurea Nardelli [Acceptance and close out] : Additional information was included on the section B.7.1 and a reference to the regulatory requirements applicable for measurements was provided. CAR 12 was closed out.			

Observations:

1) To ensure more transparency, the information about environmental legal compliance (as the number, date and name of the agency which issued the environmental licenses for the project activity) should be presented in the PDD section D.1

VALIDATION REPORT

Pouso Alto Energia S/A.

Amper Energia S/A.

Rio do Sangue Energia S/A.

Paranatinga Energia S/A.

Rio Água Clara Energia Ltda.

Garganta da Jararaca Small Hydroelectric Power Plant (SHP) – Atiaia Energia S.A. Project Activity

SGS Climate Change Programme
SGS United Kingdom Ltd
SGS House
217-221 London Road
Camberley Surrey
GU15 3EY
United Kingdom

Date of issue:	Project No.:
09-05-2007	CDM.Val0569
Project title	Organisational unit:
Garganta da Jararaca Small Hydroelectric Power Plant (SHP) – Atiaia Energia S.A. Project Activity	SGS Climate Change Programme
Revision number	Client:
03	POUSO ALTO ENERGIA S/A. AMPER ENERGIA S/A. RIO DO SANGUE ENERGIA S/A. PARANATINGA ENERGIA S/A. RIO ÁGUA CLARA ENERGIA LTDA.

Summary

SGS has performed a validation of the project: Garganta da Jararaca Small Hydroelectric Power Plant (SHP) – Atiaia Energia S.A. Project Activity. 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.

The project activity consists of the construction of a new small hydro power plant with 29.3 MW total installed capacities and a reservoir of 2.87 km². The plant is being installed in the Midwest region of Brazil, in Rio do Sangue (river).
Total amount of emission reductions estimated for the first crediting period is 352,051tCO_2e.

SGS will request registration of the Garganta da Jararaca Small Hydroelectric Power Plant (SHP) – Atiaia Energia S.A. Project Activity as a CDM project activity. The Letter of approval from the government of Brazil was issued on 20th June 2007.

Subject.:			
CDM validation			**Indexing terms**
Work carried out by			
Áurea Nardelli, Fabian Gonçalves,			
Technical review			
Irma Lubrecht			☒ No distribution without permission from the Client or responsible organisational unit
Authorized signatory			
Siddharth Yadav			☐ Limited distribution
Date of final decision: 20-07-2007	Number of pages: 14		☐ Unrestricted distribution

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Abbreviations

AM	Approved Methodology
CAR	Corrective Action Request
CER	Certified Emission Reduction
DNA	Designated National Authority
EF	Emission Factor
MP	Monitoring Plan
NIR	New Information Request
PDD	Project design Document
SGS	Société Générale de Surveillance

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1. Introduction

1.1 Objective

POUSO ALTO ENERGIA S/A; AMPER ENERGIA S/A; RIO DO SANGUE ENERGIA S/A; PARANATINGA ENERGIA S/A; RIO ÁGUA CLARA ENERGIA LTDAhave commissioned SGS to perform the validation of the project: Garganta da Jararaca Small Hydroelectric Power Plant (SHP) – Atiaia Energia S.A. Project with regard to the relevant requirements for CDM project activities. The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, the monitoring plan (MP) and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Certified Emission Reduction (CER). UNFCCC criteria refer to the Kyoto Protocol criteria and the CDM rules and modalities and related decisions by the COP/MOP and the CDM Executive Board.

1.2 Scope

The scope of the validation is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. SGS has employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

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.

1.3 GHG Project Description

This report summarizes the results of the validation of Garganta da Jararaca Small Hydroelectric Power Plant (SHP) – Atiaia Energia S.A. Project Activity, performed on the basis of UNFCCC criteria. The validation has been performed as a desk review of the project documents presented by Atiaia Energia S/A and a site visit to Garganta da Jararaca Small Hydro Power Plant, located in Campo Novo do Parecis and Nova Maringá, Mato Grosso, Brazil. During site visit, Atiaia's managers and Ecoinvest consultant were interviewed.

The plant is owned by Rio do Sangue Energia S/A. ICAL S.A. (Indústria, Comércio e Administração) is a holding that controls Rio do Sangue Energia. The holding is going through a societal restructuring, after which the project companies will be controlled 100% by Atiaia Energia S.A., a new holding company owned by ICAL, Koblitz S/A and members of Cornélio Brennand family. Garganta da Jararaca project is being financed by the Brazilian Development Bank - BNDES ("Banco Nacional de Desenvolvimento Econômico e Social").

The project activity consists of the construction of a new small hydro power plant with 29.3 MW total installed capacity and a reservoir of 2.87 km². The plant is being installed in the Midwest region of Brazil, in Rio do Sangue (river).
Small hydro in Brazil must have installed capacity between 1 MW and 30 MW and reservoir area less than 3 km², or, if the area is between 3 km² and 13 km², it should have a minimum environmental impact. Garganta da Jararaca plant complies with the Brazilian legal criteria that define small hydropower plants.

The turbine system consists of two units of 15.10 MW each, and two generators of 14.65 MW.

The yearly minimum energy output expected is 190,000 MWh. Garganta da Jararaca is going to feed, simultaneously, isolated systems and the Brazilian interconnected grid, so that the project is set to deliver electricity partially into the Brazilian interconnected grid and partially into an isolated grid. For conservativeness reasons, the project proponents considered that all the energy will be fed to the interconnected grid South-Southeast-Midwest.

Total amount of emission reductions estimated for the first crediting period is 352,051 t CO_2 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 and to isolated systems.

With-project scenario:
The project activity consists of the installation of a hydropower plant with capacity of 29.3 MW. It will result in GHG emissions reductions avoiding the dispatch of same amount of energy produced by fossil-fuelled thermal plants to the grid and to isolated systems.

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, given the small dam and reservoir size.
With the use of small hydropower facilities to generate electricity for local use and for delivery to the grid, 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 (Licenca de Operação or LO).

It was verified during the site visit that the plant obtained the preliminary and construction licenses. The licenses were issued by the Mato Grosso Environmental Agency (SEMA - Secretaria Estadual do Meio Ambiente do Mato Grosso). The following documents were verified: Technical opinion n° 054/COINF/DIMI/2005 and Installation license LI n° 102/2005 (dated on 16/02/2005).

In order to implement measures to mitigate adverse impacts identified in the Environmental Impact Assessment, the company prepared Environmental Control Plans and Basic Environmental Project which were approved by SEMA. They involve, among other: restoration of degraded areas; water resources monitoring; control of erosion; monitoring and rescue of fauna and archaeological rescue.
Regarding social and economic impacts, it is expected that small hydropower plants can provide local distributed generation, in contrast with the business as usual large hydropower and natural gas fired plants.
Section F of PDD presents in detail the Atiaia Project's contribution to Sustainable Development aligned with Brazilian priorities (Contribution to the local environmental sustainability; Contribution to the development of the quantity and quality of jobs, Contribution to the fair income distribution, Contribution to the technological development and capacity building, Contribution to the regional integration and relationships among other sectors). The project was also reviewed under the checklist of "World Commission on Dams Guidelines for Good Practice" (WCD, 2000).

It is expected that the project activity will contribute to improve the supply of electricity, while

contributing to the environmental, social and economic sustainability.

1.4 The names and roles of the validation team members

Name	*Supplier*	*Role*
Aurea Nardelli	*SGS Brasil*	*Lead Assessor*
Fabian Gonçalves	*SGS Brasil*	*Local Assessor*
Irma Lubrecht	*SGS the Netherlands*	*Technical reviewer*

2. Methodology

2.1 Review of CDM-PDD and additional documentation

The validation is performed primarily as a document review of the publicly available project documents. The assessment is performed by trained assessors using a validation protocol.

A site visit is usually required to verify assumptions in the baseline. Additional information can be required to complete the validation, which may be obtained from public sources or through telephone and face-to-face interviews with key stakeholders (including the project developers and Government and NGO representatives in the host country). These may be undertaken by the local SGS affiliate. The results of this local assessment are summarized in Annex 1 to this report.

2.2 Use of the validation protocol

The validation protocol used for the assessment is partly based on the templates of the IETA / World Bank Validation and Verification Manual and partly on the experience of SGS with the validation of CDM projects. It 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 (**Y**), 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.*

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The completed validation protocol for this project is attached as Annex 2 to this report

2.3 Findings

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

In general, 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 the Assessor shall raise a **Corrective Action Request (CAR).** A CAR

is issued, where:

I. mistakes have been made with a direct influence on project results;

II. validation protocol requirements have not been met; or

III. there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be verified.

The validation process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a NIR may result in a CAR. Information or clarifications provided as a result of an NIR may also lead to a CAR.

Observations may 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.

Corrective Action Requests and New Information Requests are raised in the draft validation protocol and detailed in a separate form (Annex 3). In this form, the Project Developer is given the opportunity to "close" outstanding CARs and respond to NIRs and Observations.

2.4 Internal quality control

Following the completion of the assessment process and a recommendation by the Assessment team, all documentation will be forwarded to a Technical Reviewer. The task of the Technical Reviewer is to check that all procedures have been followed and all conclusions are justified. The Technical Reviewer will either accept or reject the recommendation made by the assessment team.

3. Determination Findings

3.1 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 has received and analyzed the validation report.

The Letter of Approval from the government of Brazil was issued on 20th June 2007.

3.2 Baseline selection and additionality

The methodology applied to this Project Activity is: ACM0002 – "Consolidated baseline methodology for grid-connected electricity generation from renewable sources/ Consolidated monitoring methodology for grid-connected electricity generation from renewable sources" (version 06, issued on 19th May, 2006).

ACM0002 is applicable to grid-connected renewable power generation project activities which include among other conditions "new hydro electric power projects with reservoirs having power densities (installed power generation capacity divided by the surface area at full reservoir level) greater than 4 W/m².” The original PDD (version available for international stakeholder consultation) had included three plants. One of then was excluded because there were problems with social aspects. Considering the remaining two plants, one was a small hydro plant (Porto das Pedras) which has a power density less than 4 W/m². It is not acceptable by ACM0002. A CAR (07) was raised. To close out CAR 7, the plant (Porto das Pedras) was also excluded of the PDD. Only the plant Garganta da Jararaca meets the applicability criteria of the methodology. CAR 7 has been closed out.

The project consists of installation of a new small hydro power plant. The project boundaries are defined by the emissions targeted or directly affected by the project activities. It encompasses the physical, geographical site of the hydropower generation and the interconnected grid. The baseline calculation boundary is covered by the South-Southeast-Midwest integrated electric grid and all plants are connected to this grid and baseline calculations use the electric generation data from this region. Garganta da Jararaca SHP will be connected with isolated system and to the interconnected grid, the isolated system will be physically connected to the interconnected system. In Brazilian case, the emission factor to isolated systems is too much higher than the interconnected system. For conservatism reasons, all carbon credits related to the energy supplied were considered to the interconnected grid. The project boundary is acceptable.

During the validation process, the PDD was revised to apply the latest version of ACM0002. According to ACM0002 (version 6) new hydro electric power projects with reservoirs shall account for project emissions. The project emissions should be calculated considering the "power density" (installed power generation capacity divided by the surface area at full reservoir level). Once PE is dependent on the reservoir area and capacity installed of the plant, the methodology requires that "reservoir area" should be included as a monitoring item. No reference about PE was included in the PDD and consequently, a CAR (8) was raised.

To address CAR 8, information about PE calculation and demonstration why PE=zero was provided in the revised PDD (version 9). For SHP Garganta da Jararaca, considering the capacity of the project is 29.83MW and the area of reservoir is 2.87 Km², the power density was calculated from 29.3/2.87. The value obtained was 10.2 W/m². According to the methodology, if power density of the project is greater than 10W/m², PE is zero. CAR 8 was closed out.

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

Considering that the project emissions and leakage are zero, the emission reductions by the project activity (ER_y) during a given year y will be the product of the baseline emissions factor (EF_y, in tCO_2e/MWh) times the electricity supplied by the project to the grid (EG_y, in MWh).

As required in ACM 0002, the project demonstrated additionality using the "Tool for the demonstration and assessment of additionality". The relevant information for this analysis was presented in the PDD. Step 0 and step 2 were not applicable to the project.

The discussion on additionality was not clear, mainly about the investment barrier. Transparent evidence related to the IRR analysis, as spreadsheets with formulas and assumptions considered for

the analysis was not provided during the desk study. A NIR (3) was raised.

To clarify NIR 3, spreadsheets were sent to the validator, presenting data and formulas to demonstrate how IRR was determined. A list describing the assumptions for the analysis was also provided. It was verified that the investment barrier is not the most important barrier, once the project received subsidised funds from BDNES (with interest rate lower than the rate of the market).

PDD Section B.3 was revised to clarify that some barriers that are common to the Brazilian context were not faced by the project activity. The investment barrier was excluded, remaining only the infrastructure barrier. NIR 3 has been closed out.

As verified during site visit the lack of infrastructure is a significant.
The lack of infrastructure made the project activity more expensive and its construction time longer than a similar project developed in a different region with better infrastructure. There is another project closer, but regardless of the small distance between those projects, both power plants have developed their own infrastructure. The other project mentioned is a CDM project too.
The project is located in a non-developed region of the State of Mato Grosso; 7 hours by car from Cuiabá (State Capital) to the nearest city Campo Novo dos Parecís, and from Campo Novo more than 50 km by car to access the hydro plant.
Mato Grosso is an agricultural state with infrastructural problems; roads without infrastructure, unqualified personnel to work in a hydro power plant.
The project is located in an isolated system and part of the generated electricity is supplied to this isolated system. A new transmission line was built to supply the other part of the electricity to interconnected system.
Mato Grosso state is a large state with larger dimensions than developed states in Brazil.
"Garganta da Jararaca (13º23' S, 57º37' W) is located in Campo Novo do Parecis and Nova Maringá, state of Mato Grosso (MT), midwest of Brazil. The towns are located in the western part of the state (Figure 1 below)".

The PDD demonstrated that with absence of the incentive created by the CDM; this project would not be the most attractive scenario. The alternative to the project activity is the continuation of the current (previous) situation of electricity supplied by large hydro and thermal power stations – or by Diesel oil, in the case of isolated systems. As an alternative for the group company is the investment in other opportunities, like the financial market or in other traditional industrial areas of the group.

3.3 Application of Baseline methodology and calculation of emission factors

As defined in ACM0002, the baseline emission factor is calculated as a combined margin, consisting of the combination of operating margin and the build margin factors. The calculation of the emission factor of Brazilian South-Southeast-Midwest grid is based on data from the National Electric System Operator (ONS – Operador Nacional do Sistema Elétrico) covering years 2002 -2004.

During the desk study it was verified that the emission factor calculation did not use the most recent value available. A CAR (2) was raised. To close out CAR 2, the emission factor was revised and the calculated value was included in the section E.4.of PDD. The emission factor calculated was 0.2647 tCO_2e/MWh. CAR 2 has been closed out.

3.4 Application of Monitoring methodology and Monitoring Plan

During the draft validation, it was verified that the monitoring plan did not cover all requirements of ACM0002. Issues were raised, as described below:

- CAR 4: Recording frequency and proportion of data (presented in section D.2.1.3 of PDD) did not comply with the requirements of ACM0002. To close out CAR 4, the PDD was adequately revised to

comply with the methodology.

- NIR 5: The operational and management structure to be implemented was not described in detail in the PDD (see section D.4 and Monitoring plan). It was lacking information about authority and responsibility. To clarify NIR 5, the PDD was revised and the authority and responsibility of project management was presented in Annex 4. It was informed that the plant staff is responsible for project management, training, monitoring, measurement and reporting activities. It was also confirmed by the local assessor during the site visit and by interviews with Atiaia's managers.

The plant is not in operation yet. As described in the PDD, the energy distribution company will be responsible for dealing with possible monitoring data adjustments and uncertainties, for review of reported results/data, for internal audits of GHG project compliance with operational requirements and for corrective actions. It was also informed during the site visit that the project managers will prepare the Operation and Maintenance Manual for the SHP.

An Observation (1) was raised: The procedures should be clearly described and the operational and maintenance manual should be prepared and implemented until the start up of the plant. Personnel involved in monitoring activities should be trained on the procedures.

Unintended emissions from the SHP are not expected. Other potential emergencies and trouble shooting procedures will be covered by the operational manual (see Observation 1).

Considering that the CAR and NIR above were adequately addressed, the validation team accepted the monitoring plan described in the PDD.

3.5 Project design

The project's starting date (25th January 2005) and operational lifetime (35 years) were clearly defined in the PDD and are reasonable. It was assumed a renewable crediting period which will start on 15th January 2007. The operational lifetime exceeds the crediting period.

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.

A CAR (6) was raised during the document review relate to editorial requirements. The PDD template was not correctly applied and the document had been completed modifying headings, format and fonts. It was used a template "version 3" that is not a CDM document. The PDD was revised to be in compliance with the PDD-CDM template. CAR 6 was closed out.

3.6 Environmental Impacts

During the desk study, it was verified that the PDD did not present a plan for monitoring sustainable development indicators/ environmental impacts and CAR (1) was raised.

The local assessor verified on site that Rio do Sangue Energia S/A have hired expert consultants to carry out Garganta da Jararaca's environmental programs. After the beginning of the commercial operations, restoration of degraded areas and of permanent preservation areas will be done according to the legal requirements. Studies done during the design phase of the project have identified the environmental and social impacts and indicated the mitigation measures to be adopted during the construction and operation phases. A team of experts will monitor the compliance with the environmental regulation.

During the site visit, the above-mentioned information was verified through document review, interviews with Atiaia's managers and local observation. It was also verified that the analysis of the

environmental impacts of the project activity was sufficiently described in the documents related to the environmental licensing of the plant. Adverse environmental effects were identified and mitigating measures were defined for address these impacts.

Information regarding the environmental programmes and monitoring plan were included in the PDD (Annex 4). CAR 1 was closed out.

3.7 Local stakeholder comments

Local stakeholders have been invited by letters to comment on the Garganta da Jararaca Small Hydroelectric Power Plant (SHP) – Atiaia Energia S.A. Project Activity.

The invitation was sent to specific stakeholders, considered representative of the general public, as defined in the Resolution n° 1 (Brazilian DNA requirement). Copies of the letters sent to stakeholders and records of receiving were verified by the local assessor. It was confirmed that the consultation was carried out as described in the PDD.

During the consultation period, one comment was received from FBOMS, suggesting the use of Gold Standard or similar tools for monitoring of environmental/social indicator. The project participants considered that the requirements of Brazilian Government are sufficient to be used as sustainable indicators which are attended by the project activity.

4. Comments by Parties, Stakeholders and NGOs

In accordance with sub-paragraphs 40 (b) and (c) of the CDM modalities and procedures, the project design document of a proposed CDM project activity shall be made publicly available and the DOE shall invite comments on the validation requirements from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available. This chapter describes this process for this project.

4.1 Description of how and when the PDD was made publicly available

The PDD and the monitoring plan for this project were made available on the SGS website http://cdm.unfccc.int/Projects/Validation/DB/1NYKHK2HDI4U32NOR1QEA918QEOCHP/view.html and were open for comments from 12 Apr 2006 until 10 May 2006. Comments were invited through the UNFCCC CDM homepage

4.2 Compilation of all comments received

Comment number	*Date received*	*Submitter*	*Comment*

No comments were received during the 30 days commenting period.

4.3 Explanation of how comments have been taken into account

No comments were received.

5. Validation opinion

Steps have been taken to close out 8 findings. The observation raised does not preclude the validation of the project, but should be considered as an opportunity for improvement for the

verification process.

SGS has performed a validation of the project: Garganta da Jararaca Small Hydroelectric Power Plant (SHP) – Atiaia Energia S.A.
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.

By the displacement of fossil fuels by renewable energy sources in 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 barriers presented, specially lack of infrastructure, the project is not a common practice in Brazil, 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.

6. List of persons interviewed

Date	***Name***	***Position***	***Short description of subject discussed***
12/05/2006	Sergio Posternak	Administrative	Operational issues, contracts.
12/05/2006	Roberto Juliano B. Sena	ENVIRONMENTAL COORDINATOR	Environmental license, maps.
12/05/2006	José Carlos Ribeiro	ENGINEER	Technical issues.
12/05/2006	Ricardo Besen	CDM CONSULTANT	PDD developing, monitoring plan, baseline study.
12/05/2006	Karen Nagai	CONSULTANT	PDD developing, monitoring plan, baseline study.

7. Document references

Category 1 Documents (documents provided by the Client that relate directly to the GHG components of the project, (i.e. the CDM Project Design Document, confirmation by the host Party on contribution to sustainable development and written approval of voluntary participation from the designated national authority):

/1/ Project Design Document “Garganta da Jararaca, Paranatinga II and Porto das Pedras Small Hydroelectric Power Plants (SHPP) – Atiaia Energia S.A. Project Activity”, version 1, 28/03/2006; version 2, 10/05/2006; version 3, 23/05/2006.
Project Design Document ”Garganta da Jararaca and Porto das Pedras Small Hydroelectric Power Plants (SHP) – Atiaia Energia S.A. Project Activity”, version 4, 14/06/2006
Project Design Document ”Garganta da Jararaca Small Hydroelectric Power Plant (SHP) – Atiaia Energia S.A. Project Activity”, version 5, 17/07/2006; version 6,19/07/2006; version 7, 20/07/2006; version 8, 21/07/2006; version 9, 31/07/2006; version 10, 29/09/2006; version 11, 07/05/2007.

/2/ Approved consolidated baseline and monitoring methodology ACM0002 – Consolidated baseline and monitoring methodology for grid-connected electricity generation from renewable sources, version 05, 03/03/2006; version 6, 19/05/2006.

/3/ Tool for the demonstration and assessment of additionality, version 2, 28/11/2005.

Category 2 Documents (background documents used to check project assumptions and confirm the validity of information given in the Category 1 documents and in validation interviews):

/4/ Technical opinion n° 054/COINF/DIMI/2005 issued by FEMA. Installation license number 102/2005, 16/02/2005 issued by FEMA. Garganta da Jararaca environmental license (installation).

/5/ 05/2006 Garganta da Jararaca map. Reservoir map of Garganta da Jararaca.

/6/ Environmental program worksheet. Environmental and social programs of the SHP.

/7/ “Diagnóstico Ambiental da PCH Garganta da Jararaca, 1999, prepared by Global Empreendimentos Turísticos, Larrosa & Santos. Environmental study of Garganta da Jararaca plant.

/8/ Ofício number 372/2006-SCG/ANEEL, 29/03/2006 issued by ANEEL. Authorization to utilize hydro resources for Garganta da Jararaca plant.

/9/ ANEEL Resolution number 72, 02/03/2004 issued by ANEEL for PCH Garganta da Jararaca. Authorization for independent energy producer issued by National Agency of Energy.

/10/ PPA signed between Cemat and Rio do Sangue Energia Ltda (owner of Garganta da Jararaca small hydro plant), 05/07/2004. Power purchase agreement.

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Annex 1 - Local assessment checklist

Garganta da Jararaca Small Hydroelectric Power Plant (SHP) – Atiaia Energia S.A. Project Activity (CDM.VAL 0569)

This checklist is designed to provide confirmation of in-country data and information provided in the Project Design Document. It serves as a "reality check" on the project. It is to be completed by a local assessor of SGS Brazil.

Issue	Findings	Source /Means of Verification	Further action / clarification / information required?
Verify the environmental licenses/ environmental impacts (are the SHP in compliance with the legal requirements applied to the project?)	The following documents were verified: - Garganta da Jararaca: Technical opinion n° 054/COINF/DIMI/2005 issued by FEMA. Installation license n° 102/2005, 16/02/2005 issued by FEMA.	Visit/DR	No
Verify operation licence from ANEEL (national energy agency). Check if the PDD information can be confirmed with the specifications described in the licenses.	Verified: ANEEL Resolution n° 72, 02/03/2004 issued by ANEEL for SHP Garganta da Jararaca.	Visit/DR	No
Verify PPA (Power purchase agreement) – PCH Garganta da Jararaca	Verified the PPA signed between Cemat and Rio do Sangue Energia Ltda (owner of Garganta da Jararaca small hydro plant), 05/07/2004.	Visit/DR	No
Verify evidences of the construction of the SHP.	The site visit was carried out in Garganta da Jararaca PCH, and it was verified the construction of the hydropower plant.	Visit	No

Issue	Findings	Source /Means of Verification	Further action / clarification / information required?
Verify stakeholders' consultation evidences. Verify if there are any comments from the consultation.	Copy of the letters sent and mail receipts (ARs) were verified and evidenced that the list of stakeholders presented in the PDD was consulted. A response from FBOMS was received, suggesting the use of Gold Standard or similar tools for monitoring (see items 7.4 and 7.5 of the validation checklist).	Visit/DR	Send copy of the AR of the letter sent to SEMA. Ok
Verify reservoir area (they comply with the PDD information and with the environmental licenses?)	Verified the map that presents the reservoir area. Verified Garganta da Jararaca map (05/2006). It was in compliance with the PDD description.	Visit/DR	No

Annex 2 - Validation Protocol

Garganta da Jararaca Small Hydroelectric Power Plant (SHP) – Atiaia Energia S.A. Project Activity– CDM.Val0569

This validation protocol is designed to ensure that the project meets the requirements for CDM projects that are detailed in paragraph 37 of the CDM modalities and procedures. Each requirement is covered in a separate table. The following requirements are discussed in this protocol:

Requirement	Description	
Participation requirements	The participation requirements as set out in Decision 17/CP7 need to be satisfied	Covered in table 1
Baseline and monitoring methodology	The baseline and monitoring methodology complies with the requirements pertaining to a methodology previously approved by the Executive Board	Baseline methodology is covered in table 2 Monitoring methodology is covered in table 4
Additionality	The project activity is expected to result in a reduction in anthropogenic emissions by sources of greenhouse gases that are additional to any that would occur in the absence of the proposed project activity	Covered in table 3
Monitoring plan	Provisions for monitoring, verification and reporting are in accordance with relevant decisions of the COP/MOP	Covered in table 5
Environmental impacts	Project participants have submitted to the designated operational entity documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts and, if those impacts are considered significant by the project participants or the host Party, have undertaken an environmental impact assessment in accordance with procedures as required by the host Party;	Covered in table 6
Comments by local stakeholders	Comments by local stakeholders have been invited, a summary of the comments received has been provided, and a report to the designated operational entity on how due account was taken of any comments has been received;	Covered in Table 7
Other requirements	The project activity conforms to all other requirements for CDM project activities in relevant decisions by the COP/MOP and the Executive Board.	Covered in Table 8

Small sale projects and AR projects have specific requirements which are covered in Table 9-11. Small scale SSC projects have special requirements which might deviate from the requirements of other CDM projects. These requirements are tested in table 9. Please note that some questions in table 9 overlap with questions in the other tables. Where the questions in table 9 contradict or overlap questions elsewhere in the checklist, the questions in table 9 shall prevail. For the validation of small scale projects, assessor is required to address the questions in table 9 first before starting with the questions in the other tables.

Further remarks on the use of this document:

- text in *italic blue* is meant as guidance for the assessor
- MoV = Means of Verification, DR= Document Review, I= Interview

This protocol should be adapted as required. For example, if the project is not a small scale project or an AR project, some tables can be deleted.

Table 1 Participation Requirements for Clean Development Mechanism (CDM) Project Activities (Ref PDD, Letters of Approval and UNFCCC website) All CDM project activities

REQUIREMENT	MoV	Ref	Comment	Draft finding	Concl
1.1 The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3 and be entered into voluntarily.	DR	PDD	No Annex I country in this project.	Ok	Ok
1.2 The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof, and be entered into voluntarily	DR	PDD	No Letter of Approval by host country (Brazil) has been submitted to the validator. The letter will be issued by the DNA after they analyse the draft validation report. Letter of approval issued on 20th June 2007.	Send the validation report to DNA	Ok
1.3 All Parties (listed in Section A3 of the PDD) have ratified the Kyoto protocol and are allowed to participate in CDM projects	DR	UFCCC	Yes. Brazil: 23 August 2002	Ok	Ok
1.4 The project results in reductions of GHG emissions or increases in	DR	PDD	The project activity reduces emissions of	Ok	Ok

REQUIREMENT	MoV	Ref	Comment	Draft finding	Concl
sequestration when compared to the baseline; and the project can be reasonably shown to be different from the baseline scenario			greenhouse gas (GHG) as the result of the displacement of generation from fossil-fuel thermal plants that would have otherwise been delivered to the interconnected grid.		
1.5 Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days (45 days for AR projects), and the project design document and comments have been made publicly available	DR	UFCCC	PDD was publicly available: 12 April 2006 until 10 May 2006. http://cdm.unfccc.int/Projects/Validation/DB/1NYKHK2HDI4U32NOR1QEA918QEOCHP/view.html No comments were received.	Ok	Ok
1.6 The project has correctly completed a Project Design Document, using the current version and exactly following the guidance	DR	PDD	No. They used a "version 3" that is not a CDM document and have changed format and fonts. CAR 6 was raised. To close out CAR 6, the PDD was revised and presented the correct version.	CAR 6	Ok
1.7 The project shall not make use of Official Development Assistance (ODA), nor result in the diversion of such ODA	DR	PDD	This project activity does not make use of ODA.	Ok	Ok
1.8 For AR projects, the host country shall have issued a communication providing a single definition of minimum tree cover, minimum land area value and minimum tree height. Has such a letter been issued and are the definitions consistently applied throughout the PDD?			N.A		
1.9 Does the project meet the additional requirements detailed in: Table 9 for SSC projects Table 10 for AR projects Table 11 for AR SSC projects			N.A		
1.10 Is the current version of the PDD complete and does it clearly reflect all the information presented during the	DR Site	PDD	See item 1.6 and CAR 6	CAR 6	Ok

REQUIREMENT	MoV	Ref	Comment	Draft finding	Concl
validation assessment.	visit I				
1.11 Does the PDD use accurate and reliable information that can be verified in an objective manner?	DR Site visit I	PDD	Yes. Although the project is not operational yet (the plant is in construction phase), it was possible to verify the information provided in the PDD.	Ok	Ok

Table 2 Baseline methodology(ies) (Ref: PDD Section B and E and Annex 3 and AM) Normal CDM projects only

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
2.1 Does the project meet all the applicability criteria listed in the methodology	PDD ACM 0002	DR	ACM0002 (version 6) is applicable to grid-connected renewable power generation project activities which include among other conditions "new hydro electric power projects with reservoirs having power densities (installed power generation capacity divided by the surface area at full reservoir level) greater than 4 W/m².” The original PDD (version 1 to 3) included three plants. One of them was excluded because there were problems with social aspects. Considering the remaining two plants, one was a small hydro plant (Porto das Pedras) which has a power density less than 4 W/m². It is not acceptable by ACM0002. CAR 07 was raised. To close out CAR 7, the plant (Porto das Pedras) was also excluded of the PDD. Only the plant Garganta Jararaca meets all the applicability criteria	CAR 07	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			of the methodology.		
2.2 Is the project boundary consistent with the approved methodology	PDD ACM 0002	DR	Yes. It encompasses the physical, geographical site of the hydropower generation source, which is represented by the respective river basin of the project close to the power plant facility and the interconnected grid (South-Southeast-Midwest interconnected subsystem of the Brazilian grid).	Ok	Ok
2.3 Are the baseline emissions determined in accordance with the methodology described	PDD ACM 0002	DR	The baseline emission factor is defined as (EF_y) and is calculated as a combined margin (*CM*), consisting of the combination of operating margin (OM) and build margin (BM) factors. During the desk study it was verified that the emission factor calculation did not use the most recent value available. CAR 2 was raised. The emissions factor was revised and included in the PDD. CAR 2 was closed out. Baseline emissions are calculated by using the annual generation (project annual electricity dispatched to the grid) times the CO_2 average emission rate of the estimated baseline, as follows: (A) Monitored project power generation (MWh) (B) Baseline emission rate factor (tCO_2/MWh) BE= (A) x (B) (tCO_2) The EF calculated (after CAR 2 closing out) was	CAR 2	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			0.2647 tCO_2e/MWh. See PDD section E.4 for formulas and Annex 3 for external data used for EF calculation.		
2.4 Are the project emissions determined in accordance with the methodology described	PDD ACM 0002	DR	The version 6 of the ACM0002 requires that the PE should be calculated from the "power density". No reference about this was included in the PDD. CAR 08 was raised. To close out CAR 8, information about PE calculation and demonstration why PE=zero was provided in the revised PDD. "According to ACM0002 (version 6), new hydro electric power projects with reservoirs, shall account for project emissions. For SHP Garganta da Jararaca, considering the capacity of the project: 29.83MW and area of reservoir: 2.87 Km2, the power density = 29.3/2.87 = 10.2 W/m2. If power density of the project is greater than 10W/m2, PEy = 0".	CAR 08	Ok
2.5 Is the leakage op the project activity determined in accordance with the methodology described	PDD ACM 0002	DR	Leakage is not applicable.	Ok	Ok
2.6 Are the emission reductions determined in accordance with the methodology described	PDD ACM 0002	DR	See item 2.3 and CAR 2. The emissions factor used to determine the emissions reductions was revised. CAR2 was closed out.	CAR 2	Ok

Table 3 Additionality (Ref: PDD Section B3 and AM) Normal CDM projects only

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
3.1 Does the PDD follow all the steps required in the methodology to determine the additionality	PDD ACM 0002 Tool	DR	Yes. ACM0002 methodology requires the use of the "Tool for the demonstration and assessment of additionality". All steps were followed (except steps 0 and 2 that are not applicable)	Ok	Ok
3.2 Is the discussion on the additionality clear and have all assumptions been supported by transparent and documented evidence	ACM 0002 PDD	DR	The explanation about the investment barrier is not clear. The IRR worksheet presented is not transparent, i.e., no formulas and assumptions were provided. To clarify NIR 3, the text in the PDD regarding the investment barrier was revised. The IRR assumptions and formulas were provided to the assessment team and were considered reasonable. It was verified that the investment barrier is not the most important barrier as the project received subsidised funds from BDNES (with interest rate lower than the rate of the market). This financial support covers 78% of the project costs (Garganta da Jararaca), with a Long Term Interest Rate rate of 9% plus a 3.0% spread risk for a term of 8 years and grace period of 2 years. PDD Section B.3 was revised to clarify that some barriers that are common to the Brazilian context were not the case	NIR 3	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			of the project. The investment barrier was excluded, remaining only the infrastructure barrier. NIR 3 was closed out. The lack of infrastructure made the project activity more expensive and its construction time longer than a similar project developed in a different region with better infrastructure. There is another project closer, but regardless of the small distance between those projects, both power plants have developed their own infrastructure. The other project mentioned is a CDM project too. The project is located in a non-developed region of the State of Mato Grosso; 7 hours by car from Cuiabá (State Capital) to the nearest city Campo Novo dos Parecís, and from Campo Novo more than 50 km by car to access the hydro plant. Mato Grosso is an agricultural state with infrastructural problems; roads without infrastructure, unqualified personnel to work in a hydro power plant. The project is located in an isolated system and part of the generated electricity is supplied to this isolated system. A new transmission line was built to supply the other part of the electricity to interconnected system. The PDD demonstrated		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			that with absence of the incentive created by the CDM; this project would not be the most attractive scenario.		
3.3 Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	ACM 0002 PDD	DR	Yes. The alternative to the project activity is the continuation of the current (previous) situation of electricity supplied by large hydro and thermal power stations. As an alternative for the group company, there is the investment in other opportunities, like the financial market. Given Cornélio Brennand is a holding company, it could as well have decided to focus on the other company traditional areas of the group (e.g., glass industry, real estate, etc.), and not on the power market.	Ok	Ok
3.4 Is it demonstrated/justified that the project activity itself is not a likely baseline scenario	PDD ACM 0002	DR	To be confirmed by local assessor. The project activity is not the business as usual in the country, and other alternatives could be the continuation of electricity supplied by large hydro and thermal plants in the country or to invest in financial market.	Verify	Ok

Table 4 Monitoring methodology (PDD Section D and AM) Normal CDM projects only

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
4.1 Does the project meet all the applicability criteria listed in the monitoring methodology	PDD ACM 0002	DR	No. The project includes a new SHP that is not eligible as a CDM project (the power density is less than 4 W/m²). CAR 7	CAR 07	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			was raised (see also item 2.1 and CAR 7 closing out details).		
4.2 Does the PDD provide for the monitoring of the baseline emissions as required in the monitoring methodology	PDD ACM 0002	DR	No. Recording frequency and proportion of data (presented in section D.2.1.3 of PDD) did not comply with the requirements of ACM0002. CAR 4 was raised. The PDD was revised to comply with the methodology. CAR 4 was closed out.	CAR 4	Ok
4.3 Does the PDD provide for the monitoring of the project emissions as required in the monitoring methodology	PDD ACM 0002	DR	No. PE is dependent on the reservoir area and capacity installed of the plant. These parameters are used for "Power density" calculation. No information about reservoir area is included in Section D of the PDD. CAR 08 was raised (see also item 2.4 and CAR 8 closing out details).	CAR 08	Ok
4.4 Does the PDD provide for the monitoring of the leakage as required in the monitoring methodology	PDD ACM 0002	DR	No leakage is anticipated.	Ok	Ok
4.5 Does the PDD provide for Quality Control (QC) and Quality Assurance (QA) Procedures as required in the monitoring methodology	PDD AM	DR	Yes.	Ok	Ok

Table 5 Monitoring plan (PDD Annex 4) Normal CDM projects only

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
5.1 Monitoring of Sustainable Development Indicators/ Environmental Impacts	PDD	DR			
5.1.1 Does the monitoring	PDD	DR	There is no plan for	CAR	Ok

CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
	plan provide the collection and archiving of relevant data concerning environmental, social and economic impacts?			monitoring sustainable development indicators or environmental impacts. The revised PDD (annex 4) presents the environmental and social programs that will be monitored. CAR 1 was closed out.	1	
5.1.2	Is the choice of indicators for sustainability development (social, environmental, economic) reasonable?	PDD	DR	See CAR 1 and its close out details. See Annex 4 of revised PDD.	see CAR 1	Ok
5.1.3	Will it be possible to monitor the specified sustainable development indicators?	PDD	DR	See CAR 1 and its close out details for environmental performance. There will be a specific programme related to health of local communities. No additional significant social impact was identified which requires continuous monitoring.	see CAR 1	Ok
5.1.4	Are the sustainable development indicators in line with stated national priorities in the Host Country?	PDD	DR	See CAR 1 and close out details. The section F of PDD presented the Atiaia Project's contribution to Sustainable Development aligned with Brazilian priorities (Contribution to the local environmental sustainability; Contribution to the development of the quantity and quality of jobs, Contribution to the fair income distribution, Contribution to the technological development and capacity building, Contribution to the regional integration and	see CAR 1	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			relationships among other sectors In addition, presented a discussion under seven items (social and environmental) of the World Commission on Dams. recommendations checklist.		
5.2 Project Management Planning					
5.2.1 Is the authority and responsibility of project management clearly described?	PDD	DR/I	No. Section D.4 of the PDD does not present information about the management structure and authority and responsibility of project. NIR 5 was raised. The PDD was revised and the authority and responsibility of project management is presented in Annex 4. NIR 5 was closed out.	NIR 5	Ok
5.2.2 Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	PDD	DR/I	See also NIR 5 and Annex 4 of revised PDD. The SHP staff are responsible for project management, training, monitoring, measurement and reporting activities.	NIR 5	Ok
5.2.3 Are procedures identified for training of monitoring personnel?	PDD	DR Site visit I	Verify on site. The SHP is not operational yet. As informed during the site visit, the project sponsors will prepare the Operation and Maintenance Manual for the SHP and the operators will be trained.	Verify	Observation (1)
5.2.4 Are procedures identified for emergency preparedness for cases where emergencies can cause unintended	PDD	DR Site visit I	Unintended emissions from the SHP are not expected. Other potential emergencies and troubles should be covered by the	Verify	Ok

CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
	emissions?			operational manual.		
5.2.5	Are procedures identified for calibration of monitoring equipment?	PDD	DR Site visit I	Verify on site. As informed during the site visit, the project sponsors will prepare the Operation and Maintenance Manual for the SHP. Energy distribution company will be responsible for the calibration and maintenance of the monitoring equipment. (see Annex 4 of the PDD).	Verify	Observation (1)
5.2.6	Are procedures identified for maintenance of monitoring equipment and installations?	PDD	DR Site visit I	See 5.2.5. Energy distribution company will be responsible for the calibration and maintenance of the monitoring equipment. (see Annex 4 of the PDD).	Verify	Observation
5.2.7	Are procedures identified for monitoring, measurements and reporting?	PDD	DR I	Verify on site. The SHP is not operational yet. As informed during the site visit, the project sponsors will prepare the Operation and Maintenance Manual for the SHP. Annex 4 of PDD includes information about monitoring and reporting general procedures to be implemented.	Verify	Observation (1)
5.2.8	Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to	PDD	DR I	Verify on site. The SHP is not operational yet.	Verify	Observation (1)

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
process performance documentation)			See Annex 4 of the PDD which includes information regarding data collection, processing and archiving.		
5.2.9 Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	PDD	DR Site visit I	Verify As described in the PDD, the energy distribution company will be responsible for dealing with possible monitoring data adjustments and uncertainties, for review of reported results/data, for internal audits of GHG project compliance with operational requirements and for corrective actions. The procedures should be clearly described until the start up of the plant.	Verify	Observation (1)
5.2.10 Are procedures identified for review of reported results/data?	PDD	DR I	See 5.2.9.	See 5.2.9	Observation (1)
5.2.11 Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	PDD	DR I	See 5.2.9.	See 5.2.9	Observation (1)
5.2.12 Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	PDD	DR I	See 5.2.9	See 5.2.9	Observation (1)
5.2.13 Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	PDD	DR I	See 5.2.9	See 5.2.9	Observation (1)

Table 6 Environmental Impacts (Ref PDD Section F and relevant local legislation) Normal CDM projects only

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
6.1 Has an analysis of the environmental impacts of the project activity been sufficiently described?	PDD	DR	Yes.	Ok	Ok
6.2 Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	PDD	DR	Verify EIA and other legal requirement. As described in the PDD, the environmental impact of the Project is considered small by the host country definition of small-hydro plants. The following document was verified during the site visit: "Diagnóstico Ambiental da PCH Garganta da Jararaca, 1999, prepared by Global Empreendimentos Turísticos, Larrosa & Santos (Environmental diagnosis, Ref.4).	Verify	Ok
6.3 Will the project create any adverse environmental effects?	PDD	DR	The environmental effects were considered in the environmental studies and considered by the environmental agency during the licensing process. It is expected that mitigate measures have been implemented to address adverse impacts identified in those studies. A list of environmental programmes that have been carried out by the company was presented during the site visit and was cited in the PDD (Ref.3).	Verify	Ok
6.4 Are transboundary environmental impacts considered in the analysis?	PDD	DR	Transboundary environmental impacts were considered in the EIA and environmental	Verify	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			reports. These studies were analysed by the environmental agency during the licensing process.		
6.5 Have identified environmental impacts been addressed in the project design?	PDD	DR	The small hydro plant obtained licenses required by the Brazilian environmental regulation. EIA was carried out as part of the legal requirement. As verified during the site visit, the environmental programmes planned and implemented by the project sponsors have addressed the identified impacts. Environmental Control Plans and Basic Environmental Project were approved by the Mato Grosso Environmental Agency (*SEMA - Secretaria Estadual do Meio Ambiente do Mato Grosso).*	Verify	Ok
6.6 Does the project comply with environmental legislation in the host country?	PDD	DR	Verify licenses. The SHP obtained the legal required environmental licenses. Documented evidences were verified during the site visit. See references at the end of this checklist (Ref. 1, 3 and 4).	Verify	Ok

Table 7 Comments by local stakeholders (Ref PDD Section G) All CDM projects activities

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
7.1 Have relevant stakeholders been consulted?	PDD	DR	Yes, as listed in the PDD, section G and verified	Ok	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			during the validation assessment (checking the mail receipts).		
7.2 Have appropriate media been used to invite comments by local stakeholders?	PDD	DR	Verify language and information used in the consultation process. Letters sent to stakeholders were verified. They are prepared in local language.	Verify	Ok
7.3 If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	PDD	DR	To be confirmed by local assessor. Letters sent in local language and to the relevant stakeholders as required by Brazilian DNA Resolution n°1.	Verify	Ok
7.4 Is a summary of the stakeholder comments received provided?	PDD	DR	A response from FBOMS was received, suggesting the use of Gold Standard or similar tools for monitoring.	Verify	Ok
7.5 Has due account been taken of any stakeholder comments received?	PDD	DR	The project participants considered that the requirements of Brazilian Government are sufficient to be used as sustainable indicators which are attended by the project activity.	Verify	Ok

Table 8 Other requirements. All CDM project activities

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
8.1 Project Design Document					
8.1.1 Editorial issues: does the project correctly apply the PDD template and has the document been completed without modifying/adding headings or logo, format or font.	PDD	DR	No. See CAR 6 raised in the item 1.6 of this checklist.	CAR 6	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
8.1.2 Substantive issues: does the PDD address all the specific requirements under each header. If requirements are not applicable / not relevant, this must be stated and justified	PDD	DR	Yes.	Ok	Ok
8.2 Technology to be employed					
8.2.1 Does the project design engineering reflect current good practices?	PDD	DR	Yes.	Ok	Ok
8.2.2 Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	PDD	DR/ site visit	Yes. The facility is a small hydro plant which has a small reservoir. Small hydro is considered to be one of the most cost effective power plants in Brazil.	Ok	Ok
8.3 Is the project technology likely to be substituted by other or more efficient technologies within the project period?	PDD	DR/ site visit	It is not expected.	Ok	Ok
8.2.4 Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	PDD	DR/I	It was verified during the site visit, by interviews with Atiaia staff. No specific training has been required for this project. Operators will be trained on the operational, monitoring and maintenance procedures before the hydropower plant starts the operation.	Verify	Ok
8.3 Duration of the Project/ Crediting Period					
8.3.1 Are the project's starting date and operational lifetime clearly defined and reasonable?	PDD	DR	Section C.1.1 – starting date of the project activity: 25 January 2005. Section C.1.2 – lifetime 35 years	Ok	Ok
8.3.2 Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max. two x 7 years or fixed	PDD	DR	Renewable crediting period: first period 7 years. Starting date of the first crediting period:	Ok	Ok

CHECKLIST QUESTION		Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
	crediting period of max. 10 years)?			15/01/2007.		
8.3.3	Does the project's operational lifetime exceed the crediting period	PDD	DR	Yes.	Ok	Ok

Table 12 Additional information to be verified by local assessors / site visit

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
Verify the environmental licenses/ environmental impacts (SHP in compliance with the legal requirements applied to the project?)	DR	DR	The following documents were verified: - Garganta da Jararaca: Technical opinion n° 054/COINF/DIMI/2005 issued by FEMA. Installation license n° 102/2005, 16/02/2005 issued by FEMA (Ref.1).	Ok	Ok
Verify operation licence from ANEEL (national energy agency). Check if the PDD information can be confirmed with the specifications described in the licenses.	DR	DR	Verified: ANEEL Resolution n° 72, 02/03/2004 issued by ANEEL for SHP Garganta da Jararaca.	Ok	Ok
Verify PPA (Power purchase agreement) – PCH Garganta da Jararaca	DR	DR	Verified the PPA signed between Cemat and Rio do Sangue Energia Ltda (owner of Garganta da Jararaca small hydro plant), 05/07/2004.	Ok	Ok
Verify stakeholders' consultation evidences. Verify if there are any comments from the consultation.			Copy of the letters sent and mail receipts (ARs) were verified and evidenced that the list of stakeholders presented in the PDD was consulted. A response from FBOMS was received, suggesting the use of Gold Standard or similar tools for monitoring (see items 7.4 and 7.5 of this checklist).	Send copy of the SEMA "AR".	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
Verify evidences of the construction of the SHP.	DR	Site visit/ DR	The site visit was carried out in Garganta da Jararaca PCH, and it was verified the construction of the hydropower plant.	Ok	Ok
Verify reservoir area (they comply with the PDD information and with the environmental licenses?)	DR	DR/ site visit	Verified the map that presents the reservoir area. Verified Garganta da Jararaca map (05/2006) – Ref. 2. It was in compliance with the PDD description.	Ok	Ok

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Annex 3 - FINDINGS OVERVIEW

FINDINGS FROM VALIDATION OF *GARGANTA DA JARARACA SMALL HYDROELECTRIC POWER PLANT (SHP) – ATIAIA ENERGIA S.A. PROJECT ACTIVITY - CDM.VAL0569*

Each Table below represents a finding from the validation assessment. The findings are numbered consecutively, approximately in the order that they have been identified.

Description of table:

Type	Findings are either New Information Requests (NIR) or Corrective Action Requests (CAR). CARs are items that must be addressed before a project can receive a recommendation for registration. NIRs may lead to the raising of CARs. Observations are included at the end and may or may not be addressed. They are primarily to act as signposts for the verifying DOE.
Issue	Details the content of the finding
Ref	refers to the item number in the Validation Protocol
Response	Please insert response to finding, starting with the date of entry.

Rows for comments and further response will be appended to the table until the Findings has been addressed to the satisfaction of the Lead Assessor.

Please note that this is an open list and more findings may be added as validation progresses.

Date: 08/05/2006 Raised by: Fabian Gonçalves

No.	Type	Issue	Ref
1	CAR	There is no plan for monitoring sustainable development indicators or environmental impacts.	5.1-1 to 5.1.4
Date: 17/05/2006 The plan for monitoring development indicator/environmental impacts is shown in Annex 4 (revised PDD).			
Date: 18/05/2006 – Aurea Nardelli. [Acceptance and close out]: The revised PDD, Annex 4, presents the environmental and social programs that will be monitored. CAR 1 was closed out.			

Date: 12/05/2006 Raised by: Fabian Gonçalves

No.	Type	Issue	Ref
2	CAR	The baseline emission factor is defined as (EF_y) and is calculated as a combined margin (*CM*), consisting of the combination of operating margin (OM) and build margin (BM) factors. During the desk study it was verified that the emission factor calculation did not use the most recent value available.	2.3/2.6
Date: 17/05/2006 Emission factor was revised, as shown in section E.4.of PDD			
Date: 18/05/2006 – Aurea Nardelli. [Acceptance and close out]: It was confirmed that the emissions factor was revised and the new value was included in the PDD. CAR 2 was closed out.			

Date: 12/05/2006 Raised by: Fabian Gonçalves/Aurea Nardelli

No.	Type	Issue	Ref
3	NIR	The explanation about the investment barrier is not clear. The IRR worksheet presented is not transparent, i.e., no formulas and assumptions were provided.	3.2
Date: 17/05/2006 Investment barrier was revised, as shown in section B.3. Spreadsheets with IRR calculations were provided.			
Date: 18/05/2006 – Aurea Nardelli. [Acceptance and close out]: The investment barrier was revised and IRR worksheet was verified. The text in the PDD regarding the investment barrier was revised. The IRR assumptions and formulas were provided to the assessment team and were considered reasonable. It was verified that the investment barrier is not the most important barrier as the project received subsidised funds from BDNES (with interest rate lower than the rate of the market). This financial support covers 78% of the project costs (Garganta da Jararaca) with a Long Term Interest Rate rate of 9% plus a 3.0% spread risk for a term of 8 years and grace period of 2 years. PDD Section B.3 was revised to clarify that some barriers which are common to the Brazilian context are not the case of the project. The investment barrier was excluded. NIR 3 was closed out.			

Date: 12/05/2006 Raised by: Fabian Gonçalves/Aurea Nardelli

No.	Type	Issue	Ref
4	CAR	Recording frequency and proportion of data (presented in section D.2.1.3 of PDD) did not comply with the requirements of ACM0002.	4.2
Date: 17/05/2006 Recording frequency and proportion of data were corrected, as shown in section D.2.1.3.			
Date: 18/05/2006 – Aurea Nardelli. [Acceptance and close out]: The PDD was revised to comply with the methodology. CAR 4 was closed out.			

Date: 12/05/2006 Raised by: Fabian Gonçalves/Aurea Nardelli

No.	Type	Issue	Ref
5	NIR	Section D.4 of the PDD did not present information about the management structure and authority and responsibility of project.	5.2.1/ 5.2.2
Date: 17/05/2006 Authority and responsibility of project management are included in the revised PDD.			
Date: 18/05/2006 – Aurea Nardelli. [Acceptance and close out] : The PDD was revised and the authority and responsibility of project management is presented in Annex 4. The SHP staff are responsible for project management, training, monitoring, measurement and reporting activities. NIR 5 was closed out.			

Date: 27/06/2006 Raised by: Aurea Nardelli

No.	Type	Issue	Ref
6	CAR	The PDD was not correctly completed and did not use the current version; the PDD template was not correctly applied and the	1.6/1.10/8.1.1

		document had been completed modifying headings, format and fonts. It was used a template "version 3" that is not a CDM document and have changed format and fonts.	
Date: 19/07/2006 A new version of the PDD was prepared and sent to SGS.			
Date: 31/07/2006 – Aurea Nardelli. [Acceptance and close out] : The PDD was revised (twice) to be in compliance with the PDD-CDM template. CAR 6 was closed out.			

Date: 17/07/2006 Raised by: Aurea Nardelli

No.	Type	Issue	Ref
7	CAR	During the validation process, the PDD was revised to use the latest version of ACM 0002 (version 6). The methodology is applicable to grid-connected renewable power generation project activities which include among other conditions "new hydro electric power projects with reservoirs having power densities (installed power generation capacity divided by the surface area at full reservoir level) greater than 4 W/m².". The original PDD (version 1 to 3) had included three plants. One of then was excluded because there were problems with social aspects. Considering the remained two plants, one was a small hydro plant (Porto das Pedras) which has a power density less than 4 W/m². It is not acceptable by ACM0002.	2.1
Date: 31/07/2006 A new version of PDD was prepared and sent to SGS.			
Date: 31/07/2006 – Aurea Nardelli. [Acceptance and close out] : The PDD was revised (twice) to be in compliance with ACM0002 version 6. Only the plant Garganta Jararaca meets all the applicability criteria of the methodology. The plant Porto das Pedra was excluded of the project. CAR 7 was closed out.			

Date:17/07/2006 Raised by: Aurea Nardelli

No.	Type	Issue	Ref
8	CAR	The project emissions should be determined in accordance with the methodology described. The version 6 of the ACM0002 require that the PE should be calculated from the "power density". No reference about this was included in the PDD. PE is dependent on the reservoir area and capacity installed of the plant. These parameters are used for "Power density" calculation. No information about reservoir area is included in Section D of the PDD.	2.4/4.3
Date:31/07/2006 The PDD was revised and information about PE was included.			
Date: 31/07/2006 – Aurea Nardelli. [Acceptance and close out]: Information about PE calculation and demonstration why PE=zero was provided in the revised PDD. "According to ACM0002 (version 6), new hydro electric power projects with reservoirs, shall account for project emissions. For SHP Garganta da Jararaca, considering the capacity of the project: 29.83MW and area of reservoir: 2.87 Km2, the power density = 29.3/2.87 = 10.2 W/m2. If power density of the project is greater than 10W/m2, PEy = 0". CAR 8 was closed out.			

Observations:

1) The plant is not in operation yet. As described in the PDD, the energy distribution company will be responsible for dealing with possible monitoring data adjustments and uncertainties, for review of reported results/data, for internal audits of GHG project compliance with operational requirements and for corrective actions. It was also informed during the site visit, the project managers will prepare the Operation and Maintenance Manual for the SHP.

The procedures should be clearly described and the operational and maintenance manual should be prepared and implemented until the start up of the plant. Personnel involved in monitoring activities should be trained on the procedures.

VALIDATION REPORT

TERMOELÉTRICA SANTA ADÉLIA COGENERATION PROJECT (TSACP)

REPORT NO. 2005-0604

REVISION NO. 02

DET NORSKE VERITAS

VALIDATION REPORT

Date of first issue: 2005-06-21	Project No.: 28624550 (27)
Approved by: Einar Telnes *Technical Directo*	Organisational unit: DNV Certification, International Climate Change Services
Client: Termoelétrica Santa Adélia Ltda	Client ref.: Norberto Bellodi

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Summary:
Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the "Termoelétrica Santa Adélia Cogeneration Project (TSACP)" in Brazil on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and the subsequent decisions by the CDM Executive Board.
The validation consisted of the following three phases: i) a desk review of the project design, baseline and monitoring plan, ii) follow-up interviews with project stakeholders and iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.
This validation report summarizes the findings of the validation. The only changes made to this version of the validation report compared to the validation report rev. 01 dated 29 October 2005 referred to in the letter of approval of the DNA of Brazil are linked to the status of issuance of the letter of approval by the DNA of Brazil and the recalculation of the build margin emission factor with the plant efficiencies recommended by the CDM Executive Board at its 22nd meeting.
In summary, it is DNV's opinion that the "Termoelétrica Santa Adélia Cogeneration Project (TSACP)" as described in the revised PDD of 21 December 2005, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology AM0015. Hence, DNV requests the registration of the "Termoelétrica Santa Adélia Cogeneration Project (TSACP)" as a CDM project activity.

Report No.: 2005-0604	Subject Group: Environment
Report title: Termoelétrica Santa Adélia Cogeneration Project (TSACP)	
Work carried out by: Vicente San Valero, Cintia Dias, Luis Filipe Tavares	
Work verified by: Michael Lehmann	

Date of this revision: 2005-12-22	Rev. No.: 02	Number of pages: 12

Indexing terms

Key words Climate Change Kyoto Protocol Validation Clean Development Mechanism	Service Area Verification Market Sector Process Industry

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Abbreviations

ANEEL	Agência Nacional de Energia Elétrica (National Agency Electric Energy)
BAU	"Business as usual"
BNDES	Brazilian National Bank for Economic and Social Development
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CETESB	Companhia de Tecnologia de Saneamento Ambiental (São Paulo Environmental Agency)
CH_4	Methane
CL	Clarification request
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
CPFL	Companhia Paulista de Força e Luz (Regional Electricity Company)
DNV	Det Norske Veritas
DNA	Designated National Authority
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
N_2O	Nitrous oxide
NGO	Non-governmental Organisation
ODA	Official Development Assistance
ONS	Operador Nacional do Sistema Elétrico (National Electricity System Operator)
PDD	Project Design Document
S-SE-CO	South-Southeast-Midwest (one of two regional grids in Brazil)
UNFCCC	United Nations Framework Convention on Climate Change
UNICA	União da Agroindústria Canavieira de São Paulo (São Paulo Sugarcane Agroindustry Union)

1 INTRODUCTION

Termoelétrica Santa Adélia Ltda have commissioned Det Norske Veritas Certification Ltd. (DNV) to validate the Termoelétrica Santa Adélia Cogeneration Project (TSACP), located in the municipality of Jaboticabal, State of São Paulo, Brazil.

This report summarises the findings of the validation of the project, performed based on UNFCCC criteria for CDM projects, as well as criteria given to provide for consistent project operations, monitoring and reporting. The only changes made to this version of the validation report compared to the validation report rev. 01 dated 29 October 2005 referred to in the letter of approval of the DNA of Brazil are linked to the status of issuance of the letter of approval by the DNA of Brazil and the recalculation of the build margin emission factor with the plant efficiencies recommended by the CDM Executive Board at its 22nd meeting.

The validation team consisted of the following personnel:

Mr. Luis Filipe Tavares	DNV Rio de Janeiro	Team leader
Mr. Vicente San Valero	DNV Rio de Janeiro	CDM auditor
Mrs Cintia Dias	DNV Rio de Janeiro	CDM auditor
Mr. Michael Lehmann	DNV Oslo	Energy sector expert, Technical reviewer

1.1 Validation Objective

The purpose of a validation is to have an independent third party assessing the project design. In particular, the project's baseline, the monitoring plan, and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CER's).

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against Kyoto Protocol criteria for the CDM, the CDM rules and modalities as agreed in the Marrakesh Accords and relevant decisions by the CDM Executive Board. The validation team has employed, based on the recommendations in the Validation and Verification Manual /7/ a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of CER's.

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

1.3 Termoelétrica Santa Adélia Cogeneration Project (TSACP)

The "Termoelétrica Santa Adélia Cogeneration Project (TSACP)", located in the municipality of Jaboticabal, State of São Paulo, Brazil, involves an increase of the sugar cane mill's cogeneration capacity and the supply of the excess electricity to the grid.

The project has already been implemented and started operation in 07 May 2003.

Emission reductions are claimed from displacing grid electricity with electricity generated by the mill and supplied to the grid. The estimated amount of GHG emission reductions from the project is 155 428tCO_2e during the renewable 7 year crediting period (with the potential of being renewed twice), resulting in estimated average annual emission reductions of 22 204 tCO_2e.

2 METHODOLOGY

The validation consisted of the following three phases:

i) a desk review of the project design documents;
ii) follow-up interviews with project stakeholders;
iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

In order to ensure transparency, a validation protocol was customised for the project, according to the Validation and Verification Manual /7/. The protocol shows, in a transparent manner, criteria (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 a CDM project is expected to meet;
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The validation protocol consists of three tables. The different columns in these tables are described in Figure 1.

The completed validation protocol for the "Termoelétrica Santa Adélia Cogeneration Project (TSACP)" is enclosed in Appendix A to this report.

Findings established during the validation can be seen as either a non-fulfilment of validation criteria or where a risk to the fulfilment of project objectives is identified. *Corrective Action Requests* (CAR) are issued, where:

i) mistakes have been made with a direct influence on project results;
ii) CDM or host Party requirements have not been met; or
iii) there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

The term *Clarification Request* (CL) may be used where additional information is needed to fully clarify an issue.

Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities			
Requirement	***Reference***	***Conclusion***	***Cross reference***
The requirements the project must meet.	*Gives reference to the legislation or agreement where the requirement is found.*	*This is either acceptable based on evidence provided (**OK**), a **Corrective Action Request (CAR)** of risk or non-compliance with stated requirements or a request for **Clarification (CL)** where further clarifications are needed.*	*Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent Validation process.*

Validation Protocol Table 2: Requirement Checklist				
Checklist Question	***Reference***	***Means of verification (MoV)***	***Comment***	***Draft and/or Final Conclusion***
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in seven different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	*Gives reference to documents where the answer to the checklist question or item is found.*	*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).A request for **Clarification (CL)** is used when the validation team has identified a need for further clarification.*

Validation Protocol Table 3: Resolution of Corrective Action Requests and Requests for Clarification			
Draft report corrective action requests and requests for clarifications	***Ref. to Table 2***	***Summary of project participants' response***	***Final conclusion***
If the conclusions from the draft Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	*Reference to the checklist question number in Table 2 where the Corrective Action Request or Clarification Request is explained.*	*The responses given by the project participants during the communications with the validation team should be summarised in this section.*	*This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".*

Figure 1 Validation protocol tables

2.1 Review of Documents

The PDD /1/ submitted by Termoelétrica Santa Adélia Ltda / Ecoinvest in April 2005 was assessed by DNV. A revised version of the PDD /2/ was submitted in September 2005 to address DNV's initial validation findings and was assessed by DNV. Finally, a further revised version of PDD /3/ was submitted on 21 December 2005, in which the build margin emission factor was recalculated based on the plant efficiencies recommended by the CDM Executive Board at its 22nd meeting. In addition, a spreadsheet containing detailed calculations for the combined margin emission coefficient /5/, which is applied by the project, has been assessed during the validation.

Other documents, such as the Environmental Impact Assessment, the Environmental Licences and licence requirements as well as the letters sent to local stakeholders, have been assessed during the follow up interviews in order to ensure the accuracy of the relevant information.

2.2 Follow-up Interviews

On 28 June 2005 and 28 July 2005, DNV performed interviews with a representative of Ecoinvest /11/.

The main topics of the interviews were:

- Environment licenses compliance,
- Local Stakeholders invitation to comments,
- Additionality of the project,
- Cash flow analysis and IRR,
- Baseline emission calculations,
- Calibration requirements,
- The possibility of leakage effects due to a past practice of selling bagasse,
- Monitoring, reporting and QA/QC procedures.

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is to resolve any outstanding issues, which need to be clarified for DNV's positive conclusion on the project design.

The initial validation of the project identified four *Corrective Action Requests* and two requests for *Clarification*. To guarantee the transparency of the validation process, the concerns raised are summarised in chapter 3 below and documented in more detail in the validation protocol in Appendix A. The project participant's response to DNV's draft validation report findings, including the submission of a revised PDD in September 2005 and December 2005, addressed the *Corrective Actions* and *Clarifications* to DNV's satisfaction. To guarantee the transparency of the validation process, the concerns raised are documented in Table 3 of the validation protocol in Appendix A.

3 VALIDATION FINDINGS

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

The final validation findings relate to the project design as documented and described in the PDD of 21 December 2005 /3/.

3.1 Participation Requirements

The project participants (PDD/A.3.) are Termoelétrica Santa Adélia LTDA of Brazil. The host Party Brazil meets all relevant participation requirements and has provided written approval of voluntary participation in the project /6/. No participating Annex I Party is yet identified.

3.2 Project Design

Termoelétrica Santa Adélia Cogeneration Project (TSACP) is a grid-connected renewable energy project activity, displacing grid electricity with electricity generated from renewable sources (bagasse) and thus resulting in the reduction of emissions of greenhouse gases in the energy sector. The project increased the efficiency and capacity of the previous bagasse based energy generation, by refurbishing low-pressure boilers with high-pressure boilers and by installing an additional 34 MW generation capacity. This will allow for excess electricity to be dispatched to the regional S-SE-CO grid.

The project design engineering reflects good practice through the use of steam Rankine cycle technology for steam and power generation.

As per ANEEL Resolutions, total installed capacity for Santa Adélia is 42 MW. Of these 42 MW, 8 MW is installed since 1990 and only 34 MW is the project expansion, thus, being considered as a CDM additional capacity .

A fixed 7 year renewable crediting period (with the potential of being renewed twice) is selected, and is deemed to start on 7 May 2003. This corresponds with the starting date of the project activity. The expected operational lifetime of the project is 25 years.

It is estimated that the project results in 155 428 tCO_2e (22 204 tCO_2e /year average) of emissions reduction over the selected 7 year crediting period.

Project boundaries were defined as the South-Southeast and Midwest (S-SE-CO) subsystem of the Brazilian grid being the grid electricity system affected by the project and the site where the cogeneration facilities are located (Santa Adélia) being the project boundary.

The project is expected to bring social (employment, sixty five permanent jobs), environmental (the company has environmental education programs, preserves its native forests and supports communitarian agriculture) and economic benefits, thus contributing to the sustainable development objectives of the Brazilian Government. The DNA of Brazil has confirmed that the project assists in achieving sustainable development /6/.

The validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards Brazil.

3.3 Baseline Determination and Additionality

The project applies the approved baseline methodology AM0015 - "Bagasse-based *cogeneration connected to an electricity grid"*. /8/

This methodology is applicable to the project as this project consists of a renewable energy generation unit that supplies electricity to the South-Southeast-Midwest (S-SE-CO) interconnected grid of Brazil and the project meets the applicability conditions of AM0015. The baseline scenario is that the current practice continues, i.e., the bagasse is not utilized to generate excess electricity to be supplied to the grid and an equivalent of electricity would in the absence of the project activity have been generated by the operation of grid-connected power plants and by the addition of new generation sources. In accordance with AM0015, an electricity baseline emission factor is calculated as a combined margin, consisting of the combination of operating margin (OM) and build margin (BM) factors (see section 3.5).

In accordance with AM0015, the additionality of the project is demonstrated through the "*Tool for the demonstration and assessment of additionality*" /10/, which includes the following steps:

Step 0 - -Preliminary screening based on the starting date of the project activity: The starting date of the CDM project activity, i.e. 07 May 2003, falls between 1 January 2000 and the date of the registration of the first CDM project activity (November 2004). Evidence for the project's starting date of 07 May 2003 has been presented. Documentation evidencing that the incentive from the CDM was seriously considered in the decision to proceed with the project activity was provided by means of a Preliminary Environmental Report dated in September 2001 /3/.

Step 1 - Identification of alternatives to the project activity consistent with current laws and regulations: The possible baseline scenarios are: a) Business as usual which means producing electricity and steam for self consumption with low efficiency and b) investing in modifications of boilers and installing a new electricity generator. Both scenarios are in compliance with all applicable legal and regulatory requirements.

Step 2 - Investment analysis: Not applicable (Only Step 3 is selected)

Step 3. Step 3. *Barrier analysis: Investment barriers, institutional barriers and cultural barriers are presented in the PDD:*

a) *Investment barriers*. The project reaches a negative Net Present Value with a discount rate of 18% and an IRR of 15%. This average project IRR is lower than the SELIC rate in effect at the time of financing, 23.35% as of 2003. These figures were considered reliable and justified the additionality argumentation. DNV also confirmed as an investment barrier the fact that the revenues of the selling of energy represent not more than 5% of the core business revenues, i.e. production of sugar and alcohol, thus constituting a minor part of the project developer's total income. Therefore, it is clear that this investment was done considering the registering of the project as a CDM activity as it is not financially attractive under normal commercial conditions.

b) *Institutional barriers*. DNV could confirm that the regulatory environment for the electricity sector undergo frequent changes in Brazil, resulting in uncertainties for renewable energy generation. The project does not qualify for PROINFA, the Brazilian Programme of Incentives for Alternative Sources of Electric Energy, because it started operation before 2006.

d) *Cultural barriers*. DNV was able to confirm that the sugarcane production (traditionally production of sugar and alcohol) is different from energy production and that electricity

revenues only constitute a minor part of the project developer's total income. Hence, there are cultural barriers for sugarcane mills to invest in increased cogeneration capacity in order to supply excess electricity to the grid.

Step 4 - Common practice analysis: DNV was able to confirm that the efficient production of energy and heat by sugarcane mills is not common practice in Brazil. Usually the sugarcane mills produce energy inefficiently and do not supply excess electricity to the grid.

Step 5 - Impact of CDM registration: The project participants were able to demonstrate that the sale of CERs will provide the complementary incentives for the project to overcome the above presented barriers.

Given the above and in particular the investment, institutional and cultural barriers the project faces, it is sufficiently demonstrated that the project is not a likely baseline scenario.

Step 4 - Common practice analysis: DNV was able to confirm that the efficient production of energy and heat by sugarcane mills is not common practice in Brazil. Usually the sugarcane mills produce energy inefficiently.

Step 5 - Impact of CDM registration: The project participants were able to demonstrate that the sale of CERs will provide the necessary incentives for the project to overcome the above presented barriers.

3.4 Monitoring Plan

The Termoelétrica Santa Adélia Cogeneration Project (TSACP) applies the Approved monitoring methodology AM0015, "Bagasse-based *cogeneration connected to an electricity grid"*. /8/.

The monitoring plan for emission reductions occurring within the project boundary is based on monitoring the amount of electricity supplied to the grid. The reliability of this monitoring parameter is assured through second-party verification of the amount of electricity sold to CPFL (the electricity company) by Santa Adélia.

Details of the data to be collected, the frequency of data recording, its certainty, and format and storage location are described. The recording frequency of the data is appropriate for the project.

Termoelétrica Santa Adélia Ltda is responsible for the project management, monitoring and reporting as well as for organising and training of the staff in the appropriate monitoring, measurement and reporting techniques.

The monitoring plan is straightforward and no specific procedures beyond the established QA/QC procedures will be necessary. The established procedures reflect good monitoring and reporting practices.

Algorithms and formulas used have been clearly presented.

3.5 Calculation of GHG Emissions

Baseline emissions due to displacement of electricity are calculated by multiplying the electricity supplied by the project activity to the S-SE-CO grid with the combined margin emission coefficient determined for this grid. The project is not expected to result in project GHG emissions due to the use of a renewable energy source (bagasse) for electricity generation.

The combined margin emission coefficient for the S-SE-CO grid is determined *ex-ante* in accordance with AM0015. The calculations are based on electricity generation data provided by

the Brazilian Electricity Agency (ANEEL) and the National Electricity System Operator (ONS) for the electricity generated in the South-Southeast-Midwest grid in the years 2002-2004. For the determination of the operating margin (OM) emission coefficient, average plant efficiencies for different power plant types established in the IEA study on the Brazilian grid /9/ and IPCC carbon emission factors for specific fuels were applied to calculate plant specific emission coefficients. For the calculation of the build margin emission coefficient, the conservative plant efficiencies recommended by the CDM Executive Board at its 22nd meeting were applied. The resulting simple-adjusted OM emission coefficient is 0.4310 tCO_2e/MWh (applying an average λ of 0.5135) and the BM emission coefficient 0.1045 tCO_2e/MWh, resulting in a combined margin emission coefficient of 0.2677tCO_2e/MWh (weighted average of the build and operating margin). The emission coefficient calculations were transparently presented in spreadsheets /5/ submitted to and verified by DNV.

Even though the S-SE-CO grid is connected with the North-Northeast grid, the energy flow between these grids is heavily limited by the transmission lines capacity. It is hence appropriate to consider the S-SE-CO grid for the purpose of determining the BM and OM emission coefficient and consider imports from the North-Northeast grid at 0 tCO_2/MWh in accordance with AM0015.

Generation data for the years 2002-2004 are the most recent statistics available.

The ONS dataset does not include power plants that are locally dispatched. However, it is justified to only include plants dispatched by ONS although they only represent about 80% of the total installed capacity. Data for the remaining plants is not publicly available. Also, these plants operate either based on power purchase agreements which are not under control of the dispatch authority, or they are located in non-interconnected systems to which ONS has no access. Hence, these plants are not likely to be affected by a CDM project and the power plants dispatched by ONS are thus representative for the operating margin.

The λ was calculated by interpolating daily dispatch data for thermal power plants and daily dispatch data for hydropower plants. The selected approach for calculating λ is in accordance with AM0015.

3.6 Environmental Impacts

Santa Adélia has an environmental license that has been granted (*Precarious Operating License 4000417 emitted in 26 October 2005*) by the state environmental agency (CETESB-Companhia de Tecnologia e Saneamento Ambiental) after all possible environmental impacts were analyzed by the State Secretary of Environment (SMA – Secretaria de Estado do Meio Ambiente) through a report called “Previous Environmental Report” (RAP – Relatório Ambiental Preliminar).

Project design did not identified/addressed any adverse environmental impacts, which seems reasonable given the nature of the project design.

Transboundary environmental impacts are not foreseen.

3.7 Comments by Local Stakeholders

Local stakeholders were invited initially through public discussion during the environmental license issuing process. No comments were received.

Complementary, local stakeholders, such as the Municipal Government, the state and municipal agencies, the Brazilian forum of NGOs, neighbouring communities and the office of the attorney

general, were invited to comment on the project, in accordance with the requirements of Resolution 1 of the Brazilian DNA. The letters sent to the local stakeholders were verified during the follow up interviews. No comments were received.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

DNV published the PDD of April 2005 on the DNV Climate Change web site (http://www.dnv.com/certification/ClimateChange) and Parties, stakeholders and NGOs were through the UNFCCC CDM web site invited to provide comments during the period from 30 April 2005 to 30 May 2005.

One comment was received on 02/05/2005. The comment received (in unedited form) is given in the below text box.

Comment by: Axel Michaelowa, Hamburg Institute of International Economics (HWWA)

Inserted On: 2005-05-02

Subject: Build Margin weighting - Santa Adelia

Comment: The argument for weighting the build margin zero for the entire crediting period is unconvincing. The discussed dip in electricity demand after the end of the rationing will not persist throughout the crediting period. While there is a case for weighting the BM low, but certainly not zero for 2003, resumed growth in electricity demand since then makes the case invalid. Only if the project participants monitored the capacity factors of the recently built plants ex post, they could then derive an adjusted BM with a lower share.
The fuel use data from Bosi et al are outdated and should be replaced by more current ones.

***DNV's response**:*

The baseline for cogeneration considers the operating margin calculated based on the Simple Adjusted Operating Margin, methodology and data from ONS.

According to the default calculation for the combined margin, the w_{OM} and w_{BM} has been given a weight of 0,.5 for each, resulting in an emission coefficient of 0.2783. Project participants revised the PDD and calculations according to these requirements of the methodology.

5 VALIDATION OPINION

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the "Termoelétrica Santa Adélia Cogeneration Project (TSACP)", at Jaboticabal, São Paulo State, Brazil. The validation was performed on the basis of UNFCCC criteria for CDM project activities and relevant Brazilian criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The project participants are Termoelétrica Santa Adélia LTDA of Brazil. The host Party Brazil meets all relevant participation requirements requirements and has provided written approval of voluntary participation in the project. No participating Annex I Party is yet identified.

The project is a bagasse-based cogeneration power generation activity which displaces fossil-based grid electricity. By installing two high-pressure boilers and by installing one 34MW generator at the Santa Adélia sugarcane mill, the project will allow Santa Adélia to generate excess electricity to be dispatched to the regional grid.

By promoting renewable energy, the project is in line with the current sustainable development priorities of Brazil. The DNA of Brazil confirmed that the project assists in achieving sustainable development.

The project applies the approved baseline and monitoring methodology AM0015, i.e. "Bagasse-based cogeneration connected to an electricity grid". The baseline methodology has been correctly applied and the assumptions made for the selected baseline scenario are sound. . It is sufficiently demonstrated that the project is not a likely baseline scenario and that emission reductions attributable to the project are additional to any that would occur in the absence of the project activity.

A combined margin emission coefficient of 0.2677 tCO_2e/MWh is calculated in accordance with AM0015, i.e. the average of the approximate operating margin and the build margin. The determination of this combined margin emission coefficient is based on actual electricity generation data provided by the National Electricity System Operator (ONS) for the years 2002-2004 for the South-Southeast-Midwest grid.

The monitoring methodology has been correctly applied. The monitoring plan sufficiently specifies the monitoring requirements of the main project indicators.

By displacing fossil fuel-based electricity with electricity generated from a renewable source, the project results in reductions of CO_2 emissions that are real, measurable and give long-term benefits to the mitigation of climate change. Given that the project is implemented as designed, the project is likely to achieve the estimated amount of emission reductions.

Local stakeholder comments were invited according to the Brazilian DNA Resolution 1. No comments were received. Public stakeholder input has also been invited via the UNFCCC web-site. One comment has been received and was taken into account in the validation of the project.

In summary, it is DNV's opinion that the "Termoelétrica Santa Adélia Cogeneration Project (TSACP)" as described in the revised project design document of 21 December 2005, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology AM0015 CDM project activities. Hence, DNV requests the registration of the "Termoelétrica Santa Adélia Cogeneration Project (TSACP)" as CDM project activity.

REFERENCES

Documents provided by the project proponent that relate directly to the project:

/1/ Ecoinvest: Project Design Document for the Termoelétrica Santa Adélia Cogeneration Project (TSACP), Version 1 (April 2005).

/2/ Ecoinvest: Project Design Document for the Termoelétrica Santa Adélia Cogeneration Project (TSACP), Version 4 (September 2005).

/3/ Ecoinvest: Project Design Document for the Termoelétrica Santa Adélia Cogeneration Project (TSACP), Version 4B (21 December 2005).

/4/ Termoelétrica Santa Adélia Cogeneration Project (TSACP), Preliminary Environmental Report, September 2001

/5/ Spreadsheet of Calculation of Combined Margin (ONS Emission Factor SSECO 2002-2004 v 2005-11-29.xls).

/6/ Comissão Interministerial de Mudança Global do Clima (DNA of Brazil): Letter of Approval. 20 December 2005

Background documents related to the design and/or methodologies employed in the design or other reference documents:

/7/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*. http://www.vvmanual.info

/8/ Approved Baseline and Monitoring Methodology AM0015: "*Bagasse-based cogeneration connected to an electricity grid"*. Version 01 of 22 September 2004.

/9/ Bosi, M., A. Laurence, P. Maldonado, R. Schaeffer, A. F. Simoes, H. Winkler and J.-M. Lukamba: *Road testing baselines for greenhouse gas mitigation projects in the electric power sector*. OECD and IEA information paper, October 2002.

/10/ CDM Executive Board: *Tool for the demonstration and assessment of additionality*. Version 02 of 28 November 2005

Persons interviewed during the validation, or persons who contributed with other information that are not included in the documents listed above:

/11/ Fernando Souza Machado – Ecoinvest

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APPENDIX A

CDM VALIDATION PROTOCOL

Table 1 Mandatory Requirements for Clean Development Mechanism (CDM) Project Activities

Requirement	Reference	Conclusion	Cross Reference / Comment
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3	Kyoto Protocol Art.12.2	OK	Table 2, Section E.4.1 No Annex I party has yet been identified.
2. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a	OK	Table 2, Section A.3
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art.12.2.	OK	Table 2, Section E.4.1
4. The project shall have the written approval of voluntary participation from the designated national authority of each party involved	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a	OK	DNA of Brazil: Letter of Approval. 20 December 2005
5. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	OK	Table 2, Section E
6. Reduction in GHG emissions shall be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43	OK	Table 2, Section B.2
7. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance	Decision 17/CP.7	OK	The validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards Brazil.
8. Parties participating in the CDM shall designate a	CDM Modalities and	OK	The Brazilian designated national authority for the CDM

Requirement	Reference	Conclusion	Cross Reference / Comment
national authority for the CDM	Procedures §29		is the "Comissão Interministerial de Mudança Global do Clima".
9. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol	CDM Modalities §30/31a	OK	Brazil has ratified the Kyoto Protocol on 23 August 2002.
10. The participating Annex I Party's assigned amount shall have been calculated and recorded	CDM Modalities and Procedures §31b	Not Applicable	No Annex I party has yet been identified.
11. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7	CDM Modalities and Procedures §31b	Not applicable	No Annex I party has yet been identified.
12. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received	CDM Modalities and Procedures §37b	~~CAR 3~~ OK	Table 2, Section G Termoelétrica Santa Adélia Ltda has not invited local organizations and institutions to provide comments, according to the Resolution 1 of the Brazilian DNA. The names and details for further contacts should also be presented.
13. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	OK	Table 2, Section F Santa Adélia has an environmental license that has been granted (*Precarious Operating License 4000417 emitted in 26 October 2005*) by the state environmental agency (CETESB - Companhia de Tecnologia e Saneamento Ambiental) after all possible environmental impacts were analyzed by the State Secretary of Environment (SMA – Secretaria de Estado do Meio Ambiente) through a report called "Previous Environmental Report" (RAP – Relatório Ambiental Preliminar)
14. Baseline and monitoring methodology shall be previously approved by the CDM Executive Board	CDM Modalities and Procedures §37e	OK	Table 2, Section B.1.1 and D.1.1

Requirement	Reference	Conclusion	Cross Reference / Comment
15. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP	CDM Modalities and Procedures §37f	OK	Table 2, Section D
16. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available	CDM Modalities and Procedures §40	OK	DNV published the PDD on the DNV Climate Change web site (http://www.dnv.com/certification/ClimateChange) and Parties, stakeholders and NGOs were, through the UNFCCC CDM web site, invited to provide comments during the period from 30 April 2005 to 30 May 2005. One comment has been received and was taken into account in the validation of the project.
17. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances	CDM Modalities and Procedures §45c,d	OK	Table 2, Section B.2
18. The baseline methodology shall exclude to earn CER's for decreases in activity levels outside the project activity or due to force majored	CDM Modalities and Procedures §47	OK	Table 2, Section B.2
19. The project design document shall be in conformance with the UNFCCC CDM-PDD format	CDM Modalities and Procedures Appendix B, EB Decision	~~CAR 2~~ OK	PDD is in accordance with CDM-PDD (version 02 of 1 July 2004). However, the section heading H (Annexes) needs to be deleted, as the CDM-PDD shall be completed without modifying/adding headings.

Table 2 Requirements Checklist

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
A. General Description of Project Activity *The project design is assessed.*					
A.1. Project Boundaries *Project Boundaries are the limits and borders defining the GHG emission reduction project.*					
A.1.1. Are the project's spatial (geographical) boundaries clearly defined?	/1/ /2/	DR	The Termoelétrica Santa Adélia Cogeneration Project (TSACP), Brazil, is located in the municipality of Jaboticabal, State of São Paulo, within the area of Santa Adélia. The project's spatial boundaries are clearly defined.		OK
A.1.2. Are the project's system (components and facilities used to mitigate GHG's) boundaries clearly defined?	/1/ /2/	DR	Yes. The project system's boundary is limited to the Usina Santa Adélia area and the South-Southeast and Midwest section of the interconnected subsystem of the Brazilian grid, to which the project is connected. This system boundary is considered for determination of the baseline grid emission factor.		OK
A.2. Technology to be employed *Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.*					
A.2.1. Does the project design engineering reflect current good practices?	/1/ /2/	DR	Yes. The project design engineering reflects good practice through the use of steam Rankine cycle technology for steam and power generation.		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
A.2.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	/1/ /2/	DR	Yes. The technology used is the Rankine technology adopted worldwide. The project involves expanding the cogeneration capacity of the sugar mill, which will allow for the generation of excess electricity to be supplied to the grid. As per ANEEL Resolutions (authorizations to generate/sell electricity as an independent producer), total installed capacity for Santa Adélia is 42 MW.		OK
A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	/1/ /2/	DR	No. The project is unlikely to be replaced by other more efficient technologies, at least within the 7 year crediting period.		OK
A.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	/1/ /2/	DR	The project will require minimal additional training for project maintenance since the project is only a modification of the currently used system. It is an expansion of the existent plant so it meant training on the following aspects: technical instruction for electric installation and services; for boilers and pressure vessels; and for boiler combustion (in accordance with the equipment supplier)		OK
A.2.5. Does the project make provisions for meeting training and maintenance needs?	/1/ /2/	DR	The monitoring plan is straightforward and no specific procedures beyond the established QA/QC procedures will be necessary. The established procedures reflect good monitoring and reporting practices.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
A.3. Contribution to Sustainable Development *The project's contribution to sustainable development is assessed.*					
A.3.1. Is the project in line with relevant legislation and plans in the host country?	/1/ /2/	DR	The licenses were not presented. Hence, DNV requires copies of the licenses.	~~CL 1~~	OK
A.3.2. Is the project in line with host-country specific CDM requirements?	/1/ /2/	DR	Brazil established the Resolution 1 in line with CDM requirements. Termoelétrica Santa Adélia Ltda has not invited local organizations and institutions to provide comments, according to the Resolution 1 of the Brazilian DNA. The names and details for further contacts should also be presented.	~~CAR 3~~	OK
A.3.3. Is the project in line with sustainable development policies of the host country?	/1/ /2/	DR	The project is in line with current sustainable development priorities in Brazil. The DNA of Brazil confirmed that the project assists in achieving sustainable development.		OK
A.3.4. Will the project create other environmental or social benefits than GHG emission reductions?	/1/ /2/	DR	The project is expected to bring social (employment, sixty five jobs), environmental (the company has environmental education programs, preserves its native forests and supports communitarian agriculture) and economic benefits, thus contributing to the sustainable development objectives of the Brazilian Government.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
B. Project Baseline *The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.*					
B.1. Baseline Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
B.1.1. Is the baseline methodology previously approved by the CDM Executive Board?	/1/ /2/ /8/	DR	Yes. The project applies the approved baseline methodology AM0015 - "Bagasse-based cogeneration connected to an electricity grid".		OK
B.1.2. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	/1/ /2/ /8/	DR	Yes. The project fulfils the conditions under which AM0015 is applicable. The project uses: a) only the bagasse from the same facility where the project activity is implemented, b) the project is not foreseen to be implemented by the public sector, c) the project will not increase the bagasse production and d) the bagasse to be used will not be stored for more than one year.		OK
B.2. Baseline Determination *The choice of baseline will be validated with focus on whether the baseline is a likely scenario, whether the project itself is not a likely baseline scenario, and whether the baseline is complete and transparent.*					
B.2.1. Is the application of the methodology and the discussion and determination of the chosen baseline transparent?	/1/ /2/ /5/ /8/	DR	The baseline for cogeneration considers the operating margin calculated based on the Simple Adjusted Operating Margin, methodology and data from ONS. According to the default calculation for the	~~CAR 1~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			combined margin, the w_{OM} and w_{BM} has been given a weight of 0,5 for each, giving an emission coefficient of 0.2783 tCO_2e/MWh However the project applied a weight of w_{OM} = 1.0 and w_{BM} = 0. This new weight option was submitted to the EB but has not been approved up to now. DNV asks for new proper calculations which address the methodology requirements.		
B.2.2. Has the baseline been determined using conservative assumptions where possible?	/1/ /2/ /5/	DR	See B.2.2	~~CAR 1~~	OK
B.2.3. Has the baseline been established on a project-specific basis?	/1/ /2/	DR	See B.2.1	~~CAR 1~~	OK
B.2.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/ /2/	DR	Yes. All the national and/or sectoral policies implemented during the initial phase were considered. PROINFA (Programme of Incentives to the Alternative Sources of Electric Energy) was only implemented in 2004 and is applicable to projects to be installed from January to December of 2006.		OK
B.2.5. Is the baseline determination compatible with the available data?	/1/ /2/ /5/	DR	The project uses generation data from ONS for the years 2001 to 2003 for 120 generation units dispatched centrally by ONS in the South / Southeast / Midwest (S-SE-CO) interconnected grid. There is more updated data available and DNV asks for an update of these factors.	~~CAR 1~~	OK
B.2.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	/1/ /2/	DR	See B.2.1	~~CAR 1~~	

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
B.2.7. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario (e.g. through (a) a flow-chart or series of questions that lead to a narrowing of potential baseline options, (b) a qualitative or quantitative assessment of different potential options and an indication of why the non-project option is more likely, (c) a qualitative or quantitative assessment of one or more barriers facing the proposed project activity or (d) an indication that the project type is not common practice in the proposed area of implementation, and not required by a Party's legislation/regulations)?	/1/ /2/ /8/ /10/	DR	In accordance with AM0015, the additionality of the project is demonstrated through the "Tool for the demonstration and assessment of additionality" /8/, which includes the following steps: Step 0 - -Preliminary screening based on the starting date of the project activity: The starting date of the CDM project activity, i.e. May 2003, falls between 1 January 2000 and the date of the registration of the first CDM project activity (November 2004). Documented evidence(s) that the incentive from the CDM was seriously considered the in the decision to proceed with the project activity at, or prior to, the start of the project activity should be provided. Step 1 - Identification of alternatives to the project activity consistent with current laws and regulations: The possible baseline scenarios are: a) Business as usual which means producing electricity and steam for self consumption with low efficiency and b) investing in modifications of boilers and installing a new electricity generator. Both scenarios are in compliance with all applicable legal and regulatory requirements. Step 2 - Investment analysis: Not applicable (Only Step 3 is selected) Step 3. Step 3. Barrier analysis: Investment barriers, institutional barriers and cultural barriers are presented in the PDD:	~~CAR 4~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			a) Investment barriers. The project reaches a negative Net Present Value with a discount rate of 18% and an IRR of 15%. This average project IRR is lower than the SELIC rate in effect at the time of financing, 23.35% as of 2003. These figures were considered reliable and justified the additionality argumentation. DNV also confirmed as an investment barrier the fact that the revenues of the selling of energy represent not more than 5% of the core business revenues, i.e. production of sugar and alcohol, thus constituting a minor part of the project developer's total income. Therefore, it is clear that this investment was done considering the registering of the project as a CDM activity as it is not financially attractive under normal commercial conditions. b) Institutional barriers. DNV could confirm that the regulatory environment for the electricity sector undergo frequent changes in Brazil, resulting in uncertainties for renewable energy generation. The project does not qualify for PROINFA, the Brazilian Programme of Incentives for Alternative Sources of Electric Energy, because it started operation before 2006. d) Cultural barriers. DNV was able to confirm that the sugarcane production (traditionally production of sugar and alcohol) is different from energy production and that electricity revenues only constitute a minor part of the project developer's total income. Hence, there are cultural barriers for sugarcane mills to		

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			invest in increased cogeneration capacity in order to supply excess electricity to the grid. Step 4 - Common practice analysis: DNV was able to confirm that the efficient production of energy and heat by sugarcane mills is not common practice in Brazil. Usually the sugarcane mills produce energy inefficiently and do not supply excess electricity to the grid. Step 5 - Impact of CDM *registration:* The project participants were able to demonstrate that the sale of CERs will provide the complementary incentives for the project to overcome the above presented barriers. Given the above and in particular the investment, institutional and cultural barriers the project faces, it is sufficiently demonstrated that the project is not a likely baseline scenario. Step 4 - Common practice analysis: DNV was able to confirm that the efficient production of energy and heat by sugarcane mills is not common practice in Brazil. Usually the sugarcane mills produce energy inefficiently and do not supply excess electricity to the grid. Step 5 - Impact of CDM registration: The project participants were able to demonstrate that the sale of CERs will provide the complementary incentives for the project to overcome the above presented barriers. Given the above and in particular the technological, institutional, and cultural barriers		

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			the project faces, it is sufficiently demonstrated that the project is not a likely baseline scenario.		
B.2.8. Have the major risks to the baseline been identified?	/1/ /2/	DR	Yes.		OK
B.2.9. Is all literature and sources clearly referenced?	/1/ /2/	DR	Yes.		OK
C. Duration of the Project/ Crediting Period *It is assessed whether the temporary boundaries of the project are clearly defined.*					
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	/1/ /2/	DR	Yes. The project start date is 07 May 2003 with an expected lifetime of 25 years.		OK
C.1.2. Is the assumed crediting time clearly defined (renewable crediting period of seven years with two possible renewals or fixed crediting period of 10 years with no renewal)?	/1/ /2/	DR	A fixed 7 year crediting period was defined, starting in 05/2003.		OK
D. Monitoring Plan *The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed ((Blue text contains requirements to be assessed for optional review of monitoring methodology prior to submission and approval by CDM EB).*					
D.1. Monitoring Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
D.1.1. Is the monitoring methodology previously approved by the CDM Executive Board?	/1/ /2/ /8/	DR	Yes. The Termoelétrica Santa Adélia Cogeneration Project (TSACP) applies the Approved monitoring methodology AM0015, "Bagasse-based cogeneration connected to an		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			electricity grid".		
D.1.2. Is the monitoring methodology applicable for this project and is the appropriateness justified?	/1/ /2/ /8/	DR	Yes. The monitoring methodology is applicable as established in AM0015.		OK
D.1.3. Does the monitoring methodology reflect good monitoring and reporting practices?	/1/ /2/ /8/	DR	The monitoring methodology of AM0015 is correctly applied and calculation of emission reductions will use data based on electricity exported to the grid (energy meter)and consistency of the reporting will be ensured through check of electricity sales records.		OK
D.1.4. Is the discussion and selection of the monitoring methodology transparent?	/1/ /2/	DR	Yes.		OK
D.2. Monitoring of Project Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
D.2.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/ /2/ /8/	DR	Project emissions are considered zero in line with the AM0015 and IPCC guidelines, which stipulate that biomass combustion is assumed to equal its re-growth, i.e. to be climate neutral.		OK
D.2.2. Are the choices of project GHG indicators reasonable?	/1/ /2/	DR	See D.2.1		OK
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?	/1/ /2/	DR	See D.2.1		OK
D.2.4. Will the indicators give opportunity for real measurements of achieved emission reductions?	/1/ /2/	DR	See D.2.1		OK
D.2.5. Will the indicators enable comparison of project data and performance over time?	/1/ /2/	DR	See D.2.1		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
D.3. Monitoring of Leakage *It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.*					
D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/ /2/ /8/	DR	According to the chosen methodology, the only foreseen potential source of leakage could come from organizations that used to buy bagasse from the sugar mill. However, Santa Adélia never sold bagasse prior to the project implementation.		OK
D.3.2. Have relevant indicators for GHG leakage been included?	/1/ /2/	DR	See D.3.1		OK
D.4. Monitoring of Baseline Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
D.4.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1/ /2/ /5/	DR	This coefficient is fixed ex-ante and hence no data needs to be collected in this regard.		OK
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/1/ /2/	DR	See D.4.1		OK
D.4.3. Will it be possible to monitor the specified baseline indicators?	/1/ /2/	DR	See D.4.1		OK
D.5. Monitoring of Sustainable Development Indicators/ Environmental Impacts *It is checked that choices of indicators are reasonable and complete to monitor sustainable performance over time.*					
D.5.1. Does the monitoring plan provide the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/ /2/ /8/	DR	AM0015 and Resolution 1 of the Brazilian DNA do not require the monitoring of neither social nor the environmental indicators.		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
D.5.2. Is the choice of indicators for sustainability development (social, environmental, economic) reasonable?	/1/ /2/	DR	See D.5.1.		OK
D.5.3. Will it be possible to monitor the specified sustainable development indicators?	/1/ /2/	DR	See D.5.1.		OK
D.5.4. Are the sustainable development indicators in line with stated national priorities in the Host Country?	/1/ /2/	DR	See D.5.1.		OK
D.6. Project Management Planning *It is checked that project implementation is properly prepared for and that critical arrangements are addressed.*					
D.6.1. Is the authority and responsibility of project management clearly described?	/1/ /2/	DR	Project management authority and responsibility are clearly described.		OK
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	/1/ /2/	DR	Santa Adélia and the utility company (CPFL) will monitor data.		OK
D.6.3. Are procedures identified for training of monitoring personnel?	/1/ /2/	DR	Staff is trained in Special Predictive Maintenance: Vibration analysis (monthly), thermo inspections (twice during the season), analysis of the transformer's insolating oil (once during the season).		OK
D.6.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/ /2/	DR	See D.6.3.		OK
D.6.5. Are procedures identified for calibration of monitoring equipment?	/1/ /2/	DR	See D.6.3.		OK
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?	/1/ /2/	DR	See D.6.3.		OK
D.6.7. Are procedures identified for monitoring,	/1/	DR	See D.6.3.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
measurements and reporting?	/2/				
D.6.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/ /2/	DR	See D.6.3.		OK
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/1/ /2/	DR	See D.6.3.		OK
D.6.10. Are procedures identified for review of reported results/data?	/1/ /2/	DR	Considering the simplicity of the monitoring plan, the verification by the second party (the electricity company) is considered sufficient.		OK
D.6.11. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	/1/ /2/	DR	See D.6.3.		OK
D.6.12. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	/1/ /2/	DR	See D.6.3.		OK
D.6.13. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/ /2/	DR	See D.6.3.		OK
E. Calculation of GHG Emissions by Source *It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.*					
E.1. Predicted Project GHG Emissions *The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.*					
E.1.1. Are all aspects related to direct and indirect GHG emissions captured in the project design?	/1/ /2/ /8/	DR	Yes. Project emissions are considered zero in line with the AM0015 and IPCC guidelines, which stipulate that biomass combustion is		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			assumed to equal its re-growth, i.e. to be climate neutral.		
E.2. Leakage *It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed.*					
E.2.1. Are potential leakage effects beyond the chosen project boundaries properly identified?	/1/ /2/ /8/	DR	According to the chosen methodology, the only foreseen potential source of leakage could come from organizations that used to buy bagasse from the sugar mill. However, Santa Adélia never sold bagasse pror to the project commencement.		OK
E.3. Baseline Emissions *The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.*					
E.3.1. Have the most relevant and likely operational characteristics and baseline indicators been chosen as reference for baseline emissions?	/1/ /2/ /5/ /8/	DR	The baseline for cogeneration considers the operating margin calculated based on the Simple Adjusted Operating Margin, methodology and data from ONS. According to the default calculation for the combined margin, the wOM and wBM has been given a weight of 0,5 for each, giving an emission coefficient of 0.2783 tCO_2e/MWh	~~CAR 1~~	OK
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	/1/ /2/ /5/	DR	Yes. The project system's boundary is limited to the Usina Santa Adélia area and the South-Southeast and Midwest section of the interconnected subsystem of the Brazilian grid, to which the project is connected. This system boundary is considered for determination of		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			the baseline grid emission factor.		
E.3.3. Are the GHG calculations documented in a complete and transparent manner?	/1/ /2/	DR	See E.3.1	~~CAR 1~~	OK
E.3.4. Have conservative assumptions been used when calculating baseline emissions?	/1/ /2/	DR	See E.3.2		OK
E.3.5. Are uncertainties in the GHG emission estimates properly addressed in the documentation?	/1/ /2/	DR	See E.3.1	~~CAR 1~~	OK
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?	/1/ /2/	DR	For project baseline, see E.3.1. For project emissions, see E.1.1.	~~CAR 1~~	OK
E.4. Emission Reductions Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations.					
E.4.1. Will the project result in fewer GHG emissions than the baseline scenario?	/1/ /2/ /8/	DR	Emission reductions will have to be calculated according to the methodology.	~~CAR 1~~	OK
F. Environmental Impacts *Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.*					
F.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/ /2/		The licenses were not presented. Hence, DNV requires copies of the licenses.	~~CL 1~~	OK
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/ /2/	DR	See F.1.1	~~CL 1~~	OK
F.1.3. Will the project create any adverse environmental effects?	/1/ /2/	DR	Project design did not identified/addressed any environmental impact; however, no significant		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			adverse environmental effects are expected to be created, given the nature of the project design.		
F.1.4. Are transboundary environmental impacts considered in the analysis?	/1/ /2/	DR	Transboundary environmental impacts not foreseen.		OK
F.1.5. Have identified environmental impacts been addressed in the project design?	/1/ /2/	DR	The project is unlikely to create any adverse environmental impacts.		OK
F.1.6. Does the project comply with environmental legislation in the host country?	/1/ /2/	DR	See F.1.1	~~CL 1~~	OK
G. Stakeholder Comments *The validator should ensure that a stakeholder comments have been invited and that due account has been taken of any comments received.*					
G.1.1. Have relevant stakeholders been consulted?	/1/ /2/	DR	Termoelétrica Santa Adélia Ltda has not invited local organizations and institutions to provide comments, according to the Resolution 1 of the Brazilian DNA. The names and details for further contacts should also be presented.	~~CAR 3~~	OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/ /2/	DR	See G.1.1.	~~CAR 3~~	OK
G.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/1/ /2/	DR	See G.1.1	~~CAR 3~~	OK
G.1.4. Is a summary of the stakeholder comments received provided?	/1/ /2/	DR	See G.1.1.	~~CAR 3~~	OK
G.1.5. Has due account been taken of any stakeholder comments received?	/1/ /2/	DR	See G.1.1.	~~**CAR 3**~~	**OK**

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
CAR 1 The baseline for cogeneration considers the operating margin calculated based on the Simple Adjusted Operating Margin, methodology and data from ONS. According to the default calculation for the combined margin, the wOM and wBM has been given a weight of 0,5 for each, giving an emission coefficient of 0.2783 tCO_2e/MWh The project uses generation data from ONS for the years 2001 to 2003 for 120 generation units dispatched centrally by ONS in the South / Southeast / Midwest (S-SE-CO) interconnected grid. There is more updated data available and DNV asks for an update of these factors.	B.2.1 B.2.3 B.2.6 E.3.1 E.3.3 E.3.5 E.3.6	PDD, dated September 2005, corrected this issue.	The revised baseline emission calculations are according to the baseline methodology AM0015 CDM project activities for energy production for the grid considering WOM = WBM = 0.5 weight. More update data was used in the calculations. This CAR is therefore closed.
CAR 2 The section heading H (PDD Annexes) needs to be deleted as the CDM-PDD shall be completed without modifying/adding headings. Also, at PDD Annexes, the two Annex 3 references should be corrected.	Table 1 - 19	PDD, dated September 2005, corrected this issue.	The revised PDD, dated September 2005, corrected the requested corrective action. This CAR is therefore closed.
CAR 3 Termoelétrica Santa Adélia Ltda has not invited local organizations and institutions to provide comments, according to the Resolution 1 of the Brazilian DNA. The names and details for further contacts	Table 1 - 12 A.3.2 G.1.1 to G.1.5	PDD, dated September 2005, corrected this issue.	Letters were sent according to the Resolution 1 of the Brazilian DNA. This CAR is therefore closed.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
should also be presented.			
CAR 4 The barriers should be better accessed. Documented evidence(s) that the incentive from the CDM was seriously considered the in the decision to proceed with the project activity at, or prior to, the start of the project activity should be provided.	B.2.7.	Documents sent.	Document evidencing that the incentive from the CDM was seriously considered in the decision to proceed with the project activity was provided by means of an analysis of the Preliminary Environmental Report dated in September 2001. This CAR is therefore closed.
CL 1 The licenses were not presented. Hence, DNV requires copies of the licenses.	A.3.1 F.1.1 F.1.2 F.1.6	Copy of licenses sent.	Santa Adélia has an environmental license that has been granted (Precarious *Operating License 4000417 emitted in 26 October 2005)* by the state environmental agency (CETESB - Companhia de Tecnologia e Saneamento Ambiental) after all possible environmental impacts were analyzed by the State Secretary of Environment (SMA – Secretaria de Estado do Meio Ambiente) through a report called "Previous Environmental Report" (RAP – Relatório Ambiental Preliminar) This CL is therefore closed.

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