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
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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.:			
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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.