



# VALIDATION REPORT

## PARAÍSO SMALL HYDROPOWER PLANT – PCH PARAÍSO

**REPORT No. BVQI/BRA/2006-009**

REVISION No. 03

**BUREAU VERITAS CERTIFICATION**



## VALIDATION REPORT

Date of first issue: <b>October 12<sup>th</sup>, 2006</b>	Project No.: <b>62087</b>
Approved by:  <b>Dr Ashok Mammen</b>	Organisational unit: <b>Bureau Veritas Certification Holding SA</b>
Client: <b>ENERGIAS DO BRASIL S/A</b>	Client ref.: <b>JOSÉ LOPES ALVES</b>

**Summary:**

Bureau Veritas Quality International (BVQI) has made a validation of the Paraíso Small Hydro Power Plant – PCH Paraíso (hereafter called “the project”) located in the river Paraíso, in the boundary of Costa Rica and Chapadão do Sul municipalities, in the state of Mato Grosso do Sul, 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 rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

The validation scope is defined as an independent and objective review of the project design document, the project’s baseline study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan (August 2006), ii) follow-up interviews with project stakeholders (August 2006) and iii) the resolution of outstanding issues and the issuance of the final validation report and opinion (October 2006).

The overall validation, from Contract Review to Validation Report & Opinion, was conducted using internal procedures (BMS, September 2003), which were audited by the UN CDM Accreditation Team in December 2004.

The first output of the validation process is a list of Clarification and Corrective Actions Requests (CR and CAR), presented in Appendix A. Taking into account this output, the project proponent revised its project design document (October 2006).

In summary, it is BVQI’s opinion that the project correctly applies the Clean Development Mechanism Project Design Document Form (CDM-PDD) – Version 02; the Guidelines for Completing the Project Design Document (CDM-PDD) – version 04; the approved consolidated methodology ACM0002, version 06, the Tool for the demonstration and assessment of additionality – Version 02; and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

Report No.: <b>BVQI/BRA/2006-009</b>	Subject Group: <b>GHG/CDM</b>	
Report title: <b>Paraíso Small Hydro Power Plant – PCH Paraíso</b>		
Work carried out by: <b>Antonio Daraya, Sergio Carvalho</b>		
Work reviewed by: <b>Ashok Mammen</b>		
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**Indexing terms**

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### Abbreviations

ACM	Approved Consolidated Methodology
IMAP-MS	Instituto de Meio Ambiente Pantanal – Mato Grosso do Sul
AMS	Approved Methodology Simplified
BMS	BVQI Management System
BVQI	Bureau Veritas Quality International
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CR	Clarification Request
CO <sub>2</sub>	Carbon Dioxide
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
GHG	Green House Gas(es)
I	Interview
IETA	International Emissions Trading Association
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organisation for Standardization
LI	Installation Licence
LO	Operation Licence
LP	Preliminary Licence
MoV	Means of Verification
MP	Monitoring Plan
NGO	Non Government Organisation
OM	Operating Margin
ONS	Operador Nacional do Sistema Elétrico (Brazilian National Dispatch Center)
PCF	Prototype Carbon Fund
PDD	Project Design Document
SELIC	Sistema Especial de Liquidação e Custódia (SELIC rate is na economic reference index established by the Brazilian Cental Bank)
S-SE-CO	South-Southeast-Midwest
UNFCCC	United Nations Framework Convention for Climate Change

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Appendix A: Validation Protocol

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### 1 INTRODUCTION

Energias do Brasil S/A– (hereafter called “the client”) has commissioned Bureau Veritas Quality International (BVQI) to validate its renewable energy project activity Paraíso Small Hydro Power Plant – PCH Paraíso – Small Scale CDM Project. (hereafter called “the project”) located in the city of Costa Rica in the State of Mato Grosso do Sul, Brazil.

This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

#### 1.1 Objective

The validation serves as a project design verification and is a requirement of all Client projects. The validation is an independent third party assessment of 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 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 (CERs).

UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

#### 1.2 Scope

The validation scope 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. BVQI has, based on the recommendations in the Validation and Verification Manual (IETA/PCF, v. 3.3, 2004), 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.

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### 1.3 GHG Project Description

PCH Paraíso is a small Hydropower Plant of 21 MW installed capacity, located in the city of Costa Rica in the State of Mato Grosso do Sul. PCH Paraíso utilizes the Paraíso river Hydropower potential to generate electricity.

PCH Paraíso has the objective to generate electricity to supply the country's economic growth demands for energy, through the use of sustainable renewable sources, such as Hydropower Plants generation.

This renewable source of electricity generation has an important contribution to the overall reduction of CO<sub>2</sub> emissions. Although most of the electricity generated in Brazil is by Hydropower Plants, the country's electricity matrix expansion is moving towards a larger participation of thermo power generation. Furthermore, the government has the intention to increase thermo power generation installed capacity by 15%.

In the absence of this project, the tendency shows that fossil fuel intensive energy generation sources would be used instead. Therefore, this project contributes to the reduction of greenhouse gas emissions.

PCH Paraíso is located in the river Paraíso, in the boundary of Costa Rica and Chapadão do Sul municipalities, in the state of Mato Grosso do Sul. The dam is located approximately 277 km from Campo Grande, the main city of the State of Mato Grosso do Sul. The main access to the dam's reservoir is by BR-163 and MS-349/BR-060 highway.

The approximate geographical coordinates are: latitude 19° 03' south and longitude 52° 59' west. The urban nucleus of the municipalities of Costa Rica and Chapadão do Sul, and Paraíso district, are approximately 70 km, 60 km and 2,2 km, to the dam's reservoir. According to the IBGE 2000 census, the total population that lives in the surroundings of this reservoir are 27.146 inhabitants, where 15.488 are from Costa Rica, 11.658 from Chapadão do Sul and 1.773 from Paraíso.

### 1.4 Validation team

The validation team consists of the following personnel:

Eng Antonio Daraya	BVQI Brazil	Team Leader GHG Auditor
Dr Ashok Mammen	BVQI India	Internal Reviewer
MSc Sergio Carvalho	BVQI Brazil	GHG Auditor

A small resume of each member of the validation team is described below;

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Antonio Daraya is graduated in Chemical Engineering with a very large experience in Industrial and Environmental management in several industrial fields. He is ISO 9001:2000, ISO 14001:2004 and OHSAS 18001 Lead Auditor and has also experience in the implementation of Quality and Environmental Management Systems. Antonio is qualified as Lead Verifier GHG – Green House Gases. He has participated in the validation and verification of many CDM projects in the energy field like cogeneration and renewable energy projects.

Ashok Mammen Ph.D (Oils & Lubricants), M.Sc(Analytical chemistry).Over 20 years of experience in petrochemical sector. He has been involved in the validation and verification processes of more than 30 CDM projects.”

Sergio Carvalho is a graduate in Physics with MsC in materials sciences. Has a vast experience in the implementation of quality management systems in several industrial fields. He has been working for BVQI for a long period developing certification schemes related to environment. Sergio is qualified as quality and environment lead auditor and as lead verifier GHG – Green House Gases. He has participated in the validation and verification of many CDM projects in the energy field like cogeneration and renewable energy projects.

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### 2 METHODOLOGY

The overall validation, from Contract Review to Validation Report & Opinion, was conducted using internal procedures (BMS, September 2003) which were audited by the CDM Accreditation Team in December 2004.

In order to ensure transparency, a validation protocol was customised for the project, according to the Validation and Verification Manual (IETA/PCF, v. 3.3, 2004). 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 five tables. The different columns in these tables are described in Figure 1.

The completed validation protocol is enclosed in Appendix A to this report.



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Validation Protocol Table 1: Mandatory Requirements			
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 <b>Corrective Action Request (CAR)</b> or a <b>Clarification Request (CR)</b> of risk or non-compliance with stated requirements. The CAR's and CR's are numbered and presented to the client in the Validation Report.	Used to refer to the relevant protocol 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 several sections. Each section is then further subdivided. The lowest level constitutes a checklist question.	Gives reference to documents where 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 <b>Corrective Action Request (CAR)</b> due to non-compliance with the checklist question. (See below). <b>Clarification Request (CR)</b> is used when the validation team has identified a need for further clarification.

Validation Protocol Table 3: Methodology checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements of the baseline and monitoring methodologies are specified in this checklist. The checklist is organised in several sections. Each section is then further subdivided. The lowest level constitutes a checklist question.	Baseline and monitoring methodologies	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 <b>Corrective Action Request (CAR)</b> due to non-compliance with the checklist question. (See below). <b>Clarification Request (CR)</b> is used when the validation team has identified a need for further clarification.

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<b>Validation Protocol Table 4: Legal requirements</b>				
<b>Checklist Question</b>	<b>Reference</b>	<b>Means of verification (MoV)</b>	<b>Comment</b>	<b>Draft and/or Final Conclusion</b>
The national legal requirements the project must meet.	National Sustainable Policies.	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 ( <b>OK</b> ), or a <b>Corrective Action Request (CAR)</b> due to non-compliance with the checklist question. (See below). <b>Clarification Request (CR)</b> is used when the validation team has identified a need for further clarification.

<b>Validation Protocol Table 5: Resolution of Corrective Action and Clarification Requests</b>			
<b>Report clarifications and corrective action requests</b>	<b>Ref. to checklist question in tables 2, 3 and 4</b>	<b>Summary of project owner response</b>	<b>Validation conclusion</b>
If the conclusions from the 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 Tables 2, 3 and 4 where the Corrective Action Request or Clarification Request is explained.	The responses given by the Client or other 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 Tables 2,3 and 4, under "Final Conclusion".

**Figure 1 Validation protocol tables**

## 2.1 Review of Documents

The Project Design Document (PDD) submitted by Energias do Brasil S/A-Paráíso Small Hydro Power Plant – PCH Paráíso and additional background documents related to the project design and baseline, i.e., Resolução Interministerial 01/03 , Resolução Interministerial 02/05 , Clean Development Mechanism Project Design Document Form (CDM-PDD) – Version 02, Guidelines for completing the Project Design Document (CDM-PDD) – version 04, Tool for the demonstration and assessment of additionality – Version 02, Kyoto Protocol to the United Nations Framework Convention on Climate Change, Clarifications on Validation Requirements to be Checked by a Designated Operational Entity, Approved Consolidated Methodology ACM0002, version 06, Consolidated baseline methodology for grid-connected electricity generation from renewable sources were reviewed.

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The following documents were used as references to the validation work, in addition to internal BVQI procedures: IETA/PCF – Validation and Verification Manual (v. 3.3, Mar 2004) ; ISO 14064-3 - Greenhouse gases —Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions ; ISO 14064-2 - Greenhouse gases — Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements

To address BVQI corrective action and clarification requests ENERGIAS DO BRASIL S/A revised the PDD and resubmitted it in October 2006.

### 2.2 Follow-up Interviews

BVQI performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of the client were interviewed (see References). The main topics of the interviews are summarised in Table 1.

**Table 1 Interview topics**

Interviewed organisation	Interview topics
PricewaterhouseCoopers	<ul style="list-style-type: none"><li>➤ Environmental legal requirements related to the project</li><li>➤ Technical characteristics of the project</li><li>➤ Project category</li><li>➤ Actual reduction of tons of GHG</li><li>➤ Barriers to the project</li><li>➤ Methodology</li><li>➤ Origin of data</li><li>➤ Invitation of stakeholders for comments</li></ul>

### 2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation was to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for BVQI positive conclusion on the project design.

To guarantee the transparency of the validation process, the concerns raised are documented in more detail in the validation protocol in Appendix A.

## 3 VALIDATION FINDINGS

In the following sections the findings of the validation are stated. The validation findings for each validation subject are presented as follows:

1) The findings from the desk review of the original project design documents and the findings from interviews during the follow up visit

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are summarised. A more detailed record of these findings can be found in the Validation Protocol in Appendix A.

- 2) Where BVQI had identified issues that needed clarification or that represented a risk to the fulfilment of the project objectives, a Clarification or Corrective Action Request, respectively, have been issued. The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the Project resulted in nine Corrective Action Requests and twelve Clarification Requests.
- 3) The conclusions of the validation process are presented.

### 3.1 Project Design

PCH Paraíso is a small Hydropower Plant of 21 MW installed capacity, located in the city of Costa Rica in the State of Mato Grosso do Sul. PCH Paraíso utilizes the Paraíso river Hydropower potential to generate electricity.

PCH Paraíso has the objective to generate electricity to supply the country's economic growth demands for energy, through the use of sustainable renewable sources, such as Hydropower Plants generation.

This renewable source of electricity generation has an important contribution to the overall reduction of CO<sub>2</sub> emissions.

In the absence of this project, the tendency shows that fossil fuel intensive energy generation sources would be used instead. Therefore, this project contributes to the reduction of greenhouse gas emissions.

PCH Paraíso is located in the river Paraíso, in the boundary of Costa Rica and Chapadão do Sul municipalities, in the state of Mato Grosso do Sul. The dam is located approximately 277 km from Campo Grande, the main city of the State of Mato Grosso do Sul. The main access to the dam's reservoir is by BR-163 and MS-349/BR-060 highway.

The approximate geographical coordinates are: latitude 19° 03' south and longitude 52° 59' west. The urban nucleus of the municipalities of Costa Rica and Chapadão do Sul, and Paraíso district, are approximately 70 km, 60 km and 2,2 km, to the dam's reservoir. According to the IBGE 2000 census, the total population that lives in the surroundings of this reservoir are 27.146 inhabitants, where 15.488 are from Costa Rica, 11.658 from Chapadão do Sul and 1.773 from Paraíso.

In agreement with the definition of the Brazilian Electricity Regulatory Agency (ANEEL), resolution no.652, dated of December 9, 2003, small Hydropower Plant in Brazil should have installed capacity larger than 1

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MW and less than 30 MW, and should have a reservoir area less than 3 km<sup>2</sup>. According to Eletrobrás (1999), run-of-river projects are defined as: “a project where the river’s dry season flow rate is the same or higher than the minimum required for the turbines.”

A low-level diversion dam raises the water level in the river sufficiently to enable an intake structure to be located on the side of the river. The intake consists of a trash screen and a submerged opening with an intake gate. Water from the intake is normally taken through a pipe (called a penstock) downhill to a power station constructed downstream of the intake and at as low a level as possible to gain the maximum head on the turbine. The technology employed at PCH Paraíso Project is well known established technology in the industry.

### 3.2 Baseline

Approved consolidated baseline methodology ACM0002 – version 06 – 19 May 2006 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources".

The chosen methodology is applicable to the project activity because it is a grid-connected electricity generation from a renewable source, where the renewable source is the small Hydropower generation run-of-river connected to the Interconnect National Grid – ING.

Although Brazil has a vast potential for hydropower generation, the government's intention in diversifying the supply of energy in Brazil has shifted the energy matrix towards a more fossil fuel intensive power generation, constructing fossil fuel thermo power plants.

PCH Paraíso does not require an extensive reservoir. It is limited to a lake of approximately 1,2 km<sup>2</sup>. This qualifies PCH Paraíso to fit in the ACM0002 methodological framework.

It is important to mention the following points:

- . In the project activity, there is no fossil fuel substitution in the project site;
- . The characteristics of the system in which PCH Paraíso is connected are clear and easily identified.

The methodology used for the calculation of the emission factor is ACM0002.

According to the version 06 of ACM0002 methodology, new hydro electric power projects with reservoirs having power densities (installed power generation capacity divided by the surface at full reservoir level) greater than 4 W/m<sup>2</sup>. and less than or equal 10 W/m<sup>2</sup>, is necessary the calculation of the emissions from reservoir expressed as tCO<sub>2</sub>eq/year. If power

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density of the project is greater than  $s^2$  the emission from the reservoir is considered zero.

As mentioned previously, the construction of the baseline is based on the presumptions that upon the list of opportunities encountered, the natural tendency is that the Brazilian energy matrix tends to shift towards GHG intensive energy generation sources.

The calculation of the GHG energy emission reduction benefits will be done utilizing MWh of generated energy multiplied by the emission factor of the South/Southeast/midwest subsystem (SSMW).

The additionality of the project is demonstrated by applying the “Tool for demonstration and assessment of additionality” as required by ACM0002 as follows:

Step 0. Preliminary screening based on the starting date of the project activity:

Not applicable.

Step 1. Identification of alternatives to the project activity consistent with current laws and regulations

The alternative presented to the project is based on the fact that even though the current energy supply matrix in the country is highly based on renewable energy sources, in specific hydropower plants, there is an apparent indication that the percentage of thermal electric plants will increase in the next years. This will make the energy supply system more intensive towards fossil fuel energy source utilization.

This alternative comply with local laws and regulation.

Step 2. Investment analysis

Not applicable

Step 3. Barrier analysis

Sub-step 3a. Identify barriers that would prevent the implementation of type of the proposed project activity.

- Investment barriers

The investment barriers are presented as the high guarantees to finance an energy project in Brazil and the contract for buying and selling electrical energy.

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The high guarantees to finance an energy project is related to several requirements that raise the cost of the project, such as insurance, financial guarantees and financial advisors.

It was demonstrated by the project participants that the Brazilian market lacks availability of long-term capital. To finance construction, project sponsors took advantage of the financing lines of BNDES, a financial support that covers 70% of the project costs with a TJLP\* (BNDES Long Term Interest Rate) rate of 9% plus a 4.5% for a term of 10 years and 2 years grace period.. The last version of the PDD stated that the average IRR of the of the project without CER revenues is approximately 15.77 % and, considering the CER revenues 16.72%.

The startup of the plant occurred on January 2003. In 2001, the average SELIC rate was 17,65 %, in 2002 it was 19.17 % and in 2003, the SELIC rate was 23.35 %. Additional data from calculation of the IRR were presented by the project participant and it was possible to verify that the calculation was carried on considering the cost of investment, the energy production capacity assured by technical studies or by authorization of ANEEL as “assured energy” and the price of PPA signed on start-up of the unit. These figures were considered reliable and justified the argumentation.

Through this analysis presented, BVQI could notice that there is an investment f barrier to projects and the CERs become an important driver to the project participant.

- Technological barriers

### Lack of Infrastructure

BVQI could observe that the region where the project is located is isolated. There is a lack of infrastructure, such as, highways, roads, communication and transportation. The project developers had to implement these types of installations before the project started. Besides all these elements, there were no qualified professionals in this region as well.

### Institutional Barriers

It was possible to confirm that the regulatory environment for the electricity sector undergoes frequent changes in Brazil, which causes uncertainties for investors and developers of similar projects, which could be evidenced by the low number of hydroelectric plants implemented in the electric market of Brazil.

Step 4. Common practice analysis:



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Small hydro-electricity projects are not common practice in Brazil, only 1,3% of installed capacity came from small Hydropower Plants (1,2 GW from a total of 88,7 GW). The business as usual on the Brazilian electricity market is to continue with large hydro and thermal power projects, which represent the majority of the installed capacity. The project proponent doesn't participate in the PROINFA.

### Step 5. Impact of CDM Registration

The application of the Tool For Demonstration of Additionality demonstrate that the sale of CERs will provide the incentives for the project to overcome the identified barriers and in particular the investment barrier.

It was also possible to prove that the project is not likely baseline scenario.

### 3.3 Monitoring Plan

The chosen monitoring methodology is applicable to grid connected renewable energy projects. The methodology consists of metering the electricity generated by the renewable technology. This fits of the operation at Paraíso Small Hydro Power Plant – PCH Paraíso, so the choice of methodology is justified.

The monitoring plan is based on monitoring the amount of electricity supplied to the grid. The reliability of this monitoring parameter is assured through two-party verification of the amount of electricity sold to the S-SE-CO grid. The baseline emission factor will be updated annually, ex-post for the year in which actual project generation and associated emissions occur.

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 seems appropriate for the project. Algorithms and formulas used have also been established as well as the period for which data will be archived.

All the requirements of the applicable methodology ACM0002 are fulfilled by the project activity.



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### 3.4 Calculation of GHG Emissions

Based on the renewable source of technology, the project emissions are nil. Therefore, no calculation of estimate of GHG emissions is necessary.

No leakage was identified. Therefore, no calculation of estimate of GHG emissions is necessary.

The baseline emissions are proportional to the electricity delivered to the grid throughout the project's lifetime. Baseline emissions due to displacement of electricity are calculated by multiplying the electricity baseline emissions factor with the electricity generation of the project activity.

The emission reductions by the project activity ( $ER_y$ ) during a given year  $y$  are the product of the baseline emissions factor ( $EF_y$ , in tCO<sub>2</sub>e/MWh) times the electricity supplied by the project to the grid ( $EG_y$ , in MWh), as follows:

$$ER_y = EF_y \times EG_y$$

The full implementation of the Paraíso Small Hydro Power Plant – PCH Paraíso connected to the Brazilian electricity interconnected grid will avoid an average estimated yearly emission of around 31,073 tCO<sub>2</sub>e, and a total reduction of about 310,730 tCO<sub>2</sub>e over 10 years crediting period (up to and including 2016, see Table 5 of item E.6 of the PDD).

### 3.5 Sustainable Development Impacts

The current environmental impacts of PCH Paraíso implantation for the electric power production were contemplated in the entitled document “EIA/RIMA” Environmental Impact Assessment Study.

PCH Paraíso received all the necessary environmental licenses.

The identified environmental aspects of the project are presented in the EIA/RIAMA document, which presents all mitigations procedures and measurements to an appropriate environmental impact management. It is worth to point out that the study was already approved by the competent environmental agencies and all environment impact adjustments are done or in process.

As for the regulatory permits, Paraíso Small Hydro Power Plant has the authorization issued by ANEEL to operate as an independent power producer, which gives the right to operate the Paraíso Small Hydro Power Plant.

As for the environmental permits, the proponent of any project that involves the construction, installation, expansion, and operation of any polluting or potentially polluting activity or any activity capable of causing

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environmental degradation is required to secure a series of permits from the respective state environmental agency. In addition, any such activity requires the preparation of an environmental assessment report, prior to obtaining construction and operation permits. Three types of permits are required. The first is the preliminary permit (Licença Prévia or L.P.) issued during the planning phase of the project and which contains basic requirements to be complied with during the construction, and operating stages. The second is the construction permit (Licença de Instalação or L.I.) and, the final one is the operating permit (Licença de Operação or L.O.).

The preparation of an Environmental Impact Assessment is compulsory to obtain the construction and the operation licenses. In the process a report containing an investigation of the following aspects was prepared:

- Impacts to climate and air quality.
- Geological and soil impacts.
- Hydrological impacts (surface and groundwater).
- Impacts to the flora and animal life.
- Socio-economical (necessary infra-structure, legal and institutional, etc.).

The result of a successful submission of those assessments is the preliminary license (LP), which reflects the environmental local agency positive understanding about the environmental project concepts. To get the construction license (LI) it will be necessary to present either: (a) additional information into previous assessment; or (b) a new more detailed simplified assessment; or (c) the “Environmental Basic Project”, according environmental local agency decision at the LP issued. The operation license (LO) number 264/2003 was issued on 23 December 2003.

The project has the necessary environmental licenses. The operating permit/licenses were issued by the state environmental agency, Instituto do Meio Ambiente, do Pantanal – IMA – MS. All documents related to operational and environmental licensing are public and can be obtained at the state environmental agency.

### **3.6 Comments by Local Stakeholders**

According to the federal and local legislation, the environmental licensing process requires public hearings with local stakeholders. The same legislation require that the announcement of the license (LP, LI and LO) to be posted in the official state or local journal and others regional journals.

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For the development of the project activity in the standards established by the UNFCCC and Designated National Authorities (DNA), with high levels of transparency with the society, the Energias do Brasil established specific public hearing about the Clean Development Mechanism (CDM) project PCH Paraíso. The community had the opportunity to clarify doubts about the Kyoto Protocol, CDM and the impacts of the project.

The stakeholders from local, regional and national levels received an invitation letter. Energias do Brasil also published an informative about the meeting in the Mato Grosso do Sul majors newspapers, making possible for the people who were interest in the subject attend the public hearings.

Besides the stakeholders comments required for the PCH Paraíso environmental license, the Brazilian Designated National Authorities (DNA) demands that the stakeholders comments must be based on a translated version of the Project Design Document (PDD) and that validation report to be edited by a Designated Operational Entity (DOE), according the Resolution n.1 - 11 of September of 2003, in order to present a letter of approval.

During the public hearing the participants were encouraged to ask questions. All questions were answered and doubts clarified by Energias do Brasil.

At the end of the meeting the stakeholders comments were handwrite by a participant, and was read out loud to all the presents at the time in order to receive a consensual agreement.

All the stakeholder comments goes through the company plans, which previously predicted that all the income of the sales of CER's of this project activity will be allocated in a fund managed by an entity founded exclusively to this objective. This fund will support social-environmental projects.

The Brazilian Designated National Authorities (DNA) demands that all projects must be open to comments before validation.

As described above Energias do Brasil made the specific public hearing about the project in the region was the project is located.

As mentioned above, at the end of the public hearing the stakeholders prepared a document with their comments.

All comments received in the context of the environmental and operational licensing process were incorporated into current projects.

The comments about the CDM Project activity presented during the public hearing, as well as all the comments that may appear during the

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## VALIDATION REPORT

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validation process, will be undertaken in transparency manner by Energias do Brasil.

### **4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS**

According to the modalities for the Validation of CDM projects, the validator shall make publicly available the project design document and receive, within 30 days, comments from Parties, stakeholders and UNFCCC accredited non-governmental organisations and make them publicly available.

BVQI published the project documents on the UNFCCC CDM website (<http://cdm.unfccc.int>) on 2006-06-24 and invited comments until 2006-07-23 by Parties, stakeholders and non-governmental organisations. No comments were received.

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## 5 VALIDATION OPINION

BVQI has performed a validation of the Paraíso Small Hydro Power Plant-PCH Paraíso project in Brazil. The validation was performed on the basis of UNFCCC criteria and host country criteria, also on the criteria given to provide for consistent project operations, monitoring and reporting.

The validation consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan (August 2006); ii) follow-up interviews with project stakeholders (August 2006); iii) the resolution of outstanding issues and the issuance of the final validation report and opinion (October 2006).

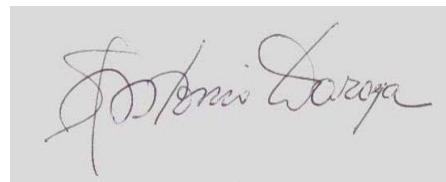
Paraíso Small Hydro Power Plant-PCH Paraíso is a run-of-river small hydro power plant generating renewable energy. The capacity of the proposed project activity is the maximum output of 21 MW.

The review of the project design documentation (March 2006 version) and the subsequent follow-up interviews have provided BVQI with sufficient evidence to determine the fulfilment of stated criteria. In our opinion, the project correctly applies the Clean Development Mechanism Project Design Document Form (CDM-PDD) – Version 02; the Guidelines for completing the Project Design Document (CDM-PDD) – Version 04; the Tool for the demonstration and assessment of additionality – Version 02, and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

The validation is based on the information made available to us and the engagement conditions detailed in this report.

Date: 15 December 2006

Date: 15 December 2006



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Ashok Mammen  
Internal Reviewer

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Antonio Daraya  
Team Leader

## 6 REFERENCES

### Category 1 Documents:

Documents provided by Paraíso Small Hydro Power Plant-PCH Paraíso that relate directly to the GHG components of the project.

- /1/ **Clean development mechanism – Project design document (CDM-PDD) – Paraíso Small Hydro Power Plant-PCH Paraíso Small Scale CDM PROJECT. Version 01, June 2006.**
- /2/ **Clean development mechanism – Project design document (CDM-PDD) – Paraíso Small Hydro Power Plant-PCH Paraíso Small Scale CDM PROJECT. Version 02, October 2006.**
- /3/ **Clean development mechanism – Project design document (CDM-PDD) – Paraíso Small Hydro Power Plant-PCH Paraíso Small Scale CDM PROJECT. Version 03, November 2006.**
- /4/ **Resolução Interministerial 01. Comissão Interministerial de Mudança Global do Clima, Sep, 2003**

### Category 2 Documents:

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

- /5/ **Resolução Interministerial 02. Comissão Interministerial de Mudança Global do Clima, Aug, 2005.**
- /6/ **Clean Development Mechanism Project Design Document Form (CDM-PDD) – Version 02**
- /7/ **Tool for the demonstration and assessment of additionality – Version 02**
- /8/ **Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec, 1997**
- /9/ **Clarifications on validation requirements to be checked by a Designated Operational Entity. UNFCCC/CCNUCC, Sep, 2004**
- /10/ **Approved Consolidated Baseline Methodology- Consolidated baseline methodology for grid-connected electricity generation from renewable sources- ACM0002, version 06.**
- /11/ **IETA/PCF – Validation and Verification Manual (v. 3.3, Mar 2004)**
- /12/ **ISO 14064-3 - Greenhouse gases — Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions**
- /13/ **ISO 14064-2 - Greenhouse gases — Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements**

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### Category 3 Websites

Websites accessed during validation to confirm information provided in the PDD

- /14/ Banco Central do Brasil (Brazilian Central Bank) [bcbr.gov.br](http://bcbr.gov.br)
- /15/ ANEEL - Agência Nacional de Energia Elétrica (Brazilian Electricity Regulatory Agency) [www.aneel.gov.br](http://www.aneel.gov.br)

### Records reviewed:

The following records were reviewed during validation process.

- /16/ Pre-Operation, Installation and Operation Licenses.
- /17/ Personnel Training Records.
- /18/ Paraiso Small Hydropower plant – PCH Paraiso – cash flow

### Persons interviewed:

List persons interviewed during the validation, or persons that contributed with other information that are not included in the documents listed above.

- /19/ PRICE WATERHOUSE COOPERS.
  - Ernesto Cavasin.
- /20/ ENERGIAS DO BRASIL
  - José Lopes Alves

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**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	The project will result in fewer GHG emissions than the baseline scenario.	Table 2, Section E.4.1
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, Marrakesh Accords, CDM Modalities §40a	The final decision from the DNA will be available only after its first meeting after the receiving of the all documents necessary for evaluation, including this validation report, according to Article 6 <sup>th</sup> of Resolução Interministerial 01/03.	Table 4, Section 1.4
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art.12.2.	The project will result in fewer GHG emissions than the baseline scenario.	Table 2, Section E.4.1
4. The project shall have the written approval of voluntary participation from the designated national authorities of each party involved, including confirmation by the host party that the project activity assists it in achieving sustainable development	Kyoto Protocol Art. 12.5a, Marrakesh Accords, CDM Modalities §40a, §28	The final decision from the DNA will be available only after its first meeting after the receiving of the all documents necessary for evaluation, including this validation report, according to Article 6 <sup>th</sup> of Resolução Interministerial 01/03.	Table 4, Section 1.4
5. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol	The project will result in fewer GHG emissions than the	Table 2, Section E



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REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
	Art. 12.5b	baseline scenario.	
<b>6.</b> 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, Marrakesh Accords, CDM Modalities §43 and 44	Data with the estimated emissions reduction is presented	Table 2, Section B.3
<b>7.</b> Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance	Marrakech Accords	There is no public funding involved. See annex 2 of PDD.	Section A.4.5
<b>8.</b> Parties participating in the CDM shall designate a national authority for the CDM	Marrakech Accords, CDM Modalities §29	Comissão Interministerial de Mudança Global do Clima	-
<b>9.</b> The host country shall be a Party to the Kyoto Protocol	Marrakech Accords, CDM Modalities §30	Comissão Interministerial de Mudança Global do Clima	-
<b>10.</b> Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received	Marrakech Accords, CDM Modalities §37b	There are no evidences that stakeholders have been consulted.	Table 2, Section G
<b>11.</b> 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.	Marrakech Accords, CDM Modalities §37c	It is declared in the PDD that the project has all environmental licenses required by the legislation. These licenses were not presented	Table 2, Section F
<b>12.</b> Baseline and monitoring methodology shall be previously approved by the CDM Methodology Panel	Marrakech Accords, CDM Modalities §37e	ACM0002 – Consolidated baseline methodology for grid-connected electricity generation from renewable sources	Table 2, Section B.1.1 and D.1.1

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REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
		Version 06 of 19 May 2006.	
<b>13.</b> 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	Marrakech Accords, CDM Modalities §37f	There are no evidences of a description of authority and responsibility for the project management. There are no evidences of a description of authority and responsibility for registration, monitoring, measurement and reporting.	Table 2, Section D
<b>14.</b> 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	Marrakech Accords, CDM Modalities, §40	PDD was uploaded at the UNFCCC website. Period comments from 24 June 2006 to 23 July 2006.	-
<b>15.</b> 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	Marrakech Accords, CDM Modalities, §45 b, c, e	The baseline scenario chosen for this project is in accordance to approved project activity.	Table 2, Section B.2
<b>16.</b> The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure	Marrakech Accords, CDM Modalities, §47	OK.	Table 2, Section B.2
<b>17.</b> The project design document shall be in conformance with the UNFCCC CDM-PDD format and fulfilled according to the guidelines for completing CDM-PDD, CDM-NMB, and CDM-NMM	Marrakech Accords, CDM Modalities, Appendix B, EB Decisions	OK	-

**Table 2 Requirements Checklist**

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
<b>A. General Description of Project Activity</b>					
<i>The project design is assessed.</i>					
A.1. Title of the project activity, version number and date of the document	1	DR	Paraíso Small Hidropower Plant Version: 1. Date: 12/06/2006.	OK	OK
<b>A.2. Description of the project activity</b>					
A.2.1. Is the purpose of the project activity included?	1	DR	PCH Paraíso has the objective to generate electricity to supply the country's economic growth demands for energy, through the use of sustainable renewable sources.	OK	OK
A.2.2. Is the view of the project participants on the contribution of the project activity to sustainable development included?	1	DR	The renewable source of electricity generation has an important contribution to the overall reduction of CO2 emissions.	OK	OK
A.2.3. Will the project create other environmental or social benefits than GHG emission reductions?	1	DR	There are no evidences at PDD related to environmental or social benefits	CR-01	OK
<b>A.3. Project participants</b>					
A.3.1. Are Party(ies) and private and/or public entities involved in the project activity listed?	1	DR	Table 01 of PDD.	OK	OK
A.3.2. Is the contact information provided in annex 1 of the PDD?	1	DR	Yes.	OK	OK
A.3.3. Is this information indicated using the tabular format?	1	DR	Yes.	OK	OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
<b>A.4. Technical description of the project activity</b>					
<b>A.4.1. Location of the project activity</b>					
A.4.1.1.Host country Party(ies)	1	DR	Brazil.	OK	OK
A.4.1.2.Region/State/Province etc.	1	DR	Brazilian Midwest region / Mato Grosso do Sul	OK	OK
A.4.1.3.City/Town/Community etc.	1	DR	Costa Rica	OK	OK
A.4.1.4.Detailed description of the physical location, including information allowing the unique identification of this project activity.	1	DR	Paraíso Hidropower Plant is located in the city of Costa Rica, latitude 19° 03' south and longitude 52° 59' west of Mato Grosso do sul State, at 277 Km Campo Grande, the main city of the State.	OK	OK
<b>A.4.2. Category of the project activity</b>					
A.4.2.1. Is the category of the project activity specified?	1	DR	Energy industries (renewable - /non-renewable sources).	OK	OK
A.4.2.2. Is it justified how the proposed project activity conforms to the project category selected?	-	DR	Category selected is the generation of renewable energy, where energy is dispatched to the an Interconnected National Grid – ING.	OK	OK
<b>A.4.3. Technology to be employed</b> <i>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.</i>					
A.4.3.1. Does the project design engineering reflect current good practices?	-	DR	Yes.	OK	OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A.4.3.2. 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?	-	DR	Yes.	OK	OK
A.4.3.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	-	DR	No.	OK	OK
A.4.3.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	-	DR	Yes.	OK	OK
A.4.3.5. Does the project make provisions for meeting training and maintenance needs?	-	DR	Please, inform which provisions were made to meet training and maintenance activities necessary for the project.	CR-02	OK
<b>A.4.4. Brief statement of how anthropogenic emissions of GHG by sources are to be reduced by the proposed CDM project activity</b>					
A.4.4.1. Is it stated how anthropogenic GHG emission reductions are to be achieved?	1	DR	The project will result in GHG emission reductions by displacing electricity generation from fossil-fuel thermal plants that would have otherwise been dispatched to the grid.	OK	OK
A.4.4.2. Is the estimate of total anticipated reductions of tons of CO <sub>2</sub> equivalent provided?	1	DR	A total reduction of 310,730 tons of CO <sub>2</sub> equivalent is estimated.	OK	OK
A.4.4.3. Is this information indicated using the tabular format?	1	DR	Table 03 – Estimated amount of emission reductions	OK	OK

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<b>A.4.5. Public funding of the project activity</b>					
A.4.5.1. Is it indicated whether public funding from Parties included in Annex I is involved in the proposed project activity?	1	DR	There is no public funding involved. See annex 2 of PDD.	OK	OK
A.4.5.2. If public funding is involved, is information on sources of public funding for the project activity provided in Annex 2, including an affirmation that such funding does not result on a diversion of official development assistance and is separate from and is not counted towards the financial obligations of those Parties?	1	DR	N.A.	-	-
<b>B. Project Baseline</b>					
<i>The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.</i>					
<b>B.1. Baseline Methodology</b>					
<i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
B.1.1. Are the title and the reference of the baseline methodology applicable to the project activity defined?	1	DR I	ACM0002 – Consolidated baseline methodology for grid-connected electricity generation from renewable sources, PDD uses version from 2004 and there is a new one, from May 2006	OK	OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
B.1.2. Does the CDM Methodology Panel previously approve the baseline methodology?	1	DR	Yes.	OK	OK
B.1.3. Does the proposed project activity meet the applicability conditions of the methodology?	1	DR	See item 1.1 of Table 3.	-	-
<b>B.2. Description of how the methodology is applied in the context of the project activity</b>					
B.2.1. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	1	DR	See item 1.1 of Table 3.	-	-
<b>B.3. Description of how the anthropogenic GHG emissions by sources are reduced below those that would have occurred in the absence of the proposed project activity</b>					
B.3.1. Is the proposed project activity additional?	3	DR	There are no evidences at item B.3 at PDD that additionality was evaluated.	CR03	OK
B.3.2. Are national policies and circumstances relevant to the baseline of the proposed project activity summarised?	-	DR	Yes.	OK	OK
<b>B.4. Description of the project boundary for the project activity</b>					
B.4.1. Are the project's spatial (geographical) boundaries clearly defined?	1	DR	Yes	OK	OK
B.4.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	1	DR	There are not clearly defined at PDD the components and facilities used to mitigate GHG project boundaries.	CR04	OK
<b>B.5. Details of the baseline and its development</b>					
B.5.1. Is the date of completion provided?	1	DR	31/03/2006	OK	OK

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B.5.2. Is contact information provided?	1	DR	Yes.	OK	OK
<b>C. Duration of the Project/ Crediting Period</b> <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>					
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	1	DR	Starting date is 12/01/2003. Operational lifetime is 30 years. There is evidence that requirement of the Tool for demonstration and assessment additionality (step 0 Preliminary screening based on the starting date of the project activity) is not fulfilled	OK CAR 09	OK OK
C.1.2. 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)?	1	DR	It is a fixed crediting period of ten years.	OK	OK
<b>D. Monitoring Plan</b> <i>The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed.</i>					
<b>D.1. Monitoring Methodology</b> <i>It is assessed whether the project applies an appropriate baseline methodology.</i>					
D.1.1. Does the CDM Methodology Panel previously approve the monitoring methodology?	1	DR	PDD used Approved and consolidated monitoring methodology ACM0002 (2004) but there is a more recent version, from 19 May, 2006.	CAR01	OK

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D.1.2. Is the monitoring methodology applicable for this project and is the appropriateness justified?	1	DR	The chosen monitoring methodology is applicable for connected net of generation of electricity of renewable sources”) and its applies to electricity capacity additions from run-of-river Hydropower Plants. Please verify that there is a new version methodology approved and check eventual modifications.	CR05	OK
D.1.3. Does the monitoring methodology reflect good monitoring and reporting practices?	2	DR	The applicability conditions expressed in the monitoring methodology are in agreement with ACM0002 baseline methodology. Please verify that there is a new version methodology approved and check eventual modifications.	CR05	OK
D.1.4. Is the discussion and selection of the monitoring methodology transparent?	2	DR	Yes.	OK	OK
<b>D.2. Monitoring of Project Emissions</b> <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
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?	-	DR	As the project activity does not generate GHG emissions within the project boundary during the crediting period , this question is not applicable.	OK	OK
D.2.2. Are the choices of project GHG indicators reasonable?	-	DR	See comment D.2.1	OK	OK
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?	-	DR	See comment D.2.1.	OK	OK

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D.2.4. Will the indicators give opportunity for real measurements of achieved emission reductions?	-	DR	See comment D.2.1.	OK	OK
D.2.5. Will the indicators enable comparison of project data and performance over time?	-	DR	See comment D.2.1.	OK	OK
<b>D.3. Monitoring of Leakage</b> <i>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.</i>					
D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	-	DR	Leakage is not applicable, therefore no relevant data is expected to occur.	OK	OK
D.3.2. Have relevant indicators for GHG leakage been included?	-	DR	See comment D.3.1.	OK	OK
D.3.3. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	-	DR	See comment D.3.1.	OK	OK
D.3.4. Will it be possible to monitor the specified GHG leakage indicators?	-	DR	See comment D.3.1.	OK	OK
<b>D.4. Monitoring of Baseline Emissions</b> <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
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?	-	DR	Table D.2.1.3 defines how relevant data will be archived and also the archiving period of them.	OK	OK

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D.4.2. Was the choice of baseline indicators, in particular for baseline emissions, reasonable?	-	DR	Yes. The choice is according to the applicable baseline methodology ACM 0002.	OK	OK
D.4.3. Will it be possible to monitor the specified baseline indicators?	-	DR	There are two indicators to be monitored. Electricity generated which is measured continuously and the emission factor to be calculated annually.  The authority and responsibility for monitoring the baseline indicators is not clearly described.	OK  CAR02	OK  OK
<b>D.5. Project Management Planning</b> <i>It is checked that project implementation is properly prepared for and that critical arrangements are addressed.</i>					
D.5.1. Is the authority and responsibility of project management clearly described?	1	DR	There are no evidences of a description of authority and responsibility for the project management.	CAR03	OK
D.5.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	1	DR	There are no evidences of a description of authority and responsibility for registration, monitoring, measurement and reporting.	CAR03	OK
D.5.3. Are procedures identified for training of monitoring personnel?	-	DR	The procedures for training of monitoring personnel are not clearly identified.	CAR04	OK
D.5.4. Are procedures identified for calibration of monitoring equipment?	-	DR	There are no evidences of procedures for calibration of monitoring equipment.	CAR05	OK
D.5.5. Are procedures identified for maintenance of monitoring equipment and installations?	-	DR	There are no evidences of procedures for maintenance of monitoring equipment and installations.	CAR05	OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
<b>E. Calculation of GHG Emissions by Source</b> <i>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.</i>					
<b>E.1. Predicted Project GHG Emissions</b> <i>The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.</i>					
E.1.1. Are all aspects related to direct and indirect GHG emissions, including leakage, captured in the project design?	-	DR	No aspects related to direct and indirect GHG emissions have been defined and no project emissions are calculated / measured. Emissions are not expected in this project activity.	OK	OK
E.1.2. Are the GHG calculations documented in a complete and transparent manner?	-	DR	See comment E.1.1	OK	OK
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?	-	DR	See comment E.1.1	OK	OK
E.1.4. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	-	DR	See comment E.1.1	OK	OK
E.1.5. Have all relevant greenhouse gases and source categories listed in Kyoto Protocol Annex A been evaluated?	-	DR	See comment E.1.1.	OK	OK
E.1.6. Are uncertainties of external data sources for emissions reduction estimated?	-	DR	See comment E.1.1.	OK	OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
<b>E.2. Leakage</b> <i>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.</i>					
E.2.1. Are potential leakage effects beyond the chosen project boundaries properly identified?	-	DR	Leakage effects are not expected in this project activity.	OK	OK
E.2.2. Have these leakage effects been properly accounted for in calculations?	-	DR	See comment E.2.1.	OK	OK
E.2.3. Does the methodology for calculating leakage comply with existing good practice?	-	DR	See comment E.2.1.	OK	OK
E.2.4. Are the calculations documented in a complete and transparent manner?	-	DR	See comment E.2.1..	OK	OK
E.2.5. Have conservative assumptions been used when calculating leakage?	-	DR	See comment E.2.1.	OK	OK
E.2.6. Are uncertainties in the leakage estimates properly addressed?	-	DR	See comment E.2.1.	OK	OK
<b>E.3. Baseline Emissions</b> <i>The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.</i>					
E.3.1. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	-	DR	Yes, the baseline boundaries are clearly defined and cover sources and sinks for baseline emissions.	OK	OK

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

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E.3.2. Are the GHG calculations documented in a complete and transparent manner?	-	DR	It should be demonstrated in a transparent and conservative manner how were achieved the values of the following parameters: <ul style="list-style-type: none"> <li>• generation electricity of the project</li> <li>• emission factor</li> <li>• operational margin emission factor</li> <li>• construction margin emission factor</li> <li>• Lambda factor</li> </ul>	CAR-06	OK
E.3.3. Have conservative assumptions been used when calculating baseline emissions?	-	DR	See comment E.3.2	CAR-06	OK
E.3.4. Are uncertainties in the GHG emission estimates properly addressed in the documentation?	-	DR	See comment E.3.2	CAR-06	OK
E.3.5. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?	-	DR	There is a new version of Methodology ACM0002.	CAR-01/CAR-06	OK
<b>E.4. Emission Reductions</b> 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?	-	DR	Yes. There are no evidences at item B.3 at PDD that additionality was evaluated.	OK CR03	OK OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
<b>F. Environmental and Social Impacts</b>					
<i>Documentation on the analysis of the environmental and social impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.</i>					
F.1.1. Has an analysis of the environmental and social impacts of the project activity been sufficiently described?	-	DR	<i>The analysis of the environmental and social impacts are not sufficiently described at PDD</i>	CR-06	OK
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	-	DR	Licenses are not available for validation team.	CR-06	OK
F.1.3. Will the project create any adverse environmental or social effects?	-	DR	No.	OK	OK
F.1.4. Are transboundary environmental and social impacts considered in the analysis?	-	DR	Yes.	OK	OK
F.1.5. Have identified environmental and social impacts been addressed in the project design?	-	DR	No. The environmental and social impact are not sufficiently described.	CR-06	OK
F.1.6. Does the project comply with environmental legislation in the host country?	-	DR	See Table 4.	CR-06	OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
<b>G. Stakeholder Comments</b>					
<i>The validator should ensure that a stakeholder comments have been invited and that due account has been taken of any comments received.</i>					
G.1.1. Have relevant stakeholders been consulted?	-	DR	Yes	OK	OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	-	DR	Yes	OK	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?	-	DR	Yes.	OK	OK
G.1.4. Is a summary of the stakeholder comments received provided?	-	DR	Yes.	OK	OK
G.1.5. Has due account been taken of any stakeholder comments received?	-	DR	Please explain how the stakeholder comments will be taken by Energias do Brasil.	CR-07	OK

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



**Table 3 Approved Consolidated Baseline and Monitoring Methodologies ACM0006**

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
<b>1. Baseline Methodology</b>					
<b>1.1. Applicability</b>					
Is the project activity a run-of-river hydro power plants; hydro power projects with existing reservoirs where the volume of the reservoir is not increased ?	2	DR	Yes	OK	OK
Is the power density of the reservoir grater than 4 W/m <sup>2</sup> ?	2	DR	Please specify the power density of the project	CR 08	OK
Does the project activity include the improvement of energy efficiency of an existing power generation plant (energy efficiency improvement projects), e.g. by retrofitting the existing plant or by installing a new plant that replaces the existing plant?	2	DR	No	OK	OK
<b>1.2. Identification of the baseline scenario</b>					
Did the project participants account CO2 emissions from electricity generation in fossil fired power that is displaced due to the project activity to determine the baseline?	2	DR	Yes	OK	OK
<b>1.3. Project boundary</b>					
Does the spatial extent of the project boundary include the project site and all power plants connected physically to the electricity system that the CDM project power plant is connected to ?	2	DR	Yes	OK	OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
<b>1.4. Emissions reductions</b>					
Is the emission reduction determined according to the following formula: $ER_y = BE_y - PE_y - Ly$ ?	2	DR	PDD doesn't explain why the project emission is considered zero. Please, explain.	CR 09	OK
Are all values chosen in a conservative manner and is the choice justified?	2	DR	See above	-	-
<b>1.5. Project emissions</b>					
Are the project emissions estimated?	2	DR	PDD doesn't explain why the project emission is considered zero. Please, explain.	CR 09	OK
<b>1.6. Emissions reductions due to displacement of electricity</b>					
Are the emission reductions calculated by multiplying the net quantity of increased electricity generated as a result of the project activity ( $EG_y$ ) with the CO <sub>2</sub> baseline emission factor for the electricity displaced due to the project ( $E_{Electricity,y}$ )?	2	DR	Yes.	OK	OK
Does the emission factor for the displacement of electricity ( $E_{Electricity,y}$ ) correspond to the grid emission factor ( $E_{Grid,y}$ )?	2	DR	Yes	OK	OK
Is the grid emission factor ( $E_{Grid,y}$ ) calculated as a combined margin (CM) consisting of the combination of operating margin (OM) and build margin (BM) factors ?	2	DR	Section E.4 presents the formulae used to determine the grid emission factor  Please explain why the value of the factor of emission of the construction factor ( $E_{FBMy}$ ) is considered to be 0 (zero) in the equation presented in section D.2.1.4	OK  CR10	OK  OK
Is $EG_y$ determined based on the net efficiency of electricity generation in the project plant prior to project implementation and the net efficiency of electricity generation in the project plant after project	2	DR	Production Electric Power from PCH started in December 2003	OK	OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
implementation?					
<b>1.7. Emissions reductions or increases due to displacement of heat</b>					
Did the project participants determine the emission reductions or increases due to displacement of heat ( <i>ER<sub>heat,y</sub></i> )?	2	DR	Not applicable		
Did the project participants demonstrate that the thermal efficiency in the project plant is larger or similar compared with the thermal efficiency of the plant considered in baseline scenario and then assume <i>ER<sub>heat,y</sub> = 0</i> ?	2	DR	Not applicable		
Did the project participant account for any increases in CO <sub>2</sub> emissions?	2	DR	Not applicable		
<b>1.8. Baseline emissions due to natural decay or uncontrolled burning of anthropogenic sources of biomass</b>					
Were the baseline emissions due to natural decay or uncontrolled burning of anthropogenic sources of biomass considered null?	2	DR	Not applicable	OK	OK
<b>1.9. Additionality</b>					
Was the additionality of the project activity demonstrated and using the latest version of the “Tool for the demonstration and assessment of additionality”?	3	DR	See item B.3.1. of Table 2	CR 03	OK
<b>1.10. Leakage</b>					
Were the leakage effects addressed?	2	DR	Leakage is not applicable. See item D.3.1	OK	OK

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CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
<b>2. Monitoring Methodology</b>					
<b>2.1. Applicability</b>					
Does the project activity apply to a new hydro electric power projects with reservoirs having power density (installed power generation capacity divided by the surface area at full reservoir level) greater than 4 W/m <sup>2</sup> ?	2	DR	Please specify the power density of the project	CR 08	OK
<b>2.2. Monitoring Methodology</b>					
Will the electricity generation from the proposed project activity be monitored?	2	DR	Electricity supplied to the grid by the project.	OK	OK
Will the data needed to recalculate the operating margin emission factor be monitored?	2	DR	Please explain if CO2 emission factor is estimated ex ante or ex post?	CR 11	OK
Will the data needed to recalculate the building margin emission factor be monitored?	2	DR	Please explain if CO2 emission factor is estimated ex ante or ex post?	CR 11	OK
Will the data needed to recalculate the CO2 be monitored?	2	DR	Please explain if CO2 emission factor is estimated ex ante or ex post	CR 11	OK
Will the surface area of reservoir at the full reservoir level be monitored?	2	DR	The area of reservoir at the full reservoir level is not monitored as required by methodology ACM 0002	CAR 7	OK
<b>2.3. Project boundary</b>					
Does the project boundary include the physical site of the plant as well as the reservoir area?	2	DR	Yes	OK	OK
<b>2.4. Quality Control (QC) and Quality Assurance (QA) procedures</b>					
Will all measurements use calibrated measurement equipment that is maintained regularly and checked for its functioning?	2	DR	There are no evidences of the determination of the type of the main meter to be used neither of its installation point.	CAR 08	OK

**Table 4 Legal requirements**

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
<b>1. Legal requirements</b>					
1.1. Is the project in line with relevant legislation and plans in the host country?	2	DR	Please described the name and kind of licenses received.	CR-12	OK
1.2. Is the project activity environmentally licensed by the competent authority?	2	DR I	See comment 1.1 above.	CR-12	OK
1.3. Are the conditions of the environmental license being met?	2	DR I	Environmental license are not presented at PDD	CR-12	OK
1.4 Are the conditions of the Designated National Authority being met?	2	DR	The final decision from the DNA will be available only after its first meeting after the receiving of the all documents necessary for evaluation, including this validation report, according to Article 6 <sup>th</sup> of Resolução Interministerial 01/03.		

**Table 5 Resolution of Corrective Action and Clarification Requests**

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in Tables 2/3/4	Summary of project owner response	Validation team conclusion
<p><b>CAR 01</b> - PDD used Approved and consolidated monitoring methodology ACM0002 (2004) but there is a more recent version, from 19 May, 2006.</p>	<p>Table 2 D.1.1/E.3.5</p>	<p>The methodology used was ACM 0002 / Version 04 – 28 November 2005. Therefore the differences between the methodologies will not affect the monitoring.</p> <p>The correction has been done at the PDD item D.1/E.1</p>	<p>According to the full view and history of this methodology available in the UNFCCC website, version 04 was valid from 29 Nov 2005 to 02 Mar 2006, therefore when the PDD was issued (12/06/2006) this version was no more valid. CAR refers to fact that the PDD mention a version of the methodology no more valid when it was issued. Please correct it.</p> <p>OK</p>
<p><b>CAR 02</b> - The authority and responsibility for monitoring the baseline indicators is not clearly described</p>	<p>Table 2 D.4.3</p>	<p>The responsible for monitoring the baseline indicators is Energias do Brasil.</p> <p>These information has been included in the PDD, item D.4</p>	<p>Please this information include in the PDD.</p> <p>OK</p>
<p><b>CAR 03</b> - There are no evidences of a description of authority and responsibility for the project management as well as for registration, monitoring, measurement and reporting.</p>	<p>Table 2 D.5.1/D.5.2</p>	<p>The responsible for the project management as well as for registration, monitoring, measurement and reporting is Energias do Brasil.</p> <p>These information has been included in</p>	<p>Please include this information in the PDD.</p> <p>OK</p>

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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in Tables 2/3/4	Summary of project owner response	Validation team conclusion
		the PDD, item D.5	
<p><b>CAR 04</b> - The procedures for training of monitoring personnel are not clearly identified.</p>	Table 2 D.5.3	<p>The monitoring personnel is trained according to the monitoring National Electric System Operator (ONS – Operador Nacional do Sistema) procedures. All the generation data are stored in that procedures way.</p> <p>These information has been included in the PDD item D.5</p>	<p>Please include this information in the PDD.</p> <p>OK</p>
<p><b>CAR 05</b> - There are no evidences of procedures for calibration of monitoring equipment.</p>	Table 2 D.5.4/D.5.5	<p>The equipments of monitoring are calibrated and are frequently inspected according to the National Electric System Operator procedures.</p> <p>These information has been included in the PDD item D.5</p>	<p>Please include this information in the PDD.</p> <p>OK</p>
<p><b>CAR 06</b> It should be demonstrated in a transparent and conservative manner how were achieved the values of the following parameters:</p> <ul style="list-style-type: none"> <li>• generation electricity of the project</li> <li>• emission factor</li> <li>• operational margin emission factor</li> <li>• construction margin emission factor</li> </ul>	Table 2 E.3.2/E.3.3/ E.3.4/E.3.5	<p>The Emission Factor is calculated according the NSO dispatch information and the ACM0002 methodology. The generation electricity of the project is stored in the Energest Central and by the NSO. The Emission factor, operational margin emission factor and the construction margin emission factor</p>	OK.

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Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in Tables 2/3/4	Summary of project owner response	Validation team conclusion
Lambda factor		are calculated according the the NSO dispatch information and the ACM0002 methodology, shown in the annex 03.	
<b>CAR 07</b> - The area of reservoir at the full reservoir level is not monitored as required by methodology ACM 0002	Table 3 2.2	The reservoir area can not exceed 1,205 Km <sup>2</sup> , because the dam does not permit it. The dam has a fixed water high limit, that when the reservoir level get up, the excess water flows throw the dam to the river, maintaining the 1,205 Km <sup>2</sup> as the maximum area. The only possible change in the reservoir water level is in the dry season when the level goes down.	OK
<b>CAR 08</b> - There are no evidences of the determination of the type of the main meter to be used neither of its installation point.	Table 3 2.4	The main meter is the Electricity Dispatch Control System, installed in the Small Hydro Power Plant, which measure the total amount of electric energy that PCH Paraíso dispatch to ING (Interconnected National Grid) in MWh (Wattmeter). This information is checked and approved by the National Electric System Operator (ONS – Operador Nacional do Sistema).  These information has been included in the PDD item D.3	Please specify in the PDD the type of meter to be used.  Just for clarification the instrument used to measure energy dispatched is wattmeter no voltmeter.  OK





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		<p>provisions of the training and maintenance were diluted among the project development period.</p> <p>These information has been included in the PDD item A.4.3, according to the annex T.01, T.02 and T.03 of the validation process</p>	OK

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<p><b>CR 03</b> - There are no evidences at item B.3 at PDD that additionality was evaluated.</p>	<p>Table 2 B.3.1/E.4.1 Table 3 1.9</p>	<p>To evaluated the additionality the project activity used EB 16  “Tool for the demonstration and assessment of additionality” and followed there steps in B.3.</p> <p>The project participant (Energias do Brasil) does not wish to have the crediting period starting prior to the registration of their project activity.</p> <p>These information has been included in the PDD, section B.3 – Step 0</p> <p>The data presented in figure 2 of the PDD, section B.3, are the most recent data from official source for this type of comparison and shows how was the scenario back at the time when the project’s investments were done.</p> <p>Energest is a company that is part of Energias do Brasil that has as its largest stockholder EDP – Energias de Portugal, a company located in Portugal.</p> <p>Energias do Brasil has in its energy generation department, an environmental and sustainability group that analysis all projects through Clean</p>	<p>The starting date of the project doesn’t fulfil requirement of the Tool for demonstration and assessment of additionality step 0.</p> <p>As a consequence of the above comment above was raised CAR 09.</p> <p>The data referring to the participation of private capital in the Brazilian electricity market are from December 2000 (figure 2 of the PDD, section B.3)</p> <p>Please clarify whether isn’t there more updated data to support the analysis?</p> <p>OK</p>

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		<p>Development Mechanism parameters.</p> <p>In January 2003, Energias de Portugal Brasil- EDP, today Energias do Brasil, started activities in a work group related to Clean Development Mechanism – CDM with Energest, Enertrade and distributors in Brazil according to the annex A.01 (slides 27 and 30) and A.02 (slides 03 and 08) of the validation process.</p> <p>These work group among other projects defined the revindication of Certified Emission Reduction – CER`s by the energy production of Small Hydropower Plan in Brazil one of there aims.</p>	
<p><b>CR 04</b> - There are not clearly defined at PDD the components and facilities used to mitigate GHG project boundaries.</p>	<p>Table 2 B.4.2</p>	<p>The project boundaries are defined by the emissions targeted or directly affected by the project activities, construction and operation. It encompasses the physical, geographical site of the hydropower plant and the reservoir, which are represented by the respective river basin of each project close to the power plant facility and interconnected grid.</p>	<p>OK</p>
<p><b>CR 05</b> - The chosen monitoring methodology</p>	<p>Table 2</p>	<p>The methodology used was ACM 0002</p>	<p>OK</p>

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is applicable for connected net of generation of electricity of renewable sources”) and its applies to electricity capacity additions from run-of-river Hydropower Plants. Please verify that there is a new version methodology approved and check eventual modifications.	D.1.2/D.1.3	/ Version 04 – 28 November 2005. Therefore the differences between the methodologies won’t affect the monitoring.	
<b>CR 06</b> - The analysis of the environmental and social impacts are not sufficiently described at PDD	Table 2 F.1.1/F.1.2/ F.1.5/F.1.6	<p>The identified environmental and social aspects of the project are presented in the PBA (Environmental Basic Plan) Paraíso – annex L01. All the social and environmental benefits requested to the project implementation were done. A run-of-river project presents low environmental impact. The expansion of the generation capacity in a sustainable way will develop a better infra-structure, increase the employment rates in the region and increase the tax income. And will be created an entity to manage the income from the sales of the CER’s, which will be responsible to allocate this resources on social and environmental projects.</p> <p>These information has been included in the PDD item A.04. The geographical location of the project activity indicated</p>	<p>The project participant sent to the validation team all the environmental licenses.</p> <p>It was observed that the geographical location of the project activity indicated in the PDD is not the same stated in the operation permit. Please explain.</p> <p>Please inform if the requirements of the operation permit have been fulfilled. In case the answer is yes, please present the evidences</p> <p>OK</p>

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		in the PDD now is the same as indicated in the operational license already sented. All the requirements of the operation permit were fulfilled according to annex L.03.	
<b>CR 07</b> - Please explain how the stakeholder comments will be taken by Energias do Brasil.	Table 2 G.1.5	All the stakeholder comments goes through the company plans, which previously predicted that all the income of the sales of CER's of this project activity will be allocated in a fund managed by an entity founded exclusively to this objective. This fund will support social-environmental projects.  The explanation has been included in the PDD item G.01	Please include this explanation in the PDD.  OK
<b>CR 08</b> – Please specify the power density of the project	Table 3 1.1/2.1	According to the information in the project activity the potency of the plant is 21 MW and the maximum area of the reservoir is 1,2 km <sup>2</sup> . With this is possible to calculate the power density. So for the Paraíso Hydropower Plant the power density is 17,5 W/m <sup>2</sup> .b	The power capacity defined in the operation license is not the same presented at the PDD. Please explain.  OK

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<b>CR 09</b> - PDD doesn't explain why the project emission is considered zero. Please, explain.	Table 3 1.4/1.5	Based on the hydropower technology, the project emissions ( $PE_y$ ) are zero, therefore no formula for calculation of direct emissions are necessary. The project activity will have a small reservoir of 1,205 km <sup>2</sup> , and the methane emissions of the reservoir are insignificant. According to the methodology, if the project power density is higher than 10 W/m <sup>2</sup> than the $PE_y = 0$ . The project does not have any power generation from another energy source.	OK
<b>CR 10</b> - Please explain why the value of the factor of emission of the construction factor (EFBM <sub>y</sub> ) is considered to be 0 (zero) in the equation presented in section D.2.1.4	Table 3 1.6	Observing the item D.2.1.4. at PDD, occurred a typing mistake. The correct value for the weights wOM and wBM, for cessation, is 50 % represented above:  wOM = wBM = 0,5  These information has been corrected in the PDD item D.2.1.4.	Please correct the PDD  OK
<b>CR 11</b> - Please explain if CO2 emission factor is estimated ex ante or ex post	Table 3 2.2	For the first crediting period, the Build Margin emission factor EFBM <sub>y</sub> will be updated annually <i>ex post</i> for the year in which actual project generation and	According to the item D.2.1.3 of the PDD all the parameters used to calculate the emission factor will be updated yearly.

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		associated emissions reductions occur.	OK
<b>CR 12</b> - Please describe the name and kind of licenses received.	Table 4 1.1	The environmental licenses received are: preview license, pre-installation license, installation license and operational license. The licenses are attached as: annex L.02, L.03, L.04, L.05 and L.06.	All the environmental licenses were sent to the validation team by the project participant, therefore this CR is closed.  OK

- 1- GUIDELINES FOR COMPLETING CDM-PDD, CDM-NMB and CDM-NMM – Version 04 – July 8<sup>th</sup>, 2005
- 2- APPROVED CONSOLIDATED METHODOLOGY ACM0002 – Version 06 – May 19<sup>th</sup>, 2006
- 3- TOOL FOR THE DEMONSTRATION AND ASSESSMENT OF ADDITIONALITY – Version 02 – November 28<sup>th</sup>, 2005
- 4- KYOTO PROTOCOL – December 11<sup>th</sup>, 1997