Validation Report

VALIDATION OF THE CDM-PROJECT:

Ouro Small Hydropower Plant – Brennand CDM Project Activity

REPORT NO. 1225732

24 February 2011

TÜV SÜD Industrie Service GmbH
Carbon Management Service
Westendstr. 199 - 80686 Munich – GERMANY

Industrie Service

Report No.	Date of first issue	Revision No.	Revision Date	Certificate No.
1225732	06-02-2011	1	24-02-2011	-

Subject: Validation of the CDM Project Ouro Small Hydropower Plant – Brennand CDM Project Activity

Accredited TÜV SÜD Unit:	**TÜV SÜD Contract Partner:**
TÜV SÜD Industrie Service GmbH Certification Body "climate and energy" Westendstr. 199 80686 Munich Germany	TÜV SÜD Industrie Service GmbH Certification Body "climate and energy" Westendstr. 199 80686 Munich Germany
Project Participants: Ouro Energética S.A. (CLIENT) Al. Antonio Brennand, s/n – Várzea Recife, ZIP 50741-904 Pernambuco Brazil Ecopart Assessoria em Negócios Empresariais Ltda. Rua Padre João Manoel 222 São Paulo, 01411-000 São Paulo Brazil	**Project Site(s):** Barracão municipality, Rio Grande do Sul State, Southern region of Brazil GPS coordinates: Dam: Latitude -27.636667° (27°38'12''South), Longitude -51.489722° (51°29'23''West) Power house: Latitude -27.628056° (27º37'41'' South), Longitude -51.485556° (51º29'8" West)
Applied Methodology / Version: ACM0002 / 12.1	**Scope(s):** 1 **Technical Area(s):** 1.1
First PDD Version: Date of issuance: 05-09-2008 Version No.: 01 Starting Date of GSP: 10-09-2008	**Final PDD version:** Date of issuance: 21-02-2011 Version No.: 07
Estimated Annual Emission Reduction:	13,875 tCO_2e
Assessment Team Leader: Sebastian Randig **Assessment Team Members:** Johann Thaler Nevena Pingarova **Trainees:** --	**Technical Reviewer:** Caiyang Wu **Responsible Certification Body Members:** Thomas Kleiser

Summary of the Validation Opinion:

☒ The review of the project design documentation and the subsequent follow-up interviews have provided TÜV SÜD with sufficient evidence to determine the fulfilment of all stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM. Hence TÜV SÜD is recommending the project for registration by the CDM Executive Board if letters of approval of all Parties involved will be available before the expiring date of the applied methodology(ies) or the applied methodology version respectively.

☐ The review of the project design documentation and the subsequent follow-up interviews have not provided TÜV SÜD with sufficient evidence to determine the fulfilment of all stated criteria. Hence TÜV SÜD will not recommend the project for registration by the CDM Executive Board and will inform the project participants and the CDM Executive Board on this decision.

Abbreviations

ACM	Approved Consolidated Methodology
BM	Build Margin
BRL	Brazilian Real
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CER	Certified Emission Reduction
CM	Combined Margin
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
CR	Clarification Request
DNA	Designated National Authority
DOE	Designated Operational Entity
EF	Emission Factor
EIA / EA	Environmental Impact Assessment / Environmental Assessment
ER	Emission Reduction
FAR	Forward Action Request
GHG	GreenHouse Gas(es)
IPCC	Intergovernmental Panel on Climate Change
IRL	Information Reference List
IRR	Internal Rate of Return
KP	Kyoto Protocol
MP	Monitoring Plan
NGO	Non Governmental Organisation
OM	Operational Margin
PDD	Project Design Document
PP	Project Participant
SHPP	Small Hydro Power Plant
TÜV SÜD	TÜV SÜD Industrie Service GmbH
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual

Table of Contents Page

1 INTRODUCTION

1.1 Objective

The validation objective is an independent assessment by a Third Party (Designated Operational Entity = DOE) of a proposed project activity against all defined criteria set forth by the registration under the Clean Development Mechanism (CDM). Validation is part of the CDM project cycle and results in a conclusion by the executing DOE whether a project activity is valid and should be submitted for registration to the CDM Executive Board (CDM-EB). The ultimate decision on the registration of a proposed project activity rests with the CDM-EB and the Parties involved.

The project activity covered by this validation report has been submitted under the project title:

Ouro Small Hydropower Plant – Brennand CDM Project Activity

1.2 Scope

The scope of any assessment is defined by the underlying legislation, regulation and guidance given by relevant entities or authorities. In the case of CDM project activities the scope is set by:

- The Kyoto Protocol, in particular § 12 and modalities and procedures for the CDM
- Decision 2/CMP1 and Decision 3/CMP.1 (Marrakech Accords)
- Further COP/MOP decisions with reference to the CDM (e.g. decisions 4 – 8/CMP.1)
- Decisions and specific guidance by the EB published under http://cdm.unfccc.int
- Guidelines for Completing the Project Design Document (CDM-PDD), and the Proposed New Baseline and Monitoring Methodology (CDM-NM)
- Baselines and monitoring methodologies (including GHG inventories)
- Management systems and auditing methods
- Environmental issues relevant to the sectoral scope applied for
- Applicable environmental, social impacts, and aspects of CDM project activity
- Sector specific technologies and their applications
- Current technical and operational knowledge of the specific sectoral scope and information on best practice

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

Once TÜV SÜD receives a first PDD version, it is made publicly available at the UNFCCC webpage and at TÜV SÜD's webpage to start a 30 day global stakeholder consultation process (GSP). In special circumstances, such as when a project design changes, the GSP may need to be repeated. Information on the PDDs is presented on page 2 of this report.

The purpose of a validation is to demonstrate compliance or non-compliance of the project with all stated and valid CDM requirements. Additionally, the purpose of validation is to enable the registration of CDM projects, which is only a part of the total CDM project cycle.

2 METHODOLOGY

The project assessment applies standard auditing techniques to assess the correctness of the information provided by the project participants. The assessment is based on the "Clean Development Mechanism Validation and Verification Manual" version 01.2. The work starts with the appointment

of the team covering the technical scope(s), sectoral scope(s) and relevant host country experience for evaluating the CDM project activity. Once the project is made available for the stakeholder consultation process, members of the team carry out the desk review, follow-up actions, resolution of issues identified, and finally preparation of the validation report. The prepared validation report and other supporting documents then undergo an internal quality control by the CB "climate and energy" before submission to the CDM-EB.

In order to ensure transparency, assumptions are clear and explicitly stated; the background material is clearly referenced. TÜV SÜD developed a methodology-specific protocol customised for the project. The protocol shows, in a transparent manner, criteria (requirements), the discussion of each criterion by the assessment team, and the results from validating the identified criteria.

The validation protocol serves the following purposes:

It organizes details and clarifies the requirements a CDM project is expected to meet;

It ensures a transparent validation process where the validator has to document how a particular requirement has been validated, as well as the results of the validation and any adjustments, if any, made to the project design.

The validation protocol consists of three tables. The different columns in these tables are described in the figure below.

Validation Protocol Table 1: Conformity of Project activity and PDD				
Checklist Topic / Question	**Reference**	**Comments**	**PDD in GSP**	**Final PDD**
The checklist is organised in sections following the arrangement of the applied PDD version. Each section is then further sub-divided. The lowest level constitutes a checklist question / criterion.	*Gives reference to documents where the answer to the checklist question or item is found in case the comment refers to documents other than the PDD.*	*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. In some cases sub-checklist are applied indicating yes/no decisions on the compliance with the stated criterion. Any **Request** has to be substantiated within this column*	*Conclusions are presented based on the assessment of the first PDD version. This is either acceptable based on evidence provided (☑), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question (See below). **Clarification Request (CR)** is used when the validation team has identified a need for further clarification. **Forward action request** to highlight issues related to project implementation that require review during the first verification.*	*Conclusions are presented in the same manner based on the assessment of the final PDD version and further documents including assumptions presented in the documentation.*

Validation Protocol Table 2: Resolution of Corrective Action and Clarification Requests			
Clarifications and corrective action requests	**Ref. to table 1**	**Summary of project owner response**	**Validation team conclusion**
If the conclusions from table 1 are either a Corrective Action, a Clarification or a	*Reference to the checklist question number in*	*The responses given by the client or other project participants during the*	*This section should summarise the discussion on and revision to project documentation together with the validation team's*

Forward action Request, these should be listed in this section.	*Table 1 where the issue is explained.*	*communications with the validation team should be summarised in this section.*	*responses and final conclusions. The conclusions should be reflected in Table 1, under "Final PDD".*

In case of a denial of the project activity more detailed information on this decision will be presented in table 3.

Validation Protocol Table 3: Unresolved Corrective Action and Clarification Requests		
Clarifications and corrective action requests	**Id. of CAR/CR**	**Explanation of the Conclusion for Denial**
If the final conclusions from table 2 results in a denial the referenced request should be listed in this section.	*Identifier of the Request.*	*This section should present a detail explanation, why the project is finally considered not to be in compliance with a criterion with a clear reference to the requirement which is not complied with.*

The completed validation protocol is enclosed in Annex 1 to this report.

2.1 Appointment of the Assessment Team

According to the technical scopes and experiences in the sectoral or national business environment, TÜV SÜD has composed a project team in accordance with the appointment rules of the TÜV SÜD certification body "climate and energy".

The composition of an assessment team has to be approved by the Certification Body (CB) to assure that the required skills are covered by the team. The CB TÜV SÜD operates the following qualification levels for team members that are assigned by formal appointment rules:

- Assessment Team Leader (ATL);
- Validator (V);
- Validator Trainee (T);
- Technical Experts (TE);
- Financial Experts (FE).

It is required that the sectoral scope(s) and the technical area(s) linked to the methodology and project have to be covered by the assessment team.

Assessment Team:

Name	Qualification	Coverage of scope	Coverage of technical area	Coverage of financial aspect	Host country experience
Sebastian Randig	**ATL**	☑	☑		
Johann Thaler	V				☑
Nevena Pingarova	FE			☑	

Technical Reviewer: Caiyang Wu

2.2 Review of Documents

The first version of the PDD was submitted to the DOE in September 2008. The first PDD version submitted by the PP and additional background documents related to the project design and baseline have been reviewed to verify the correctness, credibility, and interpretation of the presented information. Furthermore, a cross-check between information provided and information from other sources has been done as initial step of the validation process. A complete list of all documents and proofs reviewed is attached as annex 2 to this report.

2.3 Follow-up Interviews

On 16/10/2008 TÜV SÜD performed interviews and physical site inspection with project stakeholders to confirm relevant information, and to resolve issues identified in the first document review. The table below provides a list of all persons interviewed in this context.

Name	Organisation
Roberto Ferreira de Melo	Construction Coordinator, Ouro Energética S.A.
Ananias Gonçalves	Construction Manager, Ouro Energética S.A.
Jose Augusto Nunes Hirt	Environmental Supervisor, Ouro Energética S.A.
Ricardo Rego (Telephone conference)	Financial Director, Ouro Energética S.A.
Renata Freitas	Project consultant, Ecopart Assessoria em Negócios Empresariais Ltda.
Ana Paula Beber Veiga	Project consultant, Ecopart Assessoria em Negócios Empresariais Ltda.

2.4 Further cross-check

During the validation process the team makes reference to available information related to similar projects or technologies as the CDM project activity. The documentation has also been reviewed against the approved methodology applied to confirm the appropriateness of formulae and correctness of calculations.

2.5 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is to resolve the requests for corrective actions, clarifications, and any other outstanding issues which needed to be clarified for TÜV SÜD`s conclusion on the project design. The CARs and CRs raised by TÜV SÜD were resolved during communication between the client and TÜV SÜD. To guarantee the transparency of the validation process the concerns raised and responses that have been given are documented in more detail in the validation protocol in annex 1.

The final PDD version submitted in February 2011 serves as the basis for the final assessment presented. Changes are not considered to be significant with respect to the qualification of the project as a CDM project based on the two main objectives of the CDM. These are an achievement of reduction of anthropogenic GHG emissions and to contribute to a sustainable development.

2.6 Internal Quality Control

As final step of a validation activity the final documentation, which includes the validation report and the validation protocol, has to undergo an internal quality control by the CB “climate and energy”. That means that each report has to be approved either by the head of the CB or the deputy. In projects where either the Head of the CB or his/her Deputy is part of the assessment team approval can only be given by the either one not serving on the project.

After confirmation of the PP, the validation opinion and relevant documents are submitted to the EB through the UNFCCC web-platform.

3 SUMMARY

The assessment work and the main results are described below in accordance with the VVM reporting requirements. The reference documents indicated in this section and Annex 1 are stated in Annex 2.

3.1 Approval

The project participants are Ouro Energética S.A. and Ecopart Assessoria em Negócios Empresariais Ltda., both from Brazil (Host Party). The participation of both project participants was confirmed during the on-site interview. The Host Party Brazil meets the requirements to participate in the CDM.

The final letter of approval for both PPs have not been received yet, but a request for registration will not be submitted as long as the letter of approval for both PPs have not been received according to § 50 (a) of the VVM.

Before submitting the project for registration, TÜV SÜD will check whether the requirements of the VVM (§§ 45-48) are complied with.

3.2 Participation

See chapter 3.1.

3.3 Project design document

The PDD is compliant with relevant form and guidance as provided by UNFCCC.

The most recent version of the PDD form was used.

TÜV SÜD considers that the guidelines for the completion of the PDD in their most recent version have been followed. Relevant information was provided by the participants in the applicable PDD sections. Completeness was assessed through the checklist included in Annex 1 of this report.

3.4 Project description

The following description of the project as per PDD was verified during the on-site audit:

The project consists of the construction of a new run-of-river small hydroelectric power plant (“PCH”, from the Portuguese *Pequena Central Hidrelétrica*) installing 3 Francis turbines with a nominal power of each 5,919 kW and 3 WEG generators with a nominal power of each 6,060 kVA (or 5,333 kW considering an power factor of 0.88) resulting in a total installed capacity of 16 MW and a run-of-river reservoir area of 0.09 km^2. The plant is located in Barracão municipality, Rio Grande do Sul State, Southern region of Brazil. The project contributes to emission reductions by dispatching clean, renewable electricity to the Brazilian grid, which would have otherwise been generated by more carbon intensive fossil fuel power plants. Commercial operation started in July 2009. Ouro Energética S.A., the company that controls the Ouro Small Hydropower Plant, is owned by BK Energia Participações Ltda., which is owned by Brennand Group.

The proposed project activity besides reducing GHG emissions (the annual emission reductions are expected to be 13,875 tCO_2e) contributes to sustainable development. The CDM revenues will also help to support the community providing social and environmental benefits. Income distribution will be derived from this project due to job creation, employees’ salaries and package of benefits such as social security and life insurance.

The information presented in the PDD on the technical design is consistent with the actual planning and implementation of the project activity as confirmed by:

- Review of data and information (see annex 2). This was verified with other sources.
- An on-site visit has been performed and relevant stakeholder and personnel with knowledge of the project were interviewed. If doubts arose further investigations and additional interviews were conducted
- Finally, information related to similar projects or technologies as the CDM project activity have been used to confirm the accuracy and completeness of the project description.

In conclusion, TÜV SÜD confirms that the project description, as included to the PDD, is sufficiently accurate and complete in order to comply with the requirements of the CDM.

3.5 Baseline and monitoring methodology

3.5.1 Applicability of the selected methodology

Compliance with each applicability condition as listed in the chosen baseline and monitoring methodology ACM0002, version 12.1 has been demonstrated.

The assessment was carried out for each applicability criteria and included, among others, the compliance check of the local project setting with the applicability conditions in regard to baseline setting and eligible project measures. This assessment also included the review of secondary sources, which sustain that applicability conditions are complied with.

The methodology specific protocol, included to the Annex 1, documents the assessment process, which also includes the steps taken. The results on the compliance check, as well as the relevant evidence, are detailed in Annex 1.

TÜV SÜD confirms that the chosen baseline and monitoring methodology is applicable to the project activity.

Emission sources, which are not addressed by the applied methodology, and are expected to contribute more than 1% of the overall expected average annual emission reductions, have not been identified.

3.5.2 Project boundary

The project boundary was assessed in the context of physical site inspection, interviews, and on the secondary evidence received on the design of the project.

As indicated in the methodology ACM0002, version 12.1, the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to, which was correctly identified as the Brazilian Interconnected Grid as a single system.

The only GHG and emission source included in the project boundary are CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity.

The most relevant documentation assessed in order to confirm the project boundary are as follows:

- ANEEL resolution N° 537 (IRL 15) and ANEEL resolution N° 647 (IRL 14)
- Registries of land ownership (IRL 19)
- ANEEL ordinance N° 2.455 (IRL 41) about commercial operation start

The same have been validated during the validation process using standard audit techniques, further details of any observation are transparently presented in the Annex 1.

Therefore, TÜV SÜD confirms that the identified boundary, the selected sources, and gases as documented in the PDD are justified for the project activity.

3.5.3 Baseline identification

The PDD defines the following baseline scenario:

As per ACM0002 (version 12.1) methdology, the baseline is clearly defined for this type of project activity (i.e. installation of a new grid-connected renewable hydro power plant) as follows:

Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations as described in the "Tool to calculate the emission factor for an electricity system".

The information presented in the PDD has been validated by an initial document review of all data. Further confirmation is based on the on-site visit and researching information from similar projects and technologies. The information was cross-checked based on verifiable and credible sources, such as:

- ANEEL 2011 publication (general summary about new generation entrepreneurships, IRL 50) http://www.aneel.gov.br/area.cfm?idArea=37&idPerfil=2;
- 2007 Baseline Emission Factors data available at commencement of validation (IRL 57) http://www.mct.gov.br/index.php/content/view/317398.html#ancora
- ACM0002 (Version 12.1)

Based on the validated assumptions TÜV SÜD considers that the identified baseline scenario is reasonable.

Taking the definition of the baseline scenario into account, TÜV SÜD confirms that all relevant CDM requirements, including relevant and/or sectoral policies and circumstances, have been identified correctly.

A verifiable description of the baseline scenario has been included in the PDD.

In regard to item 87 of VVM, TÜV SÜD confirms that:

1. All the assumptions and data used by the project participants are listed in the PDD, including their references and sources;
2. All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD;
3. Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence, and can be deemed reasonable;
4. Relevant national and/or sectoral policies and circumstances are considered;
5. The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario, and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.

3.5.4 Algorithm and/or formulae used to determine emission reductions

TÜV SÜD has assessed the calculations of project emissions, baseline emissions, leakage, and emission reductions. Corresponding calculations were carried out based on calculation spreadsheets (IRL 61). The parameters and equations presented in the PDD, as well as other applicable documents, have been compared with the information and requirements presented in the methodology and respective tools. The equation comparison has been made explicitly following all the formulae presented in the calculation files.

The assumptions and data used to determine the emission reductions are listed in the PDD and all the sources have been checked and confirmed.
Based on the information reviewed it can be confirmed that the sources used are correctly quoted and interpreted in the PDD.
The values presented in the PDD are considered reasonable based on the documentation and references reviewed, as well as, the result of the interviews.
The baseline methodology has been correctly applied according to requirements.
The estimate of the baseline emissions can be confirmed as the same that have been replicated by the audit team using the information provided.
Detailed information on the verification of the parameters used in the equations can be found in Annex 1. The algorithms for the determination of baseline, project, and leakage emissions are discussed in the following sections.

3.5.4.1 Baseline Emissions

The calculation of the baseline emissions followed the procedures described in the methodology ACM0002, version 12.1.

The grid emission factor was calculated by the Brazilian DNA (available at: http://www.mct.gov.br/index.php/content/view/317398.html#ancora, using the Dispatch Data Analysis for the Operating Margin. The Build Margin emission factor was determined using the generation-weighted average emission factor of all power units during the most recent year for which power generation data was available. Therefore, the emission factor of 0.1842 tCO_2/MWh was accepted just for estimating the expected emission reductions of the project activity during the crediting period. Hence, the emission factor calculation used in this PDD, for estimating purposes only, must be verified and updated accordingly using the most recent data available at the time of the verification process. According to Resolution N° 8 of the Brazilian DNA (IRL 39), which defines that the National Interconnected System must be considered as a unique system and this configuration is valid for calculating the CO_2 emission factor used to calculate the emission reduction of greenhouse gases in CDM projects connected to the national grid. Hence, the emission factor is obtained from the Brazilian DNA.

The combined emission factor applied by the final PDD is fully consistent with GSP PDD and is calculated from the latest data available at commencement of validation. The value for the combined margin emission factor (EF_{CM}=0.1842 tCO_2/MWh) was determined using the weighted average of the EF_{BM} (0.0775 tCO_2/MWh) and EF_{OM} (0.2909 tCO_2/MWh) using the default values for the factors as described in the methodology (i.e. 0.5 for hydro power plants).

3.5.5 Project emissions

As per the methodology ACM0002, version 12.1, project emissions for hydro power project activities have only to be considered in case that there are emissions from water reservoirs of such hydro power plants and power density of the project activity is greater than 4 W/m^2 and less than or equal to 10 W/m^2. However, this is not the case in the proposed project activity, as power density is 177.77 W/m^2 (16,000,000W/90,000m^2), thus clearly above 10 W/m^2 and the project does not need to consider project emissions.

3.5.6 Leakage

As per the methodology, the project does not need to consider leakage.

3.5.7 Emission Reductions

As per the methodology, the emission reductions equal the baseline emissions.
In summary, the calculation of the baseline emissions and the emission reductions, respectively, can be considered as correct.

3.6 Additionality

The additionality of the project has been presented in the PDD using the steps of the Tool for the Demonstration and Assessment of Additionality, version 05.2. (hereafter: Additionality Tool).
The approach used in the PDD has been assessed initially through document review, during which following documents have been reviewed:

- Minutes of meeting, dated 10/04/2006 (IRL 28)
- WACC calculation spreadsheet (IRL 7)
- Cash flow calculation spreadsheet (IRL 8)
- Consolidated Basic Project (IRL 23)

On site the additionality has been discussed principally with: Ricardo Rego, Financial Director and Roberto Ferreira de Melo, Construction Coordinator. Further documents have been reviewed on-site (Annex 2).

Finally, the data, rationales, assumptions, justifications, and documentation provided have been verified using local knowledge as well as sectoral and financial expertise. This information was also confirmed through the following documentation:

- Turbines-generators Purchase agreement (IRL 20)
- Financial closure: Contract with ITAU bank (Banco Itau) (IRL 16)
- ANEEL ordinance N° 2.455 (IRL 41) about commercial operation start

Based on these validation steps we can confirm that the documentation assessed is appropriate for this project.

3.6.1 Prior and continuous consideration of the clean development mechanism

The starting date of the project activity (28 February 2007) is determined to be the date when turbines and generators were purchased (IRL 20), which is the earliest date at which either the implementation or construction or real action of a project activity begins and also the date of involving significant financial expenditures as per Glossary of CDM terms, version 05. In order to corroborate this information the assessment team has reviewed the following documents:

- Turbine-generator Purchase Contract dated 28/02/2007 (IRL 20)
- Engineering, Procurement and Construction contract (EPC), dated 05/07/2007 (IRL 43)
- Start of construction dated 01/08/2007 (IRL 53)
- Power Purchase Agreements with Sadia S.A. dated 01/12/2007 (IRL 21)
- Financial closure dated 25/08/2008 (IRL 22)

Additionally the assessment team cross-checked this information with Roberto Ferreira de Melo during discussions on site.

The starting date of the project activity is determined to be 28 February 2007, which is before 02 August 2008, as well as prior to the GSP. The PPs presented the following information to the assessment team in order to confirm the prior consideration of CDM:

Rija Investimentos Energéticos Ltda. minutes of meeting for the acquisition of Ouro small hydropower plant considering CDM revenues, dated 10/04/2006 (IRL 28). Rija Investimentos Energéticos

Ltda., the company that held the meeting, is a company from Brennand Group. On July 24th, 2007, Rija Investimentos Energéticos Ltda. was incorporated by Ouro Energética S.A., the owner of the SHPP currently. This can be evidenced through ANEEL Resolution nr. 988, dated July 24th, 2007 (IRL 13). The minutes amongst others mention that two conditions were important for the Board´s approval: legal/regulatory aspects and CDM revenues. Prior to this meeting, a CDM consulting contract was signed between Ouro Energética S/A and Ecopart Assessoria Negócios Empresariais Ltda. (Ouro Energética S/A was owned by Guascor Geratec Ltda. that time) on 06/07/2005 (IRL 42).

The original documents presented have been reviewed and verified based on interviews with Ricardo Rego, Financial Director, Roberto Ferreira de Melo, Construction Coordinator (both Ouro Energética S/A) and Ana Paula Beber Veiga (Ecopart Assessoria Negócios Empresariais Ltda.). Therefore the documents can be considered appropriate to confirm the prior consideration of CDM. Additionally, in order to confirm that the PPs have taken real actions to continue the activity as CDM after the project started, the following timeline has been reviewed against the respective documents presented in the table below:

Activity	**Document**	**Auditor conclusion**
July 2005 CDM consulting contract signed	CDM consulting contract (IRL 42)	CDM consulting contract was signed between Ouro Energética S/A and Ecopart Assessoria Negócios Empresariais Ltda. (formerly Ecoinvest Carbon Assessoria Ltda.). Ouro Energética S/A was owned by Guascor Geratec Ltda. that time. Later on (August 2006), the authorization to explore the hydro potential of Ouro SHPP was transferred by ANEEL from Guascor Geratec Ltda. to Ouro Energética S/A (IRL 14). The CDM consulting contract is signed by both contracting parties and is considered to be authentic.
April 2006 Rija Investimentos Energéticos Ltda. minutes of meeting	Minutes of meeting (IRL 28)	Rija Investimentos Energéticos Ltda., the company that held the meeting, is a company from Brennand Group. On July 24th, 2007, Rija Investimentos Energéticos Ltda. was incorporated by Ouro Energética S.A., the owner of the SHPP currently. This can be evidenced through ANEEL Resolution nr. 988, dated July 24th, 2007 (IRL 13). The meeting report is signed by the Board of Directors and is

		considered to be authentic. The date (10/04/2006) when the meeting report was signed, is considered as investment decision date. The minutes meeting report amongst others mention that two conditions were important for the Board´s approval: legal/regulatory aspects and CDM revenues.
February/March 2008 Validation proposal requests	Emails sent to/received from different DOEs (IRL 44).	Emails sent to/received from different DOEs requesting validation proposals show the strong intention to continue the activity as CDM project.
June 2008 Invitation letters sent to stakeholders	Invitation letters and confirmation of receipt (IRL 9 and 10)	Inviting local stakeholders for giving comments referring to the proposed project activity show the strong intention to continue the activity as CDM project.
September 2008 GSP opened	UNFCCC	Verified
2008~2011	CDM validation	On-going CDM validation works by TÜV SÜD

This confirms that the project complies with the requirements that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation.

3.6.2 Identifications of alternatives

The output of the project is electricity that is exported to the Brazilian Interconnected Grid.
Even though the applied methodology on page 4 prescribes the baseline scenario for new grid-connected renewable power plants as the project activity is, PPs decided to identify all possible alternatives to the project activity. The list of alternatives to supply the electricity, which is presented in the PDD includes the project activity undertaken without being registered as CDM project. The rest of the alternatives presented do include all plausible scenarios taking into account the local and sectoral situations for the output mentioned. Hence the list of alternatives, namely a) the project activity undertaken without being registered as CDM project and b) the continuation of the current (previous) situation of electricity supplied by the existing power plants from the interconnected system is considered to be complete. No other alternatives exist for the PPs as it was confirmed during on-site interview. The identified baseline scenario is identical to the one prescribed on page 4 of the applied methodology for the installation of new grid-connected renewable power plants:
“Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the Tool to calculate the emission factor for an electricity system.”

3.6.3 Investment analysis

The PPs use the investment analysis to demonstrate the additionality of the project. The financial returns of the proposed project are insufficient to justify the investment.

The parameters used in the financial calculations have been validated based on a review of the sources presented in the cash flow excel calculation sheet (worksheet "Inputs") (IRL 61) and Cost of equity spreadsheet (IRL 58). Main input parameters including data sources applicable at time of investment decision and cross-check evidences are mentioned in the following. The equity IRR results in 8.06% which is below the benchmark of 14.99%.

Benchmark

The **benchmark** is based on the cost of equity[1] and results in 14.99%. As per EB51, Annex 58 Guidelines on the Assessment of Investment Analysis (version 03.1) paragraph 12, "required/expected returns on equity are appropriate benchmarks for an equity IRR". The benchmark has been derived based on the publicly data sources (IRL 56) which have been clearly validated by TÜV SÜD as shown in the following:

Cost of equity – The cost of equity has been determined using the Capital Asset Pricing Model (CAPM). The CAPM approach to risk analysis calculates the risk premium associated with the specific risk involved in the particular project type. The riskiness is calculated by means of the beta and this beta measures the relative riskiness of the proposed project activity. The CAPM assesses risks at a market level and not by looking at an individual's risk preferences and therefore is sufficient to analyze the appropriate rate of return necessary to compensate investors for the risk faced in the proposed project activity.

Risk free rate

The risk free rate (4.41%) has been taken as the 20-year US Treasury Yield as of January 2006. And further reduced to a real value of 1.96% by considering the US inflation (2.45 %) This is considered as conservative approach.

The *country risk premium* for Brazil is 5,23 %. It has been referred to the JPMorgan Emerging Markets Bond Index Plus (EMBI+) as an liquid US-dollar emerging markets debt benchmark, which tracks total returns for actively traded external debt instruments in emerging markets. It has been cross checked with Damodaran's website country risks value for Brazil for 2005, which has presented a similar range risk for Brazil (6%), and the validation team can confirm that the applied value is plausible and conservative.

Equity Risk premium (6.47%) – The equity risk premium have been calculated using the annual returns on Investments in stocks (11.72%) minus annual returns on Investments in T Bonds (5.24%) , both sourced from A. Damodaran, New York University http://pages.stern.nyu.edu/~adamodar/ reference "Historical data on Stocks, Bonds and Bills - US". This total *Equity Risk Premium* is considered reasonable as it measures the rate of return investors seek to compensate them for investing in higher risk equity based assets rather than risk free securities. This is deemed appropriate and acceptable.

[1] The GSP PDD applies as benchmark the Weighted Average Cost of Capital (WACC). The benchmark in the final PDD is based on cost of equity. CAR 11 in Annex 1 explains the reasons and background for changing the benchmark during the validation process.

Beta (1.21) – The beta value has been calculated using an average value of 0.54 (un-levered) for the US Electric-Generators in the USA (power and Electric Utility) referring to the values provided by Damodaran Online http://pages.stern.nyu.edu/~adamodar/ and calculated in Excel sheet Ke Ouro – CAPM_2006 and levered, using the average market debt/equity ratio (65/35) which is usual for the industrial sector in Brasil and 34 % income tax (composed of 25% corporate income tax rate and 9% social contribution on net profits, IRL 77). The DOE due to its local and sectoral expertise confirm the applied market debt/equity ratio and tax rate as appropriate and reasonable.

Since Bovespa does not list weighted average of the Beta for small hydro power plants, the use of beta for US power sector is plausible. Calculation of an average value for beta based on power and electric utility is considered as conservative.

In light of the above, it can be stated that the derived benchmark is suitable for the project type. Therefore TÜV SÜD confirms that the benchmark (Cost of equity) that has been derived is suitable and conservative.

Input parameters in the equity IRR calculation

Input parameter	**Value applicable at investment decision**	**Data source applicable at investment decision**	**Actual (real) value**	**Cross-check evidence**
Investment cost	57,051,694 BRL (3,565 BRL/kW)	-Based on the project sponsor experience with other small hydropower plant. Balance sheet 2004 of Antonio Brennand small hydropower plant published in Brazilian Federal Register D.O.U. (from the Portuguese: *Diário Oficial da União*) in July 2005 (IRL 46). -BNDES Annual Report 2005. Main approved operations - electricity generation (from the Portuguese *Principais operações aprovadas - segmento de geração*), page 98: 3,932 BRL/kW for small hydropower plants (BRL 3 billion / 763 MW) (IRL 47).	72,473,000 BLR (4,529 BRL/kW)	-Balance sheet of Ouro small hydropower plant (2009) (IRL 45).
Electricity generation supplied to the grid	75,336 MWh	Calculated based on the energy assured approved by ANEEL and 8.760 hour of operation in a year (8.6 MW-ave x 8.760 hours = 75,336 MWh/year). The electricity generation is based on the current energy assured of the project. Although the investment decision happened considering 12 MW of installed capacity, PPs considered the 16 MW of installed capacity in order to show conservatism. The project design "Consolidated Basic Project" prepared by Intertechne (engi-	75,921 MWh (actual electricity generation from October 2009 to September 2010)	Based on the actual electricity generation (supplied to the grid) from October 2009 to September 2010 (one complete season) of Ouro project (information available by the Chamber of Elec-

		neering company) in July 2008, version 03 (IRL 23) calculates the energy assured of 8.6 MW (in average). ANEEL approved the alteration of the installed capacity from 12 MW to 16 MW by Ordinance nr. 2.452 (IRL 40) and approved the project design (basic project) by ANEEL declaration N° 608.		trical Energy Commercialization (from the Portuguese: *Câmara de Comercialização de Energia Elétrica* - CCEE) (IRL 52)
Tariff	115 BRL/MWh	Câmara de Comercialização de Energia Elétrica (CCEE). Average of the energy prices negotiated in the Brazilian energy auction destined to new hydropower plant projects in 2005 (IRL 49).	2 PPAs (4 MW for 8 years and 3 MW for 15 years): 140 BRL/MWh Spot-price (1.6 MW): 155 BRL/MWh (average invoice price from 09/2009 to 12/2010)	-2 Power Purchase Agreements with Sadia S.A. dated 01/12/2007 (IRL 21) and invoices from September 2009 to December 2010 selling electricity at the spot market (IRL 62) -Historical prices at the spot market from July 2009 (operation start) until January 2011 provided by CCEE (IRL 72)
O&M costs	4.4% from total investment	-Based on the project sponsor experience with other small hydropower plant. Balance sheet of Antonio Brennand small hydropower plant published in Brazilian Federal Register D.O.U. (from the Portuguese: *Diário Oficial da União*) in July 2005 (IRL 46). -Publication by Eletrobrás and the Ministry of Mines and Energy "Instructions for studies and projects for small scale hydro power plants" -The report presents an estimated value of 5% of the total investment for annual O&M costs as reference for the feasibility/financial analysis of these types of projects (IRL 34).	2.7% of total investment (Ouro started operation in July 2009, thus the calculated 2.7% O&M costs just refer to half year and not to a full year.	Balance sheet of Ouro small hydropower plant (2009) (IRL 45).
Depreciation	2.79%	ANEEL Resolution nr. 44, dated March 17th, 1999 (IRL 74) http://www.aneel.gov.br/cedoc/RES1999044.PDF	2.31% Certain equipment like transmission system has	Balance sheet of Ouro small hydropower plant (2009) (IRL 45).

			not suffered depreciation yet, thus the average depreciation rate is slightly lower than estimated at time of investment decision.	
Taxes	Social taxes 9% (revenue base for social taxes – CSLL 12%) Income taxes 25% (revenue base for income taxes 8%) Sales tax 3% (COFINS) 0.65% (PIS)	IRL 55 Law nr. 8,981, January 20th, 1995 (CSLL 12% x social taxes 9% = 1.08%) http://www3.dataprev.gov.br/SISLEX/paginas/42/1995/8981.htm http://www3.dataprev.gov.br/SISLEX/paginas/42/1995/8981.htm http://www.portaltributario.com.br/tributos/csl.html Law nr. 9,430, December 27th, 1996 (8% x 25 % = 2%). http://www.receita.fazenda.gov.br/legislacao/leis/ant2001/lei943096.htm http://www.receita.fazenda.gov.br/Aliquotas/ContribPj.htm http://www.portaltributario.com.br/guia/lucro_presumido_irpj.html COFINS: Law nr. 10,833, December 29th, 2003 http://www.receita.fazenda.gov.br/legislacao/Leis/2003/lei10833.htm PIS: Law nr. 10,637, December 31st, 2002 http://www.receita.fazenda.gov.br/legislacao/Leis/2002/lei10637.htm	The same as at investment decision	The same as at investment decision
Financeable items	31.576 million BRL	Based on the typical BNDES level of participation in electric generation projects in Brazil (IRL 47)	50.666 million BRL	Financing contract (IRL 22)
Real	8.55%	Real annual financial cost is calculated	4.95%	Data sources:

annual finan-cial cost		by discounting the inflation from the sum of long-term interest rate (TJLP) and spread (BNDES remuneration + credit risk) Data sources (IRL 70): Long term interest rate: http://www.bndes.gov.br/SiteBNDES/bndes/bndes_pt/Ferramentas_e_Normas/Custos_Financeiros/Taxa_de_Juros_de_Longo_Prazo_TJLP/index.html Spread: http://www.bndes.gov.br/SiteBNDES/export/sites/default/bndes_pt/Galerias/Arquivos/conhecimento/bnset/Set2901.pdf Inflation rate: http://www.bcb.gov.br/Pec/metas/TabelaMetaseResultados.pdf		Long term interest rate: http://www.bndes.gov.br/SiteBNDES/bndes/bndes_pt/Ferramentas_e_Normas/Custos_Financeiros/Taxa_de_Juros_de_Longo_Prazo_TJLP/index.html Spread: IRL 22 Inflation rate: http://www.bcb.gov.br/Pec/metas/TabelaMetaseResultados.pdf
Life-time	25 years + 5 months (operational lifetime)[2]	According to ANEEL Resolution nr. 537 (IRL 15), issued on 14/10/2003, Art 8, the project concession is valid for 30 years from the issuance of this Resolution. This period also includes the project design/study and construction, *i.e.*, the project concession is from 2003 to 2033. Since Ouro estimated full operational project start (at time of investment decision) was August 2008, the estimated project lifetime in the financial analysis is 25 years + 5 months (IRL 14, 59).[3]	24 years + 6 months July 2009 (actual start of commercial operation) to 2033 (end of concession ends in October 2033 however 2033 has been fully considered in the financial analysis for conservatism)	ANEEL Ordinance nr. 2.455 (IRL 41) and ANEEL Resolution nr. 537 (IRL 15)

[2] Chapter C of the PDD indicates an operational lifetime of 24 years + 3 months based on the actual operation start (July 2009) of the SHPP. However, in order to be conservative and to reflect the estimated starting date of operation at the time of investment decision, the financial analysis considers an operational lifetime of 25 years + 5 months.

[3] Even though ANEEL resolution N° 647 was approved in August 2006, i.e. after the investment decision date (April 2006), the request to change the estimated schedule of the project already occured in August 2005 (IRL 59), thus clearly prior to the investment decision date.

The parameters used in the PDD and financial calculations are totally consistent with the data sources applicable at investment decision, which have been validated based on a review of those sources presented in the IRR calculation sheet (worksheet "Inputs"). The balance sheet of Antonio Brennand small hydropower plant (used for the input parameters investment cost and O&M costs), CCEE auction prices (for input parameter tariff) and ANEEL approval 2.452 (for input parameter annual output) can be considered as reliable data sources applicable at the time of investment decision for the investment analysis. ANEEL ordinance N°2.452 (referring to an installed capacity of 16 MW) was only approved on 07/07/2009, thus after the investment decision date. Even though, there is another ANEEL resolution N° 480, dated 14/04/2005, which is clearly prior to the investment decision date and indicates the approval of the consolidated basic project (however only referring to an installed capacity of 12 MW[4]), PPs decided to calculate in the IRR calculation with an installed capacity of 16 MW (which is the final actual capacity of the project activity and approved by ANEEL ordinance N° 2.452) in order to show conservatism.

Additionally the audit team cross checked the data with actual contracts, invoices and other publicly available documents like Ouro balance sheet as informed in the Table above. An additional proper IRR excel spreadsheet with actual values instead of the values applicable at the time of investment decision has been elaborated in order to cross-check whether IRR would cross the benchmark in case of using the actual values.

Total Investment cost

Total investment in the IRR calculation is presumed to be 57,051 million BRL, based on 3,565 BRL/kW taken from the balance sheet of Antonio Brennand small hydropower plant[5]. This can be considered as a conservative assumption at the time of investment decision bearing in mind that BNDES Annual Report 2005 states an average value of 3,932 BRL/kW. According to 2009 balance sheet of Ouro small hydropower plant, the actual expenditures have reached 72,473,000 BLR (or equivalent 4,529 BRL/kW) higher than the estimate in the IRR calculation. Hence, the applied value in financial analysis is considered as appropriate and conservative.

Annual O&M costs

The annual O&M costs of 4.4% calculated from total investment are derived from project owner´s experience with another small hydropower plant (Antonio Brennand small hydropower plant). The same was validated with the balance sheet of Antonio Brennand small hydropower plant. The value of 4.4% from total investment can be considered as appropriate and conservative bearing in mind that Eletrobrás and the Ministry of Mines and Energy published in the year 2000 in a report an estimated value of 5% of the total investment for annual O&M costs as reference for the financial analysis of those type of projects. The actual value for O&M costs taken from 2009 balance sheet of Ouro small hydropower plant is 2.7% of total investment, however as Ouro SHPP started operation only in July 2009, the calculated 2.7% O&M costs refer to half year and not to a full year. If the 2.7% are extrapolated to one full year, then O&M costs will be higher than the 4.4% used in the IRR calculation. Thus the value used in the IRR calculation can be considered as appropriate and conservative.

[4] The installed capacity was planned to be 12 MW at the beginning stage of the project development.

[5] Antonio Brennand small hydropower plant is from the same project owner as Ouro Small Hydropower Plant.

Electricity generation supplied to the grid – Plant load factor

The plant load factor of Ouro hydropower plant has been obtained by dividing the energy assured by the installed capacity of the plant. The plant load factor results in 53.75% (8.6MW/16MW). Since the energy assured (8.6 MW x 8.760 hours = 75,336 MWh/year) of Ouro project was established in the project design by Intertechne (engineering company), EB48, Annex 11, II 3 (b) is complied with for the ex-ante determination of Ouro plant load factor. The project design (basic project) (IRL 23) is approved by ANEEL (IRL 54) and thus can be considered as appropriate.
The figure of 75,336 MWh/year has been further cross-checked with actual electricity generation figures from October 2009 to September 2010 and the total electricity generation for that (complete) season.

Tariff

The tariff of 115 BRL/MWh is derived from electricity prices negotiated in the Brazilian energy auctions destined to new hydropower plant projects in 2005. Auction prices are sourced from CCEE (Chamber of Electric Energy Commercialization), a reliable data source. The weighted average price of 115 BRL/MWh was chosen at the time of investment decision as that time no PPA was signed and available yet. Even by applying the actual PPA tariff (2 PPA were signed on 01/12/2007 for total 7 MW) of 140 BRL/MWh and using for the remaining 1.6 MW and the years not covered by the PPAs the spot price of 155 BRL/MWh (average of sales prices for the period between September 2009 to December 2010) in the proper excel spreadsheet with “actual (real) values”, the IRR clearly remains below the benchmark.

Depreciation rate and residual value

Depreciation rates (between 2.5% and 4%) have been applied according to the type of equipment/item which is in accordance with ANEEL resolution N°44 (IRL 74). The DOE confirms that depreciation rates have been conservatively applied and even by applying 0% depreciation rate (i.e. 100% residual value), the equity IRR still remains below the benchmark. The residual value is calculated as the difference between total investment and the sum of depreciation of all equipments/items. This is in accordance with common accounting practices. Depreciation in the first years is higher than later on, as “amortization” (here is not referred to financing) applicable to service items (like e.g. preliminary surveys, feasibility studies) is considered in the first 5 years as well. Amortization rate and which items can be “amortized” have been verified with IRL 73.

Therefore, the applied residual value rate and depreciation can be confirmed as appropriate.

Taxes

Tax rates are applied in accordance with the respective Brazilian laws and regulations. Because the company is in the presumed tax regime (“lucro presumido” from the Portuguese), there is no tax benefit from the interest payment on the loan given that the base for tax calculation are the project revenues and not the EBT (earnings before taxes). The DOE confirms due to its sectoral and local expertise that the project can apply the “presumed tax” regime as revenues are below the threshold of BRL 48 million. Even by applying the other, real tax regime (from the Portuguese “lucro real”), the IRR is even lower (5.46%), thus the application of the “presumed tax” regime can be considered as conservative.

Financeable items / Annual financial cost

Based on the typical BNDES level of financing in electric generation projects in Brazil, the applied value of 31.576 million BRL (about 55% of total investment) is reasonable and has been cross-checked by the DOE with the BNDES Report 2005 (IRL 47). In line with paragraph 10 of EB51, Annex 58 the portion of the investment costs which is financed by debt is not considered as cash outflow as interest and principle payments are already considered as costs in the equity IRR calculation.

The 50.666 million BRL used in the excel spreadsheet applying "actual values" is based on the figure indicated as financeable items in the financing contract (IRL 22). This can be considered as conservative once the credit granted by BNDES amounts to 40.532 million BRL. The annual financial cost of 8.55% applicable at time of investment decision was calculated by discounting the inflation target of 2006 of 4.5% from the sum of the average long term interest rate (TJLP from the Portuguese *Taxa de Juros de Longo Prazo*) of 10.25% and spread (BNDES remuneration plus credit risk) of 2.80%. The respective data sources have been verified by the DOE (IRL 70). TJLP has been calculated as an average rate from the period January 2002 to March 2006 which resulted in 10.25%. Even by applying the last available TJLP rate prior to investment decision in April 2006 which was 9% (January/March 2006) instead of an average of 10.25%, the IRR changes only slightly to 8.48% clearly remaining below the benchmark.

The annual financial cost at investment decision date is higher than the actual one (4.95%). The difference is caused by a slightly higher spread (3.20% instead of 2.80%) and a significant lower TJLP rate. The TJLP rate applied in the IRR calculation with actual values is based on the rate of 6.25% valid for the period from January to June 2009, which is only slightly higher than the rate of February 2011 (6%). Thus, the actual TJLP rate is appropriately chosen for cross-checking.

A sensitivity analysis has been performed in a transparent manner. The submitted excel spreadsheets have the readable formulas and unprotected cells, which allows TÜV SÜD to be able to reproduce the analysis and obtain the same results. Key parameters include total investment, project cost, tariff and electricity generation supplied to the grid, which have been considered to be sufficient and in accordance with paragraph 17 of EB51, Annex 58. The variation range of -/+ 10% is common practice and also in accordance with the requirement of EB51 Annex 58 para 18. The results of the sensitivity analysis show that even with a 10% variation of the input parameters the benchmark of 14.99% is never reached. The sensitivity analysis was analyzed in detail and we herewith confirm that the underlying assumptions, parameters and chosen values are appropriate and that the calculations have been performed correctly.

Furthermore, PPs submitted a proper IRR excel spreadsheet with actual values instead of the values applicable at the time of investment decision. Even though tariff is by 28%[6] higher than estimated at time of investment decision, IRR clearly remains below the benchmark as the actual investment is by 27% higher than estimated. The assessment team verified the IRR excel spreadsheet with actual values including data sources of actual values as cross check to the IRR excel spreadsheet valid and applicable at the time of investment decision and confirms that IRR does not cross the benchmark even in the "real case".

In conclusion, the financial calculations have been verified and no mistakes have been found. This confirms that the calculations are correct and the proposed project is financially unattractive without CER revenues.

[6] 28% is calculated as ((140+155)/2)-115)/115*100

3.6.4 Other barrier analysis

No barrier analysis was applied for this project. Investment analysis was applied in order to demonstrate additionality of the proposed project activity.

3.6.5 Common practice analysis

The region for the common practice analysis has been defined as Southern Region of Brazil (including the Sates of Parana, Santa Catarina and Rio Grande do Sul). The proposed project is located in Rio Grande do Sul state. The project activity´s technology can be found in different country regions, where different situations can appear. The assessment team has reviewed the approach presented in the PDD and can confirm that the relevant parameters as climate, topography, availability of transmissions lines, river flow regularity etc. has been taken into account in order to define the region to be used for the common practice (IRL 60). Hence the presented region can be considered appropriate for the common practice analysis.

The assessment team has reviewed official sources such as ANEEL 2011 general summary of electricity generation plants (IRL 50), ELETROBRAS information about PROINFA projects (IRL 51) and UNFCCC website.
It can be confirmed that all hydro power projects (except one) with an installed capacity of between 8 MW and 24 MW (+/- 50% of the installed capacity of the proposed project activity) which started operation since April 2004[7] until end of 2010 in Southern Region of Brazil receive some incentive from CDM or PROINFA[8]. The only one without CDM or PROINFA is the one of Eng. Ernesto Jorge Dreher in Rio Grande do Sul state. However, this project receives incentive from the Special Incentive for the Development of New Infrastructure (in a free translation from the Portuguese *Regime Especial de Incentivos para o Desenvolvimento da Infra-Estrutura – REIDI*) (IRL 60), thus is also not a similar activity to the proposed project activity.
The existence of these activities does not contradict the claim that the proposed project activity is financially unattractive.

3.7 Monitoring plan

The monitoring plan presented in the PDD complies with the requirements of the applicable methodology. The assessment team has verified all parameters in the monitoring plan against the requirements of the methodology; no relevant deviations have been found.
The procedures have been reviewed by the assessment team through document review and interviews with the relevant personnel. This information, together with a physical inspection, allows the assessment team to confirm that the proposed monitoring plan is feasible.
The major parameters to be monitored have been discussed with the PPs especially the location of meters, the data management, the quality assurance and quality control procedures to be implemented in the context of the project.

[7] In 2003 a reform of the electricity market's institutional framework took place and the new framework was approved in March 2004, thus only projects from April 2004 can be considered as similar projects (IRL 60).

[8] Alternative Electricity Sources Incentive Program (in a free translation from the Portuguese *Programa de Incentivo às Fontes Alternativas de Energia Elétrica – PROINFA*), created through the Law # 10,438 dated April 26th, 2002. Among others, one of the initiative's goals is to increase the renewable energy sources share in the Brazilian electricity market, thus contributing to a greater environmental sustainability. In order to achieve such goals, the Brazilian government has designated the federal state-owned power utility Eletrobrás (Centrais Elétricas Brasileiras S/A) to act as the primary off-taker of electric energy generated by alternative energy facilities in Brazil, by entering into long-term Power Purchase Agreements with alternative energy power producers, at a guaranteed price of at least 80% of the average energy supply tariff charged to ultimate consumers.

In line with the methodology, parameters that need to be monitored ex-post are the net electricity generation supplied by the project activity to the grid ($EG_{facility,y}$), which will be calculated by the electricity exported to the grid minus the electricity imported from the grid, installed capacity of the hydro power plant after the implementation of the project activity (Cap_{PJ}), Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (A_{PJ}). Further on, Operating Margin CO_2 emission factor, Build margin CO_2 emission factor and Combined margin CO_2 emission factor are included in the monitoring plan which are calculated by the Brazilian DNA using the version 02 of the "Tool to calculate the emission factor for an electricity system". $EG_{facility,y}$ will be continuously measured by 4 bi-directional electricity meters, 2 of them (main and backup meter) installed at the SHPP and the other 2 located at the SE Campos Novos substation. All meters of type SAGA 1000 manufactured by Landis+Gyr are of accuracy class 0.2%, are installed calibrated and will be re-calibrated every 2 years by an accredited entity within the Brazilian Calibration Network (from the Portuguese "*Rede Brasileira de Calibracao – RBC*"). Meter readings from the substation which will be used for emission reduction calculation will be double checked by sales receipts or by reports issued by CCEE[9]. $EG_{facility,y}$ will be hourly recorded.

CAP_{PJ} and A_{PJ} will be monitored yearly, the latter one with topographical studies and water reservoir level. The emissions factor is annually updated by the Brazilian DNA using the Dispatch Data Analysis for calculation of the emissions factor. As already mentioned in chapter 3.5.4.1., the emission factor calculation used in this PDD, for estimating purposes only, must be verified and updated accordingly using the most recent data available at the time of the verification process.

The DOE is of the opinion that the PPs will be able to implement the monitoring plan and the emission reductions achieved can be reported ex-post and verified.

3.8 Sustainable development

The project contributes to the sustainable development of the host Party. This was confirmed during the on-site visit and will be cross-checked by the audit team before submitting the project for registration once the LoA has been received.

3.9 Local stakeholder consultation

The relevant local stakeholders have been invited via invitation letters in June 2008. The evidence of these invitations is found in IRL 9 and 10. The assessment team has reviewed the documentation in order to validate the inclusion of relevant stakeholders. The team´s local expertise confirmed that the communication method used to invite the stakeholders was appropriate. The Brazilian DNA defines that the stakeholder process has to be carried out at least 15 days prior to the start of validation and the minimum of stakeholders who have to be consulted (resolution n° 7, from March 05, 2008 (IRL 39), paragraph 1).

The summary of comments presented in the PDD has been verified with the documentation of the stakeholder consultation and is found to be complete.

Comments presented by the local stakeholders have been taken into account by the PPs. This has also been verified with information obtained during interviews.

Hence, the local stakeholder consultation has been adequately performed according to the CDM requirements.

[9] CCEE is the Chamber of Electric Energy Commercialization (from the Portuguese *Camara de Comercializacao de Energia Eletrica*). CCEE regulates the electricity commercialization.

3.10 Environmental impacts

According to Brazilian regulations, the proposed project activity does not require an Environmental Impact Assessment (EIA), however an Environmental Control Plan (IRL 30) which was presented to the validation team. A valid environmental operational license (IRL 6) was presented to the validation team which clearly shows that the proposed project activity is in compliance with the environmental legislation. No significant negative environmental impacts are expected from the proposed project activity. The environmental control plan (IRL 30) mentions environmental impacts, however all not significant, confirms the correctness of the approach used by the PPs. We conclude that the PPs followed the requirements of the host country in regard to environmental impacts.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

TÜV SÜD published the project documents on the UNFCCC website by installing a link to TÜV SÜD's own website, and invited comments by affected Parties, stakeholders, and non-governmental organisations during a 30 day period.

The following table presents all gathered key information:

webpage: http://cdm.unfccc.int/Projects/Validation/DB/R37U72JOMXJWEWWP5RD8PVABDT35NQ/view.html	
Starting date of the global stakeholder consultation process: 2008-09-10	
Comment submitted by: None	**Issues raised:** -
Response by TÜV SÜD: -	

5 VALIDATION OPINION

TÜV SÜD has performed a validation of the following proposed CDM project activity:

Ouro Small Hydropower Plant – Brennand CDM Project Activity

Standard auditing techniques have been used for the validation of the project. A methodology specific customized protocol for the project have been prepared to carry out the audit in order to present the outcome in a transparent and comprehensive manner.

The review of the project design documentation, subsequent follow-up interviews and further verification of references have provided TÜV SÜD with sufficient evidence to determine the fulfilment of stated criteria in the protocol. In our opinion, the project meets all relevant UNFCCC requirements for the CDM. Therefore, TÜV SÜD will recommend the project for registration by the CDM Executive Board.

An analysis, as provided by the applied methodology, demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are additional to any that would occur in the absence of the project activity. Considering that the project will be implemented as designed, the project is likely to achieve the estimated annual amount of emission reductions of 13,875 tCO_2e and a total estimated of 97,128 tCO_2e as specified within the final PDD version.

The validation has been performed following the requirements of the latest version of the CDM VVM and on the basis of the contractual agreement. The single purpose of this report is its use during the registration process as part of the CDM project cycle.

Munich, 24-02-2011

Thomas Kleiser
Certification Body “climate and energy”
TÜV SÜD Industrie Service GmbH

Munich, 24-02-2011

Sebastian Randig
Assessment Team Leader

Industrie Service

Annex 1: Validation Protocol

Industrie Service

Table 1 Conformity of Project Activity and PDD

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
A. General description of project activity					
A.1. Title of the project activity					
A.1.1.	Does the used project title clearly enable to identify the unique CDM activity?	2	The project title clearly enables to identify the unique CDM activity.	☑	☑
A.1.2.	Are there any indication concerning the revision number and the date of the revision?	2	Yes. Version 1, dated 05/09/2008 has been submitted for the GSP.	☑	☑
A.1.3.	Is this consistent with the time line of the project's history?	2	Yes. It is consistent with the time line of the project´s history.	☑	☑
A.2. Description of the project activity					
A.2.1.	Is the description delivering a transparent overview about the scenario existing prior to the start of the implementation of the project activity?	1,2	**Corrective Action Request No.1.** It should be clearly mentioned in A.2. of the PDD what the situation was prior to the start of the implementation of the project activity.	**CAR**	☑
A.2.2.	Is the description delivering a transparent overview of the project activities, including a summary of the scope of activities/measures that are being implemented within the proposed project activity?	1,2	Yes. See A.2.4.	☑	☑
A.2.3.	Is the baseline scenario identified as in section B.4. and described? In the case that baseline scenario and scenario prior to the start of implementation of the project activity is the same: Is this fact indicated in A.2. and A.4.3. of the	1,2	The baseline scenario and scenario prior to the start of implementation of the project activity is the same, however not mentioned neither in A.2. nor in A.4.3. **Corrective Action Request No.2.** Please mention in A.2. and A.4.3. that baseline scenario and scenario prior to the start of implementation of the project activity is	**CAR**	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	PDD?		the same.		
A.2.4.	It is explained how the proposed project activity reduces GHG emissions making reference to the scenarios, emission sources and gases described in sections A.4.3. and B.3.?	1,2	Yes. A.2. mentions that the proposed project activity will reduce emissions of GHG by avoiding electricity generation by fossil fuel sources (and CO2 emissions), which would be generating (and emitting) in the absence of the project.	☑	☑
A.2.5.	Is transparently explained how the project activity contributes to sustainable development?	1,2	Yes. A.2. mentions that besides having an important contribution to environmental sustainability by reducing carbon dioxide emissions, the project activity will support the community providing social and environmental benefits. Income distribution will be derived due to job creation, employees´ salaries and package of benefits such as social security and life insurance, and credits of emission reductions. Furthermore, lower expenditure is achived due to the fact that money will no longer to be spent in the same amount to "import" electricity from other regions in the country. The revenues will stay in the region and be used for providing the population better services and improve the availability of basic needs.	☑	☑
A.2.6.	What proofs are available demonstrating that the project description is in compliance with the actual situation or planning?	1,2,11 13,14, 15,17, 18,19, 20,21, 27,29	The following documents have been submitted to the validation team evidencing that the project description in the PDD is in compliance with the actual situtation or planning: 1. ANEEL resolutions N°988, N°647, N°537 (IRL 13, 14, 15) 2. Installation licence (IRL 11) 3. Letters of ANEEL concerning the capacity increase from 12 MW to 16 MW (IRL 17 and IRL 29). 4. Technical characteristics (IRL 18) 5. 2 official registries evidencing the ownership of land (IRL 19) 6. Purchase agreement for turbines and generators (IRL 20)	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
			7. 2 Power Purchase Agreements with Sadia S.A. (IRL 21) 8. Approval of the Consolidated basic project by ANEEL (IRL 27)		
A.2.7.	Is the information provided by these proofs consistent with the information provided by the PDD?	1,2,11 13,14, 15,17, 18,19, 20,21, 27,29	See A.4.3.1.	**See CAR**	☑
A.2.8.	Is all information presented consistent with details provided by further chapters of the PDD?	1,2	Yes. All information presented is consistent with details provided by further chapters of the PDD.	☑	☑
A.3. Project participants					
A.3.1.	Is the form required for the indication of project participants correctly applied?	2	Yes. The form required for the indication of project participants is correctly applied.	☑	☑
A.3.2.	Is the participation of the listed entities or Parties confirmed by each one of them?	12	Yes. Both project participants submitted a signed declaration to the validation team, confirming the participation in the project activity.	☑	☑
A.3.3.	Is all information on participants / Parties provided in consistency with details provided by further chapters of the PDD (in particular annex 1)?	2	Yes. All information regarding project participants is consistent.	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
A.4. Technical description of the project activity					
A.4.1.	*Location of the project activity*				
A.4.1.1.	Does the information provided on the location of the project activity allow for a clear identification of the site(s)?	1,2,23	The project is located on the Marmeleiro river, which is however not indicated in the PDD. Besides, it is not clear in the PDD from which location GPS coordinates are taken. GPS coordinates were evidenced by the Consolidated Basic Project (IRL 23). **Corrective Action Request No.3.** 1. Please indicate in chapter A.4.1. on which river the proposed project activity is located. 2. Please indicate GPS coordinates from dam and power house in the PDD.	**CAR**	☑
A.4.1.2.	How is it ensured and/or demonstrated, that the project proponents can implement the project at this site (ownership, licenses, contracts etc.)?	1,19	2 official registries evidencing the ownership of land (IRL 19) have been submitted to the validation team.	☑	☑
A.4.2.	*Category(ies) of project activity*				
A.4.2.1.	To which category(ies) does the project activity belonging to? Is the category correctly identified and indicated?	2	The project belongs to sectoral scope 1: Energy industries (renewable-/non-renewable sources). The scope is correctly identified in the PDD.	☑	☑
A.4.3.	*Technology to be employed by the project activity*				
A.4.3.1.	Is a detailed description provided of the following items: a) Scenario existing prior to the start of the imple-	1,2,31	The calculation of the capacity factor (54%) is based on the average electricity generation in IRL 31, which was verified by the validation team and is correct. However, the capacity factor is not	**CAR** **CR**	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
menation of the project activity, with a list of the equipment(s) and systems in operation at that time? b) Scope of activities/measures that are being implemented within the project activity, with a list of the equipment(s) and systems that will be installed and/or modified within the project activity? c)The baseline scenario, as identified in section B.4. with a list of the equipment(s) and systems that would have been in place in the absence of the project activity?		indicated in A.4.3. of the PDD. A.4. informs that the proposed project activity is a new hydro electric project. A.4.3. informs about the equipment used (turbines, generators), however see CAR 4. **Corrective Action Request No.4.** 1. Please mention the baseline scenario and the system that would have been in place in the absence of the project activity. 2. Please add in the description of technology in A.4.3.: a) nominal turbine flow rate (m3/s) b) turbine speed in rpm and horizontal axis if applicable c) load factor (capacity factor) d) lifetime e) information about monitoring equipment and location f) information about the transformator g) model, efficiency, speed and manufacturing date of turbines and generators 3. Please correct the unit of nomial power for turbines and generators in the Table of A.4.3. (instead of MW it has to be KW) 4. Please correct the nominal power of generators to 6,500 kVA instead of 6,300 kW. 6,500 kVA is the capacity according to the TAGs of the generators. 5. Please revise the definition of run-of-river projects in A.4. of the project considering the circumstances of Ouro SHP Project. **Clarification Request No. 1.** It is not clear according to the PDD why installed capacity is 16 MW, if the total nominal power capacity of turbines is 17.7 MW.		

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
		Please clarify and provide a detailed explanation in the PDD.		
A.4.3.2. Does the technical design of the project activity reflect current good practices?	1,2	Yes. The technical design of the project reflects current good practice. The equipment and technology used in this project have been successfully applied to similar projects in Brazil and around the world.	☑	☑
A.4.3.3. Does the description of the technology to be applied provide sufficient and transparent input/ information to evaluate its impact on the greenhouse gas balance? a) Is a list of the main manufacturing/production technologies, systems and equipments involved, provided, including information about age and average lifetime of the equipments based on manufacturer´s specifications and industry standards, existing and forecast installed capacities, load factors and efficiencies? Is information about the monitoring equipment and their location in the systems provided? b) Is information provided about emissions sources and the GHG involved in the project activity as well as existing and forecast energy and mass flows and balances of the systems and equipments included in the project activity? c) Is information provided about the types and levels of services (usually in terms of mass or energy flows) provided by the systems and equipments that are being modified and/or installed under project activity and their relation (if any) to other manufacturing/production equipments and systems outside the project boundary? Is it explained how the same types	1,2	Yes. The description of the technology to be applied allows to evaluate that the proposed project activity indeed will reduce GHG emissions. However, see A.4.3.1.	**See CAR** **See CR**	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
and levels of services provided by the project activity would have been provided in the baseline scenario?				
A.4.3.4. Does the implementation of the project activity require any technology transfer from annex-I-countries to the host country(ies)?	1,2	The project equipment is supplied by national manufacturers. **Corrective Action Request No.5.** Please mention in the PDD that the project equipment is domestically manufactured.	**CAR**	☑
A.4.3.5. Is the technology implemented by the project activity environmentally safe?	1,2	The equipment and technology used in Ouro SHP Project Activity has been successfully applied to similar projects in Brazil and around the world. The technology implemented can be considered as environmentally safe.	☑	☑
A.4.3.6. Is the information provided in compliance with actual situation or planning?	1,2	See A.4.3.1.	**See CAR** **See CR**	☑
A.4.3.7. Does the project use state of the art technology and / or does the technology result in a significantly better performance than any commonly used technologies in the host country?	1,2	The project uses state of the art technology, already used in several other projects in the host country.	☑	☑
A.4.3.8. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	1,2	It is not expected that the project technology will be substituted by other or more efficient technologies within the project period.	☑	☑
A.4.3.9. Does the project require extensive initial training and maintenance efforts in order to be carried out as scheduled during the project period?	1,2,24	4 operators will be trained by the supplier of all electrical/electronical parts GRANMAYR. The respective document has been submitted to the validation team (IRL 24).	☑	☑
A.4.3.10. Is information available on the demand and requirements for training and maintenance?	1,2,24	The PDD informs in B.7.2. that “Brennand [which owns Ouro Energetica S.A.] is responsible for the project management, as well as for organising and training of the staff in the appropriate monitoring, measurement and reporting techniques. Also, Bren-	☑	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
		nand is preparing an operation, maintenance and emergency manual. Technicians will be trained on mounting and start-up.		
A.4.3.11. Is a schedule available for the implementation of the project and are there any risks for delays?	1,2,25	An implementation schedule has been submitted to the validation team (IRL 25) and there are no risks for delays. **Corrective Action Request No.6.** Please provide a project implementation schedule in A.4.3 of the PDD with the most important project implementation steps.	**CAR**	☑
A.4.4. Estimated amount of emission reductions over the chosen crediting period				
A.4.4.1. Is the form required for the indication of projected emission reductions correctly applied?	2	Yes. The form required for the indication of projected emission reductions is correctly applied.	☑	☑
A.4.4.2. Are the figures provided consistent with other data presented in the PDD?	2	Yes. The figures provided are consistent with other data presented in the PDD.	☑	☑
A.4.5. Public funding of the project activity				
A.4.5.1. Is the information provided on public funding provided in compliance with the actual situation or planning as available by the project participants?	1,2,22	Yes. The information provided on public funding is in compliance with the actual situation or planning as available by the project participants. No public funding is involved. The project has been financed by credits (IRL 22) and own equity capital.	☑	☑
A.4.5.2. Is all information provided consistent with the details given in remaining chapters of the PDD (in particular annex 2)?	1,2,22	Yes. All information provided is consistent with the details given in remaining chapters (Annex 2) of the PDD.	☑	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
B. Application of a baseline and monitoring methodology				
B.1. Title and reference of the approved baseline and monitoring methodology				
B.1.1. Are reference number, version number, and title of the baseline and monitoring methodology clearly indicated?	2-6	Yes. The project applies ACM0002, version 7. Title, reference number, version number are clearly indicated in B.1. of the PDD. Besides, all tools to which ACM0002, version 7 refers are correctly indicated in B.1. of the PDD. Later on, during the validation process, the PDD was updated to version 11 of ACM0002.	☑	☑
B.1.2. Is the applied version the most recent one and / or is this version still applicable?	3	At the time of GSP uploading, version 7 has been the most recent version of ACM0002.	☑	☑
B.1.3. Does the methodology refer to the following tools with its latest approved versions: - Tool to calculate the emission factor for an electricity system - Tool for the demonstration and assessment of additionality - Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion	2-6	Yes. The methodology refers to all 3 tools with its latest approved versions.	☑	☑
B.2. Justification of the choice of the methodology and why it is applicable to the project activity				
B.2.1. Is the applied methodology considered the most appropriate one?	2,3	Yes. The applied methodology is considered to be the most appropriate one.	☑	☑
Fill in the required amount of sub checklists for applicability criteria as given by the methodology applied and comment at least every line answered with “No”				
B.2.2. Criterion 1: Is the proposed project activity a grid-connected renewable power gener-		The proposed project activity consists of a new power plant at a site where no renewable power plant was operated prior to the	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	ation project activity that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (Greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).		implementation of the project activity (Greenfield plant). This could be confirmed by visual inspection during the on-site visit.		
B.2.3.	Criterion 2: Type of electricity capacity addition by grid-connected renewable power generation The following types are possible: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit.	2,3	<table><tr><th>Applicability checklist</th><th>Yes / No</th></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr><tr><td>Compliance provable?</td><td>Yes</td></tr><tr><td>Evidences provided in the PDD?</td><td>Yes</td></tr><tr><td>Compliance verified?</td><td>Yes</td></tr></table> The proposed project activity consists of a small hydro power plant (with run-of-river reservoir) interconnected to the electricity grid. Various evidences for that have been submitted for the desk review and during the on-site visit. The visual inspection confirmed the existance of a run-of-river reservoir.	☑	☑
B.2.4.	Criterion 3 (in the case of capacity additions, retrofits or replacements (except for wind, solar, wave or tidal power capacity addition projects which use Option 2): Did the existing plant start commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion or retrofit of the plant has been undertaken between		Not applicable, as the proposed project activity does not consist of a capacity addition, retrofit or replacement.	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	the start of this minimum historical reference period and the implementation of the project activity?				
B.2.5.	Criterion 4 (in the case of hydro plants, one of the following conditions must apply): -The project activity is implemented in an existing reservoir, with no change in the volume of reservoir or -The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity is greater than 4 W/m2 or -The project activity results in new reservoirs and the power density of the power plant is greater than 4 W/m2.	2,3	Applicability checklist / Yes / No Criterion discussed in the PDD? Yes Compliance provable? Yes Evidences provided in the PDD? Yes Compliance verified? Yes The project activity results in a new reservoir (run-of-river reservoir) and the power density of the power plant is greater than 4 W/m2. This reservoir size was evidenced by IRL 23, IRL 26, IRL 27 and visual inspection.	☑	☑
B.2.6.	Criterion 5: Exclusion of fuel switching activities	2,3	**Corrective Action Request No.7.** Please include in B.2. of the PDD that the project activity does not consist of 1) fuel switching activities 2) biomass fired power plants Applicability checklist / Yes / No Criterion discussed in the PDD? No Compliance provable? No Evidences provided in the PDD? No Compliance verified? No	**CAR**	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
B.2.7. Criterion 6: Exclusion of biomass fired power plants	2,3	See B.2.7. Applicability checklist: Criterion discussed in the PDD? No; Compliance provable? No; Evidences provided in the PDD? No; Compliance verified? No	**See CAR**	☑
B.2.8. Criterion 7: Exclusion of hydro power plants that result in new reservoirs or in the increase in existing reservoirs where the power density of the power plant is less than 4 W/m2.	2,3	Applicability checklist: Criterion discussed in the PDD? Yes; Compliance provable? Yes; Evidences provided in the PDD? Yes; Compliance verified? Yes B.2. of the PDD correctly informs that power density of the power plant is greater than 4 W/m2.	☑	☑
B.2.9. Criterion 8: In the case of retrofits, replacements, or capacity additions: The methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, i.e. to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".		Not applicable as the proposed project activity consists of a new hydropower plant.	☑	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
B.3. Description of the sources and gases included in the project boundary				
Integrate the required amount of sub-checklists for sources and gases as given by the methodology applied and comment on at least every line answered with "No"				
B.3.1. Source: Fugitive Emissions from non-condensable gases contained in geothermal steam (geothermal power plants only) Gas(es): CO_2, CH_4 Type: Project Emissions	1,2,3	Not applicable Boundary checklist / Yes / No Source and gas(es) discussed by the PDD? N/A Inclusion / exclusion justified? N/A Explanation / Justification sufficient? N/A Consistency with monitoring plan? N/A	☑	☑
B.3.2. Source: Emissions from combustion of fossil fuels for electricity generation in solar thermal power plants and geothermal power plantsGas(es): CO_2 Type: Project Emissions	1,2,3	Not applicable Boundary checklist / Yes / No Source and gas(es) discussed by the PDD? N/A Inclusion / exclusion justified? N/A Explanation / Justification sufficient? N/A Consistency with monitoring plan? N/A	☑	☑
B.3.3. Source: Emissions from the reservoir (hydro power plants only) Gas(es): , CH_4 Type: Project Emissions	1,2,3	Boundary checklist / Yes / No Source and gas(es) discussed by the PDD? Yes Inclusion / **exclusion** justified? Yes Explanation / Justification sufficient? Yes Consistency with monitoring plan? Yes	☑	☑
B.3.4. Source: Emissions from electricity generation in fossil fuel fired power plants that is dis-	1,2,3	Boundary checklist / Yes / No Source and gas(es) discussed by the PDD? Yes	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	placed due to the project activity Gas(es): CO_2 Type: Baseline Emissions		**Inclusion** / exclusion justified? Yes Explanation / Justification sufficient? Yes Consistency with monitoring plan? Yes		
B.3.5.	Source: Emissions from electricity generation in fossil fuel fired power plants of any connected electricity system Gas(es): CO_2 Type: Baseline Emissions	1,2,3, 39	Not applicable, as the Brazilian DNA published resolution nr. 8 (IRL 39) that defines a single system for the whole Brazilian Inter-connected Grid. Boundary checklist / Yes / No Source and gas(es) discussed by the PDD? N/A Inclusion / exclusion justified? N/A Explanation / Justification sufficient? N/A Consistency with monitoring plan? N/A	☑	☑
B.3.6.	Source: Emissions from electricity generation in fossil fuel fired power plants of imported electricity (project electricity consumption) Gas(es): CO_2	1,2,3, 39	The Brazilian DNA calculates the emission factor annually and considers as well emissions from electricity generation in fossil fuel fired power plants of imported electricity if relevant. Boundary checklist / Yes / No Source and gas(es) discussed by the PDD? Yes Inclusion / exclusion justified? Yes Explanation / Justification sufficient? Yes Consistency with monitoring plan? Yes	☑	☑
B.3.7.	Is a flow diagram of the project boundary presented, physically delineating the project activity, including all the equipments, systems and mass and	1,2	**Corrective Action Request No.8.** Please present a flow diagram of the project boundary in B.3. of the PDD, including all the equipments, systems, emission sources and monitoring variables.	**CAR**	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	energy flows as well as emission sources and gases included in the project boundary and the monitoring variables?				
B.3.8.	Do the spatial and technological boundaries as verified on-site comply with the discussion provided by the PDD?	1,2	Yes. The spatial and technological boundary as verified on-site comply with the discussion provided in the PDD.	☑	☑
B.4. Description of how the baseline scenario is identified and description of the identified baseline scenario					
B.4.1.	Is it clearly described that the baseline is represented by the combined margin of the grid the activity will be connected to?	2	B.4. of the PDD clearly mentions that the baseline scenario is represented by the combined margin of the grid the activity will be connected to.	☑	☑
B.4.2.	In case of any modification or retrofit of existing facilities: Is data available to determine the historic production level?	1,2	Not applicable.	☑	☑
B.4.3.	In case of any modification or retrofit of existing facilities: Have conservative assumptions been applied in order to estimate the point in time when the existing equipment needs to be replaced?	1,2	Not applicable.	☑	☑
Changes required for methodology implementation in 2nd and 3rd crediting periods					
B.4.4.	Has the continued validity of the baseline been correctly assessed?	-	Not applicable.	☑	☑
B.4.5.	Has the baseline been updated with new data?	-	Not applicable.	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity (assessment and demonstration of additionality):					
B.5.1.	If the starting date of the project activity is before the date of validation, is evidence provided, that CDM has been considered seriously in the decision to proceed with the project activity (CDM decision before project start)?	1,2,13 ,28	The starting date of the project activity is before the date of validation, thus an evidence for CDM consideration has been requested by the validation team. Minutes of meeting held on April 10, 2006 by Rija Investimentos Energéticos Ltda. were presented to the validation team during the on-site audit (IRL 28). Rija Investimentos Energeticos Ltda. was incorporated by Ouro Energetica S.A. on 24/07/2007 (IRL 13). **Corrective Action Request No.9.** Please provide a more detailed description in the PDD, how CDM was considered to proceed with the project activity.	**CAR**	☑
B.5.2.	In the case that starting date of the project activity is before the date of validation: Is an implementation timeline of the proposed project activity provided, including (where applicable), the date of investment decision, starting date of construction works, starting date of commissioning and date of start-up? Is a timeline provided of events and actions, which have been taken to achieve CDM registration, with description of the evidence used to support these actions?	1,2,11 ,20-22	A timeline is provided in B.5. of the PDD, including the construction permit, IRL 11 (16/01/2007), financial closure, IRL 22 (27/02/2007), purchase of the main equipment, IRL 20 (28/02/2007), Start of construction (24/06/2007) and Power Purchase Agreement, IRL 21 (01/12/2007). CDM consideration is mentioned through the Minutes of Meeting, dated April 10, 2006. **Corrective Action Request No.10.** The date of financial closure should be revised in the PDD, as the bank credit with ITAU was closed on 25/08/2008.	**CAR**	☑
B.5.3.	Have realistic and credible alternatives been identified providing comparable outputs or services? (step 1a)	1,2,5	Yes. The alternatives to the project activity are 1) the continuation of the current (previous) situation of electricity supplied by large hydropower plants with large reservoirs and thermal power plants. 2) the proposed project activity undertaken without being regis-	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
			tered as a CDM project activity.		
B.5.4.	Is the project activity without CDM included in these alternatives? (step 1a)	1,2,5	Yes it is.	☑	☑
B.5.5.	Is a discussion provided for all identified alternatives concerning the compliance with applicable laws and regulations? (step 1b)	1,2,5	Yes. Both alternatives are in compliance with laws and regulations.	☑	☑
B.5.6.	In case the PDD argues that specific laws are not enforced in the country or region: Is evidence available concerning that statement? (step 1b)	1,2,5	Not applicable.	☑	☑
B.5.7.	In case of applying step 2 / investment analysis of the additionality tool: Is the analysis method identified appropriately (step 2a)?	1,2,5	Yes. The benchmark analysis (option III) is the most appropriate analysis method.	☑	☑
B.5.8.	In case of Option I (simple cost analysis): Is it demonstrated that the activity produces no economic benefits other than CDM income?	1,2,5	Simple cost analysis is not applicable, as the proposed project activity generates other (viz. income from electricity sale) than CDM related income.	☑	☑
B.5.9.	In case of Option II (investment comparison analysis): Is the most suitable financial indicator clearly identified (IRR, NPV, cost benefit ratio, or (levelized) unit cost)?	1,2,5	Investment comparison analysis is not applicable, as there are no other investment options from the project owner perspective.	☑	☑
B.5.10.	In case of Option III (benchmark analysis): Is the most suitable financial indicator clearly identified (IRR, NPV, cost benefit ratio, or (levelized) unit cost)?	1,2,5	The project IRR is applied as financial indicator in the GSP PDD however has been changed to an equity IRR in the final PDD as the benchmark used in the final PDD is cost of equity. This is suitable.	☑	☑
B.5.11.	In case of Option II or Option III: Is the calculation of financial figures for this indi-	1,2,5, 38	**Corrective Action Request No.11.** 1. Please revise the calculation of WACC (also bearing in mind	**CAR CR**	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	cator correctly done for all alternatives and the project activity?		CR 2), as some applied figures in the calculation are not retraceable to the validation team. 2. Please provide the exact weblinks/sources of each figure used in order to facilitate the assessment of the WACC calculation. **Clarification Request No. 2.** Please justify the application of WACC (weighted average cost of capital) as internal company benchmark. According to paragraph 14 of the Guidance on the assessment of investment analysis, "internal company benchmarks should only be applied in cases where there is only one possible project developer and should be demonstrated to have been used for similar projects with similar risks, developed by the same company or if the company is brand new, would have been used for similar projects in the same sector in the country/region. See B.5.12.	**See CAR**	
B.5.12.	In case of Option II or Option III: Is the analysis presented in a transparent manner including publicly available proofs for the utilized data?	1,2,21 ,22,31 ,38	The IRR calculation sheet has been submitted to the validation team and is presented in a transparent manner. Investment costs are evidenced by IRL 22, the tariff is evidenced by IRL 21 and electricity generation is evidenced by IRL 31. **Corrective Action Request No.12.** 1. B.5. of the PDD should mention the main input values (investment, O&M costs, tariff, amount of electricity generated (dispatched), taxes, depreciation), preferably in a Table including the data sources. 2. The applied figure for O&M costs should be evidenced. Please submit the relevant evidence to the validation team. 3. Please provide an explanation in the PDD for the difference between generated electricity and dispatched electricity. 4. Please submit the relevant evidences for the applied figures for	**CAR**	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
			taxes and depreciation. **<u>Corrective Action Request No.13.</u>** The PDD mentions that the internal rate of return of the project was calculated for a 15 year period, as this is the default period used by Brennand Group to evaluate their projects once from this period on the variation is minimal. However, paragraph 3 of the Guidance on the assessment of investment analysis mentions that the project IRR shall as a preference reflect the period of expected operation of the underlying project activity (technical lifetime), which is in the project case 25 years and in the case that a shorter period is chosen, a fair value of the project activity assets should be included at the end of the assessment period. Thus, please revise the IRR calculation respectively.		
B.5.13.	In case of applying step 3 (barrier analysis) of the additionality tool: Is a complete list of barriers developed that prevent the different alternatives to occur?	1,2,5	Not applicable.	☑	☑
B.5.14.	In case of applying step 3 (barrier analysis): Is transparent and documented evidence provided on the existence and significance of these barriers?	1,2,5	Not applicable.	☑	☑
B.5.15.	In case of applying step 3 (barrier analysis): Is it transparently shown that the execution of at least one of the alternatives is not prevented by the identified barriers?	1,2,5	Not applicable.	☑	☑
B.5.16.	Have other activities in the host country / region similar to the project activity been identified and are these activities appro-	1,2,5	Yes. Similar project activities are mentioned in step 4a) however see B.5.17.	**See CAR**	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	priately analyzed by the PDD (step 4a)?				
B.5.17.	If similar activities are occurring: Is it demonstrated that in spite of these similarities the project activity would not be implemented without the CDM component (step 4b)?	1,2,5	**Corrective Action Request No.14.** 1. It should be discussed in step 4b) why only similar project activities from the years 2005, 2006 and 2007 are analysed. 2. Distinctions between the proposed project activity and other similar project activities should be demonstrated not only for the hydroplants which started operation in 2007, but also for hydro plants of other relevant years.	CAR	☑
B.5.18.	Is it appropriately explained how the approval of the project activity will help to overcome the economic and financial hurdles or other identified barriers?	1,2,5	**Corrective Action Request No.15.** Please explain in more detail and more project related how the CDM approval helps to overcome the economic and financial hurdles.	CAR	☑
B.6. Emissions reductions					
B.6.1.	*Explanation of methodological choices*				
B.6.1.1.	Is it explained how the procedures provided in the methodology are applied by the proposed project activity?	1,2,39	Yes	☑	☑
B.6.1.2.	Is every selection of options offered by the methodology correctly justified and is this justification in line with the situation verified on-site?	1,2,39	Yes. Baseline emissions are calculated as: $BE_y = EG_{PJ,y} \cdot EF_{grid,CM,y}$ The grid emission factor was calculated by the Brazilian DNA (available at: http://www.mct.gov.br/index.php/content/view/317398.html#ancora, using the Dispatch Data Analysis for the Operating Margin. The Build Margin emission factor was determined using the generation-weighted average emission factor of all power units during the most recent year for which power generation data was available.	☑	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
		Therefore, the emission factor of 0.1842 tCO_2/MWh was accepted just for estimating the expected emission reductions of the project activity during the crediting period. Hence, the emission factor calculation used in this PDD, for estimating purposes only, must be verified and updated accordingly using the most recent data available at the time of the verification process.		
B.6.1.3. Are the formulae required for the determination of project emissions correctly presented, enabling a complete identification of parameter to be used and / or monitored?	1,2,3	The formula required for the determination of project emissions is correctly presented as according to the applied methodology.	☑	☑
B.6.1.4. Are the formulae required for the determination of baseline emissions correctly presented, enabling a complete identification of parameter to be used and / or monitored?	1,2,3	The formula required for the determination of baseline emissions is correctly presented as according to the applied methodology.	☑	☑
B.6.1.5. Is the choice of options to determine the emissions factor (OM, BM) justified in a suitable and transparent manner?	1,2,39	Yes. The grid emission factor was calculated by the Brazilian DNA (available at: http://www.mct.gov.br/index.php/content/view/317398.html#ancora, using the Dispatch Data Analysis for the Operating Margin. The Build Margin emission factor was determined using the generation-weighted average emission factor of all power units during the most recent year for which power generation data was available. Therefore, the emission factor of 0.1842 tCO_2/MWh was accepted just for estimating the expected emission reductions of the project activity during the crediting period. Hence, the emission factor calculation used in this PDD, for estimating purposes only, must be verified and updated accordingly using the most recent data available at the time of the verification process.	☑	☑
B.6.1.6. Are the seven steps as defined per the "Tool for calculation of emission factor for	1,2,39	Yes. The Brazilian DNA calculates the emissions factor as per the Tool to calculate the emission factor for an electricity system, ver-	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	electrical systems" correctly applied by the project participants?		sion 02.		
B.6.1.7.	In case of alternative weighing factors for the Combined Margin: Is the quantification of the alternative weighing factor justified in a suitable and transparent manner?	-	Not applicable.	☑	☑
B.6.1.8.	In case of alternative weighing factors for the Combined Margin: Is the guidance for the PDD concerning the acceptability of alternative weights considered in the discussion?	-	Not applicable.	☑	☑
B.6.1.9.	Are the formulae required for the determination of leakage emissions correctly presented, enabling a complete identification of parameter to be used and / or monitored?	1,2,3	Leakage emissions do not have to be considered according to methodology ACM0002.	☑	☑
Tool to calculate project or leakage CO2 emissions from fossil fuel combustion					
B.6.1.10.	Is the formula required for the determination of CO2 project emissions from fossil fuel combustion correctly presented, enabling a complete identification of parameter to be used and / or monitored	1,2,3, 6	Not applicable as no project emissions from fossil fuel combustion are expected.	☑	☑
B.6.1.11.	Is option A (preferred approach) or option B chosen for the determination of the CO2 emission coefficient COEFi,y and is COEFi,y correctly determined?	-	See B.6.1.10.	**See CAR**	☑
B.6.1.12.	Are formulae required for the determination of emission reductions correctly pre-	1,2,3	**Corrective Action Request No.16.** Please mention in B.6.1. of the PDD the formula for the determi-	**CAR**	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	sented?		nation of emission reductions.		
B.6.2.	*Data and parameters that are available at validation*				
B.6.2.1.	Is the list of parameters presented in chapter B.6.2 considered to be complete with regard to the requirements of the applied methodology?	1,2,3	The list of parameters presented in chapter B.6.2. is considered to be complete.	☑	☑
B.6.2.2.	Is the choice of ex-ante or ex-post vintage of OM and BM factors clearly specified in the PDD?	1,2,3, 4	**Corrective Action Request No.17.** The ex-post vintage of OM and BM factors should be explicitly mentioned in B.6.1. of the PDD.	**CAR**	☑
Fill in the required amount of sub checklists for monitoring parameter and comment any line answered with "No"					
B.6.2.3.	Parameter Title: GWP_{CH4} Global warming potential of methane valid for the relevant commitment period (tCO2/tCH4)	1,2,3	Not applicable Data Checklist / Yes / No Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description of parameter? N/A Source clearly referenced? N/A Correct value provided? N/A Has this value been verified? N/A Choice of data correctly justified? N/A Measurement method correctly described? N/A	☑	☑
B.6.2.4.	Parameter Title: $EG_{historical}$ (only applicable to modification/retrofit of an existing grid-connected renewable power plant/unit) Annual average historical net electricity generation delivered to the grid by the existing renewable energy plant that was operated at the project site prior to the implementation of the project activity. (MWh/yr)	1,2,3	Not applicable. Data Checklist / Yes / No Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description? N/A Source clearly referenced? N/A Correct value provided? N/A Has this value been verified? N/A Choice of data correctly justified? N/A	☑	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
		Measurement method correctly described? N/A		
B.6.2.5. Parameter Title: $\sigma_{historical}$ Standard deviation of the annual average historical net electricity generation delivered to the grid by the existing renewable energy plant that was operated at the project site prior to the implementation of the project activity		Not applicable. Data Checklist / Yes / No Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description? N/A Source clearly referenced? N/A Correct value provided? N/A Has this value been verified? N/A Choice of data correctly justified? N/A Measurement method correctly described? N/A	☑	☑
B.6.2.6. Parameter Title: $DATE_{BaselineRetrofit}$ (only applicable to modification/retrofit of an existing grid-connected renewable power plant/unit) Point in time when the existing equipment would need to be replaced in the absence of the project activity	1,2,3	Not applicable. Data Checklist / Yes / No Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description? N/A Source clearly referenced? N/A Correct value provided? N/A Has this value been verified? N/A Choice of data correctly justified? N/A Measurement method correctly described? N/A	☑	☑
B.6.2.7. Parameter Title: $DATE_{hist}$ (only applicable to retrofit or replacement projects) Point in time from which the time span of historical data for retrofit or replacement project activities may start		Not applicable	☑	☑
B.6.2.8. Parameter Title: EF_{Res} (only applicable to hydro-power plants with reservoir) Default emission factor for emissions from reservoirs (kgCO2e/MWh)	1,2,3	Not applicable. Data Checklist / Yes / No Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description of parameter? N/A	☑	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
		Source clearly referenced? N/A Correct value provided? N/A Has this value been verified? N/A Choice of data correctly justified? N/A Measurement method correctly described? N/A		
B.6.2.9. Parameter Title: CAP_{BL} (W) (only applicable to modification/retrofit of an existing grid-connected renewable power plant/unit) Installed capacity of the hydro power plant before the implementation of the project activity. For new hydro power plants, this value is zero.	1,2,3	**Corrective Action Request No.18.** Regarding the parameter CAP_{BL} and A_{BL}: Please revise the justification of choice of data for each parameter. Data Checklist / Yes / No Title in line with methodology? Yes Data unit correctly expressed? Yes Appropriate description of parameter? Yes Source clearly referenced? Yes Correct value provided? Yes Has this value been verified? Yes Choice of data correctly justified? No Measurement method correctly described? N/A	**CAR**	☑
B.6.2.10. Parameter Title: A_{BL} (only applicable to hydropower plant projects with reservoir) Area of the reservoir measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m2). For new reservoirs, this value is zero (m^2).	1,2,3	See B.6.2.7. Data Checklist / Yes / No Title in line with methodology? Yes Data unit correctly expressed? Yes Appropriate description of parameter? Yes Source clearly referenced? Yes Correct value provided? Yes Has this value been verified? Yes Choice of data correctly justified? No Measurement method correctly described? N/A	**See CAR**	☑
B.6.2.11. Parameter Title: Emission factor of the grid (EF_{CM} in	1,2,3, 4	Not applicable, as the ex-post vintage for the application of the emissions factor is chosen.	☑	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
tCO_2/MWh)		Data Checklist / Yes / No Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description of parameter? N/A Source clearly referenced? N/A Correct value provided? N/A Has this value been verified? N/A Choice of data correctly justified? N/A Measurement method correctly described? N/A		
B.6.2.12. Parameter Title: Operating margin (EF_{OM} in tCO_2/MWh) emission factor of the grid	1,2,3, 4	Not applicable, as the ex-post vintage for the application of the emissions factor is chosen. Data Checklist / Yes / No Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description? N/A Source clearly referenced? N/A Correct value provided? N/A Has this value been verified? N/A Choice of data correctly justified? N/A Measurement method correctly described? N/A	☑	☑
B.6.2.13. Parameter Title: Build margin (EF_{BM}intCO_2/MWh) emission factor of the grid	1,2,3, 4	Not applicable, as the ex-post vintage for the application of the emissions factor is chosen. Data Checklist / Yes / No Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description of parameter? N/A	☑	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
		Source clearly referenced? N/A Correct value provided? N/A Has this value been verified? N/A Choice of data correctly justified? N/A Measurement method correctly described? N/A		
B.6.2.14. Parameter Title: $FC_{i,m,y}$, $FC_{i,y}$, $FC_{i,j,y}$, $FC_{i,k,y}$, $FC_{i,n,y}$ and $FC_{i,n,h}$ Amount of fossil fuel type i consumed by power plant / unit m,j,k or n (or in the project electricity system in case of $FC_{i,y}$) in year y or hour h (mass or volume unit)	1,2,3, 4	Not applicable, as the ex-post vintage for the application of the emissions factor is chosen. Data Checklist / Yes / No Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description of parameter? N/A Source clearly referenced? N/A Correct value provided? N/A Has this value been verified? N/A Choice of data correctly justified? N/A Measurement method correctly described? N/A	☑	☑
B.6.2.15. Parameter Title: $NCV_{i,y}$ Net calorific value (energy content) of fossil fuel type i in year y (GJ / mass or volume unit)	1,2,3, 4	Not applicable, as the ex-post vintage for the application of the emissions factor is chosen. Data Checklist / Yes / No Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description of parameter? N/A Source clearly referenced? N/A Correct value provided? N/A Has this value been verified? N/A Choice of data correctly justified? N/A Measurement method correctly described? N/A	☑	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
B.6.2.16. Parameter Title: $EF_{CO2,i,y}$ and $EF_{CO2,m,i,y}$ CO2 emission factor of fossil fuel type i in year y (tCO2/GJ)	1,2,3, 4	Not applicable, as the ex-post vintage for the application of the emissions factor is chosen. Data Checklist / Yes / No: Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description of parameter? N/A Source clearly referenced? N/A Correct value provided? N/A Has this value been verified? N/A Choice of data correctly justified? N/A Measurement method correctly described? N/A	☑	☑
B.6.2.17. Parameter Title: $EG_{m,y}$, EG_y, $EG_{j,y}$, $EG_{k,y}$ and $EG_{n,h}$ Net electricity generated and delivered to the grid by power plant / unit m,j,k or n (or in the project electricity system in case of EGy) in year y or hour h (MWh)	1,2,3, 4	Not applicable, as the ex-post vintage for the application of the emissions factor is chosen. Data Checklist / Yes / No: Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description of parameter? N/A Source clearly referenced? N/A Correct value provided? N/A Has this value been verified? N/A Choice of data correctly justified? N/A Measurement method correctly described? N/A	☑	☑
B.6.2.18. Parameter Title: $EG_{PJ,h}$ Electricity displaced by the project activity in hour h of year y (in MWh) (only applicabe for the dispatch data OM)	1,2,3, 4	Not applicable, as the ex-post vintage for the application of the emissions factor is chosen. Data Checklist / Yes / No: Title in line with methodology? N/A Data unit correctly expressed? N/A	☑	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
		Appropriate description of parameter? N/A Source clearly referenced? N/A Correct value provided? N/A Has this value been verified? N/A Choice of data correctly justified? N/A Measurement method correctly described? N/A		
B.6.2.19. Parameter Title: $\eta_{m,y}$ Average net energy conversion efficiency of power unit m in year y	1,2,3, 4	Not applicable, as the ex-post vintage for the application of the emissions factor is chosen. Data Checklist / Yes / No Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description of parameter? N/A Source clearly referenced? N/A Correct value provided? N/A Has this value been verified? N/A Choice of data correctly justified? N/A Measurement method correctly described? N/A	☑	☑
B.6.2.20. Parameter Title: fraction of time with low costs /must run plant at the margin (for simple adjusted OM only)	1,2,3, 4	Not applicable, as the ex-post vintage for the application of the emissions factor is chosen and the dispatch data analysis is chosen. Data Checklist / Yes / No Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description of parameter? N/A Source clearly referenced? N/A Correct value provided? N/A Has this value been verified? N/A Choice of data correctly justified? N/A Measurement method correctly described? N/A	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
B.6.3.	*Ex-ante calculation of emission reductions*				
B.6.3.1.	Is the projection based on the same procedures as used for future monitoring?	1,2,3	Yes, the projection is based on the same procedures as used for future monitoring. Emission reductions by the proposed project activity are the product of the baseline emissions factor times the electricity supplied by the project to the grid.	☑	☑
B.6.3.2.	Are the GHG calculations documented in a complete and transparent manner?	1,2,3, 16	The GHG calculations are documented in a complete and transparent manner in the excel file "Ouro CERs" (IRL 16). However, the columns "electricity dispatched into the grid" and "Net energy generation" are not correctly denominated. **Corrective Action Request No.19.** Please revise the denomination for the columns "electricity dispatched into the grid" and "Net energy generation" in B.6.3. of the PDD.	**CAR**	☑
B.6.3.3.	Is the calculation of the operating margin and build margin emission factors documented electronically in a spreadsheet with the relevant information as defined per the "Tool for calculation of emission factor for electrical systems"? Has this spreadsheet been submitted to the validation team?	1,2,34	Yes. An emissions factor calculation sheet (IRL 57) has been submitted to the validation team. This spreadsheet is based on data published by the Brazilian DNA.	☑	☑
B.6.3.4.	Is the data provided in this section consistent with data as presented in other chapters of the PDD?	1,2	Yes. The data provided is consistent with data as presented in other chapters of the PDD.	☑	☑
B.6.4.	*Summary of the ex-ante estimation of emission reductions*				
B.6.4.1.	Will the project result in fewer GHG emissions than the baseline scenario?	1,2	Yes. The project will definitely result in fewer GHG emissions than in the baseline scenario.	☑	☑
B.6.4.2.	Is the form/table required for the indication	1,2	Yes. The table required for the indication of projected emission reductions is correctly applied.	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	of projected emission reductions correctly applied?				
B.6.4.3.	Is the projection in line with the envisioned time schedule for the project's implementation and the indicated crediting period?	1,2,25	Yes it is. However, see A.4.3.11.	**See CAR**	☑
B.6.4.4.	Is the data provided in this section in consistency with data as presented in other chapters of the PDD?	1,2	Yes. The data provided is consistent with data as presented in other chapters of the PDD.	☑	☑
B.7. Application of the monitoring methodology and description of the monitoring plan					
B.7.1. Data and parameters monitored					
B.7.1.1.	Is the list of parameters presented by chapter B.7.1 considered to be complete with regard to the requirements of the applied methodology?	1,2,3	**Corrective Action Request No.20.** PPs are requested to add $EF_{grid,OM,y}$ and $EF_{grid,BMy}$ in B.7.1. of the PDD.	**CAR**	☑
Integrate the required amount of sub-checklists for monitoring parameter and comment on any line answered with "No"					
B.7.1.2.	Parameter Title: $EG_{facility,y}$ Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/yr)	1,2,3	**Corrective Action Request No.21.** Regarding the parameter "Electricity supplied by the project activity to the grid (in MWh)": Please revise the description and accuracy. Please indicate a standard. Moreover the parameter should be recorded in hourly frequency due to the application of dispatch data analysis OM in $EF_{grid,OM,y}$ determination.	**CAR**	☑

Monitoring Checklist	Yes / No
Title in line with methodology?	Yes
Data unit correctly expressed?	Yes
Appropriate description of parameter?	No
Source clearly referenced?	Yes
Correct value provided for estimation?	Yes

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
		Has this value been verified? — Yes Measurement method correctly described? — Yes Correct reference to standards? — No Indication of accuracy provided? — No QA/QC procedures described? — Yes QA/QC procedures appropriate? — Yes		
B.7.1.3. Parameter Title: TEGy Total electricity produced by the project activity, including the electricity supplied to the grid and the electricity supplied to internal loads, in year y (in MWh).	1,2,3	Not applicable, as the power density is much higher than 10 W/m2 and there is no possibility (as reservoir and power density will not change during the crediting period) that power density will approximate close to 10 W/m2. Monitoring Checklist — Yes / No Title in line with methodology? — N/A Data unit correctly expressed? — N/A Appropriate description of parameter? — N/A Source clearly referenced? — N/A Correct value provided for estimation? — N/A Has this value been verified? — N/A Measurement method correctly described? — N/A Correct reference to standards? — N/A Indication of accuracy provided? — N/A QA/QC procedures described? — N/A QA/QC procedures appropriate? — N/A	☑	☑
B.7.1.4. Parameter Title: $EG_{PJ\ Add,y}$ Quantity of net electricity generation supplied to the grid in year y by the project plant/unit that has been added under the		Monitoring Checklist — Yes / No Title in line with methodology? — N/A Data unit correctly expressed? — N/A	☑	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
project activity (MWh/yr)		Appropriate description of parameter? N/A Source clearly referenced? N/A Correct value provided for estimation? N/A Has this value been verified? N/A Measurement method correctly described? N/A Correct reference to standards? N/A Indication of accuracy provided? N/A QA/QC procedures described? N/A QA/QC procedures appropriate? N/A		
B.7.1.5. Parameter Title: PEFC,j,y CO2 emissions from fossil fuel combustion in process j during the year y (tCO2/yr). Calculated as per the latest version of the "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion" where j stands for the processes required for the operation of the solar/geothermal power plant	1,2,3, 6	Not applicable Monitoring Checklist: Yes / No Title in line with methodology? No Data unit correctly expressed? No Appropriate description of parameter? No Source clearly referenced? No Correct value provided for estimation? No Has this value been verified? No Measurement method correctly described? No Correct reference to standards? No Indication of accuracy provided? No QA/QC procedures described? No QA/QC procedures appropriate? No	☑	☑
B.7.1.6. Parameter Title: Cap_{PJ} (only applicable to hydropower plant projects) Installed capacity of the hydro power plant after the implementation of the project activity (W).	1,2,3	**Corrective Action Request No.22.** Regarding parameter Cap_{PJ} : Please indicate the data unit as per the methodology and indicate in measurement method that the parameter will be annually monitored. Monitoring Checklist: Yes / No Title in line with methodology? Yes	**CAR**	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
		Data unit correctly expressed? — No Appropriate description of parameter? — Yes Source clearly referenced? — Yes Correct value provided for estimation? — Yes Has this value been verified? — Yes Measurement method correctly described? — No Correct reference to standards? — Yes Indication of accuracy provided? — N/A QA/QC procedures described? — N/A QA/QC procedures appropriate? — N/A		
B.7.1.7. Parameter Title: A_{PJ} (only applicable to hydropower plant projects with reservoir) Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (m^2).	1,2,3	**Corrective Action Request No.23.** Regarding the parameter A_{PJ}: Please revise data unit, measurment method and indicate monitoring frequency. Monitoring Checklist — Yes / No Title in line with methodology? — Yes Data unit correctly expressed? — No Appropriate description of parameter? — Yes Source clearly referenced? — Yes Correct value provided for estimation? — Yes Has this value been verified? — Yes Measurement method correctly described? — No Correct reference to standards? — Yes Indication of accuracy provided? — No QA/QC procedures described? — N/A QA/QC procedures appropriate? — N/A	**CAR**	☑
B.7.1.8. Parameter Title: $w_{steam,CO2,y}$ Average mass fraction of CO_2 in the produced steam in year y tCO2/t steam (for geothermal projects only)	1,2,3	Not applicable. Monitoring Checklist — Yes / No Title in line with methodology? — N/A Data unit correctly expressed? — N/A Appropriate description of parameter? — N/A Source clearly referenced? — N/A	☑	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
		Correct value provided for estimation? N/A Has this value been verified? N/A Measurement method correctly described? N/A Correct reference to standards? N/A Indication of accuracy provided? N/A QA/QC procedures described? N/A QA/QC procedures appropriate? N/A		
B.7.1.9. Parameter Title: $w_{steam, CH4,y}$ Average mass fraction of CH_4 in the produced steam in year y (tCH4/t steam). for geothermal projects only)	1,2,3	Not applicable. Monitoring Checklist / Yes / No Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description of parameter? N/A Source clearly referenced? N/A Correct value provided for estimation? N/A Has this value been verified? N/A Measurement method correctly described? N/A Correct reference to standards? N/A Indication of accuracy provided? N/A QA/QC procedures described? N/A QA/QC procedures appropriate? N/A	☑	☑
B.7.1.10. Parameter Title: $M_{steam,y}$ Quantity of steam produced in year y. (for geothermal projects only)	1,2,3	Not applicable. Monitoring Checklist / Yes / No Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description of parameter? N/A Source clearly referenced? N/A Correct value provided for estimation? N/A	☑	☑

<table>
<tr><th>CHECKLIST TOPIC / QUESTION</th><th>Ref.</th><th>COMMENTS</th><th>PDD in GSP</th><th>Final PDD</th></tr>
<tr><td></td><td></td><td><table>
<tr><td>Has this value been verified?</td><td>N/A</td></tr>
<tr><td>Measurement method correctly described?</td><td>N/A</td></tr>
<tr><td>Correct reference to standards?</td><td>N/A</td></tr>
<tr><td>Indication of accuracy provided?</td><td>N/A</td></tr>
<tr><td>QA/QC procedures described?</td><td>N/A</td></tr>
<tr><td>QA/QC procedures appropriate?</td><td>N/A</td></tr>
</table></td><td></td><td></td></tr>
<tr><td colspan="5">Parameters related to the “Tool to calculate the emission factor for an electricity system”</td></tr>
<tr><td>B.7.1.11. Parameter Title: $EF_{grid,CM,y}$ Combined margin CO2 emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (tCO2/MWh)</td><td>1,2,57</td><td><table>
<tr><th>Monitoring Checklist</th><th>Yes / No</th></tr>
<tr><td>Title in line with methodology?</td><td>Yes</td></tr>
<tr><td>Data unit correctly expressed?</td><td>Yes</td></tr>
<tr><td>Appropriate description of parameter?</td><td>Yes</td></tr>
<tr><td>Source clearly referenced?</td><td>Yes</td></tr>
<tr><td>Correct value provided for estimation?</td><td>Yes</td></tr>
<tr><td>Has this value been verified?</td><td>Yes</td></tr>
<tr><td>Measurement method correctly described?</td><td>Yes</td></tr>
<tr><td>Correct reference to standards?</td><td>Yes</td></tr>
<tr><td>Indication of accuracy provided?</td><td>Yes</td></tr>
<tr><td>QA/QC procedures described?</td><td>Yes</td></tr>
<tr><td>QA/QC procedures appropriate?</td><td>Yes</td></tr>
</table></td><td>☑</td><td>☑</td></tr>
<tr><td>B.7.1.12. Parameter Title: EGgrid,OM,y
Operating Margin CO_2 emission factor in year y (tCO_2/MWh)
$EF_{grid,OM,y}$</td><td></td><td>See CAR 20<table>
<tr><th>Monitoring Checklist</th><th>Yes / No</th></tr>
<tr><td>Title in line with methodology?</td><td>No</td></tr>
<tr><td>Data unit correctly expressed?</td><td>No</td></tr>
<tr><td>Appropriate description of parameter?</td><td>No</td></tr>
<tr><td>Source clearly referenced?</td><td>No</td></tr>
<tr><td>Correct value provided for estimation?</td><td>No</td></tr>
<tr><td>Has this value been verified?</td><td>No</td></tr>
</table></td><td>See CAR 20</td><td>☑</td></tr>
</table>

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
		Measurement method correctly described? No Correct reference to standards? No Indication of accuracy provided? No QA/QC procedures described? No QA/QC procedures appropriate? No		
B.7.1.13. Parameter Title: Build margin CO_2 emission factor in year *y* (tCO_2/MWh) $EF_{grid,BM,y}$		See CAR 20 Monitoring Checklist / Yes / No Title in line with methodology? No Data unit correctly expressed? No Appropriate description of parameter? No Source clearly referenced? No Correct value provided for estimation? No Has this value been verified? No Measurement method correctly described? No Correct reference to standards? No Indication of accuracy provided? No QA/QC procedures described? No QA/QC procedures appropriate? No	See CAR 20	☑
Parameters related to the "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion"				
B.7.1.14. Parameter Title: Quantity of fuel type i combusted in process j during the year y FCi,j,y	1,2,3, 6	Not applicable, as there is no fossil fuel combustion in the proposed project activity. Monitoring Checklist / Yes / No Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description of parameter? N/A Source clearly referenced? N/A Correct value provided for estimation? N/A Has this value been verified? N/A Measurement method correctly described? N/A Correct reference to standards? N/A Indication of accuracy provided? N/A	☑	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
		QA/QC procedures described? N/A QA/QC procedures appropriate? N/A		
B.7.1.15. Parameter title: Weighted average mass fraction of carbon in fuel type i in year y $W_{C,I,y}$	1,2,6	Not applicable Monitoring Checklist / Yes / No Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description of parameter? N/A Source clearly referenced? N/A Correct value provided for estimation? N/A Has this value been verified? N/A Measurement method correctly described? N/A Correct reference to standards? N/A Indication of accuracy provided? N/A QA/QC procedures described? N/A QA/QC procedures appropriate? N/A	☑	☑
B.7.1.16. Parameter title: Weighted average density of fuel type i in year y $\rho_{i,y}$	1,2,6	Not applicable Monitoring Checklist / Yes / No Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description of parameter? N/A Source clearly referenced? N/A Correct value provided for estimation? N/A Has this value been verified? N/A Measurement method correctly described? N/A Correct reference to standards? N/A Indication of accuracy provided? N/A QA/QC procedures described? N/A QA/QC procedures appropriate? N/A	☑	☑
B.7.1.17. Parameter title: Weighted average net calorific value of fuel type i in year y	1,2,6	Not applicable Monitoring Checklist / Yes / No Title in line with methodology? N/A	☑	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
NCVi,y		Data unit correctly expressed? N/A Appropriate description of parameter? N/A Source clearly referenced? N/A Correct value provided for estimation? N/A Has this value been verified? N/A Measurement method correctly described? N/A Correct reference to standards? N/A Indication of accuracy provided? N/A QA/QC procedures described? N/A QA/QC procedures appropriate? N/A		
B.7.1.18. Parameter title: Weighted average CO2 emission factor of fuel type i in year y $EF_{CO2,i,y}$	1,2,6	Not applicable Monitoring Checklist / Yes / No Title in line with methodology? N/A Data unit correctly expressed? N/A Appropriate description of parameter? N/A Source clearly referenced? N/A Correct value provided for estimation? N/A Has this value been verified? N/A Measurement method correctly described? N/A Correct reference to standards? N/A Indication of accuracy provided? N/A QA/QC procedures described? N/A QA/QC procedures appropriate? N/A	☑	☑
B.7.2. Description of the monitoring plan				
B.7.2.1. Is the operational and management structure clearly described and in compliance with the envisoned situation?	1,2	**Corrective Action Request No.24.** The operational and management structure has to be described (preferably with an organigram for the CDM project activity) in B.7.2.	**CAR**	☑
B.7.2.2. Are responsibilities and institutional arrangements for data collection and	1,2	It is mentioned that Brennand is responsible for the project management as well as for measurement and reporting techniques.	**CAR**	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	archiving clearly provided?		**Corrective Action Request No.25.** Please be more specific who within Brennand will be responsible for data collection and archiving.		
B.7.2.3.	Does the monitoring plan provide current good monitoring practice?	1,2	It seems that most of the information mentioned in B.7.2. have been taken over from another project. **Corrective Action Request No.26.** 1. Please revise the information in B.7.2. and adjust it project specific to the Ouro SHP project. 2. Please mention information about the metering system (location, number of meters, owner of the meters, technical specifications of meters like model, type, calibration/testing procedures) and the approach how cross-checking and either invoicing or issuance of reports work between project owner, concessionary and possibly CCEE.	**CAR**	☑
B.7.2.4.	If applicable: Does annex 4 provide useful information enabling a better understanding of the envisoned monitoring provisions?	1,2	Annex 4 does not provide more detailed information than B.7.2. See B.7.2.3.	**See CAR**	☑
B.8. Date of completion of the application of the baseline study and monitoring methodology an the name of the responsible person(s)/entity(ies)					
B.8.1.	Is there any indication of a date when the baseline was determined?	2	Yes. The baseline was completed on 05/09/2008.	☑	☑
B.8.2.	Is this consistent with the time line of the PDD history?	2	Yes. It is consistent with the time line of the PDD history.	☑	☑
B.8.3.	Is the information on the person(s) / entity(ies) responsible for the application of the baseline and monitoring methodology provided consistent with the actual situa-	2	Yes. Ecoinv Global Ltda. (contact person: Ricardo Esparta) has been responsible for the application of the baseline and monitoring methodology.	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	tion?				
B.8.4.	Is information provided whether this person / entity is also considered a project participant?	2	Yes. It is mentioned that Ecoinv Global Ltda. is a project participant.	☑	☑
C. Duration of the project activity / crediting period					
C.1. Duration of the project activity					
C.1.1.	Are the project's starting date and operational lifetime clearly defined and reasonable?	1,2,11	The project´s starting date is 16/01/2007 (IRL 11) The operational lifetime is determined to be 25 years and deems to be reasonable.	☑	☑
C.1.2.	Is a description provided how the project´s starting date has been determined, and a description of the evidence available to support the starting date?	1,2,11	Yes, a description is provided. The project´s starting date is defined as the issuance date of the installation licence, which is the earliest real action.	☑	☑
C.2. Choice of the crediting period and related information					
C.2.1.	Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max 7 years with potential for 2 renewals or fixed crediting period of max. 10 years)?	1,2	The project participants have chosen a crediting period of 7 years with potential for 2 renewals. This is clearly defined in chapter C of the PDD and reasonable.	☑	☑
D. Environmental impacts					
D.1. Documentation on the analysis of the environmental impacts, including transboundary impacts					
D.1.1.	Has the analysis of the environmental impacts of the project activity been suffi-	1,2,30	**Corrective Action Request No.27.** The environmental impacts should be described in D.1. according	**CAR**	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
	ciently described?		to the information provided in the Environmental Control Plan.		
D.1.2.	Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, has an EIA been approved?	1,2,30	An EIA is not necessary according to the Host Party requirements. An Environmental Contral Plan (today called Simplified Environmental Report) (IRL 30) has been submitted to the validation team.	☑	☑
D.1.3.	Will the project create any adverse environmental effects?	1,2,30	See D.1.1.	**See CAR**	☑
D.1.4.	Were transboundary environmental impacts identified in the analysis?	1,2,30	No transboundary environmental impacts are involved with the proposed project activity.	☑	☑
D.2.	**If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party**				
D.2.1.	Have the identified environmental impacts been addressed in the project design sufficiently?	1,2,30	See D.1.1.	**See CAR**	☑
D.2.2.	Does the project comply with environmental legislation in the host country?	1,2,11 ,30	Yes. The project complies with the environmental legislation in the host country. A valid environmental installation licence has been submitted to the validation team (IRL 11)	☑	☑
E. Stakeholders' comments					
E.1.	**Brief description how comments by local stakeholders have been invited and compiled**				
E.1.1.	Have relevant stakeholders been consulted?	1,2	Yes. Relevant stakeholders have been consulted according to the requirements of the Brazilian DNA.	☑	☑
E.1.2.	Have appropriate media been used to invite comments by local stakeholders?	1,2,9, 10	Invitation letters were sent by postal on June 17, 2008 to the following stakeholders:	**CAR**	☑

CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
		1) City Hall of Barração 2) Municipal Assembly of Barração 3) Environmental Agency of Barração 4) Communitarian Association of Barração 5) Environmental Agency of Rio Grande do Sul (FEPAM) 6) State Attorneys for the Public Interest of Brazil and Rio Grande do Sul state 7) Forum Brasileiro de NGOs. 8) Environmental Secretary of Rio Grande do Sul Invitation letters (IRL 10) and confirmation about receipt of local stakeholder process invitation letters (IRL 9) have been submitted to the validation team, however the letter sent to the Environmental Secretary is not mentioned in E.1. of the PDD. **Corrective Action Request No.28.** Please include the invitation letter sent to the Environmental Secretary of Rio Grande do Sul into the PDD.		
E.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	1,2	Yes. Relevant stakeholders (as defined per the DNA) have to be invited at least 15 days prior to the GSP uploading of the PDD. The process was carried out in accordance with the regulations.	☑	☑
E.1.4. Is the undertaken stakeholder process that was carried out described in a complete and transparent manner?	1,2	Yes.	☑	☑
E.2. Summary of the comments received				
E.2.1. Is a summary of the stakeholder comments received provided?	1,2	No comments have been received so far.	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
E.3. Report on how due account was taken of any comments received					
E.3.1.	Has due account been taken of any stakeholder comments received?	1,2	No comments have been received so far.	☑	☑
F. Annexes 1 - 4					
Annex 1: Contact Information					
F.1.1.	Is the information provided consistent with the one given under section A.3?	1,2	Yes.	☑	☑
F.1.2.	Is the information on all private participants and directly involved Parties presented?	1,2	Yes.	☑	☑
Annex 2: Information regarding public funding					
F.1.3.	Is the information provided on the inclusion of public funding (if any) in consistency with the actual situation presented by the project participants?	1,2,22	Yes.	☑	☑
F.1.4.	If necessary: Is an affirmation available that any such funding from Annex-I-countries does not result in a diversion of ODA?	-	Not applicable.	☑	☑
Annex 3: Baseline information					
F.1.5.	If additional background information on baseline data is provided: Is this information consistent with data presented by other sections of the PDD?	1,2	Yes.	☑	☑

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
F.1.6.	Is the data provided verifiable? Has sufficient evidence been provided to the validation team?	1,2	Yes	☑	☑
F.1.7.	Does the additional information substantiate / support statements given in other sections of the PDD?	1,2	Yes.	☑	☑
Annex 5: Monitoring information					
F.1.8.	If additional background information on monitoring is provided: Is this information consistent with data presented in other sections of the PDD?	-	Not applicable.	☑	☑
F.1.9.	Is the information provided verifiable? Has sufficient evidence been provided to the validation team?	-	Not applicable.	☑	☑
F.1.10.	Do the additional information and / or documented procedures substantiate / support statements given in other sections of the PDD?	-	Not applicable.	☑	☑

Table 2 Resolution of Corrective Action and Clarification Requests

Clarifications and corrective action requests by validation team	Ref. to table 1	Summary of project owner response	Validation team conclusion
Corrective Action Request No.1. It should be clearly mentioned in A.2. of the PDD what the situation was prior to the start of the implementation of the project activity.	A.2.1.	**Answer 13.10.2008** This information was included in section A.2 as requested. Please refer to the second version of the document.	**DOE´s first answer:** A.2. now informs that there was no hydropower plant nor any other project activity on the place where the proposed project activity will be located. **CAR was closed. ☑**
Corrective Action Request No.2. Please mention in A.2. and A.4.3. that baseline scenario and scenario prior to the start of implementation of the project activity is the same.	A.2.3.	**Answer 13.10.2008** This information was included in section A.2 and A.4.3 as requested. Please refer to the second version of the document.	**DOE´s first answer:** A.2. and A.4.3. mention now that the baseline scenario and the scenario prior to the start of the implementation of the project activity is the same. **CAR was closed. ☑**
Corrective Action Request No.3. 1. Please indicate in chapter A.4.1. on which river the proposed project activity is located. 2. Please indicate GPS coordinates from dam and power house in the PDD.	A.4.1.1.	**Answer 13.10.2008** The PDD was revised. Please refer to the second version of the document.	**DOE´s first answer:** 1. It is indicated now that the project activity explores the hydrological potential of Marmeleiro River. 2. GPS coordinates both from dam and power house are indicated now. They are the same as indicated in the Consolidated Basic Project (IRL 23). **CAR was closed. ☑**
Corrective Action Request No.4. 1. Please mention the baseline scenario and the system that would have been in place in the absence of the project activity. 2. Please add in the description of technology in A.4.3.: a) nominal turbine flow rate	A.4.3.1.	**Answer 29.12.2008** This information was included in section A.4.3 as request. Information regarding monitoring equipment was included in section B.7.2. Please refer to the second version of the document. **Answer 16.06.2009**	**DOE´s first answer:** 1. The baseline scenario should be mentioned as per ACM0002, version 11. 2. -Regarding lifetime, A.4.3. indicates 30 years whereas chapter C indicates 25 years. PPs are requested to resolve this inconsistency. -Manufacturing date of the turbines is still miss-

(m3/s) b) turbine speed in rpm and horizontal axis if applicable c) load factor (capacity factor) d) lifetime e) information about monitoring equipment and location f) information about the transformator g) model, efficiency, speed and manufacturing date of turbines and generators 3. Please correct the unit of nomial power for turbines and generators in the Table of A.4.3. (instead of MW it has to be KW) 4. Please correct the nominal power of generators to 6,500 kVA instead of 6,300 kW. 6,500 kVA is the capacity according to the TAGs of the generators. 5. Please revise the definition of run-of-river projects in A.4. of the project considering the circumstances of Ouro SHP Project.		1. Information corrected in section A.2 and A.4.3 of the PDD (version 3) according ACM0002, version 11. 2. Project lifetime considered is 25 years according evidences attached to this response. Therefore, section A.4.3, C and project cashflow are correct. Manufacturing date was included in the new version of the PDD (version 3) according equipments TAGs. 4. Nominal power of generators was corrected in the new version of the PDD, version 3, (6,600 kVA) according to equipments TAGs. Evidences are attached to this response. **Answer 03.02.2010** 2. The documents sent to DOE were related to the transformers and turbines lifetime according to the equipment manufacturers, which mention 20 years for transformers and 30 years for turbines. Therefore, PPs considered 25 years reasonable in the project cash flow. However, according to ANEEL Resolution nr. 537, issued on 14/10/2003, Art 8, the project concession is valid for 30 years from the issuance of this Resolution. This period also includes the project design/study and construction, *i.e.*, the project concession is from 2003 to 2033. Since Ouro project started operation in 2009, the estimated project lifetime is 24 years. Therefore, although Brennand recommended 30 years lifetime for the turbines (with good maintenance conditions) based on the equipment manufacturers, the project concession is valid until 2033. Considering explanations above, the turbines and generators lifetime was reviewed in the PDD based on the equipment manufactures. However, the IRR calculation was not reviewed since 25 years presented in the project cash flow is a reasonable period to be considered, since the project concession is valid until 2033. ANEEL Resolution nr. 537/2003 is attached to this response.	ing. Please add. All other requested specifications are now indicated. 3. Unit of nominal power for turbines and generators was corrected. 4. The PDD indicates 6,300 kW as nominal power of the generators. This is probably not correct (assuming a power factor of 0.8 or 0.9 and the 6,500 kVA indicated at the TAG of the generators). Please correct and indicate the power factor. 5. Definition is now o.k. **DOE´s 2nd answer:** 1. The baseline scenario is mentioned in the final PDD as per ACM0002, namely “electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the ‘Tool to calculate the emission factor for an electricity system”. 2. -HISA indicated in its Email (IRL 65) that the turbines have a lifetime of 30 years. Besides, Ouro Brennand recommended to use the 30 years lifetime as well for the generators. Thus, PDD should be revised and the IRR should be calculated for 30 years. -Manufacturing year (2007) of the turbines has been indicated now and was confirmed by the turbine´s TAG (IRL 64). 4. During the on-site visit a photo of the generator TAG was taken (indicating 6,500 kVA and a power factor of 0.9), however with the last PPs response, TAGs with a capacity of 6,060 kVA

		4. The technical configuration of Ouro project shall be based on the generators TAG checked during on-site visit. In fact, photo taken during on-site visit indicates: Generator 1 (nr. 167442): 6,060 kVA, Generator 2 (nr. 167443): 6,060 kVA Generator 3 (nr. 167441): 6,060 kVA Although the "Executive Project" dated July 2008 presents a configuration of the generator of 6,300 kVA (power factor 0.9), the correct configuration is the one checked by DOE during on-site visit. Considering information above, generator power was corrected in the new version of the PDD (version 4). Pictures of the generator TAGs are attached to this response. Considering the revision of ACM0002, PPs also reviewed the PDD considering the new version. Please refer to the forth version of the document. **Answer 11.05.2010** Considering DOE comments, PPs reviewed the project cash flow based on the concession valid for Ouro project, *i.e.* until 2033. As can be seen, the IRR continues to be lower than the benchmark. Project Participants clarify that electricity sales of the project are calculated based on the electricity price and energy assured of the project. The electricity price considered is based on the energy auctions conducted by the Brazilian government at the time of the project investment decision and was adjusted to the time of the project operation start (estimated to happen in 2008). The electricity generation is based on the current energy assured of the project. Although the investment decision happened considering 12 MW of installed capacity, PPs considered the 16 MW of installed capacity in order to be conservative. Therefore, evidence for the energy assured is dated	and a power factor of 0.88 were submitted to the validation team. PPs mention in the PDD a capacity of 6,600 kVA, the document "Executive Project", dated 15/02/2009, rev.0 mentions 6,300 kVA. PPs are requested to clarify these inconsistencies and evidence the final valid equipment configuration. . **DOEs 3rd answer:** 2. Lifetime of turbines/generators has been revised to 30 years in the PDD. However, PPs do not consider 25 years in the cash-flow calculation (as mentioned in the PPs answer) but just 24 years and 3 months. If PPs argument that the concession is valid until 2033, then cash flow calculation should be conducted until 2033 and not only until 2032. Furthermore it should be clarified why project revenues from electricity sales as well as expenses/costs (like O&M costs) are considered exactly from October 2008 in the IRR calculation. 4. DOE would like to clarify that during the on-site visit a photo of the generator TAG was taken indicating 6,500 kVA and a power factor of 0.9 and not 6,060 kVA as mentioned by the PPs in their answer. Photo is attached to this protocol. PPs are requested to clarify. **DOEs 4th answer:** 2. Cash flow calculation has been conducted until 2033 as requested by the validation team. Revised IRR calculation has been verified and the validation team confirms that cash flows until 2033 have been considered when calculating the IRR. IRR remains below the benchmark. PPs argue that project operation start was esti-

		2008, *i.e.* the date in which the project design "Projeto Básico Consolidado" was reviewed. PPs also included actions related to the alteration of the installed capacity in the project timeline presented in section B.5 of the new version of the PDD (version 5). Regarding the TAG generator, the correct nominal power is 6,060 kVA (see clarifications attached to this response). PPs also included comment received by the State of Attorney for the Public Interests in section E of the PDD (version 5). Documented evidence is attached to this response. **Answer 22.12.2010** Regarding the estimated date for the operation start of the project, PPs clarify that estimated date for the operation starting changes during the project implementation considering possible (and usual) delays in the licensing process, negotiation, construction, commissioning, and others. The first estimated date for the operation start of the project was October 2005 as can be seen in the ANEEL Resolution nr. 537 issued on October 14th, 2003 when the project was owned by Guascor Geratec Ltda. Until the actual operation starting of the project, estimated dates have been changed according to the current status of the project and the most updated information available at the time. According to the financial spreadsheet sent to DOE, the reference used to determine the estimated date of operation starting of the project (at the time of the investment decision) is ANEEL Resolution nr. 647 issued on August 1st, 2006 (http://www.aneel.gov.br/cedoc/rea2006647.pdf). Although ANEEL Resolution was issued 4 months after the project investment decision, it should be noted that the process to get the ANEEL's approval is too strict. As can be seen in the ANEEL Report Process. Nr. 48500.000692/02-62 (http://www.aneel.gov.br/cedoc/area2006647.pdf), the request to change the estimated schedule of the project (including the operation start) was made in August 2005 and was approved	mated to happen in October 2008, however finally commercial operation start has been July 2009. PPs should provide an evidence for the estimated operation start of October 2008 at the time when it was decided to invest into the project. 4. According to the information provided by the PPs the TAGs of the generators had to be changed after on-site visit in order to be in compliance with ANEEL resolution 2452/2009 (establishing a total installed capacity of 16,000 kW) (IRL 40). The photos of the new TAGs were submitted to the validation team and the team confirms that each of the 3 TAGs indicate now 6,060 kVA and a power factor of 0.88 resulting in 5333 kW each. The PDD informs about an installed capacity of the 3 generators of each 6,060 kVA. However, the PPs as well informed that the generators' installed capacity has not been modified to be equivalent with the TAGs. That means that the new TAGs of the generators do not reflect the correct capacity of the generators. PPs should provide some clarification (e.g. from the manufacturer). **DOEs 5th answer:** 2. Clarification has been provided by PPs and is together with the submitted evidences (IRL 14 and 59) accepted by the DOE. The estimated operation starting date (at time of investment decision) was August 01, 2006 which is correctly reflected in the financial spreadsheet. 4. The manufacturer of the generators WEG clarified in a declaration (IRL 48) that the generators are configured/adjusted in a way that the installed capacity of 3 x 5,333kW (total 16,000kW) is not exceeded, which is in line with the limita-

		only in August 2006. Therefore, the estimated operation starting presented in the financial spreadsheet is correct and based on public available information. PPs attached to this response a declaration from WEG (generator's manufacturer) containing clarifications related to the equipment TAGs. Considering statement from the manufacturer, TAGs correspond to the nominal power of generators (for which installed capacity is limited) and, therefore, it was considered in the PDD. The generators capacity can not exceed the power capacity authorized by ANEEL and the environmental agency. PPs reviewed the version of ACM0002 in the PDD considering the latest version available at UNFCCC's website. In addition, the starting date of the crediting period was updated considering 2012 year.	tion as per ANEEL degree N° 2.455 dated 07/07/2009. Furthermore, it was informed that 6,500 kVA is the maximum nominal power. **CAR was closed. ☑**
Corrective Action Request No.5. Please mention in the PDD that the project equipment is domestically manufactured.	A.4.3.4.	**Answer 23.03.2009** The request information was included in section A.4.3. Please refer to the second version of the document.	**DOE´s first answer:** The PDD informs now that the equipment is domestically manufactured. **CAR was closed. ☑**
Corrective Action Request No.6. Please provide a project implementation schedule in A.4.3 of the PDD with the most important project implementation steps.	A.4.3.11.	**Answer 10.12.2008** The project implementation schedule was submitted to the validation team. **Answer 16.06.2009** Project implementation schedule was withdrawn from in section A.3 of the PDD (version 3) considering that it is not legible and it is the only format that project participants have available. Schedule is attached to this response in bitmap format. Note that schedule was not review. According to ANEEL, Ouro project started operations in July 2009. **Answer 03.02.2010** Information related to the dates of commissioning and opera-	**DOE´s first answer:** A project implementation schedule (IRL 25) was submitted to the validation team and included in the PDD however is not legible. **DOE´s 2nd answer:** Date of commissioning and the most important other implementation steps should be included with the respective dates into the PDD. **DOEs 3rd answer:** Commissioning start (23/05/2009) and commercial operation start (08/07/2009) have been added in B.5. of the PDD. ANEEL ordinances (N° 1880 and N° 2.455, IRL 66 and IRL 41) have been submitted to the validation team. However,

		tions start was included in section B.5 of the new version of the PDD (version 4). ANEEL ordinances which authorize the commissioning and operations are attached to this response. **Answer 11.05.2010** Considering DOE comments, PPs included actions of Ouro project related to the increase in the installed capacity. Please refer to the new version of the PDD (version 5).	other implementation steps (mainly regarding the increase from 12 MW to 16 MW) are not mentioned yet. **DOEs 4th answer:** Implementation steps related to the increase of the installed capacity from 12 MW to 16 MW have been added in B.5. as requested and respective evidences have been submitted to the validation team. **CAR was closed. ☑**
Corrective Action Request No.7. Please include in B.2. of the PDD that the project activity does not consist of 1) fuel switching activities 2) biomass fired power plants	B.2.7.	**Answer 10.12.2008** The requested information was included. Please refer to the second version of the PDD. **Answer 16.06.2009** This information was included in the new version of the PDD (version 3). **Answer 03.02.2010** Information was reviewed according to ACM0002 (version 11) in the new version of the PDD (version 4).	**DOE´s first answer:** It was not mentioned yet that the project activity does not consist of 1) fuel switching activities 2) biomass fired power plants Please add in B.2. **DOE´s 2nd answer:** Please revise wording to the following: "It is important to mention that the project activity does not involve switching from fossil fuels to renewable energy sources and does not consist of a biomass fired power plant". **DOEs 3rd answer:** Requested revision has been done in the PDD. **CAR was closed. ☑**
Corrective Action Request No.8. Please present a flow diagram of the project boundary in B.3. of the PDD, including all the equipments, systems, emission sources and monitoring variables.	B.3.8.	**Answer 15.12.2008** The flow diagram of the project boundary was included. Please refer to the second version of the PDD. **Answer 16.06.2009** This information was included in the new version of the PDD (version 3). The commissioning report was not sent before considering	**DOE´s first answer:** -The flow diagram should explain the abbreviations T and G (in power house) and indicate the reservoir as run-of-river reservoir. **Additional Request according to the new VVM:** Please provide an evidence(s) for the project

		that the project was under commissioning conclusion. Commissioning report is attached to this response. **Answer 03.02.2010** The commissioning report is dated June 18th, 2009 as presented in the report. This report was prepared since May 23rd, 2009 (commissioning start authorized by ANEEL Ordinance nr. 1,880). The project started operations on July 8th, 2009 through ANEEL authorization (Resolution nr. 2,455/2009).	boundary, as e.g. the commissioning report of the hydro power project. **DOE´s 2nd answer:** It is not clear from when the attached commissioning report is dated. PPs should clarify. ANEEL resolution N° 2.455, dated 07/07/2009 mentions the commencement of commercial operation on July 08, 2009. Was this the date of commissioning of the SHP? PPs should confirm. **DOEs 3rd answer:** Date of commissioning start and date of commercial operation start are clearly defined by ANEEL ordinances N° 1880 and N° 2455. **CAR was closed. ☑**
Corrective Action Request No.9. Please provide a more detailed description in the PDD, how CDM was considered to proceed with the project activity.	B.5.1.	**Answer 23.03.2009** 1) Minutes of Board Meeting is attached to this response. 2) Detailed description of CDM considerations was included in the new version of the PDD (version 2). **Answer 16.06.2009** 1. Original documents of minutes of meeting and contract between Ouro Energética S/A and Ecopart Assessoria were presented to DOE and, therefore, in the local language. Although the working language of the Executive Board is English as established in the Rules of Procedure of the Executive Board of the CDM, the original documents in the local language were presented to the DOE local auditor and can be confirmed by them. These documents are attached to this response. Original document of contract between Ouro Energética S/A and Ecopart Assessoria were presented to DOE. The document is attached to this response. 2. Actually, on April 10th, 2006 Rija hold a meeting in to discuss the purchase Ouro small hydropower plant and on July 24th, 2007 Rija Investimentos Energéticos Ltda. was incorpo-	**DOE´s first answer:** 1. Minutes of meeting should be submitted in English language to the DOE for further assessment within the DOE. The contract between Ouro Energetica S/A and Ecopart Assessoria Ltda. (06/07/2005) should be submitted to the DOE. 2. a) B.5. provides contradictionary information about the relationship between Rija Investimentos Energeticos and Ouro Energetica S/A. Once it is mentioned that Rija hold a meeting in April 2006 to discuss the purchase of the special purpose company Ouro Energetica S/A, whereas in the Table it is mentioned that Rija was incorporated by Ouro Energetica S.A. b) The date (13/08/2007) of the purchase agreement of turbines and generators in B.5. is not consistent what was communicated during the on-site visit (28/02/2007). Please submit the relevant part of the purchase agreement indicating the date to the validation team and correct in

		rated by Ouro Energética S.A. Therefore, PDD (version 2) is correct and it was not reviewed. - Although the equipments purchase contract was signed on 13/08/2007, the first order of the main equipments happened 11/04/2007 (evidences are attached to this response). Therefore, PDD was reviewed (version 3). - Construction starting date was corrected according to the date of the EPC signature (05/07/2007) attached to this response. Therefore, PDD was reviewed (version 3). **Answer 03.02.2010** 1. Contract between Ouro Energética S/A and Ecopart Assessoria em Negócios Empresariais Ltda. dated 06/07/2005 is attached to this response. As mentioned in the PPs response dated 16/06/2009, original documents were presented to the local auditor. PPs understand that internal DOE demands should be solved internally. In addition, PPs clarify the following: a) Investment decision date: the investment decision was based on the meeting held on April 10th, 2006 and for this reason, all actions after this date were held to transfer the authorization to explore the hydro potential of Ouro SHPP from Guascor Geratec Ltda. to Brennand Group (see table 5 of the PDD). However, according to 41st EB Meeting Report, the project starting date shall be considered as the date "*on which contracts have been signed for equipment or construction/operation services required for the project activity*". Therefore, PPs reviewed section B.5 of the PDD. In addition, Project Participants corrected the date in which the contract of equipment purchase happened (from August 13th, 2007 to February 28th, 2007) in the new version of the PDD (Version 4). See the equipment purchase contract attached to this response. b) Feasibility: In the minutes of meeting presented, project sponsor declared that Ouro project was feasible consider-	the PDD if necessary. c) PPs are requested to evidence the construction starting date. PPs should clarify. **DOE´s 2nd answer:** 1. Contract between Ouro Energetica S/A and Ecopart Assessoria Ltda. (06/07/2005) has not been attached. Please submit to DOE for assessment. Besides, the Minutes of meeting should be submitted in English language to the DOE for further assessment within the DOE. The PDD mentions in B.5. that the Board members in that meeting decided for the project acquisition. However, the document does not mention anything about project acquisition, but just mentions that the project is feasible and that CER credits can help to reduce the risks of volatile energy prices. The PDD mentions that "the objective of the meeting was to present the results of the feasibility study made for Ouro small hydroelectric project". Thus, the following items have to be further discussed/clarified: a) Investment decision date: PPs should in more detail clarify why the Board meeting on April 10, 2006 can be considered as investment decision date. b) Feasibility: If the project was "declared" to be feasible in the Board meeting, how is it then justified to consider the project as additional and to say that the project is "financially unattractive" and needs CER credits. c) Feasibility study: In order to come to the conclusion that the project is "feasible", a

		ing the technical aspects (since the project received the ANEEL's approval to explore the hydro potential of the river) and eligibility under CDM. Project sponsor had knowledge that the previous owner contracted Ecopart in July 2005 to develop the CDM process of the project. In this context, "feasible" does not mean financially attractive, but that a hydropower plant exists and could be constructed if project sponsor could afford this investment. c) As talked with the project sponsor at the time of the on-site visit and on the telephone in October 2008, the Minutes of Meeting dated April 10th, 2006 was prepared based on a default letter used by the Group Board's approval for new projects. The Minutes of Meeting used for other new projects (Terra Santa, Pampeana and Ibirama small hydropower plants) from the Group is attached to this response. The Minutes of Meeting presented clearly states that two conditions were important for the Board's approval (for the project purchase, which does not mean feasible): legal/regulatory aspects and CDM revenues. Considering this information, PPs reviewed the PDD (version 4) in order to avoid misunderstandings. d) Installed capacity: In fact, Board's decision was based on the installed capacity approved that time (12 MW). The alteration of the installed capacity of the project was authorized by ANEEL only on October 15th, 2008 (see ANEEL letter nr. 2955/2008-SGH/ANEEL), *i.e*. after the project construction start. Although the "Guidance on the assessment of investment analysis", states that "*input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participants*", PPs considered the current installed capacity of 16MW for conservativeness reasons. As demonstrated in the financial analysis of the project, Ouro project activity is not financially attractive even with a higher installed capacity. Please refer to the fourth ver-	feasibility study should have been conducted prior to that conclusion. The PDD also mentions such a feasibility study. The feasibility study used at the Board meeting should be submitted to the validation team with all its original assumptions and input parameters. d) The Board meeting from April 2006 refers to an installed capacity of 12 MW, however final capacity is 16 MW. PPs should demonstrate by further (real) actions that CDM was continuously considered to proceed with the CDM project activity. 2. a) PPs should clarify why first Rija wanted to purchase Ouro Energetica S/A but finally the opposite happened, namely Ouro Energetica S/A purchased Rija. b) During on-site visit, a purchase agreement of turbines and generators, dated 28/02/2007, has been presented. Therefore, it is not clear to the validation team why PPs argue now that purchase contract would have been signed on 13/08/2007 and first order happened on 11/04/2007. This is not in timeline when considering the payment receipt dated 10/04/2007. PPs are requested to clarify, present a logical timeline and respective evidences to the validation team. c) The contract for civil construction dated 05/07/2007 between Ouro Energetica S.A. and Bucagrans – Construtora de obras Ltda. (IRL 43) was submitted to the validation team. The respective correction has been provided in the PDD. Please explain in the PDD what EPC means and

		sion of the document. Project cash flow is also attached to this response. 2.a) PPs clarify that both companies Rija Investimentos Energéticos Ltda. and Ouro Energética S/A are owned by Brennand Group. As presented in the ANEEL Resolution nr. 988 dated July 2007, RIJA was incorporated by Ouro Energética S/A since Ouro Energética S/A was the Special Purpose Company authorized to explore the hydropower potential of Ouro project. Therefore, this incorporation was made only for simplification purposes since both companies are owned by the same company group. b) Please, refer to the HISA contract signed on February 28th, 2007. Therefore, the payment of the main equipments (10/04/2007) happened after the contract signature with HISA. As mentioned above, date of the contract signature for the equipment purchase was corrected in the new version of the PDD (version 4). Contract is also attached to this response. c) Explanations regarding the EPC meaning were included in the new version of the PDD (version 4). The EPC contract was signed on July 5th, 2007. In fact, construction started on August 1st, 2007 as presented in the ANEEL Report "Acompanhamento das Pequenas Centrais Hidrelétricas com Licença de Instalação", version 2, issued in February 2010. The date of construction start (June 24th, 2007) mentioned in the PDD (version 2) was incorrect and, therefore, it was withdrawn from the subsequent PDD versions. ANEEL Report is attached to this response. **Answer 11.05.2010** Considering DOE comments, PPs clarify that: 1a) At the time of the investment decision, the 12 MW of installed capacity of the project was considered. However, there was no new investment decision for the project since the alteration would improve the attractiveness of the project. Al-	inform whether construction started some days after signing the civil construction contract; **DOE´s 3rd answer:** Contract between Guascor Empreendimentos Energeticos Ltda. (in August 2006 ANEEL transferred the authorization to explore the hydro pótential of Ouro SHPP from Guascor to Ouro Energetica S/A) and Ecoinvest Carbon Assessoria Ltda. (nowadays Ecopart Assessoria Ltda.) dated 06/07/2005 was submitted to the validation team. 1a) Clarification has been provided regarding the investment decision date related to the project with an installed capacity of 12 MW. However, installed capacity has been later on increased to 16 MW. No appropriate explanation/evidences have been submitted so far which evidence the investment decision date related to the project with an installed capacity of 16 MW. PPs should submit respective information/evidences. 1b) Clarification has been provided and the DOE accepts the PPs explanation. 1c) Other Minutes of Meeting of other project from the same group have been submitted to the validation team (IRL 63). All Minutes of meeting as well as the one of the proposed project activity state that two conditions were important for the Board´s approval: legal/regulatory aspects and CDM revenues. A proper feasibility study does not exist. 1d) As previously requested PPs should demonstrate by further (real) actions that CDM was continuously considered to proceed with the CDM project activity regarding an installed capacity of

		though the project became more attractive, the IRR remained below the benchmark. For conservativeness reasons, PPs considered the new configuration of the project in the investment analysis presented in the PDD. PPs clarify that the possible increase in the installed capacity of the project was under evaluation/studies by the old project sponsor. Therefore, after the ANEEL authorization to explore the hydro potential of the project in August 2006, the project design (from the Portuguese *Projeto Básico Consolidado*) was issued (December 2006). This project design presents studies based on the 16MW of installed capacity for Ouro project. Right after, the Construction License was issued in January 2007, which also mentions the new configuration of the project. As can be seen in the project timeline, actions for the project implementation were not stopped and no new investment decision was taken. 1d) As explained by PPs above, another investment decision was not taken by project sponsor since construction/implementation of the project has not stopped, *i.e.* there was no evidence of a new starting date. Therefore, there is no new CDM consideration after this date, Continuous actions to secure the CDM status were taken by PP as indicated in table 6 (section B.5) of the PDD. 2b) As explained in the PDD (version 3), the issuance of the Construction License was considered as the project starting date for conservativeness reasons. However, PPs reviewed the PDD (version 5) following the clarification of the CDM EB (41st meeting). Therefore, as presented in section B.5, the starting date of the project is considered as the date in which turbines and generators of the project were purchased, *i.e.* February 28th, 2007. Considering explanations above, PPs reviewed section C of the PDD, since this section was not changed at the time of the revision of the PDD (version 4).	16 MW. Besides, the reasons for the increase from 12 MW to 16 MW should be in detail explained. All relevant steps related to the increase from 12 MW to 16 MW should be communicated (in a reasonable timeline) to the validation team including respective evidences. 2a) Clarification has been provided and has been accepted by the validation team. 2b) As per the CDM Glossary of Terms (version 05) (EB47), the project´s starting date "is the earliest date at which either the implementation or construction or real action of a project activity begins **AND** on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity". Thus it is not clear why PPs have chosen as project´s starting date the date of the construction permit (installation license), dated 16/01/2007 and not the 1st purchase agreement of project equipment with HISA on February 28, 2007. PPs are requested to clarify. 2c) EPC has been explained now as Engineering, Procurement and Construction contract. Besides, the PDD informs now that construction started shortly afterwards on August 01, 2007. **DOEs 4th answer:** 1a) Explanation has been accepted. 1d) Explanation has been accepted. 2b) Project´s starting date has been revised to February 28, 2007 (purchase of the main equipment, viz. turbines and generators) which can be considered as the first real action and on which the project participant has committed himself to financial expenditures. **CAR was closed. ☑**

Corrective Action Request No.10. The date of financial closure should be revised in the PDD, as the bank credit with ITAU was closed on 25/08/2008.	B.5.2.	**Answer 23.03.2009** The request information was included in section B.5. Please refer to the second version of the document.	**DOE´s first answer:** The date of financial closure is now correctly indicated with 25/08/2008. **CAR was closed. ☑**
Corrective Action Request No.11. 1. Please revise the calculation of WACC (also bearing in mind CR 2), as some applied figures in the calculation are not retraceable to the validation team. 2. Please provide the exact weblinks/sources of each figure used in order to facilitate the assessment of the WACC calculation.	B.5.11.	**Answer 23.03.2009** 1) The calculation of WACC was revised. Please refer to the second version of the PDD. 2) The exact weblinks was included in Sub-step 2b – Option III – Apply benchmark analysis. Please refer to the second version of the document. **Answer 16.06.2009** Considering the recent EB requests for review for small hydropower plants projects in Brazil, PPs decided to review the investment analysis. In this revision of the financial analysis, the benchmark considered is the Cost of Equity (Ke) based on Capital Asset Pricing Model (CAPM). According to the CAPM methodology, local risk-free rate plus equity premium adjusted by specific beta shall be used in the formula. Ke was calculated through parameters that are standard in the market. Spreadsheet with the calculation of Cost of Equity and data sources is attached to this response. **Answer 03.02.2010** PPs clarify that the benchmark considered by the project sponsors was the SELIC rate. Currently, project sponsors use the company internal benchmark to analyze the attractiveness of a project. However, both benchmarks are not in accordance with the Additionality Tool, since SELIC is a short term market rate and the company internal benchmark shall be used only in the particular case where the project activity can be implemented by the project participant. For this reason, PPs reviewed the financial analysis of the project considering the Cost of Equity as the most suitable benchmark to be com-	**DOE´s first answer:** 1) a) The calculation of cost of equity (29.40%) is not correct in the opinion of the validation team. According to the formula, the International Market Equity Risk Premium (8.66%) should not be summed up, thus the cost of equity is significantly lower. b) PPs are requested to clarify why they don´t use the local risk free rate. How it is proven, that the local risk free rate is not relevant but instead the used Yield of Sovereign 15-year BB Debt - 10-year BB Credit risk premium over US Treasuries appropriate? Besides, it deems not to be correct to the validation team to sum up two different time periods (15 years and 10 years). PPs should explain. c) It should be evidenced to the validation team that a debt/equity ratio of 72:28 is common for Brazilian projects. d) The validation team has great doubts that the 3 values for the determination of Beta are not sufficient. e) In the opinion of the validation team it is not correct to apply a zero tax rate in the whole calculation including Beta. It is only acceptable, if it can be demonstrated that there is a local law which makes the project activity free of taxes. Finally Brennand is taxed over an assumed profit and therefore there are no fiscal benefits for debit. The applied approach is not conservative.

		pared with the equity IRR of Ouro project. The additionality tool states that "*input values in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant*". The Cost of Equity (Ke) calculated is valid and is based on the values at the time of the investment decision. The Cost of Equity (Ke) was calculated for the financial analysis based on the CAPM methodology and parameters that are standard in the market. Therefore, the use of Ke is according to the "Tool for the demonstration and assessment of additionality" and the "Guidelines on the assessment of investment analysis". All parameters used for Ke calculation are publicly available and source of information is mentioned in the spreadsheet attached to this response. PPs stress that the equity IRR (8.02%) is lower than SELIC rate (14.47%), the company internal benchmark (15.32%), PROINFA rate (14.89%) and the Cost of Equity (14.99%) in the original scenario and the scenarios presented in the sensitivity analysis – although the first, second and third benchmarks are not appropriate to be compared with the equity IRR. Considering explanations above, the following clarifications of the Cost of Equity calculation are given: 1) Cash flow does consider only the equity disbursement as shown at line 41 (item 10 – Cash Flow). 2) US Inflation is subtracted from the Brazilian Federal Bonds because these titles are USD denominated, and therefore US inflation is embedded in it. Since the cash flow is in real terms, the benchmark chosen cannot include inflation and the American inflation shall be discounted. Further explanation: In making a depth analysis, PPs realized that the Weighted Average Cost of Capital calculated previously in the GSP-PDD did not consider parameters of the market since it was calculated based on some specific characteristics of the project (debt as a percentage of total capitalization and marginal cor-	f) Regarding cost of capital, it is not clear to the validation team why the TJLP from it seems 2007 or 2008 was taken instead of 2006 as 04/2006 was the date of investment decision. PPs should clarify. g) The spread of 3.60% has to be evidenced. 2) see item 1. See also DOE answer CAR 13. **DOE´s second answer:** PPs switched the benchmark from WACC [GSP PDD mentions the benchmark as a pure "internal company benchmark calculation", however the DOE recognized that WACC is calculated (as per paragraph 12 of the Guidelines on the assessment of investment analysis, version 03.1) using market data] to Cost of Equity, however no transparent explanation for the reasons has been provided yet why PPs decided to do such a change of the benchmark. It should be further clarified what was the benchmark used at time of investment decision. Assuming, the benchmark Cost of Equity could be applied, the following clarifications regarding the calculation of Cost of Equity should be provided: 1) Cost of Equity is an appropriate benchmark for equity IRR. However the presented IRR calculations is a mix of project and equity IRR. PPs should consider paragraph 10 of EB 51, Annex 58 regarding cash flow calculation for equity IRR, in particular not full investment, but only the portion of investment costs which is financed by equity should be considered as net cash outflow. Cost of servicing debt (interest and principle payments) are considered as costs.

		porate tax). Since WACC calculation did not follow the Additionality Tool, the benchmark considered for Ouro project was reviewed. Considering explanations given in the previous rounds, the benchmark applied in the GSP-PDD was not "simply modified" in the revisions of the PDD. PPs did not find any statement from the Additionality tool, guidelines on the assessment of investment analysis and/or validation and verification manual, which confirms that the benchmark considered in the financial analysis shall be the ones used at the time of the investment decision. According to the "Guidelines on the assessment of investment analysis": "*Input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant. The DOE is therefore expected to validate the timing of the investment decision and the consistency and appropriateness of the input values with this timing*". Considering extract from the Guidelines above, PPs clarify that input values used for its calculation reflect the financing environment at the time of investment decision and expectations related to the market, since Ke was calculated based on historical and public available data. Therefore, the project uses the option (a) (item 6 of sub-step 2b) of the "Tool for the demonstration and assessment of additionality", which states that "*discount rates and benchmarks shall be derived from government bond rates* (yield of sovereign BB), *increased by a suitable risk premium* (market risk premium) *to reflect private investment and/or the project type* (adjustment to market equity risk), *as substantiated by an independent (financial) expert or documented by official publicly available financial data* (benchmark was calculated based on historical data publicly available. All source of information is available in the spreadsheet attached to this response.	2) Calculation of Cost of Equity The following link http://www.bcb.gov.br/pec/indeco/Port/ie5-27.xls refers to 30-year Brazilian Federal Bonds. PPs should clarify why they subtract the US inflation from Brazilian Federal Bonds. **DOEs 3rd answer:** Explanation given by the PPs is accepted. The benchmark "Cost of equity" is deemed to be the most appropriate for the project. Calculations have been verified in the benchmark excel spreadsheet for the calculation of cost of equity (Ke Ouro – CAPM_2006) and can be confirmed to be correct and appropriate. The benchmark "cost of equity" has been derived based on the publicly data sources (IRL 56) which have been clearly validated by TÜV SÜD as shown in the following: ***Cost of equity*** – The cost of equity has been determined using the Capital Asset Pricing Model (CAPM). The CAPM approach to risk analysis calculates the risk premium associated with the specific risk involved in a particular project. The riskiness is calculated by means of the beta and this beta measures the relative riskiness of the proposed project activity. The CAPM assesses risks at a market level and not by looking at an individual's risk preferences and therefore is sufficient to analyze the appropriate rate of return necessary to compensate investors for the risk faced in the proposed project activity. ***Risk free rate*** The risk free rate (4.41%) has been taken as the 20-year US Treasury Yield as of January 2006. And further reduced to a real value of

			1.96% by considering the US inflation (2.45 %) This is considered as conservative approach. The ***country risk premium*** for Brazil is 5,23 %. It has been referred to the JPMorgan Emerging Markets Bond Index Plus (EMBI+) as an liquid US-dollar emerging markets debt benchmark, which tracks total returns for actively traded external debt instruments in emerging markets. It has been cross checked with Damodaran's website country risks value for Brazil for 2005, which has presented a similar range risk for Brazil (6%), and the validation team can confirm that the applied value is plausible and conservative. ***Equity Risk premium*** *(6.47%)* – The equity risk premium have been calculated using the annual returns on Investments in stocks (11.72%) minus annual returns on Investments in T Bonds (5.24%) , both sourced from A. Damodaran, New York University http://pages.stern.nyu.edu/~adamodar/ reference "Historical data on Stocks, Bonds and Bills - US". This total *Equity Risk Premium* is considered reasonable as it measures the rate of return investors seek to compensate them for investing in higher risk equity based assets rather than risk free securities. This is deemed appropriate and acceptable. ***Beta*** *(1.21)* – The beta value has been calculated using an average value of 0.54 (un-levered) for the US Electric-Generators in the USA (power and Electric Utility) referring to the values provided by Damodaran Online http://pages.stern.nyu.edu/~adamodar/ and calculated in Excel sheet Ke Ouro – CAPM_2006 and levered, using the average market debt/equity ratios (65/35) which is usual

			for the industrial sector in Brasil and 34 % income tax. The DOE due to its local and sectoral expertise confirm the applied market debt/equity ratio and tax rate as appropriate and reasonable. Since Bovespa does not list weighed average of the Beta for small hydro power plants, the use of beta for US power sector is plausible. Calculation of an average value for beta based on power and electric utility is considered as conservative. **CAR was closed. ☑**

Clarification Request No. 2. Please justify the application of WACC (weighted average cost of capital) as internal company benchmark. According to paragraph 14 of the Guidance on the assessment of investment analysis, "internal company benchmarks should only be applied in cases where there is only one possible project developer and should be demonstrated to have been used for similar projects with similar risks, developed by the same company or if the company is brand new, would have been used for similar projects in the same sector in the country/region."	B.5.11.	**Answer 23.03.2009** The benchmark considered for the attractiveness analysis of Ouro project is the Brazilian Prime Rate, known as SELIC rate. This information was discussed at the time of the validation visit and can be evidenced through the CDM project already registered by the Group (ARAPUtanga Centrais Elétricas S. A. - ARAPUCEL - Small Hydroelectric Power Plants Project, Ref.: 0530). SELIC rate at the time of the project conception (from April 2006 – project acquisition decision – to January 2007, construction license issuance) was 14.47%. Therefore, the IRR of the project (12.11%) was lower than SELIC rate, evidencing that the project was not attractive to investor. This information was included in the new version of the PDD (version 2). Considering that currently Brennand Group utilizes the Weighted Average Cost of Capital (WACC) to analyze the attractiveness of a project and the "Tool for the demonstration and assessment of additionality" (version 5.2): "*…the financial/economic analysis shall be based on parameters that are standard in the market, considering the specific characteristics of the project type, but not linked to the subjective profitability expectation or risk profile of a particular project developer*", project participants decided to calculate WACC for Ouro Project, which considers parameters that are standard in the market. The company's WACC was 12.9% as presented in the PDD, version 1. In a detailed analysis, project participants realized that the WACC's calculation considered perfect correlation to the market, what wasn't the most appropriate to the project's specifics. Therefore the "*Adjustment of Market Equity Risk with Beta"* was changed, based on Brazilian Electric-generators Betas, which are the companies closest to the project developer listed at Bovespa (Brazilian Stock Market) as presented in the new version of the PDD (version 2).	**DOE´s first answer:** -WACC as internal company benchmark is not possible to be used in the opinion of the validation team, as there is not only one possible project developer for Ouro small hydro power plant project. Thus, WACC as internal company benchmark is not possible to be applied as per paragraph 14 of the Guidance on the assessment of investment analysis, but can be applied as WACC as per paragraph 12 of the Guidance. -It has to be clearly indicated in the PDD which sole benchmark is finally the one used for the comparison with the IRR. Other remaining benchmarks should be only applied for reference purposes (cross-checking) however not applied two main benchmarks at the same time. -How is it justified to calculate the SELIC rate as an average for the period between date of Board meeting (April 2006) and issuance of the construction license (January 2007)? PPs should clarify in the PDD and justify it to the DOE. **DOE´s second answer:** PPs switched the benchmark from internal company benchmark WACC to Cost of Equity, however no transparent explanation for the reasons has been provided yet why PPs decided to do such a change of the benchmark. It should be further clarified what was the benchmark used at time of investment decision.

Continuation of Clarification Request No.2		**Answer 16.06.2009** The period from the project acquisition decision until the construction license issuance was analyzed considering that the construction license issuance was considered as the starting date of the project activity. Therefore, the period from the decision to construct the project until the first action in favor of the project was used. Even if we consider the period from the project acquisition until the time of the first project expenditures (April 11th, 2007), SELIC rate would be 14.2%. Considering the SELIC rate 14.2%, the project IRR is still under this value as well as if sensibility analysis is made, evidencing that the project is not attractive to investor. However, considering DOE comments, PPs decided to review the financial analysis presented in the PDD following the Additionality Tool: "*discount rates and benchmarks shall be derived from: (a) Government Bond rates, increased by a suitable risk Premium... as substantiated by an independent (financial) expert or documented by official publicly financial data".* Therefore, the benchmark considered is the Cost of Equity (Ke), which was calculated based on parameters that are standard in the market. In addition, SELIC rate and Proinfa reference return were withdrawn from the PDD (version 3), serving for reference or cross-checking purposes. **Answer 03.02.2010** Please, refer to PPs response in CAR 11. **Answer 11.05.2010** See PPs response in CAR 11.	**DOE´s 3rd answer:** See CAR 11 **DOEs 4th answer:** As CAR 11 was closed, this CR was closed. ☑

Corrective Action Request No.12. 1. B.5. of the PDD should mention the main input values (investment, O&M costs, tariff, amount of electricity generated (dispatched), taxes, depreciation), preferably in a Table including the data sources. 2. The applied figure for O&M costs should be evidenced. Please submit the relevant evidence to the validation team. 3. Please provide an explanation in the PDD for the difference between generated electricity and dispatched electricity. 4. Please submit the relevant evidences for the applied figures for taxes and depreciation.	B.5.12.	**Answer 23.03.2009** 1) The requested information was included. Please refer to the second version of the PDD. 2) The evidence was submitted for the validation team. Please refer to attached files "Ombreiras and Indiavaí Balance Sheet" and ANEEL Resolution nr. 44 dated March, 17th, 1999. 3) This information was reviewed in the new version of the PDD (version 2). 4) The evidences for the applied figures for taxes and depreciation was submitted for the validation team. Please refer to attached files "Ouro_Balanço Araputanga.pdf" and ANEEL Resolution nr. 44 dated March, 17th, 1999. **Answer 16.06.2009** Before properly respond the DOE comments, PPs stress that the investment analysis presented in the PDD as well as input values were valid and applicable at the time of the investment decision, following the Guidance on the Assessment of Investment Analysis (paragraph 6). **1.** **Regarding Depreciation:** See items 35 (generator) and 85 (turbines) of ANNEL annex Resolution nr. 44. Depreciation presented in the project cash flow is based on project equipments (turbines and generators). ANEEL requires that depreciation shall be based on the project authorization, which is for 30 years.	**DOE´s first answer:** **1.** **-Regarding depreciation:** It is not clear to the validation team why for the whole investment a depreciation of 3.33% is chosen, even though ANEEL Resolution N° 44 mentions different rates for e.g. structure of water intake, dam. PPs should clarify. **-Regarding investment:** a) if taking 72% of the R$56,102,000 indicated in the PDD, this results in a little bit less (40,393,440) than indicated in the financial closure. PPs should clarify. b) PPs should evidence to the validation team that the credit line is 72% of the total investment. **-Regarding tariff:** a) PPs should clarify why the spot-price is/was to be assumed to be 70% of the PPA price. Please submit the respective evidence to the DOE. **-Regarding electricity generation supplied to the grid:** a) why does the IRR calculation assume 8.60 MW assured power, whereas the CER calcuation spreadsheet 8.72 MW. Please explain why the difference. b) please refer in the Table in sub-step 2b) (amount of electricity dispatched to the grid per year) to the ANEEL Technical Note N° 211/2008-SGH/ANEEL and submit the same to the validation team.

Continuation of CAR No. 12.		However, manufacturers and suppliers inform that equipments life-time are for 25 years. See CAR 4. **Regarding Investment:** As mentioned above, the investment analysis was reviewed in the new version of the PDD (version 3). **Regarding tariff:** See project cash flow attached to this response. The energy price considered is BRL 126/MWh, the highest average of energy price considering the energy auctions held by Brazilian government in the years of 2005 and 2006. Considering 2005 year, the average of the energy price paid for new hydroelectric projects was BRL 114/MWh. However, only two small hydroelectric power plants were elected with a price of BRL 99.95/MWh. The lower price for small hydroelectric projects is because they have higher risks considering their small reservoirs when compared to large hydropower plants projects. Considering the 2006 year, the average was BRL 126/MWh and BRL 124.81/MWh considering only small hydros. Among 21 projects, only 7 small hydropower plants were elected in the auctions carried out during 2006. It is important to mention that the PPA signature happened only on December 1st, 2007. Therefore, project sponsors did not know the energy price that would be paid for Ouro project.	-**Regarding taxes:** PPs should explain what the balance sheet of Araputanga project has to do with the given project activity and how the tax rates of 1.08% and 2% (indicated in the PDD) are determined. **-Regarding O&M costs:** a) PPs should submit the balance sheet of the indicated similar projects in order to be able to assess whether 7% O&M costs are reasonable. b) It is not clear from where in ANEEL N° 44 the 0.83% were taken. PPs should inform. c) O&M costs are indicated with R$1,155,000, whereas in the PDD with R$1,154,000. PPs are requested to resolve this small inconsistency. **2.** see item 1; the file with "Ombreiras and Indiavaí Balance Sheets" has not been submitted to the validation team. **3.** The PPs are requested to inform in which chapter of the PDD the explanation was provided. Except in chapter B.7.1. (parameters), the validation team could not find any explanation. **4.** See item 1 **Additional Request according to the new VVM:** Cross-checking evidences for the input parameters should be submitted to the validation team. This can include amongst others invoices, purchase agreements (investment, tariff), water resource studies and actual figures (electricity generation), realized O&M costs and others.

Continuation of CAR No. 12.		**Regarding electricity generation:** a) According study made by Intertechne 8.6 MW is the energy assured and 8.72 MWave is the average of the installed capacity available to be exported to the grid. Considering this information, the estimated CERs were reviewed in the third version of the PDD taking into account 8.6 MW. b) All information mentioned in sub-step 2b) is referenced in the PDD (version 3). **Regarding taxes:** 2% = 8%x25% (where 8% is the basis for assumed income; and 25% is the income tax rate) 1,08%=9%x12% (9% of the revenues – base for social taxes calculation; and 12% is the social tax rate) Araputanga balance sheet is attached to this response. **Regarding O&M costs:** a) Balance sheet summary of similar activities of 2005 is attached to this response. (evidencia dos 9% e custos tot.) 2. Araputanga balance sheet is attached to this response. 3. This information was presented in sections B.6.1 and B.7.1. However, PPs included explanation in section B.6.3.	**DOE´s 2nd answer:** It was correctly mentioned in the PPs´ answer that input values should be based on values valid at the time of investment decision, however the validation team wants to clarify that according to VVM, paragraph 109 (b) the accuracy of financial calculations carried out for investment analysis, the DOE shall "cross-check the parameters against third-party or publicly available sources". In order to permit the DOE such a cross-checking, respective evidences should be submitted by the PPs. See CAR 9 (item 1) regarding investment decision date, feasibility study. **-Regarding depreciation:** It is not clear yet why the 3.33% depreciation rate indicated by ANEEL for generators is also used for turbines, structure of water intake, dam. PPs are requested to clarify in more detail. Besides, evidence should be submitted to confirm that "ANEEL requires that depreciation shall be based on the project authorization, which is for 30 years". **-Regarding investment:** DOE´s doubts (1st answer) has not been answered: a) if taking 72% of the R$56,102,000 indicated in the PDD, this results in a little bit less (40,393,440) than indicated in the financial closure. PPs should clarify. b) PPs should evidence to the validation team that the credit line is 72% of the total investment. In the meantime, the PDD indicates that 80% of the total investment is financed. This is not completely correct as the 80% refers to investment minus (land + diverse). PPs are requested to clarify.

Continuation of CAR No. 12.		4. As mentioned in the PDD, O&M costs were estimated based on Brennand Energia experience and, therefore, balance sheets of the other projects implemented by the project were submitted. According to the VVM, the cross-checking through a third-party or publicly available resources should be made by DOE. **Answer 03.02.2010** **-Regarding depreciation:** Please refer to ANEEL Resolution nr. 44. Depreciation is calculated based on 1/project lifetime (30 years according to the project concession issued by ANEEL), which results in 3.33% mentioned in ANEEL Resolution nr. 44. See PPs response in CAR 4. **-Regarding investment:** a) Project Participants clarify that the assumptions presented in the project cash flow were considered before the financial contract. Therefore, obviously estimated investment is different from the actual investment. As can be seen, the estimated value (BRL 40,536,000) is almost consistent to the amount financed (BRL 40,532,800). Since the "Guidelines on the assessment of investment analysis" mentions that "*input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant*", the cash flow was not reviewed.	Besides, the difference between the figure indicated in the financing contract of 56,115 million R$ to the one indicated in the excel file (56,102 million R$) should be clarified. **-Regarding tariff:** See CAR 9 (item 1); if auction prices are finally used as input parameter for tariff, the exact data source for auction prices should be communicated to the validation team. **-Regarding electricity generation supplied to the grid:** -The study from Intertechne mentioning an assured energy of 8.60 MW has been submitted to the validation team. However this figure should be substantiated by the calculated ANEEL figure (please submit the respective resolution) for assured energy. - ANEEL Technical Note N° 211/2008-SGH/ANEEL has not been submitted to the validation team as it was requested. Please submit. --**Regarding taxes:** Applied tax rates should be substantiated by official, credible evidences (like Brazilian legislation); the reference to the balance sheet of Araputanga is not plausible. Besides, it is not clear why PPs calculate income tax and social taxes from project revenues and not NET project revenues (i.e. project revenues minus expenses); PPs are requested to clarify. **-Regarding O&M costs:** Balance sheet summary of similar activities of 2005 is attached to this response. (evidencia dos 9% e custos tot.) as indicated by the PPs have not been submitted to the validation team. Besides, it is not clear why O&M have been changed from 7% to 9% (not clear to what the percentage refers to??); O&M costs should be based on the ones at time of investment decision. PPs are requested to clarify. -**Cross-checking evidences** for the input parameters should be submitted to the validation team. This can include amongst others invoices, purchase agreements (investment), PPA (tariff), water resource studies (electricity generation), realized O&M costs and others.

Continuation of CAR No. 12.		b) In fact, the cash flow presents 80% of the financeable items. 80% is the maximum share available in the BNDES financing line. See cash flow (as well as the source of information) attached to this response. As mentioned above, the 80% of the financeable items is related to the maximum share available in the BNDES financing line. See explanations available at the BNDES' website: <http://inter.bndes.gov.br/english/finem.asp>. Non-eligible items are presented in the following link: <http://inter.bndes.gov.br/english/items_support.asp>, which includes land and terrain regularization, imported equipment and others. Considering differences related to the values in the financing share and total investments of the project, PPs clarify that values presented in the cash flow were considered at the time of the project investment decision, *i.e.*, before the signature of the financing contract. As can be seen in the financing contract, the value considered in the cash flow is lower than the actual investment, *i.e*. more conservative for the CDM financial analysis.	**DOE´s 3rd answer:** -**Regarding depreciation:** Resolution N° 44 (ANEEL) defines different depreciation rates for different equipments, thus it is not clear why for the whole investment cost (including besides the generator as well turbines, dam, structure of water intake) the same depreciation rate of 3.33% is chosen. Resolution N° 44 indicates e.g. for turbines ("turbine hidraulica") as depreciation rate 2.5%. PPs are requested to clarify. **-Regarding investment:** It is clear now for the DOE that the 80% of BNDES investment refer to "financeable items" which are defined by BNDES (e.g. land purchase is not a financeable item). The same was verified via BNDES website. The information in Table 8 of the PDD should be corrected respectively since "about 80% of the total investment" is mentioned. Further, the DOE could verify that the investment in the financial contract is slightly higher than the one assumed in the IRR calculation. However, it is not clear yet on what data source estimated investment (at the time of investment decision) was based on. PPs should inform/evidence. Besides, a cross check evidence to the financing contract should be submitted (as previously requested) like e.g. purchase agreements, invoices etc.

Continuation of CAR No. 12.		**-Regarding tariff:** Source of information for the input values considered in the cash flow are attached to this response and presented in the cash flow. **-Regarding electricity generation:** ANEEL Technical Note N° 211/2008-SGH/ANEEL is attached to this response. In addition, PPs also atached the ANEEL letter nr. 536/2010-SGH/ANEEL, dated 01/03/2010, which approves the technical characterists of the project (16MW and energy assured of 8.6 MW-ave). PPs clarify that ANEEL approved the new configuration of the project, however, the Mines and Energy Ministry is responsible for the publication. Therefore, the energy assured of the project is not updated at the ANEEL's website. -**Regarding taxes:** Considering that taxes are based on the Brazilian legislation, values applied for Ouro project are publicly available. However, source of information/laws was inclued in the cash flow spreadsheet ("inputs" sheet).	**-Regarding tariff:** The exact CCEE (web-link or document) should be submitted to DOE for assessment. 2 PPAs (dated December 2007) with Sadia (indicating a tariff of R$140) have been submitted to the validation team. PPs are requested to submit further cross-check evidences (like further PPAs and electricity invoices) which allow the DOE a complete assessment. Furthermore PPs are requested do apply the tariff in the IRR calculation which was valid at the time of investment decision related to the project with an installed capacity of 16 MW. The applied tariff of R$ 126 is based on auction prices from 2005/2006 valid at the time of investment decision related to the project with an installed capacity of 12 MW. Auction prices at the time of investment decision (16 MW) should be submitted to the validation team. **-Regarding electricity generation supplied to the grid:** ANEEL Technical Note N° 211/2008-SGH/ANEEL was submitted to the validation team, however mentions a slightly different (average) energy (8.72 MW-ave). PPs are requested to clarify why for the IRR calculation the less conservative 8.6 MW-ave. is used. **-Regarding taxes:** Please submit the source(s) (marking the relevant text) both for income tax (revenue base for income taxes of 8%, income tax 25%) and social tax (9%) for further assessment. Besides, it should be clarified why paragraph 11 of EB51, Annex 58, version 03 regarding consideration of actual interest payable when calculating income tax is not being followed. **-Regarding O&M costs:** Until now neither the primary data source (balance sheet of similar hydro plants of the same group) nor cross-check evidence (like e.g. invoices of real O&M costs) have been submitted to the validation team. PPs are requested to do so.

Continuation of CAR No. 12.		**- Regarding O&M costs:** Values used for estimated O&M costs were based on the project sponsor experience with other small hydropower plants of the Group. Therefore, cash flow was not reviewed. - **Cross-checking evidences:** Source of information was included in the cash flow ("inputs" sheet). All documented evidence was sent to DOE. However, PPs attached to this response. **Answer 11.05.2010** -**Regarding depreciation:** As presented in the project cash flow, depreciation considered was of 3.33%. Although ANEEL resolution mentions different depreciations (2.5% or 3.33%), since the IRR was calculated in a presumed profit, depreciation does impact significantly the IRR. **-Regarding investment:** Considering DOE comments, PPs corrected information related to the project financing in table 8 of the PDD. PPs clarify that the investment considered in the project cash flow was based on the project sponsor experience. The financing contract was used to demonstrate that estimated investment is compatible with the actual one. As can be seen in the financing contract, the total investment for Ouro implementation was higher than estimated by the project sponsor, *i.e.* more conservative from the CDM perspective. **-Regarding tariff:**	**-Cross-checking evidences:** Cross-checking evidences for input parameters have NOT been submitted yet (as already stated above). PPs are requested to do so. **DOEs 4th answer:** **-Regarding depreciation** It has not been evidenced yet how it is justified to apply a unique depreciation rate of 3.33% for the whole equipment/plant as ANEEL resolution N° 44 (already valid at the time of investment decision) defines different depreciation rates for different equipments/parts of the plant (e.g. for turbines ("turbine hidraulica") the depreciation rate is 2.5%, for the power house 2%, for the transmission system 2.5%) also bearing in mind that the application of a rate of 3.33% is less conservative (regarding the result of the IRR) than lower rates. PPs should revise the "depreciation" in the IRR calculation or provide a justification why a rate of 3.33% for the whole depreciation basis is acceptable. Furthermore, it should be clarified how is it justified that the constant depreciation is higher in the first year than in later years. **-Regarding investment** Table 8 of the PDD was corrected. However, it should be explained in the PDD what "financeable items" consist of. The PPs have not clarified the doubt of the DOE yet on what data source estimated investment (at the time of investment decision) was based on. PPs should inform/evidence. Besides, cross check evidence to the financing contract should be submitted (as previously requested) like e.g. balance, purchase agreements, invoices etc (see VVM, version 01.2, paragraph 111). According to the Table in B.5. of the PDD, the project is commissioned since May 2009 and in operation since July 2009, thus respective evidences must be available. -Regarding taxes:

Continuation of CAR No. 12.		The CCEE's web-link is <http://www.ccee.org.br/cceeinterdsm/v/index.jsp?vgnextoid=d3caa5c1de88a010VgnVCM100000aa01a8c0RCRD>. PPs clarify that there are no other PPAs signed for Ouro project since the energy commercialization shall be based in the energy assured already approved by ANEEL. ANEEL authorized the new configuration of the project in September 2008 only. All PPAs involved in the project were already sent to DOE. PPs clarify that the electricity price considered at the time of investment decision is the price from the energy auctions conducted by the Brazilian government in 2005 and 2006. As mentioned in the PPs response in CAR 9, there was no new investment decision regarding the increase of the project installed capacity. The potential increase was verified by project sponsor during the project engineering studies for the project implementation (construction was not stopped). Therefore, revision of the energy price is not needed. In order to facilitate the cross-check by DOE, PPs attached to this response the results of the energy auctions. In addition, PPs clarify that although the investment decision was taken based on the installed capacity of 12MW, PPs considered 16MW in the project cash flow for conservativeness reasons. **-Regarding electricity generation:** As explained in the project design (Projeto Basico Consolidado), the average energy (in a free translation from the Portuguese *energia média*) is calculated based on hydrological data, height of the dam and efficiency of turbine/generator/transformer.	**-Regarding tariff:** The web link of CCEE and auction prices of 2005 and 2006 were submitted. The DOE has received so far 2 PPAs about 7 MW in total. However, assured electricity (by ANEEL) is 8.6 MW (this value is also considered in the IRR calculation), thus some part of the electricity must be sold at the spot market or to other consumers. As the project activity is already operational, invoices (for cross-checking) for sold electricity should be provided to the validation team if other PPAs are not available. **-Regarding electricity generation supplied to the grid:** PPs answer is accepted and the "energy assured" of 8.6 MW-ave is appropriate to be considered in the IRR calculation according to the local and sectoral expertise of the validation team. Even if using the "average energy" of 8.72 MW-ave, IRR of the project would increase only slightly. ☑ **-Regarding taxes:** -Some project/company specific official (credible) document/evidence should be submitted to the validation team which clearly shows that Ouro hydro-plant adopts/can adopt for presumed profit (from the Portuguese *lucro presumido*) tax regime and is able to apply the tax rates (for social taxes 9% over 12% revenue base) and income taxes (25% over 8% revenue base). -Cross check evidence for sales taxes should be provided.

Continuation of CAR No. 12.		The energy assured (from the Portuguese *energia assegurada*) is calculated based on the guaranteed/average energy (mentioned above) and forced/programmed unavailability. In the case of Ouro project, the guaranteed/average energy is 8.72MW-ave and the energy assured is 8.6MW-ave. Considering explanations above, the financial analysis and the estimated emission reductions are based on the energy assured of the project. **-Regarding taxes:** Brazilian laws related to the taxes considered in the project cash flow are publicly available. The cross-checking between information provided by the PPs against other sources shall be made by DOE. Local financial expert opinion can be consulted if necessary. The taxes considered in the project cash flow are well known in the Brazilian market. PPs included links in the project cash flow. Therefore, DOE can consult the text of Brazilian legislation fully. In the IRR calculation, the actual income and social taxes are being used following national legislation and Annex 58 (version 3) of the Guidelines of investment analysis. Accordingly, the benchmark is calculated considering marginal income tax rate of zero because there is no benefit from debt in presumed profit (from the Portuguese *lucro presumido*) tax regime (taxes are calculated based on na assumed income). **-Regarding O&M costs:** Balance sheets are attached to this response.	**-Regarding O&M costs:** Balance sheets of Araputanga project has been submitted to the validation team, however it is not clear how the 9% O&M costs were calculated. Besides, the PDD should indicate the reference of the 9% (9% from revenues??). Furthermore, it is not clear how managerial (7%) and transmission costs (in worksheet "cash flow" called "Tributary", typo??) (9%) can be calculated from the balance sheets. As already requested before, (cross-check) evidence of the input parameters should be provided to the validation team. Furthermore, PPs should clarify/justify (and inform in the PDD) why in year 12 and year 22 O&M costs are BRL 7,854,000 instead of BRL 854,000. Again, some evidence/justification for cross-checking should be provided. **-Cross-checking evidences** **Cross-check evidences for the following further input parameter (applied in the IRR calculation) should be provided:** Regarding the applied real interest rate: the applied spread of 3.60% should be justified/evidenced once the spread in the financing contract with BNDES is mentioned with 3.20%. Besides, PPs are asked for to provide a comparison between estimated values applicable at time of investment decision and actual values for cross-checking purposes. Furthermore, PPs should inform about the tariff price at which IRR crosses the benchmark (using actual data).

Continuation of CAR No. 12.		**-Cross-checking evidences:** All reference requested above is publicly available and was properly informed by PP in the PDD and this Protocol including website links (as energy auctions results, Brazilian taxes, share of investment, depreciation rates). As mentioned above, the cross-checking shall be made by DOE. The only evidence missing is the balance sheet used to evidence the O&M costs, which is attached to this response. **Answer 22.12.2010** **- Depreciation** As requested by DOE, PPs reviewed the annual depreciation taxes based on ANEEL Resolution nr. 44 dated March 17th, 1999 (available at: <http://www.aneel.gov.br/cedoc/RES1999044.PDF>). The average of depreciation rates was applied in the cash flow. Please refer to the project cash flow attached to this response. PPs clarify that difference related to the values considered in depreciation is related to the use application of depreciation and amortization (see line 23 of the project cash flow). Depreciation is applicable to tangible assets during lifetime and amortization is applicable to services expenses and others. The decrease in the depreciation in 2013 onwards is due to amortization, which finishes in 2013; afterwards only depreciation is considered. Please refer to the sheets "depreciation" and "amortization" in the cash flow. It is important to mention that the "amortization" mentioned above is different from the "amortization" mentioned in line 24 of the project cash flow; this last one is related to financing. In addition, PPs corrected the formula in the "depreciation" sheet (column C, line 3393). Please refer to the cash flow spreadsheet attached to this response.	**DOEs 5th answer:** **-Regarding depreciation:** Depreciation rates (between 2.5% and 4%) have been applied according to the type of equipment/item which is in accordance with ANEEL resolution N°44. The DOE confirms that depreciation rates have been conservatively applied and the average applied depreciation rate of 2.79% is accepted by the DOE. The residual value is calculated as the difference between total investment and the sum of depreciation of all equipments/items. This is in accordance with common accounting practices. PPs clarified why depreciation in the first years is higher than later on, as "amortization" (here is not referred to financing) applicable to service items and other items mentioned in http://www.receita.fazenda.gov.br/PessoaJuridica/DIPJ/2005/PergResp2005/pr381a388.htm is included in the depreciation figures until 2013. From 2014, there is no "amortization" anymore.

Continuation of CAR No. 12.		**-Investment** - PPs attached to this response the Balance sheet of Araputanga Centrais Elétricas S/A published by D.O.U. (Diário Oficial da União) in July 2005. This balance sheet is related to Antonio Brennand small hydropower plant operational since September 2002. This project is owned by the same project sponsors of Ouro project. Therefore, the investment is based on the project sponsor experience. To the understanding of the PPs, the financing contract, purchase agreements, invoices cannot be considered as cross-checking evidence, since values were based after the investment decision. The Additionality Tool clearly states that "*input values in all investment analysis should be valid and applicable at the time of the investment decision*". For cross-checking purposes, PPs attached to this response the BNDES Annual Report 2005 to demonstrate that investment considered by the PPs (based on the project sponsor's experience) was consistent with the timing of decision making. As matter of fact, investment/installed capacity is higher than the one considered in the project cash flow (3,932 BRL/kW). Although, to the understanding of the PPs, actual investment of Ouro (as evidenced through the Balance Sheet of Ouro) is not an appropriate evidence for cross-checking purposes, the PPs analyzed the estimated and actual investment, and actual investment is higher than the one estimated. Please refer to the spreadsheets attached to this response and PPs response in "cross-checking evidence" in the item below.	**-Regarding investment** PPs clarified that total investment in the IRR calculation (at the time of investment decision) is presumed to be 57,051 million BRL, based on 3,565 BRL/kW taken from the balance sheet of Antonio Brennand small hydropower plant (Antonio Brennand small hydropower plant is from the same project owner as Ouro Small Hydropower Plant). This can be considered as a conservative assumption at the time of investment decision bearing in mind that BNDES Annual Report 2005 (IRL 47) states an average value of 3,932 BRL/kW. **-Regarding tariff:** The tariff applied in the IRR calculation (at investment decision) amounts to 115 BRL/MWh. The tariff of 115 BRL/MWh is derived from electricity prices negotiated in the Brazilian energy auctions destined to new hydropower plant projects in 2005. Auction prices are sourced from CCEE (Chamber of Electric Energy Commercialization), a reliable data source. The weighted average price of 115 BRL/MWh was chosen at the time of investment decision as that time no PPA was signed and available yet. PPAs and invoices from September 2009 to December 2010 as well as historical prices in the spot market from July 2009 (operation start) until January 2011 provided by Electric Power Commercialization Chamber (CCEE) have been submitted to the DOE as cross-checking evidence. **-Regarding taxes:** It has been transparently explained why Ouro project can opt for the presumed profit (from the Portuguese *lucro presumido*) tax regime. Besides, it was shown that the choice of presumed profit tax regime compared to the real profit (from the Portuguese lucro real) is more conservative being used in the IRR calculation. Tax rates (and tax bases) were evidenced by different web-sites (IRL 55).

Continuation of CAR No. 12.		**- Tariff** Considering the DOE comments, the PPs reviewed the energy price considered in the project cash flow based on the tariff available at the time of the decision-making context of the project. Reference for the energy price is based on the energy auction conducted by the Brazilian government in December 2005 for hydroelectric power plants. Information available at CCEE's website: <http://www.ccee.org.br/>. Spreadsheet containing the results of this energy auction is attached to this response. Regarding the actual electricity tariff, PPs clarify that there is no other PPA signed for the 1.6 MW-ave of the project. However, the total energy assured of the project was considered in the financial analysis. In addition, as requested by DOE, PPs made an analysis by considering the actual energy price agreed in the project PPAs (for 7MW-ave) and price negotiated in the spot market (1.6MW-ave) according to sales of receipt (attached to this response). For the 1.6MW-ave and electricity generated in the years not covered by the PPAs, the electricity price considered is the one evidenced through the sales of receipt from 2009 and 2010 years. Considering the actual values for the project, the IRR continues to be lower than the benchmark. **-Taxes** PPs clarify that taxes regime/conditions in the presumed profit (in a free translation from the Portuguese *Lucro Presumido*) context can be applied if art. 246 of Decree nr. 3,000 dated March 26th, 1999 is not applicable. Detailed information related to the taxes regime conditions is presented at the Federal Revenue Service website: - Art. 246: <http://www.receita.fazenda.gov.br/Legislacao/rir/L2Parte1.htm> - §3, art. 516: <http://www.receita.fazenda.gov.br/Legislacao/rir/L2Parte3.htm>. - Real tax regime ("Regimes de incidência"): <http://www.receita.fazenda.gov.br/PessoaJuridica/PisPasepCofins/RegIncidencia.htm>.	**-Regarding O&M costs:** O&M costs have been revised. The annual O&M costs of 4.4% calculated from total investment are derived from project owner´s experience with another small hydropower plant (Antonio Brennand small hydropower plant). The same was validated with the balance sheet of Antonio Brennand small hydropower plant. The value of 4.4% from total investment can be considered as appropriate and conservative bearing in mind that Eletrobrás and the Ministry of Mines and Energy published in the year 2000 in a report an estimated value of 5% of the total investment for annual O&M costs as reference for the financial analysis of these type of projects. The real value for O&M costs taken from 2009 balance sheet of Ouro small hydropower plant is 2.7% of total investment, however as Ouro SHPP started operation only in July 2009, the calculated 2.7% O&M costs refer to half year and not to a full year. If the 2.7% are extrapolated to one full year, then O&M costs will be higher than the 4.4% used in the IRR calculation. Thus the value used in the IRR calculation can be considered as appropriate and conservative. **-Cross-checking evidences:** The revised spread of 2.8% applicable at time of investment decision was verified by http://www.bndes.gov.br/SiteBNDES/export/sites/default/bndes_pt/Galerias/Arquivos/conhecimento/bnset/Set2901.pdf and is accepted by the validation team. The "real" spread is slightly higher and as per the financing contract 3.2%. PPs provided a comparison between estimated values applicable at time of investment decision and actual values for cross-checking purposes. Besides, PPs showed that a tariff increase (based on the IRR calculation of actual values) is not probable in a way that IRR would cross the benchmark. **CAR was closed. ☑**

Continuation of CAR No. 12.

Since the project sponsor of Ouro project is not obliged to the taxable income (in a free translation from the Portuguese *Lucro Real*) conditions, "Lucro Presumido" and "Lucro Real" regimes can be chosen. However, there is no evidence for the project sponsor's choice of "Lucro Presumido" regime at the time of the investment decision. Since taxes in the "Lucro Presumido" regime are lower than "Lucro Real", the IRR used as financial indicator for Ouro project is very conservative.

Taxes	Lucro presumido	Lucro real
PIS/COFINS	3.65%	9.25%
CSLL/IR	Based on the revenue base for income and social taxes	Based on the net income

In the "Lucro presumido" regime, the IRR of Ouro project is 8.06%. In the "Lucro Real" regime, the IRR is 5.46%. Please refer to the financial spreadsheets attached to this response.
In order to demonstrate that "Lucro presumido" regime was chosen by the project sponsor, the Balance sheet of Ouro project can be checked, page 14 (attached to this response).

- O&M costs
PPs attached to this response the Balance sheet of Araputanga Centrais Elétricas S/A published by D.O.U. (Diário Oficial da União) in July 2005. See PPs response in the "investment" item mentioned above. According to the Balance sheet, operational costs represent 4.4% of the total investment. This estimative is cosistent to the value suggested by Eletrobrás/MME publication "Diretrizes para estudos e projetos de Pequenas Centrais Hidrelétricas". The report presents an estimated value of 5% of the total investment for annual O&M costs as reference for the feasibility/financial analysis for small hydroelectric projects.

Continuation of CAR No. 12.

- Cross-checking evidence

Spread of financing was reviewed considering the investment decision context. Please refer to the cash flow reviewed and documented evidence attached to this response.

PPs provided reference for the estimated values, including cross-check references available at the time of the investment decision. In addition, a comparison between estimated and actual investment values was made as requested by DOE.

Table 1 – Comparison between estimated (including cross-check references) and actual costs

Parameter	Estimated	Reference	Cross-checking	Reference	Actual	Reference
Investment (BRL/MW)	3,565,731	Balance sheet of Antonio Brennand small hydropower project	3,931,848	BNDES Annual Report 2005.	4,529,563	Balance sheet of Ouro small hydropower plant (2009)
O&M costs (% total investment)	4.38%		5%	Eletrobrás/MME. "Diretrizes e estudos de projetos de pequenas centrais hidrelétricas".	2.7%	
Energy price (BRL/MWh)	115.00	Energy auction conducted in December 2005	70.86	CCEE. Energy auctions 2004. "Gestão do Sistema Elétrico Interligado" presentation.	140/155	PPA signed on 01/12/2007 and sales of receipts

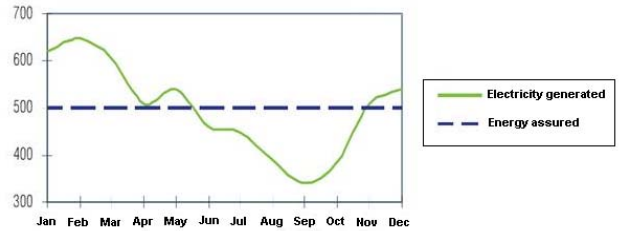
Table 1 is applicable to ACM0002, version 12.1

Continuation of CAR No. 12.		As can be seen in the table above, although a higher energy price was negotiated for Ouro project (28% higher than the estimated price), the actual investment also increased (27% higher than the estimated value). Regarding O&M costs, PPs call attention to the fact that Ouro started operations in the middle of 2009 and, therefore, O&M costs of this year did not represent an operational full year of the project (i.e. it would be reasonable to consider 5.4% of investment). PPs attached to this response the cash flow reviewed including references for the input values, including cross-check reference available at the time of the investment decision. In addition, another cash flow was made considering the "Lucro Real" regime. Please refer to the PPs response in CAR 12 (taxes item). The analysis of the IRR of the project is presented in the table below. As mentioned in "investment" item, to the understanding of the PPs, it is not reasonable to conduct an investment analysis based on actual investment, energy price, O&M costs, and others. The Additionality Tool clearly states that "*input values in all investment analysis should be valid and applicable at the time of the investment decision*". Since values considered in the investment analysis shall be based on data valid and applicable at the time of investment decision, the crossing-check shall be based on documented evidence also available at that time. However, as insistently requested by DOE, PPs made an analysis of the IRR based on actual values of the project. In addition, DOE also requested to PPs conduct a sensitivity analysis of the electricity price (for the period not covered by the signed PPAs) until the "actual" IRR reaches the benchmark. Although PPs do not agree with this approach since, to the understanding of the PPs, there is no sensitivity analysis for actual values and, therefore, the sensitivity analysis should be conducted only in the IRR available at the time of the investment decision, PPs made this analysis as requested by DOE. **Table 2 – IRR analysis based on the input values available at the time of the investment decision in the "Lucro Presumido" and "Lucro Real" regimes and actual values**	

Continuation of CAR No. 12.

Parameter			Estimated "Lucro Pre-sumido"	Estimated "Lucro Real"	Actual	
		Original IRR	8.06%	5.46%	12.08%	
		Investment (-10%)	10.91%	7.65%	-	
		Energy price/ electricity generation (+10%)	11.18%	7.77%	-	
		Costs reduction (-10%)	9.93%	6.87%	-	

As can be observed, the IRR remains lower than the benchmark in all scenarios analyzed. The results above demonstrate that the project is not financially attractive even when parameters change in favor of the project. In the case which the "actual" IRR reaches the benchmark, the electricity price should be approximately BRL 210/MWh. In order to demonstrate that this price is not a reasonable scenario, PPs analyzed the historical prices in the spot market from the operation start of the project (July 2009) to the most recent information available (January 2011). During this period, the highest price paid for the South region was BRL 169.53/MWh. This is a public information available at CCEE's website: http://www.ccee.org.br/cceeinterdsm/v/index.jsp?vgnextoid=2a8ca5c1de88a010VgnVCM100000aa01a8c0RCRD>. Therefore, a price of BRL 210/MWh (to the "actual" IRR reaches the benchmark) is not reasonable in the project activity context.
Regarding the differences related to the estimated electricity generation (considered in the PDD) to the one monitored (for the "actual" IRR calculation), PPs clarify that estimated electricity generation presented in the PDD is based on the energy assured of the project. As mentioned in the PPs response of the Validation Protocol, the energy assured is calculated based on the guaranteed/average energy and forced/programmed unavailability following the methodology established by ANEEL. The electricity commercialization is made by considering the energy assured of the projects.

Continuation of CAR No. 12.		According to ANEEL explanations (http://www.aneel.gov.br/arquivos/pdf/caderno3capa.pdf): "*….the energy assured is established independently of the real electricity generation; energy assured is associated to the estimated long-term operational conditions of power plants, assuming a specific risk of electricity supply (deficit) mainly when electricity generation is related to hydrologic variability whose hydropower plants are subjected to*".  **Figure 1 –Exemplification of electricity generation and energy assured of a hydropower plant** **Source: Cadernos Temáticos ANEEL – energia assegurada – April, 2005** Considering explanations above, it is reasonable the identification of a slight difference between the estimated electricity (based on the energy assured) and the monitored one. It is important to mention that the considered period for the calculation of the average of electricity in the "actual" IRR is from October 2009 to September 2010, which results in 6,327 MWh/month, *i.e.* 75,921 MWh/year. This result demonstrates that there is a difference of less than 1% between the estimated electricity considered in the PDD and IRR spreadsheet to the one monitored, which it is reasonable based on the explanations related to energy assured presented above. Regarding the spread of financing, PPs reviewed the project cash flow based on reference spread available at the time of the investment decision. In addition, PPs considered the actual spread of financing according value presented in the financing contract for the "actual" IRR calculation.	

Corrective Action Request No.13. The PDD mentions that the internal rate of return of the project was calculated for a 15 year period, as this is the default period used by Brennand Group to evaluate their projects once from this period on the variation is minimal. However, paragraph 3 of the Guidance on the assessment of investment analysis mentions that the project IRR shall as a preference reflect the period of expected operation of the underlying project activity (technical lifetime), which is in the project case 25 years and in the case that a shorter period is chosen, a fair value of the project activity assets should be included at the end of the assessment period. Thus, please revise the IRR calculation respectively.	B.5.12.	**Answer 23.03.2009** The internal rate calculation was revised. Please refer to the second version of the PDD. Considering that the project lifetime, as mentioned in the PDD, is 25 years and the cash flow spreadsheet considered 25 years, project participants do not need to include the residual value in it. According to the "Guidance on the assessment of investment analysis," residual value should only be included when technical lifetime is not the chosen alternative. Moreover, changes in depreciation wouldn't changes the IRR since the project is taxed over assumed income. **Answer 16.06.2009** See revision of the project cash flow attached to this response. E-mail exchange from manufacturers/suppliers demonstrating the equipments lifetime is attached to this response. For depreciation calculation, see PPs response in CAR 13. **Answer 03.02.2010** As explained by the PPs in CAR 4, according to ANEEL Resolution nr. 537, issued on 14/10/2003, Art 8, the project concession is valid for 30 years from the issuance of this Resolution. This period also includes the project design/study and construction, *i.e.*, the project concession is from 2003 to 2033.	**DOE´s first answer:** -The IRR calculation does not consider 25 years as operational lifetime yet, but just a little bit more than 23 years (In 2006 the hydro-plant is not operational yet and in 2007 only for 3 months according to the IRR calculation file), whereas the PDD in chapter C.1.2. mentions 25 years as operational lifetime. Please revise the IRR calculation and adopt 25 operational years as mentioned in chapter C of the PDD. -Please still clarify, why an operational lifetime of 25 years has been chosen, as during the on-site visit it was communicated to the validation team that the technical lifetime is supposed to be longer than 25 years. Please provide the respective evidence. -the validation team does not agree with the PPs not to consider a fair value, as §4 (independent to see from §3) of the Guidance on the assessment of investment analysis mentions that "the fair value of any project activity assets at the end of the assessment period should be included as a cash inflow in the final year….It is expected that such fair value calculations will include both the book value of the asset and the reasonable expectation of the potential profit or loss on the realization of the assets." Thus, PPs are requested to include such a fair value in the IRR calculation. -Besides, it is not clear to the DOE how it would be in line with accounting principles to use a depreciation of 3.33% p.a. which results in a residual value after 25 (operational lifetime) years, which however is not considered in the IRR calculation. PPs should clarify.

Continuation CAR 13		Since Ouro project started operation in 2009, the estimated project lifetime is 24 years. Therefore, although equipment manufacturers recommended 30 years lifetime for the turbines (with good maintenance conditions), the project concession is valid until 2033. Considering explanations above, the inclusion of the fair value is not necessary. Regarding depreciation, see PPs response in CAR 12. **Answer 11.05.2010** As mentioned in the PPs response on February 3rd, 2010, the project concession is valid for 30 years from the date of the publication of ANEEL authorization, *i.e.* until 2033. Therefore, the project cash flow was reviewed considering the project lifetime (expected operation). See PPs response in CAR 4. Although the project had the authorization to explore the hydro potential of Ouro until 2033, the project was expected to become fully operational in 2009. Therefore, PPs included the residual (fair) value in the IRR calculation as requested by DOE. Considering explanations above, PDD was reviewed considering the revision of the IRR. As can be seen in the PDD (version 5), the original (and the IRR of the sensitivity scenarios) remains lower than the project benchmark, demonstrating that if this revision of the cash flow was considered at the time of the investment decision, Ouro would not be the most attractive scenario.	**DOE´s 2nd answer:** -Email communication with the turbine supplier and confirmed by Brennand for the generators assume an operational lifetime of 30 years, thus PPs are requested to calculate the IRR for 30 years. EB51, Annex 58, paragraph 3 mentions that "both project IRR and equity IRR calculations shall as a preference reflect the period of expected operation of the underlying project activity (technical lifetime), or if a shorter period is chosen – include the fair value of the project activity assets at the end of the assessment period". However, such a fair value is neither considered in the IRR calculation. PPs are requested to clarify. -Regarding depreciation: See CAR 13; besides the following has not been responded (DOE´s 1st answer): It is not clear to the DOE how it would be in line with accounting principles to use a depreciation of 3.33% p.a. which results in a residual value after 25 (operational lifetime) years, which however is not considered in the IRR calculation. PPs should clarify.

Continuation CAR 13			**DOE´s 3rd answer:** As per EB51, Annex 58, paragraph 3 it is clearly mentioned that "both project IRR and equity IRR calculations shall as a preference reflect the period of expected operation of the underlying project activity (technical lifetime), or if a shorter period is chosen – include the fair value of the project activity assets at the end of the assessment period". Besides, as equipment is not fully depreciated until 2033, a residual value has to be considered. PPs are requested to consider such a residual (fair) value in the IRR calculation. **DOEs 4th answer:** A residual value has been correctly considered in the IRR calculation at the end of the assessment period. The residual value was calculated by deducting the depreciation of the whole period for which IRR has been calculated from the total investment. The IRR was re-calculated however remains clearly below the benchmark. However see CAR 12 (items regarding depreciation). **DOEs 5th answer:** **As CAR 12 is closed this CAR was closed. ☑**

Corrective Action Request No.14. 1. It should be discussed in step 4b) why only similar project activities from the years 2005, 2006 and 2007 are analysed. 2. Distinctions between the proposed project activity and other similar project activities should be demonstrated not only for the hydroplants which started operation in 2007, but also for hydro plants of other relevant years.	B.5.17.	**Answer 23.03.2009** 1) Project Participants believe that data from the latest three years available at the time of the PDD elaboration (2005 to 2007) is sufficient for the common practice analysis. 2) Distinctions between small hydro power plants from 2005 to 2006 were included in the new version of the PDD (version 2). **Answer 16.06.2009** 1) Common practice analysis made in the PDD (version 2) was based on small hydropower plants that started operations from 2005 to 2007, considering that Ouro project started the validation process in the end of 2008 (See link to the project GSP: http://cdm.unfccc.int/Projects/Validation/DB/R37U72JOMXJWEWWP5RD8PVABDT35NQ/view.html) and, therefore, this data was the most recent publicly available data at that time. Also, PPs believed that an analysis of three years was sufficient to conduct the common practice analysis. Considering DOE comments, common practice was reviewed in the new version of the PDD (version 3) following the Additionality Tool statement about the concept of similar activities. Moreover, 2008 year data was included in this analysis. 2) Spreadsheet with small hydropower plant that started operation from 2004 to 2008 is attached to this response. This spreadsheet was taken from ANEEL website according references mentioned in the PDD. All other evidences used in the common practice analysis are publicly available data.	**DOE´s first answer:** 1) The additionality tool requires in sub-step 4a (1) to "provide an analysis **of any other activities that are operational and that are similar** to the proposed project activity". If the PPs choose to include only the years 2005 to 2007 into the common practice analysis, then it should be clearly demonstrated in the PDD why the projects entering into operation in the years before cannot be considered as similar. Respective evidence(s) should be provided to the DOE. 2) Evidence(s) for the distinctions between the project activity and similar project activities should be submitted to the DOE. **Additional Requests according to the new VVM:** -It should be provided evidence(s) to the DOE why the Southern Region is considered as the appropriate region for the common practice analysis. -Evidence(s) used for analyzing similar project activities should be submitted to the DOE. **DOE´s 2nd answer:** -the exact data sources for similar project activities should be indicated in the PDD and communicated to the validation team for further assessment; -PPs should clarify why 2 project activities (Da Ilha and Jararaca) (both above 24 MW) are indicated in Table 12, even though PPs have chosen a scale criterion to consider only hydro plants between 8 and 24 MW.

Continuation CAR 14		**Answer 03.02.2010** References of the data source information used in the common practice analysis are presented in the PDD. In addition, a spreadsheet with the similar activities was provided to DOE. However, considering the DOE comments, PPs included source of data in the spreadsheet. In addition, PPs review the presentation of the sources/references in the PDD (instead of use the Annex 5, references were provided in as footnotes to facilitate the crosscheck. The criteria between 8 MW and 24 MW (installed capacity -50% and +50% in comparison to Ouro project) is based on the EB request for Dachunhe hydropower plant (ref.: 2010). TÜVSÜD's response for the request for review is attached to this response. Considering DOE comments, PPs reviewed the PDD (version 4) including Santa Catarina and Paraná States in the common practice analysis. In addition, explanations about the choice of the Southern region as one of the criteria as reference for the common practice analysis were included in the PDD. Please refer to the fourth version of the document.	- An evidence, why the State of Rio Grande can be considered as the appropriate region for the common practice analysis, has not been submitted to the validation team yet. PPs are requested to demonstrate by evidences that in Rio Grande State exist different conditions for SHP than in States like e.g. Sao Paulo, Santa Catarina etc. **DOE´s 3rd answer:** -Figures 5 and 6 in the PDD use different scales, thus comparison between the two figures is almost impossible. PPs are requested to revise. -Figure 7 ("Climate Zones of Brazil") contains Portuguese expressions. Please translate everything into English. -The region for the common practice analysis has been changed from the "State of Rio Grande" to "Southern region of Brazil". However, the concrete differences between "Southern region of Brazil" and other regions/States have not been illustrated yet. Page 24 refers to the precipitation of Porto Alegre and compares with other State capitals, however no comparison between "Southern region of Brazil" with other regions is explicitly conducted. -It should be explained in the PDD which States are included in "Southern region of Brazil".

Continuation CAR 14		**Answer 11.05.2010** - As mentioned in the footnote 40 of the PDD (version 4), Porto Alegre was not included in the figure 5, since the comparison of capitals precipitation is limited to 4 at the INMET's website. Scale cannot be chosen at the INMET's website. However, it can be seen that the precipitation curve differs from the other regions of Brazil (minimum of 86 mm and maximum of 140 mm). Other sources of information can be considered by DOE. - Figure 7 and all information related to the climate zones of Brazil were translated to English. - As mentioned in the PDD, Brazil has an extension of 8,514,876.599 square kilometers with different climate conditions as presented in figure 7, This difference obviously influences the technical aspects of a hydropower plant, mainly small hydropower plants. Source of information related to the climate zones is also presented in the PDD, which is based on the Brazilian Instute of Geography and Statistics (from the Portuguese *Instituto Brasileiro de Geografia e Estatística – IBGE*) PPs clarify that the precipitation of other capitals from different regions of Brazil was used just to support the affirmation of the differences among climate regions. - States of the Southern region of Brazil were included in the new version of the PDD (version 5).	-PPs claim that hydro-plants between 8 MW and 24 MW in Southern Region of Brazil entering into operation from April 2004 are considered in the common practice analysis: why then the following hydro-plants are not considered: -Ourinhos (UG1), Ourinhos (UG2) and Ourinhos (UG3) in the States of Parana/Sao Paulo and each having an installed capacity of 14.7 MW (the first two ones) and 14.6 MW (the third one) -Cacador (Rio Grande do Sul) having an installed capacity of 22.50 MW and in operation since October 2008 -the following hydro-plant in operation since 2009 or 2010 should be considered in the common practice analysis: -Linha Emilia, Rio Grande, 19.50 MW -Eng. Ernesto Jorge Dreher, Rio Grande, 11.45 MW -Rodeio Bonito, Santa Catarina, 14.68 MW -Angelina, Santa Catarina, UG1 and UG 2 each of 12.50 MW -Arvoredo, Santa Catarina, 13 MW The additionality Tool does not limit the common practice analysis to a certain point of time (like investment decision date or project´s starting date) but "provide an analysis of any other activities that are operational and that are similar to the proposed project activity". Thus the DOE finds it necessary to consider all projects which are operational until the end of the validation phase. Common practice analysis should be revised and evidence(s) for the distinctions between the project activity and similar project activities should be submitted to the DOE (if applicable).

Continuation CAR 14		- Regarding the hydropower plants analyzed in the common practice analysis, note that: ▪ Ourinhos is not a small hydropower plant. It has 44 MW of installed capacity (http://www.aneel.gov.br/aplicacoes/capacidadebrasil/GeracaoTipoFase.asp?tipo=1&fase=3) and therefore cannot be compared with the proposed project activity. ▪ Caçador small hydropower plant was considered in the common practice analysis as can be seen in the PDD (version 4) and common practice spreadsheet. Caçador was selected in PROINFA. - To the understanding of the PPs, it is not reasonable to use the CO_2 emission factor from 2007 (data available at the time of the validation start) – CAR 17 – and compare the proposed project activity with small hydropower plants that started operations currently (2009 and 2010). PPs agreed that the common practice is not limited in time but the CO_2 emission factor neither. All discussion of the PDD shall be based on a unique argument. Since small hydropower plants that started operations in 2008 was the baseline scenario information available at the time of the validation start, it should be considered for the common practice analysis; it is not reasonable to consider future scenarios. Therefore, hydropower plants which started operations in 2009 and 2010 were not included in the common practice analysis of the PDD (version 5).	**DOEs 4th answer:** -same scale should be used when comparing precipitation of different regions (otherwise it does not allow a clear comparison for the reader). Besides, it is not completely correct to say that "in July-September the precipitation increases in Porto Alegre, meanwhile the precipitation decreases in other capitals of the country". According to the Figure 5, precipitation increases from July to August in North region, from August to September in Midwest and Southeast region. 1 -Title of Figure 7 is still in Portuguese. Besides, Figure 7 should be placed after Figures 5 and 6 in order to keep a chronological order. 2 -Figure 7 should clearly delineate Southern Region as well as other regions of Brazil. So far climate zones are indicated in figure 7 however not the regions belonging to these climate zones. 3 -The States Parana, Santa Catarina and Rio Grande do Sul States are included in Southern Region of Brazil. The same has been indicated in the revised PDD. 4 -the provided link for evidencing that Ourinhos has an installed capacity of 44 MW does not open. Please provide the correct link. 5 -Cacador was considered in the common practice analysis. -The validation team does not understand the decision taken by the PPs not to consider hydro-plants which started operation in 2009 and 2010 in the common practice analysis. As already mentioned before, the additionality Tool does not limit the common practice analysis to a certain point of time (like investment decision date or project´s starting date) but "provide an analysis of any other activities that are operational and that are similar to the proposed project activity".

Continuation CAR 14		**Answer 22.12.2010:** Considering the DOE comments, the PPs took the following actions: -Scale of the precipitation parameter was reviewed in the new version of the PDD (version 6) for a clear comparison among the Brazilian regions. In addition, inclusions of explanations related to the climate influence in the hydrologic process and temperature (ºC), humidity (%) and evaporation (mm) parameters for Northern, Southern, Southeastern and Midwestern regions of Brazil were made. -Section was reviewed. Please refer to the new version of the PDD. -The purpose in presenting figure 5 is to demonstrate the climate zones of Brazil. This figure clearly distinguishes the Southern region and its climate. The states of the Southern region of Brazil are well known: Paraná, Santa Catarina and Rio Grande do Sul. -Ok. -Please click on the following link: http://www.aneel.gov.br/aplicacoes/capacidadebrasil/SelecaoDaUsinaPasso1.asp. In this link, DOE can check all power plants of the Brazilian electric system. Note that the name of the plant (in this case is Ourinhos) should be inserted. By looking at the ANEEL's website, DOE can check that this project is not a small hydropower plant, but a large hydro (44MW installed capacity). -Ok. -Considering DOE comments, PPs included the operational small hydropower plants that started operations from March 2004 (reform of the electricity sector) to the most recent information available until the preparation of this response.	**DOEs 5th answer:** -Scale of the precipitation parameter was revised and allows a comparison for the reader now. Other parameters like temperature, humidity and evaporation for North, South, Mid-west, South-east region of Brazil are indicated in the final PDD. -Figure 7 has been revised. -link for evidencing that Ourinhos has an installed capacity of 44 MW has been provided to the validation team. -The common practice analysis in the final PDD considers hydro-plants with a capacity between 8 MW and 24 MW (+/- 50% of the installed capacity of the project plant) in South Brazil (**Paraná, Santa Catarina and Rio Grande do Sul states)** that started operations from March 2004 (after law N° 10.848 (http://www.planalto.gov.br/CCIVIL/_Ato2004-2006/2004/Lei/L10.848.htm) regarding the reform of the electricity sector entered into force) until end of 2010. All except one hydro plant (Eng. Ernesto Jorge Dreher) receive incentive either from CDM or PROINFA. Eng. Ernesto Jorge Dreher hydro plant receives special incentive for the development of new infrastructure (http://www.receita.fazenda.gov.br/Legislacao/RegimeReidi/RelacaodasPJIN758.htm). Similar project activities have been researched with **http://www.aneel.gov.br/area.cfm?idArea=37&idPerfil=2, http://cdm.unfccc.int/index.html, http://www.eletrobras.gov.br/.** Thus, it was clearly shown that Ouro project is not a common practice. **CAR was closed. ☑**

Corrective Action Request No.15. Please explain in more detail and more project related how the CDM approval helps to overcome the economic and financial hurdles.	B.5.18.	**Answer 07.11.2008** The requested information was included in section B.5. Please refer to the second version of the PDD. **Answer 16.06.2009** As described in the PDD (version 2), information that "*revenues obtained with the selling of the carbon credits of the project are considered essential to overcome risks related to the high volatility of energy prices in Brazil*" was taken from Rija Investimentos Energéticos Ltda. minutes of meeting held in April 2006, before the PPA signature. Therefore, at the time of the decision to purchase the Ouro plant, there were many uncertainties. Although the high volatility of energy prices existed at the time of decision making, Ouro project signed PPAs in end of 2007 and, therefore, variations on parameters made in the project sensibility analysis are the most credible and realistic assumptions taken for Ouro project. See sensitivity analysis in attached to this response. **Answer 11.05.2010** Please refer to the PPs response in CAR 12.	**DOE´s first answer:** B.5. explains that "revenues obtained with the selling of the carbon credits of the project are considered essential to overcome risks related to the high volatility of energy prices in Brazil". If energy prices are highly volatile, how is it then guaranteed that energy prices will not increase by more than 10% (this percentage was taken for the sensitivity analysis) resulting in an IRR equal or higher than the benchmark. PPs should clarify. **DOE´s 2nd answer:** See CAR 9 (item 1) and CAR 13 regarding tariff. **DOE´s 3rd answer:** Further PPAs (except the 2 SADIA PPAs already submitted) should be submitted to the validation team for further assessment. PDD has to be updated (if applicable). **DOEs 4th answer:** See CAR 12 (regarding tariff) **DOEs 5th answer:** **As CAR 12 was closed, this CAR was closed as well. ☑**
Corrective Action Request No.16. Please mention in B.6.1. of the PDD the formula for the determination of emission reductions.	B.6.1.12.	**Answer 15.12.2008** The formula was included in the requested section of the PDD. Please refer to the second version of the PDD.	**DOE´s first answer:** The formula for the determination of emission reductions was included in B.6.1. **CAR was closed. ☑**

Corrective Action Request No.17. The ex-post vintage of OM and BM factors should be explicitly mentioned in B.6.1. of the PDD.	B.6.2.2.	**Answer 15.12.2008** The information of how the emission factor was calculated was included in Annex 3 of the PDD. The *ex-post* vintage for calculation of the emission factor was mentioned in Annex 3. Please refer to the second version of the PDD. **Answer 16.06.2009** OM and BM emission factors are calculated by the Brazilian DNA and the only values publicly available is the average of CO_2 emission factor in tCO_2/MWh: - BM annually and; - OM monthly, daily and hourly. Methods are not explicit available. According to 43rd EB meeting: "*DOEs may request the DNA for an opportunity to assess that the 'tool to calculate the emission factor for an electricity system' was correctly applied in calculating the grid emission factors at the offices of the DNA, observing their specific requirements, including confidentiality and non-removal of data from their offices*". **Answer 03.02.2010** According to the "Tool to calculate the emission factor for an electricity system", the most recent available information shall be considered at the time of validation. Therefore, the emission factor should be based on 2008 data.	**DOE´s first answer:** Annex 3 now clearly mentions that for the calculation of OM and BM emissions factors the ex-post vintage is chosen, however . Regarding OM: It should be clearly mentioned which of the options B1, B2 or B3 is chosen and further on whether (a) 10% or (b) The quantity of electricity displaced by the project activity during hour h divided by the total electricity generation in the grid during that hour h is applied. Regarding BM: The choice of options as per the Tool is not explained in the PDD yet. Please do the same. **DOE´s 2nd answer:** The PDD mentions now that **"**the OM refers to the group of existing power plants whose current electricity generation would be affected by the proposed CDM project activity. For the OM calculation, the Brazilian DNA uses option c – Dispatch data analysis OM. The dispatch data analysis is based on the power units that are actually dispatched at the margin during each hour *h* where the project is displacing grid electricity. Since this option does not permit the vintage of *ex-ante* calculation of the emission factor, this parameter will be updated applying the numbers provided by the Brazilian DNA. The BM refers to the group of prospective power plants whose construction and future operation would be affected by the CDM proposed activity. In terms of data vintage, option 2 was used, *i.e.* BM will be updated annually, *ex-post*."

Continuation of CAR No. 17		However, since 2008 data presents an emission factor of 0.3112 tCO_2/MWh (a significantly higher value when compared to those for 2006 and 2007), PPs changed the EF used for Ouro project to the average for the years last three years (2006, 2007 and 2008) in order to be conservative, which resulted in an emission factor of 0.2326 tCO_2/MWh. Since the option used for the OM calculation is the dispatch data analysis, the EF will be updated at the time of the project verification. Please refer to Annex 3 of the PDD. In addition, PPs included information in the Monitoring Plan section that EF will be updated at the time of the project verification as requested by DOE. **Answer 11.05.2010** Considering DOE comments, PPs considered the CO_2 emission factor and estimated emission reductions in the new version of the PDD (version 5).	The provision of this information is considered to be sufficient in the opinion of the validation team. It is also accepted that the explanation of the application to each step of the "Tool to calculate the emission factor for an electricity system" was taken out, as EFOM and EFBM are calculated by the Brazilian DNA for the Brazilian Interconnected Grid, i.e. PPs have no influence on the calculation of both EFOM and EFBM. However It is not clear to the validation team, why PPs changed the emission factor data for estimation, once the emission factor of 0.1842 was calculated by data available at commencement of validation. PPs are requested to use those data again. **DOE´s 3rd answer:** 2008 EF data were not available at the commencement of validation yet, when PDD was uploaded for the GSP (GSP period: 10/09/2008 to 09/10/2008) thus the EF calculated based on 2007 data, namely 0.1842 tCO2/MWh, should be used for ex-ante calculation. **DOEs 4th answer:** EF calculated based on 2007 data, namely 0.1842 tCO2/MWh was correctly used (as requested) in the revised PDD for ex-ante calculation. **CAR was closed. ☑**
Corrective Action Request No.18. Regarding the parameter CAP_{BL} and A_{BL}: Please revise the justification of choice of data for each parameter.	B.6.2.7.	**Answer 15.12.2008** The justification of choice of data of the mentioned parameters was revised. Please refer to the section version of the document.	**DOE´s first answer:** Justification of choice of parameters CAP_{BL} and A_{BL} was revised. **CAR was closed. ☑**

Corrective Action Request No.19. Please revise the denomination for the columns "electricity dispatched into the grid" and "Net energy generation" in B.6.3. of the PDD.	B.6.3.2.	**Answer 13.10.2008** The requested information was revised accordingly to methodology. Please refer to the second version of the PDD.	**DOE´s first answer:** The table in B.6.3. indicates now total electricity produced and electricity supplied to the grid. **CAR was closed. ☑**
Corrective Action Request No.20. PPs are requested to add $EF_{grid,OM,y}$ and $EF_{grid,BMy}$ in B.7.1. of the PDD.	B.7.1.1.	**Answer 09.12.2008** The relevant parameters required for the calculation of the emission factor are the build margin and the operating margin. Tough the methodology does not requires these parameters to be monitored (the only parameter that must be monitored is the combined margin), they were included. Please refer to the second version of the PDD.	**DOE´s first answer:** The parameters $EF_{grid,OM,y}$ and $EF_{grid,BMy}$ were included in B.7.1. of the PDD as requested. **CAR was closed. ☑**
Corrective Action Request No.21. Regarding the parameter "Electricity supplied by the project activity to the grid (in MWh)": Please revise the description and accuracy. Please indicate a standard.	B.7.1.2.	**Answer 23.03.2009** The description and accuracy of the parameter was revised. Please refer to the second version of the PDD.	**DOE´s first answer:** B.7.2. now indicates an accuracy of 0.2% of each of the 4 meters (two will be installed in the hydropower plant and the other two (principal and backup) will be located at the SE Campos Novos substation for billing purposes. The meters will be calibrated by an INMETRO accredited company and according to ONS procedures every 2 years. The description of the parameter "electricity supplied by the project activity" has been revised. **CAR was closed. ☑**
Corrective Action Request No.22. Regarding parameter Cap_{PJ} : Please indicate the data unit as per the methodology and indicate in measurement method that the parameter will be annually monitored.	B.7.1.7.	**Answer 13.10.2008** The data unit and the information regarding the up-dating of the parameters were revised. Please refer to the second version of the PDD.	**DOE´s first answer:** Regarding parameter Cap_{PJ}: Data unit has been revised; information of annual monitoring has been included. **CAR was closed. ☑**

Corrective Action Request No.23. Regarding the parameter A_{PJ}: Please revise data unit, measurment method and indicate monitoring frequency.	B.7.1.8.	**Answer 23.03.2009** The parameter was revised. Please refer to the second version of the PDD. **Answer 03.02.2010** Considering DOE comments and ACM0002 methodology, PPs reviewed the PDD (version 4) including the reservoir area as a parameter to be monitored during the project crediting period. However, PPs clarify that the reservoir area of hydropower plants is established in the project design approved by the environmental Agency of the State. Considering that the power density of the project is 177.77 W/m^2, there is no need to monitor the reservoir area. The reservoir area officially considered for projects in Brazil is the ones in the level maximum normal of the reservoir (from the Portuguese *Nível Máximo Normal – NA MÁX. NORMAL*). This parameter is based on historical data of the river - at least for 30 years – considering the average water level of the reservoir. In the case of Ouro project, the reservoir area in the NA MÁX. NORMAL is 0.09 km^2. This value was established considering the period of historical data from 1931 to 2005.	**DOE´s first answer:** Regarding the parameter A_{PJ}: Data unit and measurement method have been revised; information of annual monitoring has been included. **DOE´s second answer:** PPs modified the parameter $\mathbf{A_{PJ}}$ from B.7.1. to B.6.2. what is not clear to the validation team. The parameter “area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full” has to be monitored independent on the size of the reservoir or power density. ACM0002, version 11, clearly mentions the parameter in “Data and parameters monitored”. Chapters B.6.2., B.7.1. and B.7.2. have to be updated. **DOE´s 3rd answer:** The parameter “Area of the reservoir measured in the surface of the water” has been included into the monitoring plan (B.7.1. and B.7.2.) and has been taken out from B.6.2. **CAR was closed. ☑**

Continuation of CAR No. 23		On the other hand, the reservoir area in the level maximum maximorum (from the Portuguese *Nível Máximo Maximorum – NA MÁX. MAXIMORUM*[1]) is the highest water level of the reservoir. In the case of Ouro project, it is 0.14 km^2. If we considered this number as the reservoir area of the project, its power density would be 114.28 W/m^2, still many times higher than the criteria to consider the project emissions from hydropower reservoirs (10 W/m^2). Besides, if the water level reaches the NA MÁX. MAXIMORUM, the spillway drains the water from the reservoir. Therefore, the reservoir area of the project will not increase.	
Corrective Action Request No.24. The operational and management structure has to be described (preferably with an organigram for the CDM project activity) in B.7.2.	B.7.2.1.	**Answer 10.12.2008** The organogram was included in section B.7.2. Please refer to the second version of the PDD.	**DOE´s first answer:** An organigram of the operational and management structure has been included in B.7.2. of the PDD. **CAR was closed. ☑**

[1] Definition of "Nível Máximo Normal" and "Nível Máximo Maximorum" is available in the technical glossary of terms published by ONS, Sub-modulo 20.1: <http://www.ons.org.br/home/>.

Corrective Action Request No.25. Please be more specific who within Brennand will be responsible for data collection and archiving.	B.7.2.2.	**Answer 31.12.2008** The requested information was revised accordingly to methodology. Please refer to the second version of the PDD. **Answer 16.06.2009** Brennand Energia will proceed with the project monitoring according ONS procedures as adopted in the others small hydropower plants of the group: - Antontio Brennand (already registered under CDM); - Indiavaí (already registered under CDM); - Ombreiras (already registered under CDM); - Ibirama (under validation). E-mails and letters exchange between project sponsor and power utility/ONS for the project monitoring are attached to this response.	**DOE´s first answer:** B.7.2. mentions that in the 1st year of operation there will be 4 operators at the plant. In the subsequent years only one operator will be working at the plant because all the operation will be remotely controlled by the Operation and Management Center (COG) located in Cuiaba. Further on, it is mentioned that Brennand is preparing an operation, maintenance and emergency manual based on the procedures adopted in the other small hydro power plants of the group. Technicians will be trained previously to the start-up of the plant in the laboratories of the electrical devices supplier Grameyer. Project participants are requested to submit monitoring procedures (for data collection) or at least the content of such procedures to the validation team. **DOE´s 2nd answer:** The document "Executive Project – descriptive manual for calculation and measurements" (IRL 69) submitted to the validation team describes the applied equipment and measurement procedures and the relationship of involved parties. **CAR was closed. ☑**

Corrective Action Request No.26. 1. Please revise the information in B.7.2. and adjust it project specific to the Ouro SHP project. 2. Please mention information about the metering system (location, number of meters, owner of the meters, technical specifications of meters like model, type, calibration/testing procedures) and the approach how cross-checking and either invoicing or issuance of reports work between project owner, concessionary and possibly CCEE.	B.7.2.3.	**Answer 15.12.2008** 1. All the information presented in the mentioned section of the first version of the PDD was revised considering project specific information. Please refer to the second version of the PDD. 2. The information about the metering system was included in section B.7.2. Please refer the second version of the PDD. **Answer 16.06.2009** This information was included in the new version of the PDD (version 3).	**DOE´s first answer:** 1. Information in B.7.2. was revised to be project specific. 2. The following information is still missing: Please make clear who is owner of the meters and how cross-checking and either invoicing or issuance of reports work between project owner, concessionary and possibly CCEE. **DOE´s 2nd answer:** B.7.2. indicates now that two of the four meters that will be installed are located at the small hydro power plant, the other 2 meters at SE Campos Novos Substation. Brennand Energia will be responsible for the calibration of meters located at the power plant and the local power utility (CELESC) for the calibration of meters located at the substation. Calibration will be made every 2 years according to the procedures established by ONS. For invoice purposes, ONS recommendations will be followed and meters´ measurements will be sent in reports to CCEE. In the future, CCEE will have online access of meters´ measurements located at the substation. The Brennand Group, which controls Ouro Energética S.A., will be responsible for the maintenance of the monitoring equipment, dealing with possible monitoring data adjustments and uncertainties, reviewing of the reported results/data, caring out internal audits of GHG project compliance with operational requirements and for corrective actions. Also, the Group will be responsible for the project management, as well as for organising and training of the staff in the appropriate monitoring, measurement and reporting techniques. **CAR was closed.** ☑

Corrective Action Request No.27. The environmental impacts should be described in D.1. according to the information provided in the Environmental Control Plan.	D.1.1.	**Answer 23.03.2009** The requested information was included in section D.2. Please refer to the second version of the PDD.	**DOE´s first answer:** D.1. mentions that the proposed project activity does not result in significant environmental impacts and D.2. indicates the different programs which were/are necessary to be implemented to have obtained the construction license. **CAR was closed. ☑**
Corrective Action Request No.28. Please include the invitation letter sent to the Environmental Secretary of Rio Grande do Sul into the PDD.	E.1.2.	**Answer 23.03.2009** The requested information was included in section E.1. Please refer to the second version of the PDD.	**DOE´s first answer:** The invitation letter sent to the Environmental Secretary of Rio Grande do Sul has been included in E.1. of the PDD. **CAR was closed. ☑**

Additional Request according to the new VVM: **Corrective Action Request No.29.** Please submit an evidence to the validation team that the baseline scenario is the one as described in B.4. of the PDD.		**Answer 16.06.2009** Evidence/reference is mentioned in the PDD (version 3). All evidence used for the baseline scenario identification is traceable. See ANEEL website. **Answer 03.02.2010** Evidence of the baseline scenario is presented in the PDD (version 3). All information used for the baseline scenario is publicly available. **Answer 11.05.2010** In fact, the baseline scenario of the project activity is established by ACM0002. However, PPs included information related to the types of operational power plants in the national grid according to ANEEL data available at the time of the validation start. However, ANEEL's website is constantly updated. The information presented in the PDD related to the Brazil's installed capacity is 73.6% for hydropower plants and 26.1% for thermal power stations. As can be seen at ANEEL's website (http://www.aneel.gov.br/aplicacoes/capacidadebrasil/capacidadebrasil.asp), these figures did not significantly change; currently, hydropower plants represent 69.9% of Brazil's installed capacity and thermal power stations 24.5%. Considering DOE comments, PPs reviewed section B.4 of the PDD (Version 5) based on ANEEL's information (http://www.aneel.gov.br/arquivos/pdf/Resumo_Geral_jun_2008.pdf) available at the time of the validation start.	**DOE´s first answer:** No evidence regarding the baseline scenario has been submitted to the DOE yet. PPs are requested to do so. **DOE´s 2nd answer:** Information mentioned in footnote 17 of the PDD should be provided to the validation team including the exact web link . **DOE´s 3rd answer:** If information is publicly available (as explained by the PPs), then the same should be submitted to the validation team. **DOEs 4th answer:** The baseline scenario is the one described in ACM0002 "Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations as described in the "Tool to calculate the emission factor for an electricity system". Information about the electricity mix in Brazil provided by ANEEL has been submitted to the validation team (IRL 50). **CAR was closed. ☑**

Clarification Request No. 1. It is not clear according to the PDD why installed capacity is 16 MW, if the total nominal power capacity of turbines is 17.7 MW. Please clarify and provide a detailed explanation in the PDD.	A.4.3.1.	**Answer 13.10.2008** Although the nominal power of turbines and generators is higher than the ones described in the PDD, the SHPP is authorized only to operate with an installed capacity of 16 MW considering the historical river flow. Besides, the company won't generate more energy than the established by ANEEL once it can only commercialize the total assured energy, which is also authorized by the same agency. **Answer 16.06.2009** The information mentioned above was included in the new version of the PDD (version 3). **Answer 03.02.2010** According to ANEEL authorization and the project license, Ouro has an installed capacity of 16 MW. However, according to the equipment TAGs, we have the following (see table 2 in the PDD): Turbines: 3 x 5.919 MW = 17.757 Generators: 3 x 6.060 kVA (5.3328 MW, considering 0.88 of efficiency) = 15.998 MW Project participants clarify that the installed capacity of the project will be limited to the lowest power of the equipment. In the case of Ouro, the electricity generation will be limited by the capacity of the generators (16 MW). **Answer 11.05.2010** Please refer to the PPs response in CAR 4 (item 4).	**DOE´s first answer:** The PDD should clearly distinguish between physical installed capacity and operative installed capacity and explain and evidence the circumstances why the hydroplant is authorized only to operate with an operative installed capacity of 16 MW. **DOE´s 2nd answer:** See CAR 4 **DOE´s 3rd answer:** See CAR 4 (item 4) **DOEs 4th answer:** As CAR 4 (item 4) was closed, **CR was also closed.** ☑

Corrective Action Request No.30. PPs are requested to include information regarding the Plant Load Factor as per EB48, Annex 11, II., item 3.		**Answer 03.02.2010** The plant load factor of a hydropower plant can be obtained by dividing the energy assured to the installed capacity of the plant. In the case of Ouro project, the energy assured is 8.6 MW-ave, as presented in the project design "Projeto Básico" prepared by Intertechne in July 2008. Therefore, the plant load factor of the project is 0.54%. Considering the Annex 11 (EB 48), the plant load factor is established by a third party contracted by the project participant, *e.g.* engineering company (item b). This information was included in the new version of the PDD (version 4).	**DOE´s answer:** Information regarding the Plant Load factor (PLF) was added into the PDD. Since the assured energy (8.6 MW) was determined by an engineering company and the same is used for the calculation of the PLF, EB48, Annex 11, 3 (b) has being followed. **CAR was closed. ☑**

Clarification Request No. 2. PPs should clarify whether there were no other continuing and real actions taken to secure CDM status for the project activity (as per EB49, Annex 22, paragraph 7) mainly between April 2006 and February 2008.		**Answer 03.02.2010** According to the the "Guidelines on the demonstration and assessment of prior consideration of the CDM" (Annex 22, EB 49) proposed project activities with start date before August 2nd, 2008, for which the start date is prior to the publication of the PDD for global stakeholder process (as it is the case of Ouro project) shall demonstrate that CDM was seriously considered through documented evidence. Considering the paragraph 8 of this guidelines:"*In validating proposed CDM project activities where: (a) there is less than 2 years of a gap between the documented evidence the DOE shall conclude that continuing and real actions were taken to secure CDM status for the project activity*". Considering the timeline presented in section B.5 of the PDD and documented evidence presented to DOE, PPs are in line with the Annex 22 (EB 49). Based on the period mentioned by DOE, PPs stress that in October 2007 there is evidence of e-mails exchange between Brennand Energia and Ecopart (former Ecoinvest Carbon) for the CDM process starting, on February 15th, 2008 PPs requested validation proposals, which culminated to the CDM Validation Services Agreement signed on June 19th, 2008. Actions dated August 1st, 2006 and July 24th, 2007 were withdrawn from table 6. Please refer to the forth version of the PDD. CDM consideration evidences are attached to this response. **Answer 11.05.2010** Validation proposal request dated February 2008 is attached to this response.	**DOE´s answer:** PPs are requested to submit the validation proposals request (dated February 2008) to the validation team. Besides, see CAR 9, item 1d. **DOEs 4th answer:** Validation proposal requests have been sent to the validation team. **CAR was closed. ☑**

Corrective Action Request No.31. The IRR excel calculation tool has some Portuguese expressions. Please make sure that the whole content in the files which are finally submitted to EB is in English language.		**Answer 03.02.2010** IRR excel calculation was reviewed considering DOE comments. Spreadsheet is attached to this response. **Answer 11.05.2010** Please refer to the IRR spreadsheet reviewed. Financial spreadsheets were translated to Portuguese. **Answer 22.12.2010** Please refer to the reviewed financial spreadsheets.	**DOE´s answer:** The IRR excel file still contains expressions in Portuguese, like e.g. in worksheet "cash flow" cells A7, A8, A18, A19, A24, A25 or in other worksheets like "Summary", "Investment Sensitivity" and so on. PPs are requested to submit the IRR excel spreadsheet WITHOUT any Portuguese expressions. **DOEs 4th answer:** There are still some Portuguese expressions in the worksheet "Inputs", amongst others line 25, line 62 to 65. **DOEs 5th answer:** All Portuguese expressions have been removed. **CAR was closed. ☑**
Corrective Action Request No.32. The Tool to calculate the emission factor for an electricity system should be updated to version 02, as the project cannot be submitted within the grace period for registry.		**Answer 03.02.2010** Version of the Emission Factor tool was updated in the new version of the PDD (version 4).	**DOE´s answer:** Version of the "Tool to calculate the emission factor for an electricity system" was updated to version 02. **CAR was closed. ☑**
Additional requests due to Technical Review			
Corrective Action Request No.33. The measurement frequency of $EG_{facility,y}$ should be corrected from "hourly" to continuously". Moreover the parameter should be recorded in hourly frequency due to the application of dispatch data analysis OM in $EF_{grid,OM,y}$ determination.		Answer 21.02.2011 Measurement frequency and recording of $EG_{facility,y}$ parameter were reviewed in the PDD (version 7).	DOE´s answer: Measurement and recording frequency were corrected to "Continuously" and "Hourly" respectively. **CAR was closed. ☑**

Clarification Request No. 3. PPs should clarify why a tax rate of 34% was used for beta determination whereas the income tax rate in the equity IRR calculation is 25% (based on 8% of the revenues). There seems to be an inconsistency.		**Answer 21.02.2011** Please refer to the formula in the line 39 of the project cash flow ("Cash Flow" sheet). Income taxes (25%) shall be sum with social taxes (9%).	DOE´s answer: The answer given by the PPs is accepted. The DOE validated 34% as sum of 25% and 9% (social taxes), which are the payable income taxes. **CAR was closed. ☑**

Table 3 Unresolved Corrective Action and Clarification Requests (in case of denials)

Clarifications and / or corrective action requests by validation team	Id. of CAR/CR	Explanation of Conclusion for Denial
-	-	-

Annex 2: Information Reference List

Reference No.	Document or Type of Information
1	On-site interview at "Ouro Energetica S.A, Barracão" by auditing team of TÜV SÜD **Validation team on-site:** Johann Thaler, TÜV SÜD **Interviewed persons:** Date: 16/10/2008 Representatives of Ouro *Energetica S.A*.: Roberto Ferreira de Melo, Construction Coordinator Ananias Gonçalves, Manager of the construction Jose Augusto Nunes Hirt, Environmental Supervisor Ricardo Rego, Financial Director (Telephone conference) Representatives of *Ecopart Assessoria Negócios Empresariais Ltda.:* Renata Freitas, Project consultant Ana Paula Beber Veiga, Project consultant
2	Project Design Document "Ouro Small Hydropower Plant – Brennand CDM Project Activity ", version 01, dated 05/09/2008, submitted per Email on 08/09/2008.
3	Approved methodology ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", version 7 and version 12.1.

Reference No.	Document or Type of Information
4	Tool to calculate the emission factor for an electricity system, version 2
5	Tool for the demonstration and assessment of additionality, version 5.2.
6	Operational license, N° 1109/2009-DL, FEPAM, dated 13/03/2009, valid until 12/03/2013.
7	WACC calculation sheet “Custo de Capital – Ouro1”, version 1, submitted per Email on 11/09/2008.
8	IRR (Cash-flow) calculation sheet, “Ouro_Cash Flow”, version 1, submitted per Email on 11/09/2008.
9	Confirmation about receipt of local stakeholder process invitation letters, “Aviso de recebimento”, dated 19/06/2008, 20/06/2008, 23/06/2008, submitted per Email on 11/09/2008.
10	Invitation letters to local stakeholders, dated 11/06/2008 and receipts (ARs).
11	Installation license, N° 39/2007-DL, FEPAM, dated 16/01/2007, valid until 31/12/2008, submitted per Email on 02/10/2008.
12	Declarations of both Ecoinv Global (without date) and Ouro Energetica S.A. (without date) confirming the (voluntary) participation in the CDM project activity, submitted per Email on 02/10/2008 and 03/10/2008 respectively.
13	ANEEL Resolution N° 988, dated 24/07/2007, Incorporation of Rija Investimentos Energeticos Ltda. by Ouro Energetica S.A., submitted per Email on 02/10/2008.
14	ANEEL Resolution N° 647, dated 01/08/2006, Tranfer of authorization for the implementation and exploration of the small hydroelectric power plant Ouro from Guascor Geratec Ltda. to Ouro Energetica S.A, submitted per Email on 02/10/2008.
15	ANEEL Resolution N° 537, dated 14/10/2003, Authorization for Guascor Geratec Ltda to explore the hydroelectric potential of SHP Ouro.
16	CER excel calculation sheet “Ouro CERs”, version 1, submitted per Email on 02/10/2008.
17	Letter of ANEEL, N° 649/2008-SGH/ANEEL, dated 20/03/2008 concerning increase of installed capacity from 12 MW to 16 MW, submitted per Email on 06/10/2008.

Reference No.	Document or Type of Information
18	Technical characteristics (Ficha tecnica), 09/2008, submitted during the on-site visit.
19	2 official registries evidencing the ownership of land, dated 10/05/2007 and 30/10/2006, submitted during the on-site visit.
20	Purchase agreement for turbines and generators (including Annex), Hidraulica Industrial S.A. Industria e Comericio, dated 28/02/2007, presented during the on-site visit.
21	2 Power Purchase Agreements with Sadia S.A. (Concordia) and Sadia S.A. (Ponta Grossa), dated 01/12/2007, presented during the on-site visit.
22	Financial closure: Contract with Banco Itau, dated 25/08/2008, presented during the on-site visit.
23	Consolidated basic project, final report, INTERTECHNE, July 2008 (revision 03), evidencing amongst others the GPS coordinates of dam and power house, submitted during the on-site visit.
24	Evidence for initial training efforts, Operation Manual (supervisory system), GRAMEYER, dated 10/10/2008, version 00, submitted during the on-site visit.
25	Implementation time schedule, presented during and after the on-site visit.
26	Topographical map, dated 30/07/2007, submitted during the on-site visit.
27	ANEEL Resolution N° 480, dated 14/04/2005, Approval of the Consolidated basic project (12 MW), submitted during the on-site visit.
28	Evidence for CDM consideration: Minutes of meeting RIJA INVESTIMENTOS ENERGÉTICOS LTDA., dated April 10, 2006, submitted during the on-site visit.
29	Letter of ANEEL, dated 15/10/2008, N° 2955/2008-SGH/ANEEL, approving increase from 12 MW to 16 MW.
30	Environmental Contral Plan (Plano de Controle Ambiental), dated 08/2001, presented during the on-site visit.
31	ANEEL Technical Note N° 211/2008-SGH/ANEEL, dated 22/09/2008, presented during the on-site visit.

Reference No.	Document or Type of Information
32	Licence about the use of water, dated 25/08/2008, Environmental Secretary, Department of hydrological resources, N° 1227/2008.
33	Photos of visual inspection, taken during the on-site visit.
34	ELETROBRAS/MINISTRY OF MINES AND ENERGY, Instructions for studies and projects for small scale hydro power plants (from the portuguese *Diretrizes para estudos e projetos de pequenas centrais hidreletricas*), dated January 2000, indicating an estimated value of 5% of the total investment for annual O&M costs.
35	RESOLUÇÃO CONAMA N. 1, DE 23.01.86, pdf-file.
36	IPCC: Revised 2006 Guidelines for National Greenhouse Gas Inventories
37	IPCC: 2000, Good Practice Guidance
38	Guidelines on the Assessment of Investment Analysis, version 03.1, EB51, Annex 58.
39	DNA resolution N° 7, issued on March 05, 2008 and DNA resolution N° 8, dated May 26, 2008.
40	ANEEL ordinance N°2.452, dated 07/07/2009 approval of increase of installed capacity from 12 MW to 16 MW of SHP Ouro.
41	ANEEL ordinance N° 2.455, dated 07/07/2009 release for commercial operation start.
42	CDM consulting contract between Ouro Energética S/A and Ecopart Assessoria Negócios Empresariais Ltda. (formerly Ecoinvest Carbon Assessoria Ltda.), the CDM process advisor of the project (Ouro Energética S/A was owned by Guascor Geratec Ltda. that time), dated 06/07/2005.
43	Engineering, Procurement and Construction contract (EPC) between Ouro Energética S/A and Bucagrans – Construtora de obras Ltda., dated 05/07/2007.
44	Validation proposal requests (BR TÜV, DNV, RINA, SGS, TÜV SÜD), dated February/March 2008, Emails sent to/received from different DOEs.
45	Balance sheet of Ouro small hydro power plant (31/12/2009 and 2008) audited by Ernst & Young, signed letter dated 05/03/2010.

Reference No.	Document or Type of Information
46	Balance sheet (31/12/2004) of Antonio Brennand small hydropower plant (published in Brazilian Federal Register (from the Portuguese: *Diário Oficial da União*), published on 01/07/2005.
47	BNDES Annual Report 2005. Main approved operations - electricity generation (from the Portuguese: *Principais operações aprovadas - segmento de geração*).
48	WEG declaration about installed capacity and maximal nominal power of generators, dated 07/11/2010.
49	Chamber of Electric Energy Commercialization (from the Portuguese: *Câmara de Comercialização de Energia Elétrica*) (CCEE), Average Auction prices of 2005,
50	ANEEL 2011 general summary of electricity generation plants (from the Portuguese: *Resumo Geral do Acompanhamento das Usinas de Geração Elétrica*), http://www.aneel.gov.br/area.cfm?idArea=37&idPerfil=2
51	ELETROBRÁS 2010 Relationship of contracted entrepreneurships PROINFA (from the Portuguese: Relação de empreendimentos contratados e extratos dos contratos e termos aditivos celebrados. Programas: Proinfa. Centrais Elétricas Brasileiras S/A); http://www.eletrobras.gov.br/
52	CCEE (Real electricity generation supplied to the grid (dispatched electricity) from October 2009 to September 2010), excel file (Geracao PCH´s Despachadas).
53	ANEEL Report about monitoring of small hydroelectric power plants with installation license, (from the Portuguese: “Acompanhamento das Pequenas Centrais Hidrelétricas com Licença de Instalação”. Version 2). Available at: http://aneel.gov.br
54	ANEEL declaration, N° 608, dated 16/02/2009, approving the Basic Project SHP Ouro (16 MW).
55	Evidence for tax rates and tax bases (access in January 2011): http://www3.dataprev.gov.br/SISLEX/paginas/42/1995/8981.htm http://www3.dataprev.gov.br/SISLEX/paginas/42/1995/8981.htm

Reference No.	Document or Type of Information
	http://www.portaltributario.com.br/tributos/csl.html http://www.receita.fazenda.gov.br/legislacao/leis/ant2001/lei943096.htm http://www.receita.fazenda.gov.br/Aliquotas/ContribPj.htm http://www.portaltributario.com.br/guia/lucro_presumido_irpj.html http://www.receita.fazenda.gov.br/legislacao/Leis/2003/lei10833.htm http://www.receita.fazenda.gov.br/legislacao/Leis/2002/lei10637.htm Real tax regime (COFINS/PIS): http://www.receita.fazenda.gov.br/PessoaJuridica/PisPasepCofins/RegIncidencia.htm
56	Web-pages used for benchmark assessment: Risk free rate: http://finance.yahoo.com/q/hp?s=%5ETNX http://www.federalreserve.gov/econresdata/researchdata.htm Country Risk Premium: http://www.cbonds.info/all/eng/index/index_detail/group_id/1/ http://pages.stern.nyu.edu/~adamodar/ Equity Risk Premium: http://pages.stern.nyu.edu/~adamodar/ Beta: http://pages.stern.nyu.edu/~adamodar/
57	2007 Baseline Emission Factors data http://www.mct.gov.br/index.php/content/view/317398.html#ancora

Reference No.	Document or Type of Information
58	Benchmark excel spreadsheet for the calculation of cost of equity (Ke Ouro – CAPM_2006).
59	Request to change the estimated schedule of the project (including the operation start) in August 2005, Process N° 48500.000692/02-62.
60	Common practice analysis: Definition of region: PINTO, J. A. Climatic indicators study for long term prediction in the river flow of Alto São Francisco basin (in a free translation from the Portuguese *Estudo de indicadores climáticos para a previsão de longo termo de vazões na bacia do Alto São Francisco*). Universidade Federal de Minas Ferais: Belo Horizonte, 2005. Available at: http://www.smarh.eng.ufmg.br/defesas/20D.PDF VESELKA, T. D. Balance power: A warming climate could affect electricity. Geotimes. Earth, energy and environment news. American Geological Institute: August, 2008. Available at: http://www.agiweb.org/geotimes/aug08/article.html?id=feature_electricity.html HALLAL, M. O. C. Variability analysis of climatic indicators for precipitation in Rio Grande do Sul state (in a free translation from the Portuguese *Análise de variabilidade de indicadores climáticos para a precipitação pluvial no Rio Grande do Sul*). Graduation work. Universidade Federal de Pelotas, Rio Grande do Sul: Dec 2007. Available at: http://www.ufpel.tche.br/meteorologia/pos-graduacao/dissertacoes/dissertacoes_completas/dissertacao_marcia_curi_hallal.pdf National Institute of Meteorology, INMET, http://www.inmet.gov.br Electricity sector reform in 2003: http://www.planalto.gov.br/CCIVIL/_Ato2004-2006/2004/Lei/L10.848.htm Information about financial incentive program: http://www.receita.fazenda.gov.br/Legislacao/RegimeReidi/RelacaodasPJIN758.htm http://www.receita.fazenda.gov.br/legislacao/legisassunto/reidi.htm
61	Final CER calculation spreadsheet “Ouro CERs_2010 12 22_v 5”.

Reference No.	Document or Type of Information
62	Invoices of electricity sales at the spot market (period: 09/2009 to 12/2010).
63	Minutes of meeting of other projects from the project owner (SHP Ibirama, dated 10/04/2006, SHP Pampeana, dated 03/10/2005, SHP Terra Santa, dated 03/10/2005)
64	TAGs of turbines, generators, photos.
65	Email HISA about lifetime of turbines, dated 18/12/2008.
66	ANEEL Dispatch N° 1.880, dated 22/05/2009, Authorization for tests to generate electricity.
67	Final financial spreadsheet (IRR calculation, “SHPP Ouro_Project cash flow_finalb”)
68	Guidelines on the Assessment of Investment Analysis (version 03.1)
69	Executive Project – descriptive manual for calculation and measurements
70	Web-pages used for long-term interest rate, inflation rate and spread: http://www.bndes.gov.br/SiteBNDES/bndes/bndes_pt/Ferramentas_e_Normas/Custos_Financeiros/Taxa_de_Juros_de_Longo_Prazo_TJLP/index.html http://www.bndes.gov.br/SiteBNDES/export/sites/default/bndes_pt/Galerias/Arquivos/conhecimento/bnset/Set2901.pdf http://www.bcb.gov.br/Pec/metas/TabelaMetaseResultados.pdf
71	Financial spreadsheet with actual (real) values (IRR calculation, “SHPP Ouro_Project cash flow_final-actualb”)
72	Historical prices in the spot market from July 2009 (operation start) until January 2011 provided by Electric Power Commercialization Chamber (CCEE, from the Portuguese: *Camara de Comercializacao de Energia Eletrica*) , http://www.ccee.org.br/cceeinterdsm/v/index.jsp?vgnextoid=2a8ca5c1de88a010VgnVCM100000aa01a8c0RCRD
73	Laws and guidelines about amortization, http://www.planalto.gov.br/ccivil_03/Leis/L4506.htm, http://www.receita.fazenda.gov.br/PessoaJuridica/DIPJ/2005/PergResp2005/pr381a388.htm

Reference No.	Document or Type of Information
74	ANEEL Resolution nr. 44, dated March 17th, 1999. http://www.aneel.gov.br/cedoc/RES1999044.PDF
75	Financial spreadsheet assuming the application of the real tax regime (from the Portuguese “lucro real”) instead of presumed tax regime (“lucro presumido” from the Portuguese),(IRR calculation, “SHPP Ouro_Project cash flow_final-LRealb”).
76	Final Project Design Document “Ouro Small Hydropower Plant – Brennand CDM Project Activity “, version 07, dated 21/02/2011.
77	KPMG's Corporate and Indirect Tax Rate Survey, 2010 (including historical tax rate values)

Industrie Service

Annex 3

Appointment Certificates

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

Industrie Service

CERTIFICATE OF APPOINTMENT

Sebastian Randig

accomplishes the requirements according to the guidelines of the Certification Body "climate and energy" of TÜV SÜD Industrie Service GmbH and is appointed as

Assessment Team Leader

for the following sectoral scopes:

CDM / JI Projects

The requirements of the QM-Manual and its attachments of the Certification Body "climate and energy" are binding.

This appointment is valid for 3 years.

Certificate No. **CMS-Z-44**

Munich, 2010-05-28

Certification Body "climate and energy"

TÜV®

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

TÜV SÜD
Industrie Service

CERTIFICATE OF APPOINTMENT

Johann Thaler

accomplishes the requirements according to the guidelines of the Certification Body "climate and energy" of TÜV SÜD Industrie Service GmbH and is appointed as

GHG validator / verifier

for the following Technical Areas in the Sectoral Scopes:

4 (4.9), **13** (13.1, 13.2), **15** (15.1, 15.2)

The requirements of the QM-Manual and of the attachments of the Certification Body "climate and energy" are binding.

This appointment is valid for 3 years.

Certificate No. **CMS-Z-52**

Munich, 2010-05-28

Certification Body "climate and energy"

TÜV®

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

TÜV SÜD
Industrie Service

CERTIFICATE OF APPOINTMENT

Nevena Pingarova

accomplishes the requirements according to the guidelines of the Certification Body "climate and energy" of
TÜV SÜD Industrie Service GmbH
and is appointed as

Financial Expert

for the following scopes of business:

Clean Development Mechanism

The requirements of the QM-Manual and the attachments of the Certification Body "climate and energy" are binding.

Munich, 2010-07-22

Certification Body "climate and energy"

TÜV®

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

TÜV SÜD
Industrie Service

CERTIFICATE OF APPOINTMENT

Caiyang Wu

accomplishes the requirements according to the guidelines of the Certification Body "climate and energy" of TÜV SÜD Industrie Service GmbH and is appointed as

Technical Reviewer

for the following sectoral scopes:

1, 2, 3, 4

The requirements of the QM-Manual and of the attachments of the Certification Body "climate and energy" are binding.

This appointment is valid for 3 years.

Certificate No. **CMS-Z-114**

Munich, 2010-11-23

Certification Body "climate and energy"

TÜV®

ZERTIFIKAT ◆ CERTIFICATE ◆ 認証証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

TÜV SÜD
Industrie Service

CERTIFICATE OF APPOINTMENT

Thomas Kleiser

accomplishes the requirements according to the guidelines of the Certification Body "climate and energy" of
TÜV SÜD Industrie Service GmbH
and is appointed as

Technical Reviewer

for the following sectoral scopes:

1, 3, 4, 5, 8, 13

The requirements of the QM-Manual and of the attachments of the Certification Body "climate and energy" are binding.

This appointment is valid for 3 years.

Certificate No. **CMS-Z-04**

Munich, 2010-05-28

Certification Body "climate and energy"

TÜV®