
VALIDATION REPORT

***CERAN Companhia Energética Rio das
Antas (HPP Castro Alves)***

**C-Trade Comercializadora de Carbono
Ltda**

**Ceran's Castro Alves Hydro Power Plant
CDM Project Activity**

SGS Climate Change Programme

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1	CERAN (Companhia Energética Rio das Antas) C-Trade Comercializadora de Carbono Ltda
<p>Summary:</p> <p>SGS has performed a validation of the project Ceran's Castro Alves Power Plant Activity. The Validation was performed on the basis of the UNFCCC criteria and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting. Using a risk based approach, the review of the project design documentation and the subsequent follow-up interviews have provided SGS with sufficient evidence to determine the fulfilment of the stated criteria.</p> <p>The project activity consists of the installation of a hydro power plant with installed capacity of 130 MW. The plant is located on the Antas River, in the municipalities of Nova Pádua, Flores da Cunha, Nova Roma do Sul and Antonio Prado, Rio Grande do Sul State, Brazil.</p> <p>Total amount of emission reductions estimated for the period of seven years is 2,202,454tCO₂e.</p> <p>SGS will request the registration of the Ceran's Castro Alves Hydro Power Plant CDM Project Activity as a CDM project activity, once the written approval by the DNA of the participating Parties and the confirmation by the DNA of Brazil that the project assists in achieving sustainable development has been received.</p> <p>The Letter of approval from the Brazilian DNA was issued on December 20th, 2007.</p> <p>The only amendment made to this validation report compared to the report referred in the Brazilian LoA is related to information provided regarding the Letter of Approval received and evidence that the incentive from the CDM was seriously considered in the decision to proceed with the project activity.</p>	
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CDM validation	
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Abbreviations

ACM	Approved Consolidated Methodology
ANEEL	Agencia Nacional de Energia Elétrica (Brazilian Agency of Power Electricity).
CAR	Corrective Action Request
CER	Certified Emission Reduction
DNA	Designated National Authority
EF	Emission Factor
ER	Emissions Reduction
MP	Monitoring Plan
NIR	New Information Request
PDD	Project design Document
SGS	Société Générale de Surveillance
PE	Project Emissions
DOE	Designated Operational Entity
UNFCCC	United Nations Framework Convention on Climate Change
CDM	Clean Development Mechanism

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1. Introduction

1.1 Objective

C-Trade Comercializadora de Carbono Ltda have commissioned SGS to perform the validation of the project Ceran's Castro Alves Hydro Power Plant CDM Project Activity with regard to the relevant requirements for CDM project activities. The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, the monitoring plan (MP) and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Certified Emission Reduction (CER). UNFCCC criteria refer to the Kyoto Protocol criteria and the CDM rules and modalities and related decisions by the COP/MOP and the CDM Executive Board.

1.2 Scope

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

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

1.3 GHG Project Description

This report summarizes the results of the validation of Ceran's Castro Alves Hydro Power Plant CDM Project Activity, performed on the basis of UNFCCC criteria. The validation has been performed as a desk review of the project documents presented by CERAN Companhia Energética Rio das Antas and C-Trade Comercializadora de Carbono Ltda and a site visit carried out on 16 and 17th July, 2007, where the details of the project activity were verified on-site. During the site visit, CERAN's manager and C-Trade consultant were interviewed.

The project activity consists of the installation of a small hydroelectric plant with an installed capacity of 130MW and a small reservoir of 5 km², located on the Antas River, in the municipalities of Nova Pádua, Flores das Cunha, Nova Roma do Sul and Antonio Prado, Rio Grande do Sul State, Brazil.

The project has the objective to provide renewable electricity from HPP Castro Alves and dispatch the energy to interconnected system. This project will increase the supply of renewable source of energy to the grid, avoiding the use of fossil fuel that would be burned in thermal power.

Total amount of emission reductions estimated for the crediting period is 2,202,454 tCO₂e.

Baseline Scenario:

Electricity will continue to be generated by the existing generation mix operating in the grid, composed by Hydro Power Plants and fossil-fuel-fired thermal plants.

With-project scenario:

The installation of a hydroelectric plant to provide renewable electricity to the South Subsystem interconnected system.

Leakage: No leakage need to be considered in applying ACM0002.

Environmental and social impacts:

The project is in line with host-country specific CDM requirements. It is expected that the project activity will help Brazil to fulfil its goals of promoting sustainable development. The contributions of the project activity for this were described in the PDD, and comprises, among others: decreasing the dependence on fossil fuels,

thus improving air quality; increasing employment opportunities in the area where the project is located; promotion of better revenue distribution since it contributes to the regional/local economic development and encouraging other similar companies that want to replicate this experience.

The construction and operation of the plant have followed the legal requirements regarding environmental protection and control. During the site visit, documented evidences regarding the environmental assessments were verified, including the Environmental Report. The environmental and social impacts were identified before the installation of the project and measures have been taken to minimize these impacts.

1.4 1.4 The Names and Roles of the Validation Team Members

Name	Role
Fabian Gonçalves	Lead Assessor
Geisa Principe	Assessor

2. Methodology

2.1 Review of CDM-PDD and Additional Documentation

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

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

2.2 Use of the Validation Protocol

The validation protocol used for the assessment is partly based on the templates of the IETA / World Bank Validation and Verification Manual and partly on the experience of SGS with the validation of CDM projects. It serves the following purposes:

- it organises, details and clarifies the requirements the project is expected to meet; and
- it documents both how a particular requirement has been validated and the result of the validation.

The validation protocol consists of several tables. The different columns in these tables are described below.

Checklist Question	Means of Verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements are linked to checklist questions the project should meet.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (Y), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). New Information Request (NIR) is used when the validation team has identified a need for further clarification.

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

2.3 Findings

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

In general, where insufficient or inaccurate information is available and clarification or new information is required the Assessor shall raise a **New Information Request (NIR)** specifying what additional information is required.

Where a non-conformance arises the Assessor shall raise a **Corrective Action Request (CAR)**.

A CAR is issued, where:

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

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

Observations may be raised which are for the benefit of future projects and future verification or validation actors. These have no impact upon the completion of the validation or verification activity.

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

2.4 Internal Quality Control

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

3. Determination Findings

3.1 Participation Requirements

Brazil is listed as the host Party. Brazil ratified the Kyoto Protocol on 23rd August 2002. (http://unfccc.int/files/essential_background/kyoto_protocol/application/pdf/kpstats.pdf).

At time of the validation, no Letter of Approval from the host country had been provided. The Letter of Approval will be signed when the DNA of Brazil receive and analyse the validation report. The letter of approval was issued on December 20th, 2007.

3.2 Baseline Selection and Additionality

The project activity uses the approved methodology ACM0002 version 6, as correctly described in the PDD.

According to the “Tool”, version 3, Sub step 1a, it was not presented the discussion of other realistic and credible scenario to the project activity and more details about the identified baseline scenario. CAR 4 was raised. PDD version 2 discusses other realistic alternatives scenario to the baseline scenario as requested by the “Tool” version 3. CAR 4 was closed out.

The first version of the PDD does not mention relevant sectoral or national policies or macroeconomic trends in the discussion of the baseline scenario. It was not provided details about the law and regulation analyzed. CAR 5 was raised. PDD version 2 presents the relevant sectoral and national policies in the discussion of the baseline scenario. The alternatives presented are in compliance with Brazilian norms and regulations. CAR 5 was closed out. According to the available information provided by ONS, ANEEL and other entities of the Brazilian electricity market there is no obligation to implement the alternatives presented in the PDD.

According to the information provided the baseline is compatible with available data. In the absence of the project activity the electricity should be generated by the actual mix of generation of the grid. The hydro power plant Castro Alves will avoid GHG emissions for the South Sub-system.

To demonstrate additionality the project uses the “Tool for the demonstration and assessment of Additionality” version 3.

During validation assessment following steps was not correctly applied. Step 1a - other realistic and credible alternative was not discussed. Sub-step 1b - consistency with mandatory laws and regulations is not provided. Step2 - the revenue from the sale of CERs shall be excluded from the financial analysis. Sub-step 2.b option III - Information about the benchmark reference (SELIC rate) was not provided. Sub-step 2c - Sources of information about Electricity price projected was not provided. It was necessary to provide the calculation spreadsheet of cash flow and information sources. Sub-step 2 d - The sensitivity analysis was not correctly applied according to the tool. The CERs revenues shall be extracted from sensitivity analysis and include other information, loan rate and electricity cost. Step 3 – specify this barrier, barriers sources of information and an explanation of how they prevent the project implementation and not the alternatives. The information sources were not provided and some of them are not according to the baseline year. CAR 6 was raised.

Step 1: Alternatives to the project activity were provided. Continuation of current practice, build a thermoelectric plant and project activity not as a CDM project.

A revised financial analysis was provided: revenue from CER was excluded. The SELIC (benchmark) rate is defined by Central Bank of Brazil. The average value for the years 1999-2003 is 20.87%.

Revenues from electricity sale are according ANEEL and installed capacity.

The sensitivity analysis was verified, the analysis consider the variation in the energy tariff, operational costs and administrative costs.

The revised PDD version 2 excludes the barrier analysis. In order to demonstrate additionality the project uses only step 2 of the “Tool for the demonstration and assessment of Additionality version 3”. CAR 6 was closed out.

Alternatives to the project activity were provided. Continuation of current practice, build a thermoelectric plant and project activity not as a CDM project.

Alternative 3 was selected. As verified during validation assessment the continuation of current practice and the project not undertaken as a CDM project are consistent with laws and regulations. The electricity could continue to be generated by existing grid and there is no obligation to build the hydro power plant.

The project developer selected the benchmark analysis. The IRR was used as a financial indicator for comparison. The discount rate used is the SELIC. The SELIC rate is defined by Central Bank of Brazil. The average SELIC value for the years 1999-2003 is 20.87%. Verified the worksheet with financial analysis.

The following data presented were checked during validation assessment:

Investments – verified the financial contract between CERAN and Financial agents, BNDES nº21/00883-3, 09/02/2004; nº03.2.794.3.1, 09/02/2004. Verified by interview and documents that the final project cost was higher than planned. During construction some problems were faced that increased the costs.

Revenues are according ANEEL that defined the reference tariff. Costs were confirmed by internal documents (CPFL reference value, R\$ 3.60/MWh). Carbon credits are according to CER estimation based in the installed capacity. CER value was estimated.

The IRR presented is 16.59% that represents a financial barrier for the project activity when compared to the Benchmark value (SELIC) of 20.87% (average value 1999-2003). The IRR is lower than benchmark.

It was concluded that the project is not attractive for investors. A sensitivity analysis was conducted altering some parameters. The IRR is still not financially attractive.

Sub step 4a is not discussed.

Sub step 4b is not in accordance with the “Tool for the demonstration and assessment of Additionality version 3”. CAR 7 was raised.

Version 2 of the PDD presents the correct steps of the “Tool”. It was presented the information under sub-step 4a and 4b as requested. CAR 7 was closed out.

The common practice analysis is based in the Brazilian electricity sector. Source of data presented were checked. There are similar hydro plants located in the same region. According to the data provided in the PDD and verified, two plants has reservoir and the environmental impact is more significant than Castro Alves plant. There are other hydro power plants in the region as Monte Claro and 14 de Julho that are considering the CDM revenue. Monte Claro is a CDM project under verification and 14 de Julho is under construction as a CDM project. It was concluded that Castro Alves plant is not a common practice in the region.

The applicable steps of the “Tool for the demonstration and assessment of Additionality version 3” were assessed correctly and it was concluded that the project is additional due to the financial analysis presented.

3.3 Application of Baseline Methodology and Calculation of Emission Factors

The project title mentions that the project is a run-of-river which according to the methodology is a mistake. The title should be rephrased according to the applications presented in the methodology without text changes. The applicability is not clearly described in the PDD. NIR 2 was raised. The applicability is clearly described in section B.2 of the PDD version 01. HPP Castro Alves is a new hydro electric power project with reservoir. Title of the project was rephrased to reflect the real condition. NIR 2 was closed out.

After corrections the approach used is in accordance with ACM0002 version 6. The emission factor used follows the Brazilian DNA requirements.

According ACM0002 and information provided during site visit the PE = 0; Installed capacity = 130MW;

Reservoir area = 5 km²; Power density = 26 W/m². As the power density is higher than 10 W/m², the project emissions should not be considered. The reservoir was visited and is under construction (document was provided to confirm the area). Installation license 393/2007, issued by Fepam, valid until 31/12/2007.

The baseline emission factor follows the ACM0002 version6 and the information was obtained from the Brazilian DNA. The method used is the dispatch data analysis operating margin.

The calculation and related data are presented in the PDD and spreadsheet “Cálculo dos CERs Castro Alves”. The emission factor should be calculated ex-post during the crediting period using the values calculated and publicly available by the DNA.

3.4 Application of Monitoring Methodology and Monitoring Plan

The monitoring plan provided follows the requirements of ACM0002 version 6. The project is not implemented yet and it was possible to check only the procedures and information presented in the PDD section B.7 and annex 4. The information presented attends the requirements and should be followed when starting the crediting period.

Monitoring plan provide the applicable parameters (Electric energy Generated (EGy); Emission Factor (EFy); Emission Factor Operating Margin (EFOM); Emission Factor Build Margin (EFBM).

The information provided in the PDD and procedures verified during site visit describe properly the implementation of the monitoring plan. The electricity generated will be monitored by the project and it will be checked by reports emitted by CCEE (official source). As verified during site visit, the monitoring approach is in line with current good practice for the energy sector in the country. The level of uncertainty is low because the data related to the emission factor comes from official source (Brazilian DNA) and the electricity energy generated can be cross checked with official source. The monitoring plan includes the operations of all data, data analysis and data compilation systems to be employed by the project participants.

The complete operational procedure with the main information presented in annex 4 will be elaborated before project operation. Ceran has experience in energy sector and the procedure will follow the same approach of the other hydro plant in operation, this procedure was verified during site visit. The electricity energy generated is controlled by third party (CCEE). The electricity delivered to the grid is available and controlled by governmental agency. The structure (authority and responsibility) is defined and described in the PDD. During site visit it was verified that the management structure is in place. Before project implementation operators will be trained for the specific activities. Also it was Verified the procedure to collect the generation data of the Monte Claro hydro power plant (another CERAN's CDM project), the same procedure will be adopted for Castro Alves hydro power plant.

According monitoring plan the project will follow the CCEE procedure PdC ME.01 version 2, 26/04/2007 (Despacho ANEEL Nº1.247, 26/04/2007). Verified the communication diagram of the net measured energy to be invoiced.

There is no information about training and maintenance in the PDD. NIR 3 was raised.

Ceran has experience in energy sector and the procedure will follow the same approach of the other hydro plant in operation, this procedure was verified during site visit. Before project implementation operators will be trained for the specific activities. There is no procedure available because the project is not operational yet, but before project implementation operators will be trained for the specific activities. The procedures and training evidence will be further checked during verification. NIR 3 was closed out.

3.5 Project Design

The project boundary is correctly applied in the PDD, encompasses the Castro Alves hydro power plant interconnect through the the South subsystem of Brazil.

Starting date of the project activity 01/04/2004 (According CERAN Letter 129/2004). Life time is 31 years plus 9 months.

CAR 1 was raised because the project does not follow the CDM-PDD format template version 03- in effect from 28th July 2006 without modifying text, tables etc. The PDD was revised and version 01 follows the CDM-PDD template version 03. CAR 1 was closed out.

3.6 Environmental Impacts

The project has applicable environmental licenses required by the state environmental agency.

Verified the Installation license 393/2007, issued by Fepam, valid until 31/12/2007.

Operation license process 02599-0567/07-4 requested on 03/04/2007 to Fepam. Environmental impacts were considered by the environmental agency when issuing applicable licenses. It is not expected any adverse environmental effects.

Verified the internal environmental report to attend the license requirements: "RELATÓRIO DE ATIVIDADES EM MEIO AMBIENTE COMPLEXO ENERGÉTICO CERAN, CR/C/RM/030/037/2007, Jan-Mar 2007.

The project obtained the licenses required by the Brazilian environmental regulation and environmental impacts were considered by Fepam (environmental agency).

3.7 Local Stakeholder Comments

The local stakeholder consultation is required by Brazilian DNA. It is necessary to invite the relevant stakeholders, before the validation process starts. Copies of the letters sent to the stakeholders and receipts of mailing were available. The following stakeholders were invited by letters to comment on the project:

- City Hall of Antonio Prado
- City Hall of Flores da Cunha
- City Hall of Nova Padua
- City Hall of Nova Roma do Sul
- District Attorney of Rio Grande do Sul
- Chamber of Deputy of Flores da Cunha
- Chamber of Deputy of Nova Pádua
- Chamber of Deputy of Nova Roma do Sul
- Chamber of Deputy of Antonio Prado
- Fundação Estadual de Proteção do Meio Ambiente (FEPAM) - Environmental Agency of Rio Grande do Sul
- Brazilian Forum of NGOs
- Environmental Agency of Antonio Prado
- Environmental Agency of Nova Roma do Sul
- Environmental Agency Nova Pádua
- Environmental Agency Flores da Cunha
- Local communities associations

No comments were received.

4. Comments by Parties, Stakeholders and NGOs

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

4.1 Description of How and When the PDD was Made Publicly Available

The PDD and the monitoring plan for this project were made available on the SGS website and were open for comments from 31 July 2007 to 29 August 2007. Comments were invited through the UNFCCC CDM homepage

<http://cdm.unfccc.int/Projects/Validation/DB/CJJACA7U4ILONCA4SXLQVQORWJMKCC/view.html>

4.2 Compilation of all Comments Received

No comment was received to the DOE during the 30 days commenting period.

4.3 Explanation of How Comments Have Been Taken into Account

No comment was received.

5. Validation Opinion

Steps have been taken to close out seven findings.

SGS has performed a validation of project Ceran's Castro Alves Hydro Power Plant CDM Project Activity. The validation was performed on the basis of the UNFCCC criteria and host country criteria, as well as criteria given to provide consistent project operations, monitoring and reporting. Using a risk based approach, the validation of the project design documentation and the subsequent follow-up interviews have provided SGS with sufficient evidence to determine the fulfilment of the stated criteria.

By the installation of hydroelectric plant to provide renewable electricity to the South Electric Subsystem of Brazil the project results in reducing greenhouse gas emissions that are real, measurable and give long-term benefits to the mitigation of climate change. A review of the investment analysis presented demonstrates that the proposed project activity was not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. If the project is implemented as designed, the project is likely to achieve the estimated amount of emission reductions.

In our opinion, the project meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria. The project correctly applies methodology AMC0002 version 06. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total emission reductions from the project are estimated to be 2,202,454 t of CO₂e over a 7 year crediting period, averaging 314,636 t of CO₂e annually. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given the underlying assumptions do not change.

SGS has received confirmation by the host Party that the project activity assists it in achieving sustainable development. The project will hence be recommended by SGS for registration with the UNFCCC.

6. List of Persons Interviewed

Date	Name	Position	Short Description of Subject Discussed
16 and 17 July 2007	Gustavo Demarchi	Project consultant/C-Trade	Validation process and findings. Technical issues, operational issues, investment analysis, monitoring plan, baseline emission factor.
16 and 17 July 2007	Clovis Badaró	Project consultant/C-Trade	Validation process and findings. Technical issues, operational issues, investment analysis, monitoring plan, baseline emission factor.
16 and 17 July 2007	Eduardo Leão	Administrative Annalist	Technical issues, operational procedures
16 and 17 July 2007	Gustavo Furini	Environmental Annalist	Licenses applicable to the plant.

7. Document References

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

- /1/ Project Design Document, Ceran's Castro Alves Hydro Power Plant CDM Project Activity, Brazil. Version 1, 20/07/2007; Version 2, 24/08/2007; Version 3, 05/12/2007.
- /2/ ACM0002- Consolidated methodology for grid-connected electricity generation from renewable sources and 'Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources', version 6, 19 May 2006.
- /3/ Tool for the demonstration and assessment of additionality, version 3.

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

- /4/ Cash flow
- /5/ CERs calculation spreadsheet
- /6/ Emission Factor Calculation
- /7/ Installation License, 393/2007
- /8/ Operation license Protocol,
- /9/ Environmental Report
- /10/ Power Purchase Agreement
- /11/ EIA/RIMA
- /12/ Calibration procedure
- /13/ Aneel Document
- /14/ Procedure to energy generation
- /16/ PPA – Power purchasing agreement (Contrato CERAN)

A.1 Annex 1 - Local Assessment Checklist

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

Issue	Findings	Source /Means of Verification	Further action / clarification / information required?
Verify operation licence from ANEEL (national energy agency).	Verified the licenses issued by ANEEL: contract No 08/2001 - ANEEL - COMPLEXO ENERGÉTICO RIO DAS ANTAS - AHE'S 14 DE JULHO, CASTRO ALVES E MONTE CLARO, process No 48500.005783/00-31 (this contract define the installed capacity of the HPP Castro Alves).	Site visit/DR	No
Verify project like described in the PDD.	<p>Castro Alves hydro power plant is under construction. The plant is considered a run-of-river according Brazilian definitions because the reservoir will be used only to enlarge the natural fall and to allow the water to reach the forced tunnels, being operated with constant quota, so that it is turbinated just the flowing flow being the spare volumes returned to the natural bed of the river through the drain. The plant is underground with an adduction tunnel of 7 km, including the power house where turbines and generators will be located are underground.</p> <p>The total installed capacity is 130 MW (3 Francis turbines of 44.58 MW), and the yearly firm electric energy output of 560,640 MWh annual (assured power of 64 MW average). The first Francis turbine is planned to start operation on December 1st, 2007. The second turbine on February 1st, 2008; and the third turbine in April 2008.</p> <p>Reservoir area is 5 km² and the gross power density is 26 W/m².</p>	Site visit/DR/I	No
Verify the reservoir area.	The reservoir was visited and is under construction (document was provided to confirm the area). Installation license 393/2007, issued by Fepam, valid until 31/12/2007.	Site visit/DR	No

A.2 Annex 2 – Validation Protocol

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

REQUIREMENT	REFERENCE	Comments	CONCLUSION
All Parties (listed in Section A3 of the PDD) have ratified the Kyoto protocol and are allowed to participate in CDM projects	Marrakech Accords, CDM Modalities §30	Brasil is listed as the non-Annex-I Party, has ratified the protocol on 23 rd August 2002 and is allowed to participate http://maindb.unfccc.int/public/country.pl?country=BR	OK
The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3 and be entered into voluntarily.	Marrakech Accords, CDM Modalities §29 and §30	No Annexure-I party is involved at this stage	OK
The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof, and be entered into voluntarily	Marrakech Accords, CDM Modalities §29 and §30 Kyoto Protocol Art. 12.2, Marrakech Accords, CDM Modalities §40a	There is no letter of approval from DNA Brazil at this phase (just after submission of validation report). Letter of approval was issued on December 20 th , 2007.	Pending Ok
Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available	Marrakech Accords, CDM Modalities, §40	PDD publicly available: 31 Jul 07 - 29 Aug 07 http://cdm.unfccc.int/Projects/Validation/DB/CJJACA7U4ILONCA4SXLQVQORWJMKC/C/view.html No comments received during global stakeholder period.	Ok
The project design document shall be in conformance with the UNFCCC CDM-PDD format	Marrakech Accords, CDM Modalities, Appendix B, EB	Please follow the CDM-PDD format template version 03- in effect from 28 th July 2006 without modifying text, tables etc. CAR 1 was	CAR1 Ok

REQUIREMENT	REFERENCE	Comments	CONCLUSION
	Decisions	raised. The PDD was revised and version 01 follows the CDM-PDD template version 03. CAR 1 was closed out.	
The project participants shall submit a letter on the modalities of communication (MoC) before submitting a request for registration	EB-09 F_CDM_REG form	Letter of MoC was provided (signed by all project participants).	Ok
For AR projects, the host country shall have issued a communication providing a single definition of minimum tree cover, minimum land area value and minimum tree height. Has such a letter been issued and are the definitions consistently applied throughout the PDD?	NA	NA	

Table 2PDD

CHECKLIST QUESTION	Ref. ID	MoV*	COMMENTS	Draft Concl	Final Concl
A. General Description of Project Activity					
A.1. Project Title					
A.1.1. Does the used project title clearly enable to identify the unique CDM activity?	A.1	DR	The project title mentions that the project is a run-of-river which according to the methodology is a mistake. The title should be rephrased according to the applications presented in the methodology without text changes.. NIR 2 was raised. Title of the project was rephrased to reflect the real condition. NIR 2 was closed out.	NIR2	Ok
A.1.2. Are there an indication of a revision number and the date of the revision?	A.1	DR	Yes, PDD version 1 dated 26 th June 2007	OK	Ok

CHECKLIST QUESTION	Ref. ID	MoV*	COMMENTS	Draft Concl	Final Concl
A.1.3. Is this in consistency with the time line of the project's history?	A.1	DR	Yes, the PDD version and date are OK	OK	Ok
A.2. Description of the project activity					
A.2.1. Is the description delivering a transparent overview of the project activities?	A.2	DR	The description is OK	OK	Ok
A.2.2. Is all information provided in compliance with actual situation or planning?	A.2	DR	The description of section A.2 of the PDD will be cross checked with the information seen by the local assessor in the site visit. Information provided in section A.2 corresponds with verified during site visit.	Pending	Ok
A.2.3. Is all information provided consistent with details provided in further chapters of the PDD?	A.2	DR	The information of the Section A.2 of the PDD is consistent with further chapters.	Ok	Ok
A.3. Project Participants					
A.3.1. Is the table required for the indication of project participants correctly applied?	A.3	DR	The table in accordance with the Guidelines for Completing the PDD.	Ok	Ok
A.3.2. Is all information provided in consistency with details provided by further chapters of the PDD (in particular annex 1)?	Anne x 1	DR	The description of annex 1 is consisting.	Ok	Ok
A.4. Technical description of the project activity					
A.4.1. Does the information provided on the location of the project activity allow for a clear identification of the site(s)?	A.4.1 .4	DR	Please, insert site coordinates in the PDD. Should not exceed one page. coordinates of HPP Castro Alves are: Latitude: 29°00'30" South Longitude: 51°22'45" West	Pending	Ok
A.4.2. Do the project participants possess ownership or	A.4.1	DR	The history of relevant approvals/licenses	Pending	Ok

CHECKLIST QUESTION	Ref. ID	MoV*	COMMENTS	Draft Concl	Final Concl
licenses which will allow the implementation of the project at that site / those sites?	.4		presented in Section D.1 of the PDD, concession and license presented in the Section A.3 and others applied to project activity will be checked by local assessor in the visit. Licenses and concession were verified and confirms that CERAN is the owner of Castro Alves hydro power plant.		
A.4.3. Is the category(ies) of the project activity correctly identified?	A.4.2	DR	Yes, scope 1 – Renewable energy.	Pending	Ok
A.4.4. Does the project design engineering reflect current good practices?	A.4.3	DR	The project design engineering follow the good practice applied in Brazil.	Ok	Ok
A.4.5. Does the description of the technology to be applied provide sufficient and transparent input to evaluate its impact on the greenhouse gas balance and is the explanation how the project will reduce greenhouse gas emission transparent and suitable?	A.4.3	DR	The information on section A.2 clearly describes how the project will reduce the GHG. Transparent inputs of technical description to be checked by the local assessor in the site visit. Also check evidence of the reservoir area (5Km2), installed capacity of the plant (130 MW) and other values presented in the section A.4.3. The installed capacity and reservoir area were confirmed during site visit and complies with environmental license (FEPAM LI 393/2007-DL).	Pending	Ok
A.4.6. Is all information provided in compliance with actual situation or planning as available by the project participants?	A.4.3	DR	The technical description of section A.4.3 of the PDD will be cross checked with the information seen by the local assessor in the site visit. The principal parameters presented in section A.4.3 were confirmed during site visit and by document review (checking licenses, contracts and specification).	Pending	Ok
A.4.7. Does the project use state of the art technology or would the technology result in a significantly better	A.4.3	DR	The technology applied by the project activity	Ok	Ok

CHECKLIST QUESTION	Ref. ID	MoV*	COMMENTS	Draft Concl	Final Concl
performance than any commonly used technologies in the host country?			follow the common practice of its sector.		
A.4.8. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	A.4.3	DR	The project activity uses the most common technology applied in its sector and it's not likely to be substituted.	Ok	Ok
A.4.9. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	B.7.2 Anne x 4	DR	There is no information about training and maintenance in the PDD. Please discuss it, following the guide rules. NIR 3 was raised. Ceran has experience in energy sector and the procedure will follow the same approach of the other hydro plant in operation, this procedure was verified during site visit. Before project implementation operators will be trained for the specific activities. There is no procedure available because the project is not operational yet, but before project implementation operators will be trained for the specific activities. NIR 3 was closed out.	NIR3	Ok
A.4.10. Does the project make provisions for meeting training and maintenance needs?	A.4.3	DR	Please see A.4.9.	Pending closure of NIR 3	.Ok
A.4.11. Is a schedule available on the implementation of the project and are there any risks for delays?	A.2	DR	Yes. The schedule was described in the Section A.2 of the PDD. More information about delays (if any) will be checked by the local assessor. Significant delays are not expected.	Pending	Ok
A.4.12. Is the table required for the indication of projected emission reductions correctly applied?	A.4.4 Metho dology ACM0	DR	Yes, the table is correctly present in the section A.4.4. The table values were checked in the site visit by the lead assessor, following the requirement of	Pending	Ok

CHECKLIST QUESTION	Ref. ID	MoV*	COMMENTS	Draft Concl	Final Concl
	002;Version 06		the methodology.		
A.5. Public Funding					
A.5.1. Does the information on public funding provided conform with the actual situation or planning as presented by the project participants?	A.4.5 Annex 2	DR	No public funding is being used for the project activity.	Ok	Ok
A.5.2. Is all information provided consisting with details provided by further chapters of the PDD (in particular annex 2)?	A.4.5 Annex 2	DR	No public funding is being used for the project activity.	Ok	Ok
A.5.3. In case of public funding from Annex I Parties is it confirmed that such funding does not result in a diversion of official development assistance	A.3	DR	There is no Annex I Party participating of the project activity. The project does not make use of public funding.	Ok	Ok
B. Baseline and Monitoring Methodology					
B.1. Choice and Applicability					
B.1.1. Is the baseline methodology previously approved by the CDM Methodology Panel?	B.1 UNFCCC website	DR	The project activity uses the approved methodology ACM0002 version 6, as correctly described in the PDD. UNFCCC Web site: http://cdm.unfccc.int/UserManagement/FileStorage/CDMWF_AM_BW759ID58ST5YEEV6WUCN5744MN763	Ok	Ok
B.1.2. Is the baseline methodology the one deemed most applicable for this project?	B.1	DR	Yes. The baseline methodology is ok.	Ok	Ok

CHECKLIST QUESTION	Ref. ID	MoV*	COMMENTS	Draft Concl	Final Concl
B.1.3. Is the choice of the methodology correctly justified by the PDD and is the project in conformance with all applicability criteria of the applied methodology?	B.2 Methodology ACM 0002 Version 06	DR	The applicability is not clearly described in the PDD. Also see NIR2. The applicability is clearly described in section B.2 of the PDD version 01. HPP Castro Alves is a new hydro electric power project with reservoir. NIR 2 was closed out.	NIR 2	Ok
B.2. Project boundary					
B.2.1. Are all emission sources and gasses related to the baseline scenario, project scenario and leakage clearly identified and described in a complete manner?	B.3 ACM 0002	DR	The project boundary is correctly described in the PDD	OK	Ok
B.2.2. In case of grid connected electricity projects: Is the relevant grid correctly identified in accordance with EB guidance and the underlying methodology?	B.3 ACM 0002	DR	The South Brazilian Electric Grid was correctly mentioned See B.2.1	OK	Ok
B.3. Identification of the Baseline Scenario					
B.3.1. Does the PDD discuss the identification of the most likely baseline scenario? Does the PDD follow the steps to determine the baseline scenario required by the methodology and is the application of the methodology and the discussion and determination of the chosen baseline transparent?	B.4 ACM 0002 version 6	DR	Yes, however it's not complete. According to the "Tool", version 3, Sub step 1a, please discuss other realistic and credible scenario and provide more details about the identified baseline scenario. CAR 4 was raised. PDD version 2 discusses other realistic alternatives scenario to the baseline scenario as requested by the "Tool" version 3. CAR 4 was closed out.	CAR 4	Ok
B.3.2. Does the application consider all potential realistic	B.4	DR	The PDD do not mention relevant sectoral or	CAR 5	Ok

CHECKLIST QUESTION	Ref. ID	MoV*	COMMENTS	Draft Concl	Final Concl
and credible baseline scenarios in the discussion taking into account relevant national and/or sectoral policies, macro-economic trends and political aspirations??	ACM 0002 version 6		national policies or macroeconomic trends in the discussion of the baseline scenario (PDD page 17 sub-step 1b.2.) please provide details about the law and regulation analyzed. CAR 5 was raised. PDD version 2 presents the relevant sectoral and national policies in the discussion of the baseline scenario. The alternatives presented are in compliance with Brazilian norms and regulations. CAR 5 was closed out.		
B.3.3. Is the choice of the baseline compatible with the available data?	B.4 ACM 0002 version 6	DR	Pending because information needed on B.3.1 and B.3.2. The baseline is compatible with available data. CAR 4 and 5 was closed out.	Pending CAR4 and 5	Ok
B.3.4. Is conservativeness addressed in the way of identifying the baseline?	B.4 ACM 0002 version 6	DR	Pending because the baseline identification analysis is not complete. In the absence of the project activity the electricity should be generated by the actual mix of generation of the grid. The hydro power plant Castro Alves will avoid GHG emissions for the South Subsystem.	Pending CAR5	Ok
B.3.5. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	B.4 ACM 0002 version 6	DR	Pending because the baseline identification analysis is not complete. Yes, see B.3.4.	Pending CAR5	Ok
B.4. Additionality					
B.4.1. Does the PDD clearly demonstrate the additionality using the approach as given by the methodology and by following all the required steps?	B.5	DR	See item B.4.2. CAR 6 was closed out.	See CAR 6	Ok

CHECKLIST QUESTION	Ref. ID	MoV*	COMMENTS	Draft Concl	Final Concl
B.4.2. In case of using the additionality tool: Are all steps followed in a transparent manner?	B.5	DR	<p>Discuss the conformance for each step. Ensure each step is transparently documented. It is necessary to provide it in a transparent manner</p> <p>Step 1</p> <p>Step 1a other realistic and credible alternative was not discussed.</p> <p>Sub-step 1b consistency with mandatory laws and regulations is not provided.</p> <p>Step2</p> <p>The revenue from the sale of CERs shall be excluded from the financial analysis.</p> <p>Sub-step 2.b option III</p> <p>Information about the benchmark reference (SELIC rate) was not provided.</p> <p>Sub-step 2c</p> <p>Sources of information about Electricity price projected were not provided.</p> <p>Please provide the calculation spreadsheet of cash flow and information sources.</p> <p>Sub-step 2 d</p> <p>The sensitivity analysis was not correctly applied according to the tool.</p> <p>The CERS revenues shall be extracted from sensitivity analysis and include other information, loan rate and electricity cost.</p> <p>Step 3</p> <p>Please specify this barrier, barriers sources of</p>	CAR 6	Ok

CHECKLIST QUESTION	Ref. ID	MoV*	COMMENTS	Draft Concl	Final Concl
			<p>information and an explanation of how they prevent the project implementation and not the alternatives.</p> <p>The PDD provide other barriers that were not discussed before.</p> <p>The information sources were not provided and some of them are not according to the baseline year.</p> <p>Please clarify how the CDM alleviate the barriers.</p> <p>Please clarify the main risk and assumption about this barrier. CAR 6 was raised.</p> <p>Step 1: Alternatives to the project activity were provided. Continuation of current practice, build a thermoelectric plant and project activity not as a CDM project.</p> <p>A revised financial analysis was provided: revenue from CER was excluded. The SELIC (benchmark) rate is defined by Central Bank of Brazil. The average value for the years 1999-2002 is 20.11%.</p> <p>Revenues from electricity sale are according ANEEL and installed capacity.</p> <p>The sensitivity analysis was verified, the analysis consider the variation in the energy tariff, operational costs and administrative costs.</p> <p>The revised PDD version 2 excludes the barrier analysis. In order to demonstrate addittionality the project uses only step 2 of the "Tool". CAR 6 was closed out.</p> <p>Alternatives to the project activity were provided.</p>		

CHECKLIST QUESTION	Ref. ID	MoV*	COMMENTS	Draft Concl	Final Concl
			<p>Continuation of current practice, build a thermoelectric plant and project activity not as a CDM project.</p> <p>Alternative 3 was selected. As verified during validation assessment the continuation of current practice and the project not undertaken as a CDM project are consistent with laws and regulations. The electricity could continue to be generated by existing grid and there is no obligation to build the hydro power plant.</p> <p>The project developer selected the benchmark analysis. The IRR was used as a financial indicator for comparison. The discount rate used is the SELIC. The SELIC rate is defined by Central Bank of Brazil. The average SELIC value for the years 1999-2003 is 20.87%. Verified the worksheet with financial analysis.</p> <p>The following data presented were checked during validation assessment:</p> <p>Investments – verified the financial contract between CERAN and Financial agents, BNDES nº21/00883-3, 09/02/2004; nº03.2.794.3.1, 09/02/2004. Verified by interview and documents that the final project cost was higher than planned. During construction some problems were faced that increased the costs.</p> <p>Revenues are according ANEEL that defined the reference tariff.</p> <p>Costs – confirmed by internal documents (CPFL reference value, R\$ 3.60/MWh).</p>		

CHECKLIST QUESTION	Ref. ID	MoV*	COMMENTS	Draft Concl	Final Concl
			<p>Carbon credits – according to CER estimation based in the installed capacity. CER value was estimated.</p> <p>The IRR presented is 16.59% that represents a financial barrier for the project activity when compared to the Benchmark value (SELIC) of 20.87% (average value 1999-2003). The IRR is lower than benchmark.</p> <p>It was concluded that the project is not attractive for investors.</p> <p>A sensitivity analysis was conducted altering some parameters. The IRR is still not financially attractive.</p> <p>The common practice analysis is based in the Brazilian electricity sector. Source of data presented were checked. There are similar hydro plants located in the same region. According to the data provided in the PDD and verified, two plants has reservoir and the environmental impact is more significant than Castro Alves plant. There are other plants in the region as Monte Claro and 14 de Julho that are considering the CDM revenue. Monte Claro is a CDM project under verification and 14 de Julho will start the construction as a CDM project. It was concluded that Castro Alves plant is not a common practice in the region.</p> <p>The applicable steps of the “Tool” were assessed correctly and it was concluded that the project is additional due to the financial analysis presented and the common practice in the region.</p>		

CHECKLIST QUESTION	Ref. ID	MoV*	COMMENTS	Draft Concl	Final Concl
B.4.3. Is the discussion on additionality and the evidence provided consistent with the starting date of the project	B.5 C.1.1	DR	Yes, starting date of the project: 01/04/2004, according to CERAN letter n°129 of 2004..	Ok	Ok
B.4.4. Is the discussion on additionality consistent with the identification all potential realistic and credible baseline scenarios	B.5	DR	See section B.4.2. CAR 6 was closed out.	See CAR 6	Ok
B.4.5. If an investment analysis has been used, has it been shown that the proposed project activity is economically or financially less attractive than at least one other alternative without the revenue from the sale of CERs?	B.5	DR	Yes, an investment analysis has been used but it is not clear how the SELIC is involved on calculations/spreadsheets provided in Table 5 (Pg.19, PDD). A revised financial analysis was provided. The SELIC (benchmark) rate is defined by Central Bank of Brazil. The average value for the years 1999-2002 is 20.11%.	Pending	Ok
B.4.6. If a barrier analysis has been used, has it been shown that the proposed project activity faces barriers that prevent the implementation of this type of proposed project activity but would not have prevented the implementation of at least one of the alternatives?	B.5	DR	Barrier analysis is not consistent with the financial analysis, please rephrase the section. The barrier analysis was excluded and the project uses only the investment analysis.	Ok	Ok
B.4.7. Has it been shown that the project is not common practice?	B.5	DR	Sub step 4a is not discussed. Sub step 4b is not in accordance with the "Tool for the demonstration and assessment of Additionality version 3". CAR 7 was raised. Version 2 of the PDD presents the correct steps of the "Tool". It was presented the information under sub-step 4a and 4b as requested. CAR 7 was closed out.	CAR 7	Ok
B.4.8. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario	B.5	DR	Pending closure of CAR above. See CAR 6 and 7 closed out information.	pending	Ok

CHECKLIST QUESTION	Ref. ID	MoV*	COMMENTS	Draft Concl	Final Concl
B.5. Application of the baseline methodology					
B.5.1. Has the approved methodology been applied correctly for determining baseline emissions ?	B.6.1	DR	The approach used is in accordance with ACM0002. The emission factor used follows the Brazilian DNA requirements.	Ok	Ok
B.5.2. Has the approved methodology been applied correctly for determining project emissions ?	A.4.3 B.3 B.7	DR	According ACM0002 and information provided during site visit the PE = 0 Installed capacity = 130MW Reservoir area = 5Km2 Power density = 26W/m2 As the power density is higher than 10W/m2, the project emissions should not be considered.	Ok	Ok
B.5.3. Has the approved methodology been applied correctly for determining leakage?	B.7	DR	Leakage is not applicable.	Ok	Ok
B.5.4. Where applicable, has the approved methodology been applied correctly for the direct calculation of emission reductions	B.6.3	DR	Formulas and data presented in the PDD are correct. The calculation of emission reductions follows the methodology ACM0002 version 6.	Ok	Ok
B.5.5. Have all the methodological choices been explained, have they been properly justified and are they correct	B.6.1 B.6.3	DR	The baseline emission factor follows the ACM0002 version6 and the information was obtained from the Brazilian DNA. Method used: dispatch data analysis operating margin. The calculation and related data are presented in the PDD and spreadsheet "Cálculo dos CERs Castro Alves".	Ok	Ok
B.5.6. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	B.6.1 B.6.3	DR	Not applicable because the emission factor is defined by the Brazilian DNA and follows the ACM0002 version 6.	Ok	Ok

CHECKLIST QUESTION	Ref. ID	MoV*	COMMENTS	Draft Concl	Final Concl
B.6. Ex-ante data and parameters used					
B.6.1. Are the data provided in compliance with the methodology?	B.6.2 B.6.3	DR	The ex-ante parameters that are mentioned in the PDD is correct and in compliance with the methodology. Verified on site: Reservoir area 5Km2 Installed capacity 130MW	Ok	Ok
B.6.2. Is all the data derived from official data sources or replicable records and have these been correctly quoted?	B.6.2 B.6.3	DR	All data derived form official sources (environmental license and ANNEL contract). ANEEL contract No 08/2001 - ANEEL - COMPLEXO ENERGÉTICO RIO DAS ANTAS - AHE'S 14 DE JULHO, CASTRO ALVES E MONTE CLARO, process No 48500.005783/00-31 (this contract define the installed capacity of the HPP Castro Alves). Installation license number 393/2007-DL issued by Fepam (this license define the reservoir area of the HPP Castro Alves).	Ok	Ok
B.6.3. Is the vintage of the baseline data correct?	B.6.2 B.6.3	DR	Official data was used.	Ok	Ok
B.7. Calculation of Emissions Reductions					
B.7.1. Has the approved methodology been applied correctly for determining emission reductions ?	B.6.3	DR	Yes, the methodology was applied exactly as defined for determining emission reductions. The PDD state which equations will be used in calculating emission reductions. The required steps have been followed.	Ok	Ok
B.7.2. Are the emission reduction calculations documented in a complete and transparent	B.6.3 B.6.4	DR	The equations are presented in the PDD. WithThe data provided in the PDD it's possible to	Ok	Ok

CHECKLIST QUESTION	Ref. ID	MoV*	COMMENTS	Draft Concl	Final Concl
manner?			reproduce the calculation. Verified the spreadsheet with CER calculation (Cálculos dos CERs Castro Alves).		
B.7.3. Have conservative assumptions been used to calculate emission reductions?	B.6.3	DR	Yes, the emission factor used from official source (defined by the Brazilian DNA). Estimation of energy generation is based in official documents issued by the ANEEL (National electricity agency).	Ok	Ok
B.7.4. Is the projection based on provable input parameter?	B.6.3	DR	Yes, see section B.6	Ok	Ok
B.7.5. Is the projection based on same procedures as used for later monitoring or acceptable alternative models?	B.6.3	DR	Yes, the same procedure to calculate the estimate emissions reduction and emission factor of the grid will be used during monitoring period.	Ok	Ok
B.7.6. Is the calculation of the emission reduction correct?	B.6.3	DR	Formulas to calculate emissions and emission reductions checked.	Ok	Ok
B.8. Emission Reductions					
B.8.1. Will the project result in fewer GHG emissions than the baseline scenario?	B.6.3	DR	Yes, emissions reductions are achieved by the total electricity generated and delivered to the grid.	Ok	Ok
B.8.2. Is the form/table required for the indication of projected emission reductions correctly applied?	B.6.4	DR	Yes, follows the correct format.	Ok	Ok
B.8.3. Is the projection in line with the envisioned time schedule for the project's implementation and the indicated crediting period?	B.6.3	DR	Yes.	Ok	Ok
B.9. Monitoring Methodology					
B.9.1. Does the monitoring methodology provide a consistent approach in the context of all parameter to be monitored and further information provided by the PDD?	B.7 Anne x 4	DR	The monitoring plan provided follows the requirements of ACM0002 version 6. The project is not implemented yet and it was possible to check only the procedures and	Ok	Ok

CHECKLIST QUESTION	Ref. ID	MoV*	COMMENTS	Draft Concl	Final Concl
			information presented in the PDD section B.7 and annex 4. The information presented attends the requirements and should be followed when starting the crediting period.		
B.9.2. Does the monitoring methodology apply consistently the choice of the option selected for monitoring both of project and baseline emissions?	B.7.1 Anne x 4	DR	Yes, specifically in this project the PE is zero and the baseline emission is the grid emission factor. The EF is correctly applied and follows the ACM0002 version 6.	Ok	Ok
B.10. Data and parameters monitored					
B.10.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the emission reductions within the project boundary during the crediting period?	B.7.1	DR	Yes, monitoring plan provide the applicable parameters (Electric energy Generated (EGy); Emission Factor (EFy); Emission Factor Operating Margin (EFOM); Emission Factor Build Margin (EFBM).	Ok	Ok
B.10.2. Are the choices of project GHG indicators reasonable and in conformance with the requirements set by the approved methodology applied?	B.7.1	DR	Yes, indicator in conformance with the requirements of ACM0002 version 6.	Ok	Ok
B.10.3. Will it be possible to determine the specified project GHG indicators?	B.7.1	DR	All monitored data could be cross checked with official sources.	Ok	Ok
B.10.4. Will the indicators enable comparison of project data and performance over time?	B.7.1	DR	Yes.	Ok	Ok
B.10.5. Is the information given for each monitoring variable by the presented table sufficient to ensure the verification of a proper implementation of the monitoring plan?	B.7.1	DR	The information provided describes properly the implementation of the monitoring plan.	Ok	Ok
B.10.6. Is the information given for each monitoring variable by the presented table sufficient to ensure	B.7.1	DR	The electricity generated will be monitored by the project and it will be checked by reports emitted	Ok	Ok

CHECKLIST QUESTION	Ref. ID	MoV*	COMMENTS	Draft Concl	Final Concl
the delivery of high quality data free of potential for biases or intended or unintended changes in data records?			by CCEE (official source).		
B.10.7. Is the monitoring approach in line with current good practice, i.e. will it deliver data in a reliable and reasonably acceptable accuracy?	B.7.1	DR	As verified during site visit, the monitoring approach is in line with current good practice for the energy sector in the country.	Ok	Ok
B.10.8. Are all formulae used to determine project emission clearly indicated and in compliance with the monitoring methodology.	B.7.1	DR	Yes, the formula is correctly applied.	Ok	Ok
B.11. Quality Control (QC) and Quality Assurance (QA) Procedures					
B.11.1. Is the selection of data undergoing quality control and quality assurance procedures complete?	B.7.1 Anne x 4	DR	Yes, the level of uncertainty is low because the data related to the emission factor comes from official source (Brazilian DNA) and the electricity energy generated can be cross checked with official source.	Ok	Ok
B.11.2. Is the belonging determination of uncertainty levels done correctly for each ID in a correct and reliable manner?	B.7.1 Anne x 4	DR	Yes, see B.11.1	Ok	Ok
B.11.3. Are quality control procedures and quality assurance procedures sufficiently described to ensure the delivery of high quality data?	B.7.1 Anne x 4	DR	The monitoring plan includes the operations of all data, data analysis and data compilation systems to be employed by the project participants. The complete operational procedure with the main information presented in annex 4 will be elaborated before project operation. Ceran has experience in energy sector and the procedure will follow the same approach of the other hydro plant in operation, this procedure was verified during site visit.	Ok	Ok
B.11.4. Is it ensured that data will be bound to national or	B.7.1	DR	The monitoring data could be compared with	Ok	Ok

CHECKLIST QUESTION	Ref. ID	MoV*	COMMENTS	Draft Concl	Final Concl
internal reference standards?	Anne x 4		official source (CCEE).		
B.11.5. Is it ensured that data provisions will be free of potential conflicts of interests resulting in a tendency of overestimating emission reductions?	B.7.1 Anne x 4	DR	The electricity energy generated is controlled by third party (CCEE). The electricity delivered to the grid is available and controlled by governmental agency.	Ok	Ok
B.12. Operational and management structure					
B.12.1. Is the authority and responsibility of project management clearly described?	B.7.2	DR	The structure (authority and responsibility) is defined and described in the PDD. During site visit it was verified that the management structure is in place. Before project implementation operators will be trained for the specific activities.	Ok	Ok
B.12.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	B.7.2	DR	The maintenance area is responsible for the accomplishment of the data server backup and generation of the monthly spreadsheets of energy generation of the generating meters, the main meter and backup meter. The operation Area is responsible for the consolidation of the monthly spreadsheets of generation and supervision of the SCDE (System of energy data collection of CCEE) System, through the consistence analysis of the collected data and monitoring of the System Operation.	Ok	Ok
B.12.3. Are procedures identified for training of monitoring personnel?	B.7.2	DR	There is no procedure available because the project is not operational yet, but before project implementation operators will be trained for the specific activities.	Ok	Ok

CHECKLIST QUESTION	Ref. ID	MoV*	COMMENTS	Draft Concl	Final Concl
B.13. Monitoring Plan (Annex 4)					
B.13.1. Is the monitoring plan developed in a project specific manner clearly addressing the unique features of the CDM activity?	Anne x 4	DR	<p>Yes, the monitoring plan explains about the energy measurement process.</p> <p>Verified the procedure to collect the generation data of the Monte Claro hydro power plant (another CERAN's CDM project), the same procedure will be adopted for Castro Alves hydro power plant.</p> <p>According monitoring the project will follow the CCEE procedure PdC ME.01 version 2, 26/04/2007 (Despacho ANEEL N°1.247, 26/04/2007).</p> <p>Verified the communication diagram of the net measured energy to be invoiced.</p>	Ok	Ok
B.13.2. Does the monitoring plan completely describes all measures to be implemented for monitoring all parameter required, including measures to be implemented for ensuring data quality?	Anne x 4	DR	See B.13.1. The energy generated will be controlled internally and by third party (CCEE).	Ok	Ok
B.13.3. Does the monitoring plan provide information on monitoring equipment and respective positioning in order to safeguard a proper installation?	Anne x 4	DR	Yes, see B.13.1	Ok	Ok
B.13.4. Are procedures identified for calibration of monitoring equipment?	Anne x 4	DR	The project will follow the National System Operator procedure (ONS submódulo 12.3, 23/01/2007).	Ok	Ok
B.13.5. Are procedures identified for maintenance of monitoring equipment and installations?	Anne x 4	DR	Yes, see B.13.4	Ok	Ok
B.13.6. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance	Anne x 4	DR	See B.13.1	Ok	Ok

CHECKLIST QUESTION	Ref. ID	MoV*	COMMENTS	Draft Concl	Final Concl
documentation)					
B.13.7. Are procedures identified for dealing with possible monitoring data adjustments and missing data allowing redundant reconstruction of data in case of monitoring problems??	Anne x 4	DR	See B.13.1	Ok	Ok
B.13.8. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	Anne x 4	DR	See B.13.1. The energy data is checked internally and by the consultant company contracted.	Ok	Ok
B.13.9. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	Anne x 4	DR	See B.13.1. The energy data is checked internally and by the consultant company contracted.	Ok	Ok
B.14. Baseline details					
B.14.1. Is there any indication of a date when determine the baseline?	B.8	DR	Besides section B.8 indicates the date when baseline was determined, the PDD mention 3 starting date. The information was corrected and the PDD version 1 presents the starting date according real situation of the Castro Alves hydro plant (confirmed by the ANEEL contract No 08/2001 - ANEEL - COMPLEXO ENERGÉTICO RIO DAS ANTAS - AHE'S 14 DE JULHO, CASTRO ALVES E MONTE CLARO, process No 48500.005783/00-31, 29 May 2006).	Ok	Ok
B.14.2. Is this in consistency with the time line of the PDD history?	B.8 C	DR	Yes, see item B.14.1	Ok	Ok
B.14.3. Is all data required provided in a complete manner by annex 3 of the PDD?	Anne x 2	DR	Yes, the information is provided by the Brazilian DNA, the build margin and operating margin calculation of 2006 is used correctly being the last updated value.	OK	Ok

CHECKLIST QUESTION	Ref. ID	MoV*	COMMENTS	Draft Concl	Final Concl
C. Duration of the Project / Crediting Period					
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	C.1.1	PDD	Yes. Starting date: 01/04/2004 (According CERAN letter 129/2004). Life time is 31 years plus 9 months.	Ok	Ok
C.1.2. 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)?	C.1.2	PDD	7 years.	Ok	Ok
C.1.3. Does the project's operational lifetime exceed the crediting period	C	PDD	No.	Ok	Ok
D. Environmental Impacts					
D.1.1. Does the project comply with environmental legislation in the host country?	D	DR	Yes, the project has applicable environmental licenses required by the state environmental agency. Verified: Installation license 393/2007, issued by Fepam, valid until 31/12/2007. Operation license process 02599-0567/07-4 requested on 03/04/2007 to Fepam.	Ok	Ok
D.1.2. Has an analysis of the environmental impacts of the project activity been sufficiently described?	D	DR	Environmental impacts were considered by the environmental agency when issuing applicable licenses.	Ok	Ok
D.1.3. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	D	DR	Yes, the environmental agency required the environmental impact assessment in order to issue the installation license.	Ok	Ok
D.1.4. Will the project create any adverse environmental effects?	D	DR	It is not expected any adverse environmental effects.	Ok	Ok

CHECKLIST QUESTION	Ref. ID	MoV*	COMMENTS	Draft Concl	Final Concl
			Verified the internal environmental report to attend the license requirements: "RELATÓRIO DE ATIVIDADES EM MEIO AMBIENTE COMPLEXO ENERGÉTICO CERAN, CR/C/RM/030/037/2007, Jan-Mar 2007.		
D.1.5. Are transboundary environmental impacts considered in the analysis?	D	DR	Transboundary environmental impact was considered in the licensing process.	Ok	Ok
D.1.6. Have identified environmental impacts been addressed in the project design?	D	DR	The project obtained the licenses required by the Brazilian environmental regulation and environmental impacts were considered by Fepam (environmental agency).	Ok	Ok
E. Stakeholder Comments					
E.1.1. Have relevant stakeholders been consulted?	E	DR	Yes, as listed in the PDD, section E and verified during the validation assessment.	Ok	Ok
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	E	DR	Verify language and information used in the consultation process. Letters sent to stakeholders were verified. They are prepared in local language.	Ok	Ok
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?	E	DR	Yes, the stakeholder consultation process follow the Brazilian DNA Resolution No. 1, issued on September 11th, 2003,	Ok	Ok
E.1.4. Is the undertaken stakeholder process described in a complete and transparent manner?	E	DR	Yes, copy of the letters and delivery receipts were provided.	Ok	Ok
E.1.5. Is a summary of the stakeholder comments received provided?	E	DR	Yes, no comments received.	Ok	Ok
E.1.6. Has due account been taken of any stakeholder comments received?	E	DR	Yes, no comments received.	Ok	Ok

A.3 Annex 3 – Findings Overview

Date: 17/07/2007

Raised by: Fabian Gonçalves

No.	Type	Issue	Ref
1	CAR	The project design document shall be in conformance with the UNFCCC CDM-PDD format. Please follow the CDM-PDD format template version 03- in effect from 28 th July 2006 without modifying text, tables etc.	Table 1, item 5
Date: 14/08/2007 [Comments]: The project design document was corrected in conformance with the version 3 of the CDM-PDD format.			
Date: 23/08/2007 – Fabian Gonçalves. [Acceptance and close out]: The PDD was revised and version 01 follows the CDM-PDD template version 03. CAR 1 was closed out.			

Date: 17/07/2007

Raised by: Fabian Gonçalves

No.	Type	Issue	Ref
2	NIR	The project title mentions that the project is a run-of-river which according to the methodology is a mistake. The title should be rephrased according to the applications presented in the methodology without text changesThe methodology applicability is not clearly described in the PDD.	A.1.1 B.1.3
Date: 14/08/2007 [Comments]: The title was substituted and the methodology applicability was corrected.			
Date: 23/08/2007 – Fabian Gonçalves. [Acceptance and close out]: Title of the project was rephrased to reflect the real condition. The applicability is clearly described in section B.2 of the PDD version 01. HPP Castro Alves is a new hydro electric power project with reservoir. NIR 2 was closed out.			

Date: 17/07/2007

Raised by: Fabian Gonçalves

No.	Type	Issue	Ref
3	NIR	There is no information about training and maintenance in the PDD. Please discuss it, following the guide rules.	A.4.9
Date: 14/08/2007 [Comments]: As the project is a New Power Plant the trainings and maintenance manuals adopted are from the HPP Monte Claro, due to the projects are similar in this issue. All the comments were included in the monitoring plan of the PDD.			
Date: 23/08/2007 – Fabian Gonçalves. [Acceptance and close out]: Ceran has experience in energy sector and the procedure will follow the same approach of the other hydro plant in operation, this procedure was verified during site visit. Before project implementation operators will be trained for the specific activities. There is no procedure available because the project is not operational yet, but before project implementation operators will be trained for the specific activities. NIR 3 was closed out.			

Date: 17/07/2007

Raised by: Fabian Gonçalves

No.	Type	Issue	Ref
4	CAR	According to the “Tool”, version 3, Sub step 1a, please discuss other realistic and credible scenario and provide more details about the identified baseline scenario.	B.3.1
Date: 14/08/2007 [Comments]: A new scenario was presented: A construction of a New Thermal Power Plant. It is feasible according to the South Region of Brazil. Most of the coal reservoirs (about 95%) are located there.			

Date: 23/08/2007 – Fabian Gonçalves.
[Acceptance and close out]: PDD version 2 discusses other realistic alternatives scenario to the baseline scenario as requested by the “Tool” version 3. CAR 4 was closed out.

Date: 17/07/2007

Raised by: Fabian Gonçalves

No.	Type	Issue	Ref
5	CAR	The PDD do not mention relevant sectoral or national policies or macroeconomic trends in the discussion of the baseline scenario (PDD page 17 sub-step 1b.2.) please provide details about the law and regulation analyzed.	B.3.2

Date: 14/08/2007

[Comments]: It was showed the macroeconomic trends of the south region. The laws and regulation was presented with details.

Date: 23/08/2007 – Fabian Gonçalves.

[Acceptance and close out]: PDD version 2 presents the relevant sectoral and national policies in the discussion of the baseline scenario. The alternatives presented are in compliance with Brazilian norms and regulations. CAR 5 was closed out.

Date: 17/07/2007

Raised by: Fabian Gonçalves

No.	Type	Issue	Ref
6	CAR	<p>Additionality tool: discuss the conformance for each step. Ensure each step is transparently documented. It is necessary to provide it in a transparent manner</p> <p>Step 1</p> <p>Step 1a other realistic and credible alternative was not discussed.</p> <p>Sub-step 1b consistency with mandatory laws and regulations is not provided.</p> <p>Step2</p> <p>The revenue from the sale of CERs shall be excluded from the financial analysis.</p> <p>Sub-step 2.b option III</p> <p>Information about the benchmark reference (SELIC rate) was not provided.</p> <p>Sub-step 2c</p> <p>Sources of information about Electricity price projected was not provided</p> <p>Please provide the calculation spreadsheet of cash flow and information sources.</p> <p>Sub-step 2 d</p> <p>The sensitivity analysis was not correctly applied according to the tool.</p> <p>The CERS revenues shall be extracted from sensitivity analysis and include other information, loan rate and electricity cost.</p> <p>Step 3</p> <p>Please specify this barrier, barriers sources of information and an explanation of how they prevent the project implementation and not the alternatives.</p> <p>The PDD provide other barriers that were not discussed before</p> <p>The information sources were not provided and some of them are not according to the baseline year.</p> <p>Please clarify how the CDM alleviate the barriers.</p> <p>Please clarify the main risk and assumption about this barrier.</p>	B.4.2

Date: 14/08/07

[Comments]: In the Step 1 was included the new alternative (Thermal Power Plant) and the mandatory laws and regulations were provided.

The Step 2 was corrected. The benchmark was better explained and as the details of the Cash Flow. The sensitivity analysis was corrected.

The project IRR was lower than the benchmark in the moment of the analysis.

The Step 3 was excluded from the PDD due to the Step 2 was enough to concluded the additionality.

Date: 23/08/2007 – Fabian Gonçalves.

[Acceptance and close out]: Step 1: Alternatives to the project activity were provided. Continuation of current practice, build a thermoelectric plant and project activity not as a CDM project.

A revised financial analysis was provided: revenue from CER was excluded. The SELIC (benchmark) rate is defined by Central Bank of Brazil. The average value for the years 1999-2002 is 20.11%.

Revenues from electricity sale are according ANEEL and installed capacity.

The sensitivity analysis was verified, the analysis consider the variation in the energy tariff, operational costs and administrative costs.

The revised PDD version 2 excludes the barrier analysis. In order to demonstrate additionality the project uses only step 2 of the "Tool". CAR 6 was closed out.

Date: 17/07/2007

Raised by: Fabian Gonçalves

No.	Type	Issue	Ref
7	CAR	Sub step 4a is not discussed. Sub step 4b is not in accordance with the tool.	B.4.7

Date: 14/08/07

[Comments]: The Sub-step 4b was corrected and better explained. The HPP Castro Alves had differences in its construction making the IRR lower than the same projects. HPP Monte Claro, of the same company, also has a MDL project, due to same reasons as HPP Castro Alves.

Date: 30/08/2007 – Fabian Gonçalves.

[Acceptance and close out]: Version 2 of the PDD presents the correct steps of the "Tool". It was presented the information under sub-step 4a and 4b as requested. CAR 7 was closed out.

A.4 Annex 4 – Statements of Competency for Validation Team Members

Statement of Competence

Name: Fabian Goncalves

SGS Affiliate: SGS Brazil

Status

- Product Co-ordinator ☒
- Operations Co-ordinator ☐
- Technical Reviewer ☐
- Expert ☐

Validation

Verification

- | | | |
|-------------------------|-------------------------------------|-------------------------------------|
| - Local Assessor | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| - Lead Assessor | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| - Assessor | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| / Trainee Lead Assessor | | |

Scopes of Expertise

- | | |
|------------------------------------------------------------------------------------------------|-------------------------------------|
| 1. Energy Industries (renewable / non-renewable) | <input checked="" type="checkbox"/> |
| 2. Energy Distribution | <input type="checkbox"/> |
| 3. Energy Demand | <input type="checkbox"/> |
| 4. Manufacturing | <input checked="" type="checkbox"/> |
| 5. Chemical Industry | <input checked="" type="checkbox"/> |
| 6. Construction | <input type="checkbox"/> |
| 7. Transport | <input type="checkbox"/> |
| 8. Mining/Mineral Production | <input type="checkbox"/> |
| 9. Metal Production | <input type="checkbox"/> |
| 10. Fugitive Emissions from Fuels (solid,oil and gas) | <input type="checkbox"/> |
| 11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride | <input type="checkbox"/> |
| 12. Solvent Use | <input type="checkbox"/> |
| 13. Waste Handling and Disposal | <input checked="" type="checkbox"/> |
| 14. Afforestation and Reforestation | <input type="checkbox"/> |
| 15. Agriculture | <input type="checkbox"/> |

Approved Member of Staff by: Marco van der Linden

Date: 27/07/2006



Statement of Competence

Name: Geisa Principe

SGS Affiliate: SGS Brazil

Status

- Product Co-ordinator ☐
- Operations Co-ordinator ☐
- Technical Reviewer ☐
- Expert ☐

Validation

Verification

- Local Assessor ☒
- Lead Assessor ☐
- Assessor ☒
- / Trainee Lead Assessor

Scopes of Expertise

- | | |
|---------------------------------------------------------------------------------------------------|-------------------------------------|
| 1. Energy Industries (renewable / non-renewable) | <input checked="" type="checkbox"/> |
| 2. Energy Distribution | <input type="checkbox"/> |
| 3. Energy Demand | <input type="checkbox"/> |
| 4. Manufacturing | <input type="checkbox"/> |
| 5. Chemical Industry | <input type="checkbox"/> |
| 6. Construction | <input type="checkbox"/> |
| 7. Transport | <input type="checkbox"/> |
| 8. Mining/Mineral Production | <input type="checkbox"/> |
| 9. Metal Production | <input type="checkbox"/> |
| 10. Fugitive Emissions from Fuels (solid,oil and gas) | <input type="checkbox"/> |
| 11. Fugitive Emissions from Production and
Consumption of Halocarbons and Sulphur Hexafluoride | <input type="checkbox"/> |
| 12. Solvent Use | <input type="checkbox"/> |
| 13. Waste Handling and Disposal | <input type="checkbox"/> |
| 14. Afforestation and Reforestation | <input type="checkbox"/> |
| 15. Agriculture | <input type="checkbox"/> |

Approved Member of Staff by: Marco van der Linden Date: 13/03/2007

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