RINA

VALIDATION REPORT

"Guanhães Energia CDM Project, Minas Gerais, Brazil (JUN1123)" in Brazil

REPORT NO. 2009-BQ-ME-24

REVISION NO. 00

RINA

VALIDATION REPORT

Project Name: "Guanhães Energia CDM Project, Minas Gerais, Brazil (JUN1123)"	**Country:** Brazil	**Estimated CERs** (tCO_2e)**:** 440,646	
Client: Carbotrader Ltda	**Client contact:** Mr. Arthur Moraes		
Report title: "Guanhães Energia CDM Project, Minas Gerais, Brazil (JUN1123)" in Brazil	**Report No.:** 2009-BQ-ME-24	**Rev. No.** 00	**Date of this report:** 14/12/2009
Approved by: *(Final Report – DCI Director approval)* Roberto Cavanna	**Organizational Unit:** DCI		**Date:** 07/01/2010

Methodology

Reference:	**Version:**	**Title:**	**Sectoral Scope:**
ACM0002	Version 10 of 11/06/2009	"Consolidated baseline methodology for grid-connected electricity generation from renewable sources"	1

RINA has performed a validation of the CDM project activity "Guanhães Energia CDM Project, Minas Gerais, Brazil (JUN1123)" on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, the subsequent decisions by the CDM Executive Board and the Host country criteria.

The project applies the approved baseline and monitoring methodology ACM0002, i.e."Consolidated baseline methodology for grid-connected electricity generation from renewable sources", Version 10 of 11/06/2009. The baseline methodology has been correctly applied and the assumptions made for the selected baseline scenario are sound. The monitoring methodology has been correctly applied and the monitoring plan sufficiently specifies the monitoring requirements.

In our opinion, the project as described in the PDD of 03 November 2009 meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria. and correctly applies the approved baseline monitoring methodology ACM0002, i.e. "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", Version 10 of 11/06/2009. The "Guanhães Energia CDM Project, Minas Gerais, Brazil (JUN1123)" project will hence be recommended by RINA for registration as a CDM project activity.

Prior to the submission of the Project Design Document and the Validation Report to the CDM Executive Board, the Project will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the Project assists the country in achieving sustainable development.

Work carried out by: Américo Varkulya Jr, Thaís Carvalho, Vicente San Valero, Ashok Kumar	☒ No distribution without permission from the Client or responsible organizational unit ☐ Strictly confidential ☐ Unrestricted distribution
Work verified by: *(CRT Responsible approval)* Paolo Teramo	**Keywords:**

Abbreviations / Acronyms

Explain any abbreviations/ acronyms that have been used in the report here.

ANEEL	"Agência Nacional de Energia Elétrica" - Brazilian Electric Energy Agency
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER(s)	Certified Emission Reduction(s)
CCEE	"Camara de Comercialização de Energia Elétrica"- Electric Power Commercialization Chamber
CL	Request for Clarification
CIMGC	"Comissão Interministerial de Mudança Global do Clima" (Interministerial Commission on Global Climate Change)
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DNA	Designated National Authority
EPC	Engineering, Procurement and Construction
FAR	Forward Action Request
FEAM	"Fundação Estadual do Meio Ambiente" - Environment Foundation of the Minas Gerais State Government
GHG	Greenhouse gas(es)
ODA	Official Development Assistance
ONS	"Operador Nacional do Sistema"- National Grid Operator
PDD	Project Design Document
PROINFA	"Programa de Incentivo às Fontes Alternativas de Energia Elétrica" - Programme of Incentives to the Alternative Sources of Electric Energy
PP	Project Participants
RINA	RINA
SELIC	"Sistema Especial de Liquidação e de Custódia" - Special System for Settlement and Custody (Overnight Interest Rate)
SHP	Small Hydroelectric Plant (Pequena Central Hidroelétrica - PCH)
SIN	"Sistema Interconectado Nacional" - National Interconnected System
UNFCCC	United Nations Framework Convention on Climate Change

VALIDATION REPORT

Table of Contents ***Page***

1 INTRODUCTION

The Client has commissioned RINA to perform a validation of the "Guanhães Energia CDM Project, Minas Gerais, Brazil (JUN1123)". This report summarizes the findings of the validation of the project, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and the subsequent decisions by the CDM Executive Board.

The following team has performed this validation:

Role/Qualification	Last Name	First Name	Country
Validator	Varkulya, Jr	Américo	Brazil
Validator	Carvalho	Thaís	Brazil
CDM Technician	Kumar	Ashok	India
Team Leader	San Valero	Vicente	Brazil
Team/Reviewer	Teramo	Paolo	Italy

The draft validation report, including the initial validation findings, underwent a technical review before being submitted to the project participants. The technical review was performed by a technical reviewer qualified in accordance with RINA's qualification scheme for CDM validation and verification.

1.1 Objective

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

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board, including the approved baseline and monitoring methodologyACM0002 - "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", Version 10 of 11/06/2009 /10/.

The validation team has, based on the recommendations in the CDM Validation and Verification Manual /9/ (hereinafter referred as the VVM) employed a risk-based approach, 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 project participants. However, stated Clarification and/or Corrective Actions Requests may have provided input for improvement of the project design.

1.3 GHG Project Description

The project activity consists on the generation and delivery of renewable electric energy to the Brazilian connected grid, through the follow Small Hydroelectric Plants (SHP), which will be installed in Minas Gerais State:

- SHP Dores de Guanhães - 14 MW;
- SHP Fortuna II - 9 MW;
- SHP Jacaré - 9 MW;
- SHP Senhora do Porto - 12 MW.

Emission reductions are claimed from displacing grid electricity with the estimated electricity that will be generated by the hydroelectric power plants and supplied to the grid.

The total installed capacity of the project activity is 44 MW (14+9+9+12) with an estimated generation of 219,263 MWh/year (assured energy), achieving a value of GHG emission reductions corresponding to 440,646 tCO_2e during the first renewable 7 years crediting period (with the potential of being renewed twice), resulting in an annual average emission reductions of 62,949 tCO_2e / year.

2 METHODOLOGY

The validation may consist of the following three phases:

I a desk review of the project design documentation

II follow-up interviews with project stakeholders

III the resolution of outstanding issues and the issuance of the final validation report and opinion.

Explain the different means of verification used, and any considerations related to adjustments made to the use of the validation protocol. There is a reference to the complete protocol in Appendix A. There should also be a reference to the Validation and Verification Manual for methodology and protocol.

Findings established during the validation can either be seen as a non-fulfillment of validation protocol criteria or where a risk to the fulfillment of project objectives is identified.

Corrective Action Request (CAR) shall be raised if one of the following occurs:

(a) The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;

(b) The CDM requirements have not been met;

(c) There is a risk that emission reductions cannot be monitored or calculated.

The validation team shall raise a Clarification Request (CL) if:

Information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

A Forward Action Request (FAR) shall be raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for registration.

VALIDATION REPORT

Validation Protocol Table 1: Mandatory Requirements			
Requirement	***Reference***	***Conclusion***	***Cross reference***
The requirements the project must meet.	*Gives reference to the legislation or agreement where the requirement is found.*	*This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the Validation report.*	*Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent Validation process.*

Validation Protocol Table 2: Requirement checklist				
Checklist Question	***Reference***	***Means of verification (MoV)***	***Comment***	***Draft and/or Final Conclusion***
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organized in seven different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	*Gives reference to documents where the answer to the checklist question or item is found.*	*Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.*	*The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.*	*This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). Clarification (CL) is used when the validation team has identified a need for further clarification. A Forward Action Request (FAR) shall be raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity*

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

Figure 1 Validation protocol tables

2.1 Review of Documents

The initial Project Design Document (PDD Version 1) of 28 November 2008 /1/ and estimative for the emission reductions /2/ and financial investments, submitted by Carbotrader Assessoria e Consultoria em Energia Ltda were assessed by RINA. After the initial validation some findings were identified and communicated to the Client. Consequently the following revised versions of the PDD and its respective spreadsheets of CER calculations were submitted and assessed by RINA:

- PDD Version 2 of 04 September 2009 /4/ and SPE Guanhães_CERs_v2.xls- Emission reductions calculations spreadsheet /5/;
- PDD Version 3 of 03 November 2009 /7/ and SPE Guanhães_CERs_v3.xls- Emission reductions calculations spreadsheet /8/.

RINA also assessed additional background documents (/9/ to /24/), related to the design and/or methodologies employed in the design or other reference documents.

2.2 Follow-up Interviews

On 09/06/2009, RINA performed a site visit and interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Carbotrader Assessoria e Consultoria em Energia Ltda, SPE Guanhães Energia S.A. and CEMIG Geração e Transmissão S.A. were interviewed (/25/ to /27/).

The main topics of the interviews are commented through the report and summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
Carbotrader Assessoria e Consultoria em Energia Ltda; SPE Guanhães Energia S.A.; CEMIG Geração e Transmissão S.A.	- Clarifications on establishment of baseline, monitoring plan and emission reduction calculations - Resources, training needs and procedures for operation and maintenance - Monitoring Plan / Records (backups) - Maintenance program (calibration) - Project boundaries - Baseline and project emissions - Emissions reductions calculations - Environmental Licenses - Local stakeholders – invitations/confirmations

2.3 Resolution of Clarification and Corrective Action Requests

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

The Corrective Action Requests (**07**) and Clarification Requests (**15**) rose by RINA were resolved during communications between the Client and RINA. One (**01**) Forward Action Request (FAR) has been raised and should be checked in the first verification.

To guarantee the transparency of the validation process, the concerns raised are summarized in chapter 3 below and documented in more detail in the validation protocol in Appendix A.

3 VALIDATION FINDINGS

Where RINA identified issues that needed clarification or that could represent a risk to the fulfillment of the project objectives, Clarification or Corrective Action Requests, respectively, have been issued. The requirements to be validated, means of validation and reporting requirements are documented in more detail in the Validation Protocol in Appendix A.

The final validation findings relate to the project design as documented and described in the revised and resubmitted project design documentation, CDM-PDD for "Guanhães Energia CDM Project, Minas Gerais, Brazil (JUN1123)" project, Version 3, dated 03 November 2009.

3.1 Project Design

The "Guanhães Energia CDM Project, Minas Gerais, Brazil (JUN1123)" is composed by four Small Hydroelectric Plants (SHPs), which will be installed at Minas Gerais State. The location of the four SHPs are indicated in the below table.

SHP	City	Coordinates
Dores de Guanhães	Dores de Guanhães	19º 04'S / 42º 53'W
Fortuna II	Guanhães and Virginópolis	18º 54' S / 42º 41' W
Jacaré	Dores de Guanhães	19º 00' S / 42º 57' W
Senhora do Porto	Dores de Guanhães	19º 02' S / 42º 55' W

Section A.4.1.3 of the PDDs versions 2 and 3 present the city Dores de Guanhães for the SHP Dores de Guanhães and SHP Senhora do Porto, according to the document *Carta Nº 47-2009 SUPRAM CENTRAL.pdf.* /20/, instead of Guanhães, that was mentioned in the published PDD.

The proposed project activity falls under Project category "Grid-connected electricity generation from renewable sources" and Sectoral Scope 1- Energy industries (renewable/non-renewable sources).

The proposed project boundary (spatial extent) encompasses the physical, geographical sites of the renewable power generation sources and all power plants connected physically to the Brazilian interconnected grid.

The project is a renewable electricity generation project activity displacing grid electricity that is partly generated based on fossil fuels, with electricity generated from renewable sources and thus resulting in the reduction of emissions of greenhouse gases in the energy sector.

The SHP Dores de Guanhães presents an installed capacity of 14 MW and a reservoir area of 0.11 km^2, confirmed through the ANEEL Dispatch no. 2001/2007, issued on 20/06/2007 /16/. This SHP will use one Kaplan vertical shaft turbine with a nominal power of 14,500 kW (flow rate of 46.90 m^3/s) and a 14,000 kW generator.

The SHP Fortuna II presents an installed capacity of 9.0 MW and the area of reservoir is 0.963 km^2, confirmed through the ANEEL Dispatch no. 1865/2007 issued on 13/06/2007 /16/. This SHP will use two Francis horizontal turbines with a nominal power of 4,660 kW each (flow rate of 10.37 m^3/s) and two generators of 4,500 KW each.

The SHP Jacaré presents an installed capacity of 9.0 MW, with a reservoir area equal to 0.77 km^2, confirmed through the ANEEL Dispatch no. 2002/2007, issued on 20/06/2007 /16/. This SHP will use one Kaplan vertical shaft turbine, with a nominal power of 9,320 kW (flow rate of 42.20 m^3/s) and a 9,000 kW generator.

The SHP Senhora do Porto presents an installed capacity of 12 MW and a reservoir area equal to 0.42 km^2, confirmed through the ANEEL Dispatch no. 2003/2007, issued on 20/06/2007 /16/. This SHP will use one Kaplan vertical turbine, with a nominal power of 12,440 kW (flow rate of 46.02 m^3/s) and a 12,000 kW generator.

The project (4 SHPs) is expected to displace 219,263 MWh/year of electricity per year (Assured Energy[1]) and the total installed capacity of the project activity is forecasted to be 44 MW (assured installed capacity of 25 MW).

The Assured Energy of a hydroelectric plant is issued for each plant by ANEEL (Brazilian Electric Energy Agency), and serves essentially two purposes:

(i) to establish an upper limit for energy supply contracts (PPAs), and

(ii) to define the share of each generating plant on the total amount of energy generated in the system by hydro plants.

The Assured Energy of the Brazilian electric system is defined as the maximum energy production that can be delivered almost continuously by hydroelectric plants throughout the years, simulating the occurrence of each one of the thousands of possibilities of statistically created flow sequences, admitting certain risk of not attendance to the load, that is, in determined percentile of the simulated years some rationing is allowed up to a limit considered acceptable by the system. The determination of the Assured Energy is associated to the conditions in the long term that each plant can supply to the system assuming an specific risk criteria of non-attendance to the market (risk of deficit), considering mainly the hydrologic variability to which the plant is submitted.

The published PDD (version 1) presented different assured energy values from the ones presented in ANEEL's Decrees ("Portarias"). The revised PDD Version 3 of 03 November 2009 presents the correct calculus, based on the assured energy as per ANEEL Decrees, presented below.

SHP	Assured Energy MW (ANEEL Decrees)
Dores de Guanhães	8.00
Fortuna II	5.11
Jacaré	5.15
Senhora do Porto	6.77

The project design engineering reflects current good practice.

Project participants are Carbotrader Assessoria e Consultoria em Energia Ltda and SPE Guanhães Energia S.A. The host Party Brazil meets all relevant participation requirements. No Annex I party has yet been identified.

Prior to the submission of the Project Design Document and the Validation Report to the CDM Executive Board, the Project will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the Project assists the country in achieving sustainable development.

[1] http://www.aneel.gov.br/aplicacoes/capacidadebrasil/energiaassegurada.asp

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

A renewable crediting period of 7 years (with the potential of being renewed twice) was selected in the published PDD (version 1), with a forecasted start on 15/05/2010 and later, in the revised PDDs versions 2 and 3, the crediting period starting date was revised to 01/02/2011 or the date in which occurs the UNFCCC registration, the one that occurs later.

The project's starting date was defined as 16/10/2008 in the published PDD (version 1) and later, with proper evidence, confirmed as 15/12/2009 in the revised PDD Version 3 of 03 November 2009. An e-mail /24/ from Guanhães Energia S.A (Mr. Hudson Maia Arantes) confirming that the forecasted data to sign the EPC contract is 15/12/2009 was presented and found acceptable as evidence for the project's starting date as the forecasted earliest commitment to expenditures related to the implementation or construction of the project activity.

The PDD was published on 15/03/2009, before the project starting date (15/12/2009) defined by project participants in the revised PDD (version 3). Thus, as stated in the "*Guidelines on the demonstration and assessment of prior consideration of the CDM*", the notification of the commencement of the project activity and of their intention to seek CDM status is not necessary as the PDD has been published for global stakeholder consultation before the project activity start date.

The expected operational lifetime of the project is defined as 30 years (0 months), and deemed reasonable. The expected operational lifetime of 30 years is mentioned in the document "*Comite de Priorização de Investimento - CPO*" /23/.

As mentioned in the published PDD (version 1), the project was expected to reduce CO_2 emissions to the extent of 222,994 tCO2e (31,856 tCO2e / year average) over the 7 years renewable crediting period (with the potential of being renewed twice). Later, due to the change of the crediting period starting date and the update of the grid emission factor of the Brazilian grid system (from 0.1842 to 0.3112 tCO_2/MWh), the expected total of CO_2 emissions reductions were revised and now the project is expected to reduce CO_2 emissions to the extent of 440,646 tCO2e (62,949 tCO_2e / year average), as reflected in the PDD Version 3 of 03 November 2009.

The project activity will create other social benefits, such as better working conditions, increase on job opportunities and better conditions on local economy. The PPs document "Plano de Gestão Ambiental- PGA, July 2007" /21/ describes social programs and activities that are forecasted to be created by the project activity.

3.2 Baseline

The published PDD was revised in order to present the most updated version of the methodology.

The project applies the approved consolidated baseline methodology ACM0002 - "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", Version 10 of 11/06/2009 /10/.

The approved methodology refers to the latest approved versions of the following tools:

* "Tool to calculate the emission factor for an electricity system" - version 1.1;
* "Tool for the demonstration and assessment of additionality" - version 5.2;
* "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion"- version 2.

(As the project activity does not present fossil fuel consumption, this third tool was not considered).

ACM0002 is applicable to the "Guanhães Energia CDM Project, Minas Gerais, Brazil (JUN1123)" because:

- the project activity will result in the installation of four hydro power plants/units (either with a run-of-river reservoir or an accumulation reservoir);
- the project activity will result in new reservoirs and the power density of the power plants, as per definitions given in the Project Emissions section, is greater than 4 W/m^2;
- the geographic and system boundaries for the relevant electricity grid can be clearly identified and information on the characteristics of the grid is available;
- the power density of the power plants is greater than 4 W/m^2 (see table below).

SHP	Installed Power (MW)	Reservoir (km^2)	Power Density (W/m^2)
Dores de Guanhães	14	0.11	127.27
Fortuna II	9	0.963	9.35
Jacaré	9	0.77	11.69
Senhora do Porto	12	0.42	28.57

The areas of the reservoirs of SHP´s Fortuna and Jacaré, presented on PDD, version 1, table 3 - item A.4.3, were exchanged (inverted) and were revised correctly in the PDDs version 2 and 3.

Fortuna II SHP has a power density smaller than 10 W/m^2 and so project emissions from its reservoir were considered. The other three power plants (Dores de Guanhães, Jacaré and Senhora do Porto) have power densities greater than 10 W/m^2 and thus the project emissions from their reservoir(s) are considered as equal to zero (PE_y=0).

All four Power Plants are considered as Small Hydroelectric Plants (SHPs), according to the Resolution #652 (issued on 09/12/2003) from the Brazilian Power Regulatory Agency (Agência Nacional de Energia Elétrica – ANEEL) /18/, which states that small hydro's in Brazil must have an installed capacity greater than 1 MW but not more than 30 MW and with reservoir area less than 3 km^2.

The following emissions sources were included in or excluded from the project boundary:

Baseline emissions

Source	Gas	Included?	Justification / Explanation
CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity.	CO_2	Yes	Main emission source.
	CH_4	No	Minor emission source.
	N_2O	No	Minor emission source.

Project Activity Emissions

Source	Gas	Included?	Justification / Explanation
For hydro power plants, emissions of CH_4 from the reservoir.	CO_2	No	Minor emission source.
	CH_4	Yes	Main emission source
	N_2O	No	Minor emission source.

The revised PDDs versions 2 and 3 took out the wrong statement contained in the published PDD (section B.3) which was mentioning that project emissions were not to be considered. Project emissions calculations for the SHP Fortuna II were properly explained in section B.6.1 of the PDDs versions 2 and 3.

The project does not involve switching from fossil fuels to renewable energy at the site(s) of the project activity.

The baseline scenario is the following: 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".

Emission reductions were initially estimated (published PDD), using the latest grid emission factor (2007 data) of the Brazilian grid system (estimated *ex-ante*), available at the time baseline study and the monitoring methodology were concluded (28/11/2008), and equal to 0.1842 tCO_2/MWh.

In the PDD version 3, dated 28 November 2008, this factor was updated and the emission reductions were estimated *ex-ante* based on the latest available emission factor of the Brazilian grid system for 2008, (= 0.3112 tCO_2/MWh - average OM=0.4766 tCO_2/MWh and BM= 0.1458 CO_2/MWh). The emission factor provided by the Brazilian DNA ("Comissão Interministerial de Mudança Global do Clima"– CIMGC) is calculated according to the Tool to calculate the emission factor for an electricity system, Version 01.1 and considering all four regions connected (North, Northeast, South and Southeast-Midwest). Data was checked against the Brazilian DNA web site and found correct.

The project's additionality is demonstrated by project participants as per the "Tool for the demonstration and assessment of additionality" - Version 5.2.

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

Sub-step 1a: Define alternatives to the project activity

Two alternative baseline scenarios were considered by project participants:

Alternative 1: Project activity construction without the CDM carbon credits revenue;

Alternative 2: keeping the *business as usual* practices (electricity continues to be generated with the actual power plant mix that has fossil fuel power plants in operation).

Sub-step 1b: Consistency with mandatory laws and regulations

Both alternatives are in compliance with all mandatory applicable legal and regulatory requirements.

Step 2: Investment analysis

Sub-step 2a: Determine appropriate analysis method

Project participants identified Option III, benchmark analysis, as the analysis method option to be applied.

Among the three options available for investment analysis as discussed in the "Tool for the demonstration and assessment of additionality", project participants have chosen the benchmark analysis since the other two are not applicable. The simple cost analysis is not applicable because the project will generate financial and economic benefits (from electricity sales) other than CDM

related income. The investment comparison analysis is not applicable either because the only alternative to the project activity is the supply of electricity from a grid, which is not to be considered a similar investment project.

Sub-step 2b: Option III. Apply benchmark analysis

The IRR (internal rate of return) was identified as the financial/economic project's indicator and the SELIC (Special System for Settlement and Custody) rate was selected for the benchmark analysis.

The SELIC rate is defined and calculated by the Brazilian Central Bank and is the weighted average of the rates traded in overnight repurchase agreements (*repos*) backed by government bonds. In other words, it is Brazilian Central Bank's overnight lending rate and considered the country's risk-free rate. SELIC data used by projects participants are official and available at Brazilian Central Bank's home page[2].

Contrarily to other countries, in Brazil there is not a specific IRR that works as a benchmark for SHP projects, which is the same to say that the Brazilian government does not require a minimum profitability in projects of this kind nor there is a widely accepted benchmark applied by several different players in the Brazilian small hydropower business. The attractiveness of any project in this area depends exclusively on the minimum rate of return required by project participants. To be economically attractive, the IRR of any investment project implemented in Brazil should exceed the SELIC rate as projects carry risks (i.e. execution risks, financial risks etc) and therefore should include a premium over the risk-free rate.

In the published PDD (version 1), project participants selected a period from January 2003 to December 2008 to calculate the SELIC average, resulting in an average SELIC rate of 16.99%. Aiming to exclude periods when the mentioned rate was distorted by Brazilian specific events (2002-2003), PP revised the PDD (Versions 2 and 3) considering a shorter and more conservative period from January 2004 to December 2008. The average SELIC for this period is 15.48 %. Database containing the SELIC rate for the period under consideration ("Histórico Selic_version 2.xls") /22/ was provided to RINA and verified.

Sub-step 2c: Calculation and comparison of financial indicators

Project participants presented in the published PDD (version 1), a cash-flow (SPE Guanhães_Cash Flow_v1.xls) /3/ that was elaborated for a period of 28 years, getting an IRR equal to 12.62%, without CERs sales, and 13.35, with CERs sales, both below the initially selected benchmark of 16.99%.

The revised PDDs versions 2 and 3, presented a revised cash flow (*SPE Guanhaes Cash Flow v2_1.xls)* /6/ considering the project's lifetime (30 years) and a revised benchmark of 15.48 %. The revised IRRs came to 9.73 % without CERs sales and 10.80 % with CERs sales, both still below the selected 15.48 % benchmark. The assumptions of the revised cash flow were confirmed throught the document "*Comite de Priorização de Investimento - CPO*" /23/.

The initial investment amount of R$251 million is reasonable considering the magnitude of such investments. In fact, the average of R$ 5,700/kW installed is in line with the average of similar projects, which is reinforced by the expected trend in construction material prices. .Verified in the document "*Comite de Priorização de Investimento - CPO*" that the viability studies for the SHPs considered the four SHPs as a group, therefore the cash-flow of the project activity was

[2] www.bcb.gov.br

elaborated considering the four SHPs. This document also confirmed the investments, energy price and O & M costs. The construction investment was also checked trough a newspaper article about the four SHPs.

Starting operations in February 2011, SPE Guanhães should reach full capacity only in 2012 when revenues should amount to R$30.2 million. Therefore, revenues in 2011 should be approximately 80% of gross revenues generated from 2012 onwards. The project is expected to deliver 219,263 MWh per year out of which 97% should be negotiated at R$140 / MWh under purchase and sale agreements between SPE Guanhães and its industrial clients while the remaining 3% should be negotiated in the short term market at an average spot price of R$76.44 / MWh.

According to the Tool for Additionality, it should be determined whether the proposed project activity is not: (a) The most economically or financially attractive; or (b) Economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs). The annual IRR of SPE Guanhães, according to the spreadsheet provided by project participants, was 9.73 % without CERs income and 10.80 % with CERs income, much lower than the benchmark (SELIC rate = 15.48 % per year), therefore satisfying condition "a" above.

Table 3 –Comparison of financial indicators with and without income from CDM

	Without CER Income	With CER Income	Benchmark (SELIC)*
IRR (annual)	9.73 %	10.80 %	15.48 %

* Average of the 4-year period from January 2004 to December 2008.

Sub-step 2d: Sensitivity analysis

For the sensitivity analysis, cost variations of +10 % and – 10% were applied on the electricity price, investment and annual operation values were carried out and expalined on sub-step 2c. The spreadsheet *"SPE Guanhaes Cash Flow v2_1.xls"* /6/ presents the calculation of the break even point analysis and the discussions of the possibilities of the scenarios reach the benchmark. Besides the parameters included in the analysis presented in the PDD version 1, PP also included in the PDDs versions 2 and 3 the analysis of the plant load factor parameter. The breakeven points are: 27% rise of the energy price, 23% reduction of the investment and 29 % increase in the plant load factor The conclusion of the sensitivity analysis is that these variations are not likely to occur.

In RINA's opinion, the investment analysis has been done correctly and demonstrates that the project activity is unlikely to be financially/economically attractive.

Step 3: Barrier analysis

Not selected.

Step 4: Common practice analysis

Sub-step 4a: Analyze other activities similar to the proposed project activity

The common practice analysis was revised in the PDDs versions 2 and 3 in order to present the scenario Brazil, not only Minas Gerais state, as presented in the published PDD (version 1). PP included in the analysis SHPs with installed capacity above 5 MW and below 15 MW. From 2005 (just after the formal CDM market beginning) until May 2009, 41 SHPs were implemented in Brazil with installed capacities between 5 MW and 15 MW. From this 41 SHPs, 11 were

implemented with the PROINFA incentive and 28 were implemented with the CDM incentive. These figures were checked and confirmed in ANEEL and UNFCCC web sites. Thus, it can be confirmed that the implementation of similar projects are made by availing some kind of benefits (PROINFA and CDM benefits).

Sub-step 4b: Discuss any similar Options that are occurring

According to the National Agency for Electrical Energy (ANEEL), only 2.12% of the installed capacity of the overall operational Brazilian plants are represented by SHPs, while Large Hydro Power Plants represent 73.92% and Thermal power plants represent 21.62% (ANEEL web site).

Therefore, the project activity is not the business-as-usual scenario in Brazil, where large Hydropower and Natural Gas Thermo Power plants represent the majority (95.5%) of present installed capacity.

Based on all above considerations, it is RINA's opinion that the GHG emission reductions achieved by the project activity are additional to those that would have occurred in the absence of the project activity.

3.3 Monitoring Plan

The project applies the approved consolidated monitoring methodology ACM0002 - "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", Version 10 of 11/06/2009.

The project is a grid-connected renewable power generation, with power density greater than 4W/m2, which is applicable for ACM0002.

The parameters that are available at validation (not monitored) are correctly described in Section B.6.2, according to the requirements of the methodology ACM0002 version 10:

GWP_{CH4}	-Global warming potential of methane valid for the relevant commitment period
EF_{Res}	- Default emission factor for emissions from reservoirs
Cap_{BL}	-Installed capacity of the hydro power plant before the implementationof the project activity. For new hydro power plants, this value is zero
A_{BL}	-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.

The following parameters are mentioned as to be monitored:

$EG_{DoresdeGuanhães,\ y}$	-	Net Electricity supplied by the SHP to the grid in year *y*;
$EG_{FortunaII,\ y}$	-	Net Electricity supplied by the SHP to the grid in year *y*;
$EG_{Jacaré,\ y}$	-	Net Electricity supplied by the SHP to the grid in year *y*;
$EG_{SenhoradoPorto,\ y}$	-	Net Electricity supplied by the SHP to the grid in year *y*
$EF_{grid,CM,y}$	-	Brazilian grid emission factor;
$EF_{grid,OM\text{-}DD,y}$	-	CO2 Operating Margin emission factor of the grid, in a year *y*;
$EF_{grid,BM,y}$	-	CO2 Build Margin emission factor of the grid, in a year *y*;

TEG_y	-	Total electricity produced by the SHP Fortuna II, including the electricity supplied to the grid and the electricity supplied to internal loads, in year *y*;
Cap_{JP}	-	Installed capacity of the hydro power plant after the implementation of the project activity;
A_{PJ}	-	Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full.

The net electricity generated from the project will be measured and recorded continuously (hourly reading and recorded monthly). These measurements will be cross checked against sales receipts of the electricity delivered to the grid and/or the CCEE measured data.

All data collected as part of monitoring will be archived and kept at least for 2 years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.

The emission factor will be updated *ex-post* using data published by the Brazilian DNA.

Project emissions are calculated for the SHP Fortuna II and leakage accounting is not required under ACM0002 and thus has not been considered for the project.

The revised PDD (version 3) included the information of the training of monitoring personnel, training needs, procedures and responsible personnel. It also mentions that the personnel will be trained during plant construction and during the plant commercial operation. Operation, maintenance and calibration procedures will follow the National Grid Operator guidelines. Emergency procedures will be included in the training courses.

It is established that SPE Guanhães Energia should be responsible for the operational structure of the project activity and that emission reductions should be managed/claculated by Carbotrader Assessoria e Consultoria em Energia Ltda.

3.4 Calculation of GHG Emissions

The formulas and factors used in the project's emissions calculations are in accordance to the approved baseline and monitoring methodology ACM0002 - "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", Version 10 of 11/06/2009.

***Ex-ante* calculation of emission reductions**

Emission reductions were initially estimated (published PDD), using the latest grid emission factor of the Brazilian grid system (estimated *ex-ante*), available at the time baseline study and the monitoring methodology were concluded (28/11/2008), and equal to 0.1842 tCO_2/MWh (2007 data).

In the PDD version 3, dated 28 November 2008, this factor was updated and the emission reductions were estimated *ex-ante* based on the latest available emission factor of the Brazilian grid system for 2008, (= 0.3112 tCO_2/MWh - average OM=0.4766 tCO_2/MWh and BM= 0.1458 CO_2/MWh). The emission factor provided by the Brazilian DNA ("Comissão Interministerial de Mudança Global do Clima"– CIMGC) is calculated according to the Tool to calculate the emission factor for an electricity system, Version 01.1 and considering all four regions connected (North, Northeast, South and Southeast-Midwest). Data was checked against the Brazilian DNA web site and found correct.

***Ex-post* calculation of emission reductions**

The combined margin emissions factor ($EF_{grid,CM,y}$) will be calculated *ex-post* using the CO_2 emission factors for the build margin and the operational margin that are provided by the Brazilian DNA. CO_2 emission factors for the build margin and the operational margin for electricity generation in Brazil's National Interconnected System (SIN) are calculated, according to the dispatch analysis, from generation records of plants dispatched in a centralized manner by the National Electric System Operator (ONS).

Fortuna II SHP has a power density greater than 4 W/m^2 and less than 10 W/m^2 and so project emissions from its reservoir were considered.

As mentioned in the published PDD (version 1), the project was expected to reduce CO_2 emissions to the extent of 222,994 tCO2e (31,856 tCO2e / year average) over the 7 years renewable crediting period (with the potential of being renewed twice). Later, due to the change of the crediting period starting date and the update of the grid emission factor of the Brazilian grid system (from 0.1842 to 0.3112 tCO_2/MWh), the expected total of CO_2 emissions reductions were revised and now the project is expected to reduce CO_2 emissions to the extent of 440,646 tCO2e (62,949 tCO_2e / year average) over the 7 years renewable crediting period (with the potential of being renewed twice), as reflected in the PDD Version 3 of 03 November 2009.

Emission reductions calculation was provided in the spreadsheet "*SPE Guanhães_CERs_v3.xls"* /8/ and verified by RINA.

According to the applied baseline methodology, leakage emissions were not considered.

3.5 Environmental Impacts

The project activity already obtained the following Installation Licenses /14/ emitted by Environmental Foundation of Minas Gerais State (FEAM):

* Dores de Guanhães - FEAM Installation License No. 029/2007, dated 22/08/007 and valid until 10/04/2013;

* Fortuna II - FEAM Installation License No. 031/2007, dated 23/07/2007 and valid until 10/04/2013;

* Jacaré - FEAM Installation License No. 027/2007, dated 22/08/2007 and valid until 30/03/2013;

* Senhora do Porto - FEAM Installation License No. 030/2007, dated 23/07/2007 and valid until 10/04/2013.

Furthermore, the following documentation from ANEEL was verified:

AUTHORIZATIONS /15/

* Dores de Guanhães - ANEEL Authorization - Resolution number 931, transferring previous authorizations from Construtora Barbosa Mello S.A. to SPE Guanhães Energia S.A., dated 29/05/2007;

* Fortuna II - ANEEL Authorization - Resolution number 932, transferring previous authorizations from Construtora Barbosa Mello S.A. to SPE Guanhães Energia S.A., dated 29/05/2007;

* Jacaré - ANEEL Authorization - Resolution number 934, transferring previous authorizations from Construtora Barbosa Mello S.A. to SPE Guanhães Energia S.A., dated 29/05/2007;

* Senhora do Porto - ANEEL Authorization - Resolution number 933, transferring previous authorizations from Construtora Barbosa Mello S.A. to SPE Guanhães Energia S.A., dated 29/05/2007.

DISPATCHES /16/

* Dores de Guanhães- ANEEL Dispatch no. 2001/2007 (installed capacity= 14 MW), issued on 20/06/2007;

* SHP Fortuna II- ANEEL Dispatch no. 1865/2007 (installed capacity= 9 MW), issued on 13/06/2007;

* SHP Jacaré- ANEEL Dispatch no. 2002/2007 (installed capacity= 9 MW), issued on 20/06/2007;

* SHP Senhora do Porto - ANEEL Dispatch no. 2003/2007 (installed capacity= 12 MW), issued on 20/06/2007

DECREES /17/

* Dores de Guanhães – Decree number 2 (assured energy = 8 MW), dated 04/01/2008;

* Fortuna II – Decree number 1 (assured energy = 5.11 MW), dated 04/01/2008;

* Jacaré - Decree number 3 (assured energy = 5.15 MW), dated 04/01/2008;

* Senhora do Porto - Decree number 4 (assured energy = 6.77 MW), dated 04/01/2008.

It was verified that the environmental agency (FEAM) did considered transboundary impacts in the installation licenses for the SHPs, as per the PPs Environmental Control Plan ("*PCA – Plano de Controle Ambiental*").

3.6 Comments by Local Stakeholders

As required by the Interministerial Commission on Global Climate Change (CIMGC) and in accordance to the Resolution 7 of the Brazilian DNA (05 March 2008), the project participants sent letters, inviting for comments, to the following stakeholders/City authorities:

City Hall of Municipality Dores de Guanhães;	Prefeitura Municipal de Dores de Guanhães	Rua Castro Alves, 29 Centro Dores de Guanhães – MG CEP 35894-000
City Council of Dores de Guanhães;	Camara dos Vereadores de dores de Gunhães	Rua Castro Alves, 29 Centro Dores de Guanhães – MG CEP 35894-000
City Hall of Guanhães;	Prefeitura Municipal de Guanhães	Praça Neira Coelho Guimarães, 100 Centro CEP 39740-000 Gunhães - MG
City Council of Guanhães;	Camara de Vereadores de Guanhães	Rua Odilon Behrens, 193 Centro CEP 39740-000
City Hall of Virginópolis	Prefeitura Municipal de Virginópolis	Rua Félix Gomes, 290 Centro CEP 39730-000 Virginópolis - MG
City Council of Virginópolis	Camara dos Vereadores de Virginópolis	Travessa nove de Março s/n Centro CEP 39730-000 Virginópolis - MG
Environment Secretary of	Secretaria de Meio	Praça Neira Coelho Guimarães 100

Guanhães	Ambiente do Município de Guanhães	Centro CEP 39740-000 Guanhães - MG
Bacia do Suaçui Association	Municípios da Micro Região da Bacia do Suaçui Association - AMBAS de Guanhães	Rua Benjamin Constant, 60 Centro CEP 39740-000 Gunhães - MG
State Environment Foundation – FEAM;	Fundação Estadual do Meio Ambiente	Rua Espírito Santo, 495 Centro CEP 30160-030 Belo Horizonte - MG
Brazilian Forum of NGOs and Environmental and Development Social Movements – FBOMS	Fórum Brasileiro de ONG´s e Movimentos Sociais para o Meio Ambiente e Desenvolvimento.	SCS Quadra 08, Bloco B 50, Venâncio 2000 salas 133/135 CEP 70333-900 Brasília-DF
Minas Gerais State Attorney Office	Ministério Público do Estado de Minas Gerais	Avenida Álvares Cabral, 1690 Santo Agostinho CEP 30170-001 Belo Horizonte - MG
Federal Attorney Office	Ministério Público Federal	Avenida Brasil, 1877 Funcionários CEP 30140-002 Belo Horizonte - MG
Union of rural producer of Guanhães	Sindicato dos Produtores Rurais de Guanhães	Av. Gov. Milton Campos, 2709 CEP 39740-000 Guanhães- MG
Comercial and Industrial o Association of Guanhães	Associação Comercial e Industrial of Guanhães	Rua Cap. Bernardo, 220, sala 8 CEP 39740-000 Guanhães- MG
Union of the industry workers in the wood and firewood extraction of Guanhães	Sindicato dos Trabalhadores na Indústria de Extração de Madeira e Lenha of Guanhães	Rua Odilson Behrens, 205 CEP 39740-000 Guanhães- MG

Letters referent to stakeholder's consultation were sent on 19/12/2008 and 02/04/2009 and their AR´s ("Receiving acknowledgment receipts") were presented by project participants, during the validation visit.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The PDD version 1 of 28 November 2008 was made publicly available on the UNFCCC CDM website and Parties, stakeholders and NGOs were invited to provide comments during a 30 days period from 17 March 2009 to 15 April 2009. No comments were received.

5 VALIDATION OPINION

RINA has performed a validation of the "Guanhães Energia CDM Project, Minas Gerais, Brazil (JUN1123)" project in Brazil. The validation was performed on the basis of UNFCCC criteria and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation (PDD Version 1 dated 28 November 2008, PDD Version 2 dated 04 September 2009, subsequently revised to version 3 dated 03 November 2009) and the subsequent follow-up interviews have provided RINA with sufficient evidence to determine the fulfillment of stated criteria.

The project participants are SPE Guanhães Energia S.A. and Carbotrader Assessoria e Consultoria em Energia Ltda. The host Party Brazil meets all relevant participation requirements. No Annex I party has yet been identified.

The proposed project activity falls under Project category "Grid-connected electricity generation from renewable sources" and Sectoral Scope 1- Energy industries (renewable/non-renewable sources) and the project boundary (spatial extent) encompasses the physical, geographical sites of the renewable power generation sources and all power plants connected physically to the Brazilian interconnected grid. The project is a renewable electricity generation project activity displacing grid electricity that is partly generated based on fossil fuels, with electricity generated from renewable sources and thus resulting in the reduction of emissions of greenhouse gases in the energy sector.

The "Guanhães Energia CDM Project, Minas Gerais, Brazil (JUN1123)" project is composed by four Small Hydroelectric Plants (SHPs), located at Minas Gerais State.

The total installed capacity of the project activity is 44 MW with an estimated generation of 219,263 MWh/year (assured energy), achieving a value of GHG emission reductions corresponding to 440,646 tCO_2e during the first renewable 7 years crediting period (with the potential of being renewed twice), resulting in an annual average emission reductions of 62,949 tCO_2e / year.

It has been 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. Given that the project is implemented as designed, the project is likely to achieve the estimated amount of emission reductions.

Emission reductions were estimated ex-ante using the latest available combined margin CO_2 emission factor of 0.3112 tCO_2/MWh (2008) for the Brazilian grid system, provided by the Brazilian DNA, "Comissão Interministerial de Mudança Global do Clima"– CIMGC and considering all four regions connected (North, Northeast, South and Southeast-Midwest).

The validation is based on the information made available to us and the engagement conditions detailed in this report. The only purpose of this report is its use during the registration process as part of the CDM project cycle.

The project correctly applies the approved baseline and monitoring methodology ACM0002, i.e. "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", Version 10 of 11/06/2009. The baseline methodology has been correctly applied and

the assumptions made for the selected baseline scenario are sound. The monitoring methodology has been correctly applied and the monitoring plan sufficiently specifies the monitoring requirements.

In our opinion, the project, as described in the PDD version 3 dated 03 November 2009, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria. The "Guanhães Energia CDM Project, Minas Gerais, Brazil (JUN1123)" project will hence be recommended by RINA for registration as a CDM project activity.

Prior to the submission of the Project Design Document and the Validation Report to the CDM Executive Board, the Project will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the Project assists the country in achieving sustainable development.

6 REFERENCES

Category 1 Documents:

List 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). These should have been used as direct sources of evidence for the validation conclusions, and are usually further checked through interviews with key personnel.

/1/ CDM-PDD for the "Guanhães Energia CDM Project, Minas Gerais, Brazil (JUN1123)" project, Version 1 of 28 November 2008.

/2/ SPE Guanhães_CERs_v1.xls - Emission reductions calculations spreadsheet

/3/ SPE Guanhaes Cash Flow v1.xls.

/4/ CDM-PDD for the "Guanhães Energia CDM Project, Minas Gerais, Brazil (JUN1123)" project, Version 2 of 04 September 2009.

/5/ SPE Guanhães_CERs_v2.xls- Emission reductions calculations spreadsheet.

/6/ *SPE Guanhaes Cash Flow v2_1.xls.*

/7/ CDM-PDD for the "Guanhães Energia CDM Project, Minas Gerais, Brazil (JUN1123)" project, Version 3 of 03 November 2009.

/8/ SPE Guanhães_CERs_v3.xls- Emission reductions calculations spreadsheet.

Category 2 Documents:

List background documents related to the design and/or methodologies employed in the design or other reference documents. Where applicable, Category 2 documents should have been used to check project assumptions and confirm the validity of information given in the Category 1 documents and in validation interviews.

/9/ CDM Validation and Verification Manual – Version 01, dated 28 November 2008.

/10/ ACM0002, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" - Version 10 of 11/06/2009.

/11/ Tool for the demonstration and assessment of additionality - Version 5.2.

/12/ Tool to calculate the emission factor for an electricity system - Version 01.1.

/13/ "Fatores de Emissão de CO_2 pela geração de energia elétrica no Sistema Interligado Nacional do Brasil - Ano Base 2008" (CO_2 emission factors from electric energy generation in Brazil's National Interconnected System – Baseline year 2008). http://www.mct.gov.br/index.php/content/view/303077.html#ancora (accessed on October 26th 2009).

/14/ FEAM Environmental Licenses

* Dores de Guanhães - FEAM Installation License No. 029/2007, dated 22/08/007 and valid until 10/04/2013;

* Fortuna II - FEAM Installation License No. 031/2007, dated 23/07/2007 and valid until 10/04/2013;

* Jacaré - FEAM Installation License No. 027/2007, dated 22/08/2007 and valid until 30/03/2013;

* Senhora do Porto - FEAM Installation License No. 030/2007, dated 23/07/2007 and valid

until 10/04/2013.

/15/ ANEEL Authorization Resolutions

* Dores de Guanhães - ANEEL Authorization - Resolution number 931, transferring previous authorizations from Construtora Barbosa Mello S.A. to SPE Guanhães Energia S.A., dated 29/05/2007;

* Fortuna II - ANEEL Authorization - Resolution number 932, transferring previous authorizations from Construtora Barbosa Mello S.A. to SPE Guanhães Energia S.A., dated 29/05/2007;

* Jacaré - ANEEL Authorization - Resolution number 934, transferring previous authorizations from Construtora Barbosa Mello S.A. to SPE Guanhães Energia S.A., dated 29/05/2007;

* Senhora do Porto - ANEEL Authorization - Resolution number 933, transferring previous authorizations from Construtora Barbosa Mello S.A. to SPE Guanhães Energia S.A., dated 29/05/2007.

/16/ ANEEL Dispatches

* Dores de Guanhães- ANEEL Dispatch no. 2001/2007, issued on 20/06/2007;

* SHP Fortuna II- ANEEL Dispatch no. 1865/2007 issued on 13/06/2007;

* SHP Jacaré- ANEEL Dispatch no. 2002/2007, issued on 20/06/2007;

* SHP Senhora do Porto - ANEEL Dispatch no. 2003/2007, issued on 20/06/2007.

/17/ ANELL Decrees (Portarias)

* Dores de Guanhães – Decree number 2 (assured energy = 8 MW), dated 04/01/2008;

* Fortuna II – Decree number 1 (assured energy = 5.11 MW), dated 04/01/2008;

* Jacaré - Decree number 3 (assured energy = 5.15 MW), dated 04/01/2008;

* Senhora do Porto - Decree number 4 (assured energy = 6.77 MW), dated 04/01/2008.

/18/ Resolution #652 from the Brazilian Power Regulatory Agency (Agência Nacional de Energia Elétrica – ANEEL), dated 09/12/2003.

/19/ Minutes of meeting - Committee of Budget Priority, dated 16/10/2008.

/20/ Carta Nº 47-2009 SUPRAM CENTRAL.pdf. (Letter to the Regional Superintendence of the Minas Gerais State).

/21/ Plano de Gestão Ambiental- PGA, July 2007 (Environmental Management Plan).

/22/ Histórico Selic_version 2.xls (Selic historic data).

/23/ *Comitê de Priorização de Investimento – CPO- Parecer de Projecto de Investimento – Projeto nº1714/07 SPE Guanhães* (Meeting report discussing the investment of the SPE Guanhães projects, conducted on 16/10/2008).

/24/ Email from Guanhães Energia S.A (Mr. Hudson Maia Arantes) dated 23/11/2009 - evidence of the starting date of the project activity.

Persons interviewed:

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

/25/ Ezequiel Teodoro Elorde - CEMIG Geração e Transmissão S.A.

/26/ Arthur Moraes - Carbotrader Assessoria e Consultoria em Energia Ltda

/27/ Hudson Maia Arantes - SPE Guanhães Energia S.A.

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APPENDIX A

CDM VALIDATION PROTOCOL

This document contains a generic Validation Protocol for CDM projects, which must be seen in conjunction with the Validation and Verification Manual and the Validation Report Template. The entries in the protocol should be adjusted and amended as appropriate to prepare for the validation of a particular project.

This validation protocol serves the following purposes:

- *It organizes, details and clarifies the requirements a CDM project is expected to meet; and*
- *It ensures a transparent validation process by inducing the Validator to document how a particular requirement has been validated and which conclusions have been reached;*

This protocol contains two tables with generic requirements for validation projects. Table 1 shows the requirements that the GHG emission reduction project will be validated against. Table 2 consists of a checklist with validation questions related to one or more of the requirements in Table 1. The checklist questions may not be applicable for all investors, and should not be viewed as mandatory for all projects. Where a finding is issued, a corrective action request or clarification request are stated. The resolution and final conclusions of these requests should be described in Table 3 of this protocol.

Before this generic validation protocol can be applied to validate a specific project, the Validator must review and adjust/amend the protocol to make it applicable to individual project characteristics and circumstances as well as individual investor criteria. The application of the Validator's professional judgment and technical expertise should ensure that checklist amendments cover all necessary specific project requirements that have impact on project performance and acceptance of the project. Given the above, the checklist part of the protocol is neither exhaustive nor prescriptive.

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

Requirement	Reference	Conclusion	Cross Reference / Comment
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reductions commitment under Art. 3.	Kyoto Protocol Art.12.2	**OK**	No Annex I party has yet been identified. Table 2, Section, B.6.3, B.6.4
2. The project shall assist non Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof.	Kyoto Protocol Art. 12.2, Marrakesh Accords, CDM Modalities §40a	**--**	Table 2, Section A.2.3 Prior to the submission of the Project Design Document and the Validation Report to the CDM Executive Board, the Project will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the Project assists the country in achieving sustainable development.
3. The project shall assist non Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	**OK**	No Annex I party has yet been identified.
4. The project shall have the written approval of voluntary participation from the designated national authorities of each party involved.	Kyoto Protocol Art.12.5a, Marrakesh Accords, CDM Modalities §40a, § 28	**--**	Prior to the submission of the Project Design Document and the Validation Report to the CDM Executive Board, the Project will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the Project assists the country in achieving sustainable development..
5. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.	Kyoto Protocol Art. 12.5b	**OK**	Table 2, Section A.4.4, B.6.3, B.6.4
6. Reductions in GHG emissions shall be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by	Kyoto Protocol Art. 12.5c, Marrakesh Accords, CDM Modalities §43 and § 44	**OK**	Table 2, Section B.5

Requirement	Reference	Conclusion	Cross Reference / Comment
sources are reduced below those that would have occurred in the absence of the registered CDM project activity.			
7. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance (ODA) and is separate from and is not counted towards the financial obligations of these Parties.	Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2	**OK**	Table 2, Section A.4.5
8. Parties participating in the CDM shall designate a national authority for the CDM.	Marrakech Accords, CDM Modalities §29	**OK**	The Brazilian designated national authority for the CDM is the "Comissão Interministerial de Mudança Global do Clima" (CIMGC).
9. The host country and the participating Annex I Party shall be a Party to the Kyoto Protocol.	Marrakech Accords, CDM Modalities §30	**OK**	Brazil has ratified the protocol on 23 August 2002.
10. The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	**OK**	No Annex I party has yet been identified.
11. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.	CDM Modalities and Procedures §31b	**OK**	No Annex I party has yet been identified.
12. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received.	Marrakech Accords, CDM Modalities §37b	**OK**	Table 2, Section E As required by the Interministerial Commission on Global Climate Change (CIMGC) and in accordance to the Resolution 7 of the Brazilian DNA (05 March 2008), the project participants sent letters, inviting for comments, to local stakeholders/City authorities.
13. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if	Marrakech Accords, CDM Modalities §37c	**OK**	Table 2, Section D

Requirement	Reference	Conclusion	Cross Reference / Comment
those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.			
14. Baseline and monitoring methodology shall be previously approved by the CDM Methodology Panel.	Marrakech Accords, CDM Modalities §37e	**OK**	Table 2, Section B
15. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP.	Marrakech Accords, CDM Modalities §37f	**OK**	Table 2, Section B.7
16. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available.	Marrakech Accords, CDM Modalities, §40	**OK**	The PDD of 28 November 2008 was made publicly available on the UNFCCC CDM website and Parties, stakeholders and NGOs were invited to provide comments during a 30 days period from 17 March 2009 to 15 April 2009. No comments were received.
17. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	Marrakech Accords, CDM Modalities, §45 b, c, d, e	**OK**	Table 2, Section B.4
18. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure.	Marrakech Accords, CDM Modalities, §47	**OK**	Table 2, Section B.4
19. The project design document shall be in conformance with the UNFCCC CDM-PDD format.	Marrakech Accords, CDM Modalities, Appendix B, EB Decisions	**OK**	PDD is in accordance with CDM-PDD form (version 03 of 28 July 2006).

Table 2 Requirements Checklist

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
A. General Description of Project Activity. *The project design is assessed.*					
A.1. Title of the project activity.					
A.1.1. Title of the project activity, version number and date of document (PDD).	/1/	DR	The title of the project activity is "Guanhães Energia CDM Project, Minas Gerais, Brazil (JUN1123)", as per PDD Version 3 of 03 November 2009.	**OK**	**OK**
A.2. Description of project activity.					
A.2.1. Is the purpose of the project activity included?	/1/	DR	The project activity consists on the generation and delivery of renewable electric energy to the Brazilian connected grid, through the follow Small Hydroelectric Plants (SHP), which will be installed in Minas Gerais State: - SHP Dores de Guanhães - 14 MW; - SHP Fortuna II - 9 MW; - SHP Jacaré - 9 MW; - SHP Senhora do Porto - 12 MW. Emission reductions are claimed from displacing grid electricity with the estimated electricity that will be generated by the hydroelectric power plants and supplied to the grid.	**OK**	**OK**

<table>
<tr><th>Checklist Question</th><th>Ref.</th><th>MoV*</th><th>Comments</th><th>Draft Concl.</th><th>Final Concl.</th></tr>
<tr><td>A.2.2. Is it explained how the project activity reduces greenhouse gas emissions, i.e. technology, measures?</td><td>/1/</td><td>DR</td><td>The project is a renewable electricity generation project activity displacing grid electricity that is partly generated based on fossil fuels, with electricity generated from renewable sources and thus resulting in the reduction of emissions of greenhouse gases in the energy sector.
The installed power, the area of the reservoir and the power density of each SHP included in this project activity are presented below.
<table><tr><th>SHP</th><th>Installed Power (MW)</th><th>Reservoir (Km^2)</th><th>Power Density (W/m^2)</th></tr><tr><td>Dores de Guanhães</td><td>14</td><td>0.11</td><td>127.27</td></tr><tr><td>Fortuna II</td><td>9</td><td>0.963</td><td>9.35</td></tr><tr><td>Jacaré</td><td>9</td><td>0,77</td><td>11.69</td></tr><tr><td>Senhora do Porto</td><td>12</td><td>0.42</td><td>28.57</td></tr></table>
The areas of the reservoirs of SHP´s Fortuna and Jacaré, presented on PDD table 2 - item A.4.3, are exchanged (inverted), please correct accordingly.</td><td>~~CL 14~~</td><td>OK</td></tr>
<tr><td>A.2.3. Contribution to Sustainable Development. Table 1 - 2</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>A.2.3.1. Is the project in line with relevant legislation and plans in the host country?</td><td>/1/
/14/
/15/
/17/</td><td>DR</td><td>The project activity already obtained the following Installation Licenses emitted by Environmental Foundation of Minas Gerais State (FEAM):
* Dores de Guanhães - FEAM Installation License No. 029/2007, dated 22/08/007 and valid until 10/04/2013;
* Fortuna II - FEAM Installation License No. 031/2007,</td><td>OK</td><td>OK</td></tr>
</table>

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			dated 23/07/2007 and valid until 10/04/2013; * Jacaré - FEAM Installation License No. 027/2007, dated 22/08/2007 and valid until 30/03/2013; * Senhora do Porto - FEAM Installation License No. 030/2007, dated 23/07/2007 and valid until 10/04/2013. Furthermore, the following documentation from ANEEL was verified: AUTHORIZATIONS * Dores de Guanhães - ANEEL Authorization - Resolution number 931, transferring previous authorizations from Construtora Barbosa Mello S.A. to SPE Guanhães Energia S.A., dated 29/05/2007; * Fortuna II - ANEEL Authorization - Resolution number 932, transferring previous authorizations from Construtora Barbosa Mello S.A. to SPE Guanhães Energia S.A., dated 29/05/2007; * Jacaré - ANEEL Authorization - Resolution number 934, transferring previous authorizations from Construtora Barbosa Mello S.A. to SPE Guanhães Energia S.A., dated 29/05/2007; * Senhora do Porto - ANEEL Authorization - Resolution number 933, transferring previous authorizations from Construtora Barbosa Mello S.A. to SPE Guanhães Energia S.A., dated 29/05/2007. DECREES * Dores de Guanhães – Decree number 2 (assured energy = 8 MW), dated 04/01/2008; * Fortuna II – Decree number 1 (assured energy = 5.11 MW), dated 04/01/2008;		

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			* Jacaré - Decree number 3 (assured energy = 5.15 MW), dated 04/01/2008; * Senhora do Porto - Decree number 4 (assured energy = 6.77 MW), dated 04/01/2008. See D.1.6		
A.2.3.2. Is the project in line with host-country specific CDM requirements?	/1/	DR	Prior to the submission of the Project Design Document and the Validation Report to the CDM Executive Board, the Project will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the Project assists the country in achieving sustainable development.	--	
A.2.3.3. Is the project in line with sustainable development policies of the host country?	/1/	DR	Prior to the submission of the Project Design Document and the Validation Report to the CDM Executive Board, the Project will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the Project assists the country in achieving sustainable development.	--	
A.2.3.4. Will the project create other environmental or social benefits than GHG emission reductions?	/1/	DR	It is mentioned that the project activity will create other social benefits, such as better working conditions, increase on job opportunities and better conditions on local economy. Please provide evidences (further elaboration) of the mentioned benefits.	~~CL 1~~	OK
A.3. Project participants. Annex 1					
A.3.1. Are Party (ies) and private and / or public entities involved in the project activity listed?	/1/	DR	Project participants are SPE Guanhães Energia S.A. and Carbotrader Ltda.	OK	OK
A.3.2. Is the contact information provided in	/1/	DR	The contact information is properly provided and	OK	OK

<table>
<tr><th>Checklist Question</th><th>Ref.</th><th>MoV*</th><th>Comments</th><th>Draft Concl.</th><th>Final Concl.</th></tr>
<tr><td>Annex 1 of the PDD, using the (proper table) tabular format?</td><td></td><td></td><td>using the proper table (tabular format).</td><td></td><td></td></tr>
<tr><td>A.4. Technical description of the project activity.</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>A.4.1. Is the location of the project activity clearly defined, including details of the physical location and information allowing the unique identification of this project activity(ies)?</td><td>/1/</td><td>DR/I</td><td>The location of project activity is clearly defined by the GPS coordinates of each small hydro plant included in the project activity:
<table><tr><th>SHP</th><th>City</th><th>Coordinates</th></tr><tr><td>Dores de Guanhães</td><td>Dores de Guanhães</td><td>19º 04'S 42º 53'W</td></tr><tr><td>Fortuna II</td><td>Guanhães and Virginópolis</td><td>18º 54' S 42º 41' W</td></tr><tr><td>Jacaré</td><td>Dores de Guanhães</td><td>19º 00' S 42º 57' W</td></tr><tr><td>Senhora do Porto</td><td>Dores de Guanhães</td><td>19º 02' S 42º 55' W</td></tr></table>
PDD Items A.4.1.3 and A.4.1.4 are mentioning different cities for the SHPs Dores de Guanhães and Senhora do Porto. Please revise/correct accordingly.
See A.2.3.1</td><td><s>CL 5</s></td><td>OK</td></tr>
<tr><td>A.4.2. Is (are) the category (ies), type(s) and sectoral scope(s) of the proposed project activity specified?</td><td>/1/</td><td>DR</td><td>The project's sectoral scope is defined as Scope 1 – Energy Industries (renewable sources) on PDD section A.4.2. The proposed project activity falls under Project category "Grid-connected electricity generation from renewable sources" and Sectoral Scope 1- Energy industries (renewable/non-renewable sources). Please revise/correct accordingly.</td><td><s>CL 6</s></td><td>OK</td></tr>
<tr><td>A.4.3. Technology to be employed.
Validation of the project technology focuses on the project engineering, choice of technology competence/ maintenance needs. The Validator should ensure that environmentally safe and sound technology</td><td></td><td></td><td></td><td></td><td></td></tr>
</table>

<table>
<tr><th>Checklist Question</th><th>Ref.</th><th>MoV*</th><th>Comments</th><th>Draft Concl.</th><th>Final Concl.</th></tr>
<tr><td>and know how is used / transferred.</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>A.4.3.1. Does the project design engineering reflect current good practices?</td><td>/1/</td><td>DR</td><td>Yes, the project design engineering reflects current good practices.
Equipments described in the below table:

<table>
<tr><th>SHP</th><th>Dores de Guanhães</th><th>Fortuna II</th><th>Jacaré</th><th>Senhora do Porto</th></tr>
<tr><td>Installed Power (MW)</td><td>14.0</td><td>9.0</td><td>9.0</td><td>12.0</td></tr>
<tr><td>Reservoir Area (Km^2)</td><td>0.11</td><td>0.77</td><td>0.963</td><td>0.42</td></tr>
<tr><td>Power Density (W/m^2)</td><td>127.3</td><td>9.3</td><td>11.7</td><td>28.6</td></tr>
<tr><td>Turbines Type</td><td>Kaplan – vertical shaft</td><td>Francis - horizontal</td><td>Kaplan – vertical shaft</td><td>Kaplan - vertical</td></tr>
<tr><td>Turbines Quantity</td><td>1</td><td>2</td><td>1</td><td>1</td></tr>
<tr><td>Unit Nominal Power (kW)</td><td>14,500</td><td>4,660</td><td>9,320</td><td>12,440</td></tr>
<tr><td>Flow Rate (m^3/s)</td><td>46.90</td><td>10.37</td><td>42.20</td><td>46.02</td></tr>
<tr><td>Synchronous Speed (rpm)</td><td>720</td><td>400</td><td>790</td><td>740</td></tr>
<tr><td>Generators</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Generators Quantity</td><td>1</td><td>2</td><td>1</td><td>1</td></tr>
<tr><td>Effective Power (kW)</td><td>14,000</td><td>4,500</td><td>9,000</td><td>12,000</td></tr>
<tr><td>Power`s Factor</td><td>0.9</td><td>0.9</td><td>0.9</td><td>0.9</td></tr>
<tr><td>Frequency (Hz)</td><td>60</td><td>60</td><td>60</td><td>60</td></tr>
</table>
</td><td>OK</td><td>OK</td></tr>
<tr><td>A.4.3.2. Does the project use the state of the art technology or could the technology result in a significantly better performance than any commonly used technologies in the host country?</td><td>/1/</td><td>DR</td><td>At this particular time, the technology used can be considered as state of the art.</td><td>OK</td><td>OK</td></tr>
<tr><td>A.4.3.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?</td><td>/1/</td><td>DR</td><td>The expected operational lifetime of the project is 30 years.
The project technology is not likely to be substituted by other or more efficient technologies within the project period.
See C.1.2.1.</td><td>OK</td><td>OK</td></tr>
</table>

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
A.4.3.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	/1/	DR	PDD did not identified/mentioned training of monitoring personnel and/or training needs, procedures (including emergency preparedness) and responsible personnel. Please clarify. In the first verification, training courses provided to the operational team and related procedures should be checked. Furthermore, the plant operation manual and its implementation should be verified. See B.7.2.7	~~CL 8~~ FAR 1	**OK**
A.4.3.5. Does the project make provisions for meeting training and maintenance needs?	/1/	DR	See A.4.3.4.	~~CL 8~~ FAR 1	**OK**
A.4.4. Estimated amount of emission reductions over the chosen crediting period. Table 1 - 5					
A.4.4.1. Is the chosen crediting period, total and annual estimated reductions defined and presented in a (proper table) tabular format? (*check these figures against item B.6.4 figures*)	/1/	DR	Yes. The project is expected to reduce CO_2 emissions to the extent of 440,646 tCO_2e (62,949tCO_2e / year average) over the renewable 7 years crediting period. The first crediting period starts on 2010 and expires on 2017. The total amount of emission reductions indicated in PDD is 222,994 tCO2e/year. The spreadsheet of CER´s calculations provided by project participants is not adding the CERs referent to year 2017 in any of the individual SHPs calculations, as well as in the calculation of the total amount of CERs, which would result in 243.424 tCO2e/year. See B.6.4.1	 ~~CAR 2~~	**OK**
A.4.5. Public funding of the project activity.					

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
Table 1 - 7 & Annex 2					
A.4.5.1. Is it indicated whether public funding from Parties included in Annex 1 is involved in the proposed project activity?	/1/	DR	The validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding towards Brazil.	**OK**	**OK**
A.4.5.2. If public funding is involved, is information on sources of public funding for the project activity is provided in Annex 2, including an affirmation that such funding does not result on a diversion of official development assistance (ODA) and is separate from and is not counted towards the financial obligations of those Parties?	/1/	DR	See A.4.5.1.	**OK**	**OK**
B. Project Baseline Application (methodologies). *The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.* Table 1 - 14 & Annex 3					
B.1. Baseline Methodology. *It is assessed whether the project applies an appropriate baseline methodology.*					
B.1.1. Is the baseline methodology previously approved by the CDM Methodology Panel? *(correctly quoted and interpreted?)*	/1/ /10/	DR	The project activity applies the approved consolidated baseline methodology ACM0002, "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" - Version 10 of 11/06/2009. Project participants are requested to explain why the	~~**CAR 1**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			PDD dated 28 November 2008 is applying/mentioning ACM0002 version 9, valid from 27 February 2009, and a SELIC benchmark covering a range from January 2003 until December 2008. Furthermore, considering the present validation timeline to register projects, it is recommended to revise the PDD according to ACM0002 version 10, valid from 11 June 2009 onwards.		
B.1.2. Are other methodologies or tools drawn up by the approved methodology mentioned? *(correctly quoted and interpreted?)*	/1/ /11/ /12/	DR	The chosen baseline methodology refers to latest approved versions of the following tools: • "Tool to calculate the emission factor for an electricity system" (version 1.1) • "Tool for the demonstration and assessment of additionality" (version 5.2) • "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" (version 2). As the project activity does not present fossil fuel consumption, the third tool was not considered. The project does not involve switching from fossil fuels to renewable energy at the site(s) of the project activity.	**OK**	**OK**
B.2. Description of how the methodology is applied in the context of the project activity.					
B.2.1. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	/1/ /10/	DR	ACM0002 is applicable to the "Guanhães Energia CDM Project, Minas Gerais, Brazil (JUN1123)" because: - the project activity will result in the installation of four hydro power plants/units (either with a run-of-	**OK**	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			river reservoir or an accumulation reservoir); - the project activity will result in new reservoirs and the power density of the power plants, as per definitions given in the Project Emissions section, is greater than 4 W/m^2; - the geographic and system boundaries for the relevant electricity grid can be clearly identified and information on the characteristics of the grid is available. See B.6.1.3 - B.7.2.2		
B.2.2. Background information or documentation, including tables with time series data, documentation of measurement results and data sources are properly addressed? (*check Annex 3*)	/1/	DR	Yes.	**OK**	**OK**
B.2.3. If comparable information is available from sources other than that used in the PDD, cross check the PDD against the other sources to confirm that the project activity meets the applicability conditions.	/1/	DR	When applicable, comparable information was cross checked and mentioned in the report. Please clarify why the PDD's mentioned installed capacity of SHP Dores de Guanhães (14 MW), Jacaré (9 MW) and Senhora do Porto (12 MW) is different from the described in the following ANEEL's documentation: SHP Dores de Guanhães - Authorization Resolution no. 931 – Installed capacity = 12.0 MW; SHP Jacaré - Authorization Resolution no. 934 – Installed capacity = 10.5 W; SHP Senhora do Porto - Authorization Resolution no. 933 – Installed capacity = 9. 0 MW.	~~**CL 2**~~	**OK**

<table>
<tr><th colspan="2">Checklist Question</th><th>Ref.</th><th>MoV*</th><th>Comments</th><th>Draft Concl.</th><th>Final Concl.</th></tr>
<tr><td colspan="2">B.3. Description of the sources and the gases included in the project boundary. (physical delineation of the proposed CDM project activity)</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>B.3.1.</td><td>Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?</td><td>/1/</td><td>DR</td><td>The proposed project boundary (spatial extent) encompasses the physical, geographical sites of the renewable power generation sources and all power plants connected physically to the Brazilian interconnected grid.</td><td>OK</td><td>OK</td></tr>
<tr><td>B.3.2.</td><td>Are all emission sources and significant GHGs included in the project boundary clearly identified and described in the appropriate table? Are the demonstration / justification (also for exclusions) adequate and sufficient?</td><td>/1/</td><td>DR</td><td>The following emissions sources were included in or excluded from the project boundary:
Baseline emissions
<table>
<tr><th>Source</th><th>Gas</th><th>Included?</th><th>Justification / Explanation</th></tr>
<tr><td rowspan="3">CO_2 emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity.</td><td>CO_2</td><td>Yes</td><td>Main emission source.</td></tr>
<tr><td>CH_4</td><td>No</td><td>Minor emission source.</td></tr>
<tr><td>N_2O</td><td>No</td><td>Minor emission source.</td></tr>
</table>
Project Activity Emissions
<table>
<tr><th>Source</th><th>Gas</th><th>Included?</th><th>Justification / Explanation</th></tr>
<tr><td rowspan="3">For hydro power plants, emissions of CH_4 from the reservoir.</td><td>CO_2</td><td>No</td><td>Minor emission source.</td></tr>
<tr><td>CH_4</td><td>Yes</td><td>Main emission source</td></tr>
<tr><td>N_2O</td><td>No</td><td>Minor emission source.</td></tr>
</table>
The project does not involve switching from fossil fuels to renewable energy at the site(s) of the project</td><td></td><td>OK</td></tr>
</table>

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			activity. PDD (section B.3) is mentioning that project emissions are not to be considered and SHP Fortuna II has a power density greater than 4 W/m2 and less than or equal to 10 W/m2. Please clarify.	~~CL 11~~	
B.3.3. If GHG emissions occurring within the proposed CDM project activity boundary (not addressed by the applied methodology), as a result of project's implementation, are expected to contribute more than 1% of the overall expected average annual emissions reductions, are they informed in the PDD?	/1/	DR	GHG emissions occurring within the proposed CDM project activity boundary are not expected to contribute with more than 1% of the overall expected average annual emissions reductions.	**OK**	**OK**
B.4. Description of how baseline scenario is identified. Baseline Determination. Table 1 - 17, 18 *The choice of baseline will be validated with focus on whether the baseline is a likely scenario, whether the project itself is not a likely baseline scenario, and whether the baseline is complete and transparent.*					
B.4.1. Is the application of the methodology and the discussion and determination of the chosen baseline scenario transparent?	/1/	DR	Yes. The baseline scenario is the following: 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		**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			calculate the emission factor for an electricity system". Emission reductions were estimated *ex-ante* using an emission factor of 0.1841 for the Brazilian grid system. Please, revise the calculus using the latest data made available by the Brazilian DNA. See B.6.1.1	~~**CL 13**~~	
B.4.2. Has the baseline been determined using conservative assumptions where possible? *(confirm that any procedure contained in the methodology to identify the most reasonable baseline scenario, has been correctly applied)*	/1/	DR	Yes.	**OK**	**OK**
B.4.3. Has the baseline been established on a project-specific basis?	/1/	DR	Yes, the baseline was established on a project-specific basis.	**OK**	**OK**
B.4.4. Does the baseline scenario sufficiently take into account relevant national and / or sectoral policies, macro-economic trends and political aspirations?	/1/	DR	National and/or sectoral policies implemented during the initial phase were considered.	**OK**	**OK**
B.4.5. Is the baseline determination compatible with the available data?	/1/	DR	The baseline determination is compatible with available data. See B.4.2.	**OK**	**OK**
B.4.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	/1/	DR	The selected baseline represents the most likely scenario among the two alternative scenarios discussed. Two alternative baseline scenarios were considered: ***Alternative 1***: the project activity undertaken without	**OK**	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			being registered as a CDM project activity; ***Alternative 2***: electricity consumption from the Brazilian National Interconnected System (SIN). See B.4.1.		
B.4.7. Have the major risks to the baseline been identified? (*Are uncertainties in the GHG emission estimates properly addressed in the documentation?*)	/1/	DR	The major risk of the project is not being able to produce the estimated amount of electricity to the grid.	**OK**	**OK**
B.4.8. Is all literature and sources clearly referenced?	/1/	DR	Yes.	**OK**	**OK**
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*). Table 1 - 6					
B.5.1. Does the PDD follow all the steps required in the methodology to determine the additionality? (*Is an approved additionality tool required / used? - Note: the guidance in the methodology shall supersede the tool*)	/1/		The project participants provided the additionality assessment based on the investment analysis, using the "Tool for the demonstration and assessment of additionality" (Version 5.2), as indicated in ACM0002 version 9.	**OK**	**OK**
B.5.2. Is the discussion on the additionality clear and have all assumptions been conservative, supported by transparent and documented evidence for all steps?	/1/	DR	The Guidelines for completing CDM-PDD describes *that " information used to determine additionality, to describe the baseline methodology and its application, and to support an environmental impact assessment, shall not be considered proprietary or confidential"* PDD version 2 , Sub-step 2c: Calculation and comparison of financial indicators, page 12 mentions	~~**CL 15**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			that "The *participant companies of the project consider the cash-flow a confidential information and, therefore, it will be presented integrally for the Designated Operational Entity that will do the validation and for any CDM related entity that asks for it to the purpose of evidence of the additionality of the project. However, it will not be available in the PDD"*. Please revise/correct accordingly. The project's additionality is demonstrated by project participants as per the "Tool for the demonstration and assessment of additionality" - Version 5.2. ***Step 1: Identification of alternatives to the project activity consistent with current laws and regulations*** ***Sub-step 1a: Define alternatives to the project activity*** Two alternative baseline scenarios were considered by project participants: ***Alternative 1***: Project activity construction without the CDM carbon credits revenue; ***Alternative 2***: keeping the *business as usual* practices (electricity continues to be generated with the actual power plant mix that has fossil fuel power plants in operation). ***Sub-step 1b: Consistency with mandatory laws and regulations*** Both alternatives are in compliance with all mandatory applicable legal and regulatory requirements.		

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			Step 2: Investment analysis ***Sub-step 2a: Determine appropriate analysis method*** Project participants identified Option III, benchmark analysis, as the analysis method option to be applied. Among the three options available for investment analysis as discussed in the "Tool for the demonstration and assessment of additionality", project participants have chosen the benchmark analysis since the other two are not applicable. The simple cost analysis is not applicable because the project will generate financial and economic benefits (from electricity sales) other than CDM related income. The investment comparison analysis is not applicable either because the only alternative to the project activity is the supply of electricity from a grid, which is not to be considered a similar investment project. ***Sub-step 2b: Option III. Apply benchmark analysis*** IRR (internal rate of return) was identified as the financial/economic project's indicator and the SELIC (Special System for Settlement and Custody) rate was selected for the benchmark analysis. The SELIC rate is defined and calculated by the Brazilian Central Bank and is the weighted average of the rates traded in overnight repurchase agreements (*repos*) backed by government bonds. In other words, it is Brazilian Central Bank's overnight lending rate and considered the country's risk-free rate. SELIC		

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			data used by projects participants are official and available at Brazilian Central Bank's home page[3]. Contrarily to other countries, in Brazil there is not a specific IRR that works as a benchmark for SHP projects, which is the same to say that the Brazilian government does not require a minimum profitability in projects of this kind nor there is a widely accepted benchmark applied by several different players in the Brazilian small hydropower business. The attractiveness of any project in this area depends exclusively on the minimum rate of return required by project participants. To be economically attractive, the IRR of any investment project implemented in Brazil should exceed the SELIC rate as projects carry risks (i.e. execution risks, financial risks etc) and therefore should include a premium over the risk-free rate. Project participants selected a period from January 2003 to December 2008 to calculate the SELIC average, resulting in an average SELIC rate of 16.99%. ***Sub-step 2c: Calculation and comparison of financial indicators*** As per project participants, the cash-flow (SPE Guanhães_CERs_v1.xls /2/) was elaborated for the operational life of the project activity (28 years), getting an IRR equal to 12.62% per year (without CERs sales) and 13.35% per year with CERs sales,		

[3] www.bcb.gov.br

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			below the selected 16.99% benchmark. Please clarify if the operational lifetime of project activity is 28 years, as mentioned on Sub-step 2c: "Calculation *and comparison of financial indicators",* or 30 years, as indicated on PDD's section C.1.2. ***Sub-step 2d: Sensitivity analysis*** For the sensitivity analysis, cost variations on the electricity price, investment and annual operation values were carried out and presented. The benchmark used by project participants is the SELIC average rate (range/period = Jan-2003 to Dec-2008). Aiming to exclude periods when the mentioned rate was distorted by Brazilian specific events (2002-2003), please consider revising this range/period to a shorter and more conservative period (for example, from 2004 on). Moreover, project participants are required to provide the database containing the SELIC rate for the period under consideration. Please explain why the cash flow spreadsheet is considering only 28 years while the project's lifetime is 30 years. Sensitive analysis results (percentages) presented in the spreadsheet do not allow the verification of the calculation and if it considers or not CER incentives (sales). According to paragraph 8 of the "Guidance on the Assessment of Investment Analysis", all formulas used in the investment analysis must be readable and	~~CL 7~~ ~~CAR 3~~	

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			all relevant cells must be viewable and unprotected. Although the IRR data provides useful information on its fluctuations when parameters vary in a range of -10% and +10%, it would be more useful to show how large should these variations be to make the project IRR equal the benchmark. Then a second analysis should be applied to discuss the likelihood of occurrence of these scenarios. Furthermore, IRR Spreadsheet(s) must be all in English. ***Step 3: Barrier analysis*** Not selected. ***Step 4: Common practice analysis*** ***Sub-step 4a: Analyze other activities similar to the proposed project activity*** Project participants presented information from ANEEL showing that SHPs in Brazil energy matrix represent around 2.12% of the total installed capacity and that in the state of Minas Gerais, SHPs represent 2.66% of the state energy matrix. RINA verified and confirmed the presented information as correct. ***Sub-step 4b: Discuss any similar Options that are occurring*** Project participants presented information about seven SHPs under construction in Minas Gerais, where six of them were already qualified under the PROINFA program and four were contemplated with the PROINFA benefits.		

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			Regarding Step 4, project participants are requested to further develop sub-steps 4a & 4b including the identification of similar project activities (other CDM project activities registered or published not to be included) not just in Minas Gerais but in the country/region. Furthermore, there is no a clear conclusion about the common practice analysis.	~~CAR 7~~	
B.5.3. Is it demonstrated / justified that the project activity itself is not a likely baseline scenario? (*e.g. through **(a)** a flow-chart or series of questions that lead to a narrowing of potential baseline options, **(b)** a qualitative or quantitative assessment of different potential options and an indication of why the non-project option is more likely, **(c)** a qualitative or quantitative assessment of one or more barriers facing the proposed project activity or **(d)** an indication that the project type is not common practice in the proposed area of implementation, and not required by a Party's legislation/regulations*)	/1/	DR	See B.5.2.	~~CL 7~~ ~~CAR 3~~ ~~CAR 7~~	**OK**
B.5.4. If the starting date of the project activity is before 2 August 2008, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, evidence to demonstrate that the CDM was seriously considered in the decision to implement the project activity, was provided,	/1/	DR	The staring date of the project activity is defined as 16/10/2008. During the validation visit, project participants informed that the chosen starting date (16/10/2008) corresponds to the date when a meeting of Committee of Budget Priority decided to implement the project	~~CAR 4~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
adequate and sufficient to justify it? (If starting date is on or after 2 August 2008, see C.1.1.2)			activity. The project starting date must be defined/revised as per EB41 Meeting paragraph 67.		
B.5.5. Is the above evidence based on official, legal and / or other corporate document that was available at, or prior to, the start of the project activity?	/1/	DR	See B.5.4.	~~CAR 4~~	OK
B.5.6. If investment analysis has been used to demonstrate the additionality of the proposed CDM project activity, evidences that the proposed CDM project activity would not be: (a) The most economically or financially attractive alternative; or (b) Economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs); were provided? (*"Guidance on the Assessment of Investment Analysis")*	/1/		The investment analysis provides the confrontation between the project financial indicator/s (IRR) and the SELIC rate, the chosen benchmark. See B.5.2.	~~CL 7~~ ~~CAR 3~~ ~~CAR 7~~	OK
B.6. Emission Reductions. *Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations.*					
B.6.1. Explanation of methodological choices.					
B.6.1.1. Have the project, baseline and leakage emissions and emission reductions been properly explained and determined using the same appropriate methodology and conservative assumptions?	/1/	DR	The baseline scenario is the following: 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		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system". Emission reductions were estimated *ex-ante* using an emission factor of 0.1841 for the Brazilian grid system. Please, revise the calculus using the latest data made available by the Brazilian DNA. According to ACM0002, potential leakage effects, such as emissions arising from power plant construction and land inundation do not have to be considered. See B.4.1	~~CL 13~~	
B.6.1.2. Does the proposed project clearly state which equations for the calculation of emission reductions are used, as given by the approved / applied methodology?	/1/	DR	The equations used are in line with the applied baseline methodology.	**OK**	**OK**
B.6.1.3. Are the demonstration / justification for the choice of the chosen scenario (for example, in ACM0006) or case, option / method (for example in ACM0002) adequate and sufficient?	/1/	DR	ACM0002 is applicable to the "Guanhães Energia CDM Project, Minas Gerais, Brazil (JUN1123)" because: - the project activity will result in the installation of four hydro power plants/units (either with a run-of-river reservoir or an accumulation reservoir); - the project activity will result in new reservoirs and the power density of the power plants, as per definitions given in the Project Emissions section, is greater than 4 W/m^2; - the geographic and system boundaries for the relevant electricity grid can be clearly identified and	**OK**	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			information on the characteristics of the grid is available. The baseline scenario is the following: 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". Fortuna II SHP has a power density smaller than 10 W/m^2 and so project emissions from its reservoir were considered. The other three power plants have power densities greater than 10 W/m^2 and thus the project emissions from their reservoir(s) are considered as equal to zero ($PE_y=0$). See B.2.1		
B.6.1.4. Are the demonstration / justification for the chosen default values adequate and sufficient?	/1/	DR	The chosen default values are adequate and sufficient.	**OK**	**OK**
B.6.2. Data and parameter those are available at validation. *Data that is calculated with equations provided in the methodology or default values specified in the methodology should not be included in the compilation.*					
B.6.2.1. Is the list of the *ex-ante* data and parameters used by the project -including data from other sources- complete,	/1/	DR	Please include the following not monitored parameters, as per the applied baseline methodology: *GWPCH4* - Global warming potential of methane	~~**CAR 5**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
transparent, documented and available? (*measurements after the implementation of the project activity should not need to be included here but in the tables in section B.7.1*)			valid for the relevant commitment period; *EFRes* - Default emission factor for emissions from reservoirs.		
B.6.2.2. Is the chosen value or, where relevant, the qualitative information for each supporting data or parameter(s) provided in a (proper table) tabular form and the choice for the source of data explained / justified with clear and transparent references or additional documentation? (*check Annex 3)*	/1/	DR	See B.6.2.1.	~~CAR 5~~	**OK**
B.6.2.3. If values were measured, a description of measurement methods and procedures (standards), indicating the responsible(s) for carrying out the measurement(s), dates and results of measurement(s) was provided? (*check Annex 3*)	/1/	DR		**OK**	**OK**
B.6.3. *Ex-ante* calculation of emission reductions. Table 1 - 1, 3, 5					
B.6.3.1. Is the *ex-ante* calculation of the expected project, baseline and leakage emissions transparent, conservative, accurate, and documented and as per the approved / applied methodology (equations) of the project activity?	/1/	DR	Emission reductions were estimated *ex-ante* using an emission factor of 0.1841 for the Brazilian grid system. Please, revise the calculus using the latest data made available by the Brazilian DNA. Please clarify the difference between the assured energy ("garantia física") used in CER´s calculations and the values provided by ANEEL's Decrees ("Portarias").	~~CL 13~~ ~~CL 3~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
B.6.3.2. Sufficient background information and / or data to assess the calculation(s) and enable its reproduction, including electronic files (i.e. spreadsheets), was provided? (*check Annex 3*)	/1/	DR	Yes.	**OK**	**OK**
B.6.4. Summary of *ex-ante* estimation of emission reductions. Table 1 - 1, 3, 5					
B.6.4.1. Is all *ex-ante* estimation of emission reductions summarized in a (proper table) tabular form for all years of the crediting period? (*Check against A.4.4.1 figures*)	/1/	DR	The emissions reductions are presented in a proper table, on item A.4.4, totalizing 440,646 tCO_2e for the first 7 years crediting period. The first crediting period starts on 2010 and expires on 2017. The total amount of emission reductions indicated in PDD is 222,994 tCO2e/year. The spreadsheet of CER´s calculations provided by project participants is not adding the CERs referent to year 2017 in any of the individual SHPs calculations, as well as in the calculation of the total amount of CERs, which would result in 243.424 tCO2e/year. See A.4.4.1	~~**CAR 2**~~	**OK**
B.7. Application of monitoring methodology and description of the monitoring plan. *Compliance of the monitoring plan with the approved methodology and Implementation of the plan* Table 1 - 15 & Annex 4					
B.7.1. Data and parameters monitored. *(background documentation in Annex 4)*					
B.7.1.1. Specific information on how the data and parameters that need to be monitored	/1/	DR	The following parameters are mentioned as to be	**OK**	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
would actually be collected during monitoring for the project activity is provided? (m*easurements after the implementation of the project activity should be included here*)			monitored: $EG_{DoresdeGuanhães,\ h}$ - Net Electricity supplied by the SHP to the grid in hour *h*; $EG_{FortunaII,\ h}$ - Net Electricity supplied by the SHP to the grid in hour *h*; $EG_{Jacaré,\ h}$ - Net Electricity supplied by the SHP to the grid in hour *h*; $EG_{SenhoradoPorto,\ h}$ - Net Electricity supplied by the SHP to the grid in hour *h*; $EF_{grid,CM,y}$ - Brazilian grid emission factor; $EF_{grid,OM\text{-}DD,y}$ - CO2 Operating Margin emission factor of the grid, in a year *y*; $EF_{grid,BM,y}$ - CO2 Build Margin emission factor of the grid, in a year *y*; TEG_y - Total electricity produced by the project activity, including the electricity supplied to the grid and the electricity supplied to internal loads, in year *y*; Cap_{JP} - Installed capacity of the hydro power plant after the implementation of the project activity; A_{PJ} - Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full. Measurement methods and procedures are specified. ***Ex-post* calculation of emission reductions** The combined margin emissions factor ($EF_{grid,CM,y}$) will be calculated *ex-post* using the CO_2 emission factors for the build margin and the operational		

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			margin that are provided by the Brazilian DNA. CO_2 emission factors for the build margin and the operational margin for electricity generation in Brazil's National Interconnected System (SIN) are calculated, according to the dispatch analysis, from generation records of plants dispatched in a centralized manner by the National Electric System Operator (ONS). See B.7.2.10		
B.7.1.2. Are all the parameters and its sources of data reliable, specified and documented in a (proper table) tabular form?	/1/	DR	See B.7.1.1	**OK**	**OK**
B.7.1.3. Where data or parameters are supposed to be measured, are measurement methods and procedures, including a specification of which accepted industry standards or national or international standards will be applied, specified?	/1/	DR	See B.7.1.1	**OK**	**OK**
B.7.1.4. Are the measuring instruments / equipments, measurement methods, accuracy and interval, measurement responsible(s) and calibration procedures specified?	/1/	DR	The energy meters will be calibrated according to Brazilian electric sector requirements. See B.7.2.3	**OK**	**OK**
B.7.1.5. Are the QA / QC procedures applied described and complying with existing good practice? (*The parameters related to the performance of the project will be monitored using meters and standard testing equipment, which will be*	/1/	DR	The indicated QA/QC procedures are in line with the applied methodology.	**OK**	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
regularly calibrated following standard industry practices)					
B.7.2. Description of monitoring plan. *The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed.*					
B.7.2.1. Is the monitoring methodology previously approved by the CDM Methodology Panel?	/1/	DR	The project applies the approved consolidated monitoring methodology ACM0002 - "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", Version 10 of 11/06/2009 Project participants are requested to explain why the PDD dated 28 November 2008 is applying/mentioning ACM0002 version 9, valid from 27 February 2009, and a SELIC benchmark covering a range from January 2003 until December 2008. Furthermore, considering the present validation timeline to register projects, it is recommended to revise the PDD according to ACM0002 version 10, valid from 11 June 2009 onwards.	~~**CAR 1**~~	**OK**
B.7.2.2. Is the monitoring methodology the one deemed most applicable for this project and is the appropriateness justified?	/1/	DR	The applied monitoring methodology is the one deemed most applicable to the Project. See B.2.1.	**OK**	**OK**
B.7.2.3. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions	/1/	DR	All data collected as part of monitoring will be archived and kept at least for 2 years after the end of the crediting period. See B.7.1.1 and B.7.1.4	**OK**	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
within the project boundary during the crediting period?					
B.7.2.4. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR	According to ACM0002 version 10 the leakage does not need to be considered.	**OK**	**OK**
B.7.2.5. Is the authority and responsibility of project management clearly described?	/1/	DR	Project participants are requested to clarify how the data from the four SHPs will be consolidated and registered. Furthermore, the responsible(s) by project management procedures of collection, measurement, archiving of all data/records and calculation of the CER´s to each SHP and of the consolidated results should be defined.	~~**CAR 6**~~	**OK**
B.7.2.6. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	/1/	DR	See B.7.2.5	~~**CAR 6**~~	**OK**
B.7.2.7. Are procedures identified for training of monitoring personnel?	/1/	DR	PDD did not identified/mentioned training of monitoring personnel and/or training needs, procedures (including emergency preparedness) and responsible personnel. Please clarify. In the first verification, training courses provided to the operational team and related procedures should be checked. Furthermore, the plant operation manual and its implementation should be verified. See. A.4.3.4.	~~**CL 8**~~ FAR 1	**OK**
B.7.2.8. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR	See B.7.2.7	~~**CL 8**~~ FAR 1	**OK**
B.7.2.9. Does the monitoring plan reflect good	/1/	DR	See B.7.2.3.	**OK**	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
monitoring and reporting practices?					
B.7.2.10. Is the discussion and selection of all required monitoring parameters and / or data variables (for example, project emissions, project electricity generation, baseline grid / captive power emission factor) of the monitoring plan according to the approved / applied methodology transparent?	/1/	DR	See B.7.1.1	**OK**	**OK**
B.8. Date of completion of the application of the baseline and monitoring methodology and the name of responsible person(s) / entity (ies).					
B.8.1. Is the date of completion of the application of the methodology to the project activity provided and mentioned in the format *DD / MM / YYYY*?	/1/	DR	The date of completion of the application of the methodology is indicated as 28 November 2008. Please provide date of completion of the application of the methodology in the DD/MM/YYYY format.	~~**CL 9**~~	**OK**
B.8.2. Is the contact information of the person(s) / entity (ies) responsible for the baseline and monitoring methodology to the project activity provided? If applicable, are they indicated as project participants in Annex 1?	/1/	DR	The responsible for the baseline and monitoring methodology is Carbotrader Ltda and they are identified as project participants in Annex 1.	**OK**	**OK**
C. Duration of the Project activity / Crediting Period. *It is assessed whether the temporary boundaries of the project are clearly defined.*					
C.1. Duration of project activity.					
C.1.1. Starting date of project activity.					
C.1.1.1. Is the project's activity starting date (the	/1/	DR	The project's starting date is defined as 16/10/2008 in		

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
earliest date at which either the implementation or construction or real action of a project activity begins implementation, construction or real action - *project participant has committed to expenditures related to the implementation or related to the construction of the project activity*) clearly defined and reasonable?			the published PDD. During the validation visit, project participants informed that the chosen starting date (16/10/2008) corresponds to the date when a meeting of Committee of Budget Priority decided to implement the project activity. The project starting date must be defined/revised as per EB41 Meeting paragraph 67.	~~**CAR 4**~~	**OK**
C.1.1.2. If the project activity started on or after 2 August 2008, were the Host Party DNA and/or the UNFCCC secretariat informed in writing of the commencement of the project activity and of the intention to seek CDM status? (If starting date is before 2 August 2008, see B.5.4)	/1/	DR	Despite the chosen project starting date (16/10/2008), a letter informing the Brazilian DNA was sent on 10/03/2009 (requirement in force until 16/07/2009 was from EB41-Annex 46).	**OK**	**OK**
C.1.2. Expected operational life time of the project.					
C.1.2.1. Is the project's operational lifetime (mentioned in years and months) clearly defined and reasonable? (*check against crediting period and equipment lifetime*)	/1/	DR	The expected operational lifetime of the project is 30 years (0 months), and deemed reasonable. Please clarify if the operational lifetime of project activity is 28 years, as mentioned on Sub-step 2c: "Calculation *and comparison of financial indicators",* or 30 years, as indicated on PDD's section C.1.2. See A.4.3.3	~~**CL 7**~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
C.2. Choice of crediting period. *The crediting period may only start after the date of registration of the proposed activity as a CDM project activity.*					
C.2.1. Is the chosen crediting period clearly defined (mentioned in years and months) and its starting date mentioned in the format *DD / MM / YYYY*? (*renewable crediting period of seven years with two possible renewals or fixed crediting period of 10 years with no renewal*)	/1/	DR	A renewable crediting period of 7 years was selected (with the potential of being renewed twice), starting on 15/05/2010. The project selects a renewable crediting period of 7 years starting from 15/05/2010. As the crediting period may only start after the date of registration of the proposed activity as a CDM project activity, project participants should confirm that the crediting period will only start after the date of registration.	~~CL 4~~	**OK**
D. Environmental impacts. *Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the Validator.* Table 1 - 13					
D.1. Documents on Environmental impacts, including transboundary impacts.					
D.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/	DR	The project proponent is requested to include considerations about transboundary environmental impacts in the PDD.	~~CL 10~~	**OK**
D.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/	DR	See D.1.1.	~~CL 10~~	**OK**
D.1.3. Will the project create any adverse environmental effects?	/1/	DR	See D.1.1.	~~CL 10~~	**OK**
D.1.4. Are transboundary environmental	/1/	DR	See D.1.1.	~~CL 10~~	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
impacts considered in the analysis?					
D.1.5. Have identified environmental impacts been addressed in the project design?	/1/	DR	See D.1.1.	~~CL 10~~	OK
D.1.6. Does the project comply with the environmental legislation in the host country?	/1/	DR	See A.2.3.1.	OK	OK
E. Stakeholders' comments. *The Validator should ensure that stakeholders' comments have been invited and that due account has been taken of any comments received.* Table 1 - 12					
E.1. Description of how comments by local stakeholders have been invited and compiled. *The local stakeholder process shall be completed before submitting the proposed project activity to a DOE for validation.*					
E.1.1. Have relevant stakeholders been adequately consulted / invited for comments?	/1/	DR	Please clarify why the Environmental Secretary of Virginópolis was not invited for comments on the project activity.	~~CL 12~~	OK
E.1.2. If a stakeholder consultation process is required by regulations / laws in the host country, has the stakeholders' consultation process been carried out in accordance with such regulations / laws?	/1/	DR	As required by the Interministerial Commission on Global Climate Change (CIMGC) and in accordance to the Resolution 7 of the Brazilian DNA (05/03/2008), the project participants sent letters, inviting for comments, to local stakeholders/City authorities. All letters referent to stakeholder's consultation were sent on 19/12/2008 and their AR´s ("Receiving acknowledgment receipts") were presented by project participants, during the validation visit.	OK	OK
E.1.3. Was the stakeholders' consultation	/1/	DR	Yes.	OK	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
process conducted, within a reasonable time for comments submission, in an open and transparent manner to facilitate comments and properly described?					
E.2. Summary of comments received.					
E.2.1. Are the stakeholders who made comments identified (addresses provided / available)?	/1/	DR	Yes.	**OK**	**OK**
E.2.2. The summary of the stakeholders' comments received is provided / available?	/1/	DR	The summary of stakeholder comments was presented during the validation visit as well as the answers given by project participants.	**OK**	**OK**
E.3. Report on how due account was taken of any comments received.					
E.3.1. Has due account been taken of any stakeholders' comments received?	/1/	DR	See E.2.1	**OK**	**OK**
Annex 1. ***Contact information on project participants***					
1. Are the Names of all organization given? (*as listed in section A.3*)	/1/	DR	Contact information is correctly provided in Annex 1.	**OK**	**OK**
2. Name of contact person, Street, City, Post fix / ZIP, Country, Telephone Fax or e-mail mandatory fields are filled?	/1/	DR	All the mandatory fields were corrected fulfilled.	**OK**	**OK**
Annex 2. ***Information regarding public funding*** Table 1 – 7 & Table 2, A.4.5					
3. Is information from Parties included in Annex I on sources of public funding for the project activity provided?	/1/	DR	No parties from Annex I are included in the project description.	**OK**	**OK**
4. Does the information provided above include an affirmation that such funding does not result in a diversion of ODA and is separate from and is not	/1/	DR	The validation did not reveal any information that indicates that the project can be seen as a diversion of official development assistance (ODA) funding	**OK**	**OK**

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
counted towards the financial obligation of those Parties?			towards Brazil.		
Annex 3. ***Baseline information*** Table 1 - 14, 17, 18 & Table 2, B.2.2 B.6.2.2 B.6.2.3 B.6.3.2					
• Is any needed further background information used in the application of the baseline methodology, i.e. tables with time series data, documentation of measurement results and data sources, provided?	/1/	DR	See B.6.2.2 B.6.2.3 B.6.3.2. .	~~**CAR 5**~~	**OK**
Annex 4. ***Monitoring information*** Table 1 - 15 & Table 2, B.7 B.7.1					
• Is any needed further background information used in the application of the monitoring methodology, i.e. tables with time series data, documentation of measurement results and data sources, provided?	/1/	DR	Yes.	**OK**	**OK**

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
~~**CAR 1**~~ Project participants are requested to explain why the PDD dated 28 November 2008 is applying/mentioning ACM0002 version 9, valid from 27 February 2009, and a SELIC benchmark covering a range from January 2003 until December 2008. Furthermore, considering the present validation timeline to register projects, it is recommended to revise the PDD according to ACM0002 version 10, valid from 11 June 2009 onwards.	B.1.1 B.7.2.1	Correction was provided in the PDD. 28/11/2008 is the conclusion date of the project baseline (emissions reduction) and not the PDD finalization that dated after and utilized ACM0002 version 9. By the revision, the dates were adjusted. The PDD was revised to ACM002 version 10.	The revised PDD (Version 2, dated 4 September 2009), applies the methodology ACM0002 version 10. The SELIC benchmark is further discussed on CAR 3. This CAR is closed.
~~**CAR 2**~~ The first crediting period starts on 2010 and expires on 2017. The total amount of emission reductions indicated in PDD is 222,994 tCO_2e/year. The spreadsheet of CER´s calculations provided by project participants is not adding the CERs referent to year 2017 in any of the individual SHPs calculations, as well as in the calculation of the total amount of CERs, which would result in 243.424 tCO_2e/year.	A.4.4.1 B.6.4.1	Corrections were provided in the PDD and the evidence (CERs spreadsheet version 2) was sent to the DOE. Second response: The CERs spreadsheet was revised; the electric energy generated by all SHPs involved in the present project activity reflects one month reduction for all SHPs (31/01/2018).	Revised spreadsheet and PDD were provided to the validation team. The crediting period starting date was revised (PDD Version 2, dated 4 September 2009) from 15/05/2010 to 01/02/2011 or the date in which occurs the UNFCCC registration, the one that occurs later. Therefore, the period to estimate the emission reductions is from 01/02/2011 until 31/01/ 2018. The total CER´s amount referent to year 2018, based only on the electric energy generated until 31/01/2018, has to be revised accordingly to reflect one month reductions for all SHPs. This CAR remains open. Second response:

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
			Verified that the CERs calculations are correctly applied in the revised spreadsheet and PDD (version 3, dated 03/11/2009). This CAR is closed.
~~**CAR 3**~~ The benchmark used by project participants is the SELIC average rate (range/period = Jan-2003 to Dec-2008). Aiming to exclude periods when the mentioned rate was distorted by Brazilian specific events (2002-2003), please consider revising this range/period to a shorter and more conservative period (for example, from 2004 on). Moreover, project participants are required to provide the database containing the SELIC rate for the period under consideration. Please explain why the cash flow spreadsheet is considering only 28 years while the project's lifetime is 30 years. Sensitive analysis results (percentages) presented in the spreadsheet do not allow the verification of the calculation and if it considers or not CER incentives (sales). According to paragraph 8 of the "Guidance on the Assessment of Investment Analysis", all formulas used in the investment analysis must be readable and all relevant cells must be viewable and unprotected.	B.5.2 B.5.6	Correction was provided in the PDD. The range/period of the SELIC average rate was revised, excluding periods when the rate was distorted by national specific events. A shorter and more conservative period (January 2004 until December 2008) was chosen, totalizing 5 whole years of observation before the PDD publication for the global stakeholders year. Sensitive analysis results (percentages) presented in the spreadsheet version 2 now allow the verification of the calculation (was not considered the CERs incentives). Due this to make the project IRR equal the benchmark we have that to the two most sensitive parameters: Energy Price = R$ 178.00 (27.1% above) Investment = R$ 192,148,875.00 (23.5% lower). Second response: - The discussion regarding the	The revised PDD (Version 2, dated 4 September 2009) presents a shortened period of SELIC and its database was provided, as well as a new sensitivity analysis with readable formulas and unprotected cells. The investment period analysis is according to the project's lifetime (30 years). The values of energy price and investment that make the project meet the benchmark were presented in the PP´s response. However, the discussion of the likelihood (or not) of scenarios of higher energy prices (+27.1%) and lower investment (-23.5%) is still pending. Also, provide the calculus to arrive at these values. Moreover, please explain why the value of investment was revised in the revised spreadsheet version 2_1 (*SPE Guanhães Cash Flow.xls*, version 1: R$ 211,281,000 and *SPE Guanhaes Cash Flow v2_1.xls*, version 2: R$ 251,175,000). Furthermore, the revised IRR Spreadsheet (*SPE Guanhaes Cash Flow v2_1.xls*) was not translated (all cells contents) to the English language.

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
Although the IRR data provides useful information on its fluctuations when parameters vary in a range of -10% and +10%, it would be more useful to show how large should these variations be to make the project IRR equal the benchmark. Then a second analysis should be applied to discuss the likelihood of occurrence of these scenarios. Furthermore, IRR Spreadsheet(s) must be all in English.		likelihood of scenarios to the Project's IRR overcome the benchmark were inserted in the PDD also the IRR spreadsheet was revised in order to present the breakeven point analysis; - R$ 251,175,000 is the current value presented in the date (16/10/2008) which corresponds to the date when a meeting of Committee of Budget Priority decided to implement the project also this value was recently made public by the Project Participant (newspaper article about the SHPs construction investment). - The IRR Spreadsheet was revised in order to present all cells in English language. Please see the document "*SPE Guanhaes Cash Flow v2_1.xls*".	This CAR remains open. Second response: The *SPE Guanhaes Cash Flow v2_1.xls* presents the calculation of the breakpoint analysis and the discussions of the possibilities of the scenarios reach the benchmark were included in the revised PDD. PP discussed the possibilities of variation of the energy prices, investment, operational cost and plant load factor. The breakeven points are: rise 27% of the energy price, reduce 23% the investment, increase 29 % the plant load factor and reduce 446% the operational costs. The conclusion of the analysis is that the occurrence of the project's IRR overcome the benchmark is not likely to occur. Verified the report from the Committee of Budget Priority and the newspaper article to confirm the investment in the project activity. This CAR is closed.
~~**CAR 4**~~ During the validation visit, project participants informed that the chosen starting date (16/10/2008) corresponds to the date when a meeting of Committee of Budget Priority decided to implement the project	B.5.4 B.5.5 C.1.1.1	Correction was provided in the PDD. The starting date was determined as per EB41 Meeting paragraph 67. According to the SPE Guanhães CEO the date forecasted to the EPC sign, so the commitment with	Please provide evidences referent to the signature of the EPC contract or provide evidences referent to the data, expressed in DD/MM/YYYY, that the mentioned contract will be signed.

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
activity. The project starting date must be defined/revised as per EB41 Meeting paragraph 67.		the major expenditures should be 30/09/2009. Evidence was sent to the DOE. Second response: Due the delay into the EPC contract assignment the update schedule, to the starting date is 15/12/2009 (according to the Guanhães Board Directors).	This CAR is still open. Second response: Checked the email from Guanhães Energia S.A (Mr. Hudson Maia Arantes) that the forecasted data to sign the contract was revised to 15/12/2009. This CAR is closed.
~~**CAR 5**~~ Please include the following not monitored parameters, as per the applied baseline methodology: GWP_{CH4} - Global warming potential of methane valid for the relevant commitment period; EF_{Res} - Default emission factor for emissions from reservoirs.	B.6.2.1 Annex 3	Corrections were provided. The not monitored parameters *GWP*CH4 and *EFRes* were included in section B.6.2 of the PDD.	Section B.6.2 was revised in the PDD version 2, dated 4 September 2009. The parameters are according to the requirements of the methodology ACM0002 version 10. This CAR is closed.
~~**CAR 6**~~ Project participants are requested to clarify how the data from the four SHPs will be consolidated and registered. Furthermore, the responsible(s) by project management procedures of collection, measurement, archiving of all data/records and calculation of the CER´s to each SHP and of the consolidated results should be defined.	B.7.2.5 B.7.2.6	The section B.7.2 of the PDD was revised. All the monitoring plan was rewritten, including Power generation and measurements system (Data monitoring, Quality control, Data management, Training procedures) and the information about the Emission Factor provided by the Brazilian DNA.	In sections B.7.2 and Annex 4 there is no information about the procedures referent to the monitoring of the parameter TEG_y. Also explain the leakage effects mentioned on PDD page 28 section B.7.2, item " Data monitoring" This CAR remains open.

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
		Second response: As listed in the PDD section B.7.1, the TEG_y shall be monitored by the project proponent, as one of the SHP involved has Power Density greater than $4W/m^2$ and less than 10 W/m^2.The monitoring plan described in the section B.7.2 refers also to this parameter. In this way the procedures of measurements, recording and storage, procedures for Baseline, Project Emission and Emission Reductions calculations will be performed taking into account the TEG_y. A description about this parameter was inserted in the section B.7.2. No leakage emissions should be considered to the project activity. This is a new project. The text contained in the monitoring plan which mentioned leakage was rewritten in order to clarify all these issues.	Second response: Leakage effects were removed from the PDD. Information about the parameter TEG_y was included in the revised PDD. TEG_y from the SHP Fortuna II will be hourly measured and monthly recorded. This CAR is closed.
~~**CAR 7**~~ Regarding Step 4, project participants are requested to further develop sub-steps 4a & 4b including the identification of similar project activities (other CDM project activities registered or published not to be included) not just in Minas Gerais but in the	B.5.2 B.5.6	Corrections were provided in the PDD. The identification of similar project activities in the same state of the project as well as in the country/region was included at sub-steps 4a and 4b and the conclusion of the common practice	For the common practice analyses, PP considered all the power plants that became operational since 2005 in Brazil and that have a installed capacity between 5 and 15 MW. Power plants with incentives like CDM and PROINFA were highlighted in the

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
country/region. Furthermore, there is no a clear conclusion about the common practice analysis.		analysis was rewritten in section B.5 of the PDD. Second response: The Porto Góes SHP was excluded from the analysis because the 14.3MW refers to a expansion. The SHP was expanded from 10.5MW to 24.8MW, in this way an expansion of **14.3MW**. Evidence that support the exclusion is the Official data from ANEEL, which can be check through the following links: http://www.aneel.gov.br/cedoc/prt2006022mme.pdf; http://www.aneel.gov.br/cedoc/res2003225.pdf. Regarding the SHPs Constestado and Pequi they were included in the analysis. The sub-steps 4a and 4b were rewritten with this information	provided document-spreadsheet "*PCHs de 2005 a 2009.xls*". PP analysis was confirmed on the ANEEL and UNFCCC websites but some pending issues are listed bellow: -2005: provide explanation why the Porto Góes SHP (14.3 MW) was excluded from the analysis. -2007: provide the evidences that the SHP Contestado (5.5 MW) is a CDM project (registered or published) and can be excluded from the analysis. -2008: provide the evidences that the SHP Pequi (6 MW) is a CDM project (registered or published) and can be excluded from the analysis. This CAR remains open. Second response: Checked the links for the Porto Góes SHP and confirmed that the 14.3 MW refers to an expansion of the SHP. Pequi and Contestado were included in the analysis. Confirmed the revised information presented in the PDD version 3 through the ANEEL web site and UNFCCC web site. In Brazil, 2.12% of the energy is generated by SHP. From this, 95 % were implemented with incentives (CDM or PROINFA).

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
			Therefore, the project activity cannot be considered as common practice in Brazil. This CAR is closed.
~~**CL 1**~~ It is mentioned that the project activity will create other social benefits, such as better working conditions, increase on job opportunities and better conditions on local economy. Please provide evidences (further elaboration) of the mentioned benefits.	A.2.3.4	The social benefits mentioned can be viewed in the Environmental Control Plan (PCA), evidence was sent to the DOE. All four SHPs has Workforce Mobilization and Desmobilization Program (80% of the jobs are for the local population), Socioeconomic Monitoring Project, Health Care Project and other social benefits projects.	It was verified that the document "*Plano de Gestão Ambiental- PGA, July 2007*" describes social programs and activities that are forecasted to be created by the project activity. This CL is closed.
~~**CL 2**~~ Please clarify why the PDD's mentioned installed capacity of SHP Dores de Guanhães (14 MW), Jacaré (9 MW) and Senhora do Porto (12 MW) is different from the described in the following ANEEL's documentation: SHP Dores de Guanhães - Authorization Resolution no. 931 – Installed capacity = 12.0 MW; SHP Jacaré - Authorization Resolution no. 934 – Installed capacity = 10.5 W; SHP Senhora do Porto - Authorization Resolution no. 933 – Installed capacity = 9. 0 MW.	B.2.3	The documentation Authorization Resolutions no. 931, 933 and 934 was issued based on the former project design (Projeto Básico) version no more valid. Also these documentation was carried out by the former project owner and not by the Guanhães Energia the present project owner. A new version of the Project Design (Projeto Básico) was delivered to the ANEEL and all documentation referent to the Project Activity has been done based on the new project design version. Second response: The installed capacity presented in the	Please, provide the evidence (copies of the "*Project design- Projeto Básico*") for the (revised) installed capacity of the SHPs. This CL remains open. Second response: Checked the ANEEL dispatch and confirmed that the installed capacity described in the PDD are as per ANEEL documents. - Dispatch no. 2001/2007 – Dores de Guanhães, with installed capacity of 14MW, issued on 20/06/2007; - Dispatch no. 2002/2007 – Jacaré, with installed capacity of 9MW, issued on

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
		PDD, refering to the new Project Design – Projeto Básico, was approved by the regulatory agency according to the following evidences: - Dispatch no. 2001/2007 – Dores de Guanhães, with installed capacity of 14MW; - Dispatch no. 2002/2007 – Jacaré, with installed capacity of 9MW; - Dispatch no. 2003/2007 – Senhora do Porto, with installed capacity of 12MW. The evidences provided above, are considered adequate (official data), since that it was provided and approved by the ANEEL – Brazilian Electricity Regulatory Agency – official data	20/06/2007; - Dispatch no. 2003/2007 – Senhora do Porto, with installed capacity of 12MW, issued on 20/06/2007. All ANEEL dispatches were issued after the ANEEL Resolutions 931, 934, 933 (29/05/2007). This CL is closed.
~~**CL 3**~~ Please clarify the difference between the assured energy ("garantia física") used in CER´s calculations and the values provided by ANEEL's Decrees ("Portarias").	B.6.3.1	To the CERs spreadsheet version 2 was considered the same values than the ANEEL´s Decrees ("Portarias"). Second response: The calculations provided in the CER's calculations are in line with the ANEEL's Decrees, which is also in line with the most recent "*Projeto Básico*" used by the ANEEL to calculate the assured energy. Please refer to the CL2, to acess the	The PDD version 2, dated 4 September 2009, presents calculations based on the ANEEL´s Decrees (official data). Please, clarify if the mentioned decrees are in line with the most recent installed capacity, corresponding to "*Projeto Básico*" sent to ANEEL This CL remains open. Second response

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
		mentioned ANEEL's Decrees.	The ANEEL Decrees referent to the assured energy were issued on 4/01/2008, after the revision of the installed capacity of the SHPs (Dispatches 2001, 2002 and 2003, issued on 20/06/2007). Considering the mentioned dispatches and ANEEL Decrees, all SHPs included in this project activity have the same value of plant load factor. This CL is closed.
~~**CL 4**~~ The project selects a renewable crediting period of 7 years starting from 15/05/2010. As the crediting period may only start after the date of registration of the proposed activity as a CDM project activity, project participants should confirm that the crediting period will only start after the date of registration.	C.2.1	The project selected a renewable crediting period. It can be renewable twice, 7 years each period so total 21 years.The starting date is 01/02/2011 or the date in which occurs the UNFCCC registration, the one that occurs later	The crediting period starting date was revised (PDD Version 2, dated 4 September 2009) from 15/05/2010 to 01/02/2011or the date in which occurs the UNFCCC registration, the one that occurs later. This CL is closed.
~~**CL 5**~~ PDD Items A.4.1.3 and A.4.1.4 are mentioning different cities for the SHPs Dores de Guanhães and Senhora do Porto. Please revise/correct accordingly.	A.4.1	Clarification was provided in the PDD. The correct cities were mentioned in section A.4.1.3 and A.4.1.4 for each SHP, accordingly to the evidence sent to the DOE (Carta Nº 47-2009 SUPRAM CENTRAL)	PDD version 2 is correctly mentioning the cities for the SHPs Dores de Guanhães and Senhora do Porto, according to the document "*Carta Nº 47-2009 SUPRAM CENTRAL*". This CL is closed.
~~**CL 6**~~ The project's sectoral scope is defined as *Scope 1 – Energy Industries (renewable sources)* on PDD section A.4.2. The proposed project activity falls under Project category	A.4.2	Clarification was provided in the PDD. The correct sectoral scope of the proposed project activity was included (Sectoral Scope I – Energy Industries	Clarifications provided to RINA's satisfaction. This CL is closed.

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
"Grid-connected electricity generation from renewable sources" and *Sectoral Scope 1-Energy industries (renewable/non-renewable sources)*. Please revise/correct accordingly.		Renewable/Non-Renewable Sources).	
~~**CL 7**~~ Please clarify if the operational lifetime of project activity is 28 years, as mentioned on Sub-step 2c: "*Calculation and comparison of financial indicators*", or 30 years, as indicated on PDD's section C.1.2.	C.1.2.1	The operational lifetime of the project activity is 30 years. The investment analysis was adjusted to these period	It was verified and confirmed, in the document "*Comite de Priorização de Investimento - CPO*", that the operational lifetime of the SHPs is 30 years. This CL is closed
~~**CL 8**~~ PDD did not identified/mentioned training of monitoring personnel and/or training needs, procedures (including emergency preparedness) and responsible personnel. Please clarify.	A.4.3.4 A.4.3.5 B.7.2.7 B.7.2.8	The information of the training of monitoring personnel, training needs, procedures and responsible personnel was included in the PDD version 2. Second response: The PDD was revised in order to include training procedures for all emergency procedures related to the operation of the project activity (for instance: workers' safety and health, dam safety related emergency drills/exercises, etc). It is a commom practice regarding plants operation.	The revised PDD (version 2) included the information about the training of monitoring personnel (operational team) that will be provided (or required) from a third party service provider. Nevertheless, the emergency preparedness procedures must include all emergency procedures related to the operation of the project activity (for instance: workers' safety and health, dam safety related emergency drills/exercises, etc). This CL remains open Second response: The revised PDD mentions that the emergency procedures will be included in the training courses to be provided and that a

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
			plant operational manual will be created. This CL is closed and FAR 1 was open.
~~**CL 9**~~ The date of completion of the application of the methodology is indicated as 28 November 2008. Please provide date of completion of the application of the methodology in the DD/MM/YYYY format.	B.8.1	Clarification was provided in the PDD, section B.8. The date of conclusion of the application of the methodology, due the version 2, was adjusted and indicated in the DD/MM/YYYY format (04/09/2009).	Clarifications provided to RINA's satisfaction. This CL is closed.
~~**CL 10**~~ The project proponent is requested to include considerations about transboundary environmental impacts in the PDD.	D.1.1	Clarification was provided. Considerations about transboundary environmental impacts were included in the PDD, section D.1. The impacts beyond the project limits are mentioned with more details in the SHP's Environmental Control Plan (PCA – Plano de Controle Ambiental).	It was verified that the environmental agency (FEAM) did considered transboundary impacts in the instalation licenses for the SHPs, as per the PPs Environmental Control Plan ("*PCA – Plano de Controle Ambiental*"). Clarifications provided to RINA's satisfaction. This CL is closed.
~~**CL 11**~~ PDD (section B.3) is mentioning that project emissions are not to be considered and SHP Fortuna II has a power density greater than 4 W/m^2 and less than or equal to 10 W/m^2. Please clarify.	B.3.2	Clarification was provided in the PDD. The project emissions from Fortuna II SHP are included on item B.6.1.	PDD version 2 took out the wrong statement contained in the the published PDD (section B.3) mentioning that project emissions were not to be considered. Project emissions calculations for the SHP Fortuna II are properly explained in section B.6.1. Clarifications provided to RINA's satisfaction. This CL is closed.

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
~~CL 12~~ Please clarify why the Environmental Secretary of Virginópolis was not invited for comments on the project activity.	E.1.1	By the time of consulting the local stakeholders, Virginópolis Environmental Secretary do not existed. The entity was mentioned by mistake in the PDD and had been withdrawn in version 2. Second response: The Environmental Secretary of Virginópolis was excluded from the section E.1 of the PDD version 3. Letters and ARs for the entities inserted in the section E.1 was provided to the DOE. There were none associations linked to the project in the municipalities of Virginópolis (10,891 ha *) and Dores de Guanhães (5,528 ha *) at the time of stakeholders invitation for comments, although the project activity has performed the invitations to all existing stakeholders. These two cities are too small, so was possible with hard work to localize three entities in the Guanhães city (the biggest city among the three with 29,286 ha *) that could be direct or indirectly influenced by the project. Such	The Environmental Secretary of Virginópolis is still described in the section E.1 of the PDD version 2. Moreover, three new entities were included in the PDD version 2 (Sindicato dos Produtores Rurais of Guanhães;_Associação Comercial e Industrial of Guanhães;_Sindicato dos Trabalhadores na Indústria de Extração de Madeira e Lenha of Guanhães). Letters and ARs for these entities were not provided to RINA. Please, clarify why other community associations from Dores de Guanhães and Virginópolis were not also invited for comments on the project activity. This CL remains open. Second response: Letters and ARs were provided to RINA. Letters were sent on 02nd April 2009. ARs are from 06th April 2009. Environmental Secretary of Virginópolis was excluded from the revised PDD. This CL is closed.

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
		associations were founded after the invitation start, which made the PP provide invitation letters including them, enabling comments about the project. Therefore, the invitation letters were immediately delivered in order to ask for the comments about the projet activity. Also, the three associations were discovered after Even though during the entire validation process the stakeholders can submit their opinium to the project participants as determined by the brazilian DNA "Manual para Subsmissão de Atividades de Projetos no Âmbito do MDL". To the all cities the Environmental Plan (Plano de Gestão Ambiental) forecast several activities in the local communities. * Source: www.citybrazil.com.br	
~~**CL 13**~~ Emission reductions were estimated *ex-ante* using an emission factor of 0.1841 for the Brazilian grid system. Please, revise the calculus using the latest data made available by the Brazilian DNA.	B.4.1 B.6.1.1 B.6.3.1	The emission reductions calculation was revised and corrected in the PDD and CERs calculation.	Project participants updated CER´s calculations, based on the latest available grid emission factor of the Brazilian grid system for 2008 ($EF_{grid,CM,y}$ = **0.3112** tCO_2/MWh - average OM=0.4766 tCO_2/MWh and BM= 0.1458 tCO_2/MWh / weights=0.5), provided by the Brazilian DNA.

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
			This CL is closed.
~~**CL 14**~~ The areas of the reservoirs of SHP´s Fortuna and Jacaré, presented on PDD table 2 - item A.4.3, are exchanged (inverted), please correct accordingly.	A.2.2	The areas were adjusted accordingly.	The reservoir areas are correctly presented in the PDD version 2. This CL is closed.
~~**CL 15**~~ The Guidelines for completing CDM-PDD describes *that " information used to determine additionality, to describe the baseline methodology and its application, and to support an environmental impact assessment, shall not be considered proprietary or confidential"* PDD version 2 , Sub-step 2c: Calculation and comparison of financial indicators, page 12 mentions that "*The participant companies of the project consider the cash-flow a confidential information and, therefore, it will be presented integrally for the Designated Operational Entity that will do the validation and for any CDM related entity that asks for it to the purpose of evidence of the additionality of the project. However, it will not be available in the PDD*". Please revise/correct accordingly.	B.5.2	The information related to this CL was adjusted accordingly in the PDD version 3 Sub-step 2c. The cash-flow will be made public in a separate content/document according to the UNFCCC rules.	Revised PDD included the information that the cash flow will be presented in a separate document. This CL is closed.

Draft report clarifications and corrective action requests	Ref. to table 2	Summary of project participants' response	Validation team conclusion
FAR 1 In the first verification, training courses provided to the operational team and related procedures should be checked. Furthermore, the plant operation manual and its implementation should be verified.	A.4.3.4 A.4.3.5 B.7.2.7 B.7.2.8		