

VALIDATION REPORT SIGMA ENERGIA S/A

VALIDATION OF THE SERRA DAS AGULHAS SMALL HYDROPOWER PLANT PROJECT ACTIVITY

REPORT NO. BRAZIL-VAL/BR.1099481 REVISION NO. 02 BUREAU VERITAS CERTIFICATION

> 62/71 Boulevard du Château 92571 Neuilly Sur Seine Cdx - France



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Summary: Bureau Veritas Certi Activity of Sigma En Brazil, on the basis operations, monitorin and modalities and t The validation scope project's baseline st phases: i) desk revie project stakeholders opinion. The overall Bureau Veritas Certi	on of the Serra das Agulhas Small Hydropower Plant Project cipalities of Diamantina and Monjolos, State of Minas Gerais, DM, as well as criteria given to provide for consistent project iteria refer to Article 12 of the Kyoto Protocol, the CDM rules the CDM Executive Board, as well as the host country criteria. In the and objective review of the project design document, the er relevant documents, and consisted of the following three the baseline and monitoring plan; ii) follow-up interviews with g issues and the issuance of the final validation report and view to Validation Report & Opinion, was conducted using t of Clarification and Corrective Actions Requests (CL and		
CAR), presented in Appendix A. Taking into accour design document. In summary, it is Bureau Veritas Certification's opin monitoring methodology ACM0002 version 12.3.0 and and the relevant host country criteria.			count this output, the project proponent revised its project opinion that the project correctly applies the baseline and and meets the relevant UNFCCC requirements for the CDM
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Serra das Agulhas Small Hydropower Plant Project Activity			Flavio Gomes – Global Product Manager
Work carried out by:			
Marcelo Porto – lead verifier Bernardo Lima – financial specialist			Client or responsible organizational unit
Internal Technical Review carried our by:			\dashv _
Antonio Daraya			Limited distribution
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1 INTRODUCTION

Sigma Energia S/A has commissioned Bureau Veritas Certification to validate its CDM project Serra das Agulhas Small Hydropower Plant Project Activity (hereafter called "the project") at the municipalities of Diamantina and Monjolos, State of Minas Gerais, Brazil.

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

1.1 Objective

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

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

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

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

1.3 Validation team

The validation team consists of the following personnel:

FUNCTION	NAME	CODE HOLDER*	TASK PERFORMED
Lead Verifier	Marcelo Porto	🗹 Yes 🗌 No	⊠dr ⊠ sv ⊠ri
Financial Specialist	Bernardo Lima	□Yes 🗹 No	⊠dr ⊡sv ⊠ri



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Internal			
Technical	Antonio Daraya	🗹 Yes 🗌 No	☑DR □SV ☑RI
Reviewer (ITR)			

*DR = Document Review; SV = Site Visit; RI = Report issuance

2 METHODOLOGY

The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

In order to ensure transparency, a validation protocol was customized for the project, according to the version 01.2 of the Clean Development Mechanism Validation and Verification Manual, issued by the Executive Board at its 55th meeting on 30/07/2010 /**Ref-A**/. The protocol shows, in a transparent manner, criteria (requirements), means of validation and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organizes, details and clarifies the requirements a CDM project is expected to meet;
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

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

2.1 Review of Documents

The Project Design Document (PDD) submitted by Sigma Energia S/A and additional background documents related to the project design and baseline, i.e. country Law, Guidelines for Completing the Project Design Document (CDM-PDD), Approved methodology, Kyoto Protocol, Clarifications on Validation Requirements to be Checked by a Designated Operational Entity were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests, Sigma Energia S/A revised the PDD and resubmitted it on 29/03/2012.

The validation findings presented in this report relate to the project as described in the PDD version 04 /Ref-19/.



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2.2 Follow-up Interviews

On 17/11/2011 Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of the three project participants (please refer to Table 1 below) were interviewed (see References for the names of the persons interviewed). The main topics of the interviews are summarized in Table 1.

Interviewed	Interview topics			
organization				
Sigma Energia S/A [*]	 Project background information, 			
and	Project technology, operation, maintenance and monitoring			
Omega Energia	capability,			
Renovável S/A	 Project monitoring and management plan, 			
	 Stakeholder consultation process, 			
	 Project status, 			
	Environmental aspects / impacts and licenses.			
Ecopart Assessoria	 Project description, 			
em Negócios	 Technology used, 			
Empresariais Ltda	Project category,			
	 Baseline and Additionality, 			
	Monitoring Plan,			
	 Emission Reduction Calculation, 			
	Environmental aspects / impacts and licenses.			

Table 1Interview topics

2.3 Resolution of Clarification and Corrective Action Requests

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

Corrective Action Requests (CAR) is issued, where:

(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 may also use the term Clarification Request (CL), if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

^{*} Sigma Energia S/A is a company controlled by Omega Energia Renovável S/A.



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

2.4 Internal Technical Review

The validation report underwent an Internal Technical Review (ITR) before requesting registration of the project activity.

The ITR is an independent process performed to examine thoroughly that the process of validation has been carried out in conformance with the requirements of the validation scheme as well as internal Bureau Veritas Certification procedures.

The Lead Verifier provides a copy of the validation report to the reviewer, including any necessary validation documentation. The reviewer reviews the submitted documentation for conformance with the validation scheme. This will be a comprehensive review of all documentation generated during the validation process.

When performing an Internal Technical Review, the reviewer ensures that:

- The validation activity has been performed by the team by exercising utmost diligence and complete adherence to the CDM rules and requirements.
- The review encompasses all aspects related to the project which includes project design, baseline, additionality, monitoring plans and emission reduction calculations, internal quality assurance systems of the project participant as well as the project activity, review of the stakeholder comments and responses, closure of CARs, CLs and FARs during the validation exercise, review of sample documents.

The reviewer compiles clarification questions for the Lead Verifier and Validation Team and discusses these matters with Lead Verifier.

After the agreement of the responses on the 'Clarification Request' from the Lead Verifier as well as the PP(s) the finalized validation report is accepted for further processing such as uploading on the UNFCCC webpage.



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3 VALIDATION CONCLUSIONS

In the following sections, the conclusions of the validation are stated.

The findings from the desk review of the original project design documents and the findings from interviews during the follow up visit are described in the Validation Protocol in Appendix A.

The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the Project resulted in 38 Corrective Action Requests (CARs) and 27 Clarification Requests (CLs).

The CARs and CLs were closed based on adequate responses from the Project Participant(s) which meet the applicable requirements. They have been reassessed before their formal acceptance and closure.

The number between brackets at the beginning of each section corresponds to the VVM paragraph.

3.1 Approval (49-50)

The participation for each Project Participant has not been approved yet by a Party of the Kyoto Protocol.

3.2 Participation (54)

The participation for each project participant has not been approved yet by a Party of the Kyoto Protocol. Please, refer to section 3.1 of this Validation Report.

3.3 **Project design document (57)**

The validation team hereby confirms that the PDD complies with the latest forms of the guidance documents for completion of PDD:

- Clean Development Mechanism - Project Design Document Form (CDM-PDD), version 03.0 /Ref-B/.

- Guidelines for completing the Project Design Document (CDM-PDD) and the Proposed New Baseline and Monitoring Methodologies (CDM-NM), version 07.0 /Ref-C/.



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3.4 Changes in the Project Activity

As was observed by the validation team through documentation analysis and during site visit held on 17/11/2011, the project is being implemented in accordance with the descriptions provided in the webhosted PDD.

However, the following changes were identified:

- In version 04 of the PDD, the PPs added a complement to the sensitivity analysis, by varying the relevant parameters until the IRR reaches the benchmark (9.38%). This complement, under Sub-step 2d, in Section B.5, had not been presented in PDD version 01. This change was validated by the DOE, by checking all relevant formulas in the financial calculation spreadsheet (/Ref-26/), as well as verifying that all values presented in Table 10 of the PDD, upon the application of Excel's "goal seek" function, are correct.
- In version 04 of the PDD, the PPs selected Option (c), Dispatch data analysis OM, as the method to determine to operating margin, to be used in the calculation of EF_{grid,CM,y}. In PDD version 01, Option (b), Simple adjusted OM, had been chosen. This change was validated by the DOE, by verifying that PPs have adequately justified the updated choice, in accordance with Step 3 of "Tool to calculate the emission factor for an electricity system" /Ref-F/.

All the other changes that have been made to the different versions of the PDD during the Validation Process, from the webhosted PDD version 01 **/Ref-1/** to the final PDD version 04 **/Ref-19/**, have been supported by CARs and CLs opened by the DOE and have already been discussed in the Validation Protocol.

3.5 **Project description (64)**

The project consists of the construction and operation of a small hydropower plant in the State of Minas Gerais, in Brazil. The hydropower plant is called SHPP Serra das Agulhas and its geographic coordinates are 18°21'43''S and 43°57'31''W (for the Dam) and 18°20'51''S and 44°01'20''W (for the Power House). Geographic coordinates were validated with /**Ref-22**/.

The plant has an installed capacity of 28 MW, with 2 turbine/generator units and a reservoir area of 0.62 km^2 . With a Plant Load Factor (PLF) of 0.467, its average electricity generating capacity is 13.08 MW. The project activity has an expected operational lifetime of 30 years, in accordance with the maximum period established by ANEEL's Decree 6,048/2007 /**Ref-35**/^{*}.

^{*} See Section 3.7.3, of this report, for details on the validation of the period of assessment of 30 years.



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The PLF was determined using option b) as defined in the Guidelines for the reporting and validation of plant load factors, version 01.0, EB 48 Report, Annex 11 /**Ref-D**/: "The plant load factor determined by a third party contracted by the project participants (e.g. an engineering company).", according to evidence: ANEEL's Technical Summary of the consolidated project design, dated 31/01/2011 (prepared by third party contracted by project participants: VLB Engenharia Ltda.) /**Ref-6**/, attached to Report 1.344-RE-G00-001 /**Ref-5**/, dated 20/05/2011.

It's important to observe that the consolidated basic project was presented to the Brazilian National Electric Energy Agency (ANEEL) and has already been approved, as verified by the DOE, through official ANEEL's approval of the Consolidated Basic Engineering Project (ANEEL's Dispatch 937/2012) /**Ref-22**/, dated 21/03/2012.

The DOE validated the accuracy and completeness of the project description contained in the PDD version 04 by:

- An analysis of documents related to the project activity, and their respective crosscheck with the PDD information: /Ref-4/, /Ref-5/, /Ref-6/, /Ref-7/, /Ref-8/, /Ref-22/ and /Ref-30/.

- A site visit and interviews with Project Participants (PPs) held on 17/11/2011.

The DOE hereby confirms that the project description in PDD version 04 is accurate and complete in all respects and that there are no changes to the project activity/design or boundary as compared to the webhosted PDD, except those changes mentioned in Section 3.4 above and changes that have been supported by CARs and CLs opened by the DOE, which have already been discussed in the Validation Protocol.

3.6 Baseline and monitoring methodology

3.6.1 General requirement (76-77)

The steps taken to assess the relevant information contained in the PDD against each applicability condition are described below.

The project applies the approved baseline methodology ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", version 12.3.0 /Ref-E/.

The applied baseline methodology is justified as it has been demonstrated that the project activity ensures that:



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Applicability conditions ACM0002, version 12.3.0:

1. According to this methodology, it is applicable to grid-connected renewable power generation project activities that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).

The PDD version 04 correctly states: "Serra das Agulhas is a new gridconnected power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant)". The DOE was able to validate this through a site visit (17/11/2011) and by analyzing project activity related documents: /Ref-4/ up to and including /Ref-8/, /Ref-19/ and /Ref-22/. Furthermore, the DOE was able to validate that the power plant will be grid-connected with evidences /Ref-5/, /Ref-6/ and /Ref-22/.

2. The methodology also provides the following conditions: The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit.

The PDD version 04 states: "Serra das Agulhas is a new small hydropower plant connected to the Brazilian Interconnected System". The DOE was able to validate that the project activity is the installation of a new hydro power plants through a site visit (17/11/2011) and by analyzing project activity related documents: /Ref-4/ up to and including /Ref-8/, /Ref-19/ and /Ref-22/.

3. In the case of capacity additions, retrofits or replacements (except for capacity addition projects for which the electricity generation of the existing power plant(s) or unit(s) is not affected): the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity addition or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.

No capacity addition, retrofits or replacements will be carried out, seeing that the project activity is the installation of a *new* hydro power plant. Please refer to applicability conditions 1 and 2 above for an explanation

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regarding how the DOE was able to validate that the Project activity comprised the installation of a new grid-connected renewable power plant.

4. In case of hydro power plants, at least one of the following conditions must apply:

- The project activity is implemented in an existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or
- The project activity is implemented in an existing single or multiple reservoirs, where the volume of any of reservoirs is increased and the power density of each reservoir, as per definitions given in the Project Emissions section, is greater than 4 W/m² after the implementation of the project activity; or
- The project activity results in new single or multiple reservoirs and the power density of each reservoir, as per definitions given in the Project Emissions section, is greater than 4 W/m² after the implementation of the project activity.

The third option above applies: The project activity results in new single or multiple reservoirs and the power density of each reservoir, as per the definitions given in the Project Emissions section, is greater than $4 W/m^2$ after the implementation of the project activity.

The DOE was able to validate that the new hydro power plant result in a new single reservoir with a power density above 4 W/m^2 (i.e. 45.16 W/m^2) through a site visit (17/11/2011), by an analysis of Equation 9 provided in the PDD version 04, together with project activity related documents: /**Ref-5**/, /**Ref-6**/, /**Ref-7**/ and /**Ref-22**/.

5. In case of hydro power plants using multiple reservoirs where the power density of any of the reservoirs is lower than $4 W/m^2$ after the implementation of the project activity all of the following conditions must apply:

- The power density calculated for the entire project activity using equation 5 is greater than $4 W/m^2$;
- All reservoirs and hydro power plants are located at the same river and were designed together to function as an integrated project that collectively constitutes the generation capacity of the combined power plant;
- The water flow between the multiple reservoirs is not used by any other hydropower unit which is not a part of the project activity;
- The total installed capacity of the power units, which are driven using water from the reservoirs with a power density lower than 4 W/m^2 , is lower than 15 MW;
- The total installed capacity of the power units, which are driven using water from reservoirs with a power density lower than $4 W/m^2$,



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is less than 10% of the total installed capacity of the project activity from multiple reservoirs.

The PDD version 04 correctly states that this applicability condition does not apply, since the project does not use multiple reservoirs. Please refer to applicability condition 4 above for a description how the DOE was able to validate that the project comprises the use of a single reservoir.

The methodology is not applicable to the following:

1. Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site.

The PDD version 04 states that the project activity does not involve switching from fossil fuels to renewable energy sources. The DOE validated it, by a site visit and by the analysis of project activity related document: /Ref-5/, /Ref-6/, /Ref-8/ and /Ref-22/.

2. Biomass fired power plants;

The PDD version 04 states that the project activity does not involve biomass fired power plants. The DOE validated it, by a site visit and by the analysis of project activity related document: /Ref-5/, /Ref-6/, /Ref-8/ and /Ref-22/.

3. A hydro power plant that results in the creation of a new single reservoir or in the increase in an existing single reservoir where the power density of the reservoir is less than 4 W/m^2 .

The PDD version 04 states that the project activity does not involve a hydro power plant that results in the creation of a new single reservoir or in the increase in an existing single reservoir where the power density of the power plant is less than 4 W/m^2 . The DOE was able to validate that the new hydro power plant results in a new single reservoir with a power density above 4 W/m^2 (i.e. 45.16 W/m^2) through a site visit (17/11/2011), by an analysis of Equation 9 provided in the PDD version 04, together with project activity related documents: /**Ref-5**/, /**Ref-6**/, /**Ref-8**/ and /**Ref-22**/.

Applicability conditions of the Tool to calculate the emission factor for an electricity system, version 02.2.1:

1. This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity, i.e. where a project activity supplies electricity to a grid or a



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project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).

The PDD version 04 uses the Tool to calculate the emission factor for an electricity system, version 02.2.1 /**Ref-F**/. The DOE validated that the project activity will supply electricity to a grid, by analysis of project activity related documents: /**Ref-5**/, /**Ref-6**/, /**Ref-8**/ and /**Ref-22**/.

Applicability conditions of the Tool for the demonstration and assessment of additionality, version 06.0.0:

1. The document provides a general framework for demonstrating and assessing additionality and is applicable to a wide range of project types. Some project types may require adjustments to this general framework.

The PDD version 04 uses the Tool for the demonstration and assessment of additionality, version 06.0.0 /**Ref-G**/. The DOE validated the applicability of this Tool by analyzing the UNFCCC website at: http://cdm.unfccc.int/methodologies/PAmethodologies/approved (wherein it is stated that the additionality of projects using the ACM0002 methodology, version 12.3.0, shall be demonstrated and assessed using the Tool for the demonstration and assessment of additionality).

The DOE hereby confirms that the selected baseline and monitoring methodology ACM0002, version 12.3.0 /**Ref-E**/, the Tool to calculate the emission factor for an electricity system, version 02.2.1 /**Ref-F**/ and the Tool for the demonstration and assessment of additionality, version 06.0.0 /**Ref-G**/ are previously approved by the CDM Executive Board, and are applicable to the project activity, which, complies with all the applicability conditions therein.

The DOE hereby confirms that, as a result of the implementation of the proposed CDM project activity, there are no greenhouse gas emissions occurring within the proposed CDM project activity boundary, which are expected to contribute more than 1% of the overall expected average annual emissions reductions, which are not addressed by the applied methodology.



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3.6.2 **Project boundary (80)**

According to the applicable methodology, the project boundary "includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to".

According to Section B.3 of the PDD version 04, the project boundary comprises the new project power plant and all the power plants physically connected to the CDM project electricity system. This system has been defined in the PDD as the Brazilian Interconnected System or Grid (SIN). Simply pictured as the "National Grid", as part of the project boundary, in Figure 5, of the PDD.

Also, the PDD version 04 contains a table where the greenhouse gases and emission sources included in or excluded from the project boundary are shown.

The DOE validated the project boundary by:

a) The DOE was able to validate that the definition of the project boundary in the PDD is in accordance with the relevant methodology through: Brazilian DNA resolution nr. 08, which defines the Brazilian National Interconnected System (SIN) as the electricity system for CDM projects in Brazil /**Ref-H**/. According to step 1 of the latest version of the Tool to calculate the emission factor for an electricity system, if the DNA of the host country has published a delineation of the project electricity and connected electricity systems, these delineations should be used.

Also, the DOE was able to validate that the new small hydro power plant will be physically connected to the project electricity system (the Brazilian SIN), through document analysis of PDD related documents /**Ref-5**/, /**Ref-6**/, /**Ref-8**/ and /**Ref-22**/.

In addition, the DOE was able to validate the greenhouse gases and emission sources included in or excluded from the project boundary through document analysis of PDD related documents: /Ref-5/, /Ref-6/, /Ref-7/, /Ref-8/ and /Ref-22/.

b) Also, through a site visit, that took place on 17/11/2011, the DOE was able to validate that the project boundary is in accordance with the relevant methodology, with interviews with representatives of the Project Participants.

Based on the above assessment, the DOE hereby confirms that the identified boundary and the selected sources and gases are justified for the project activity.



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3.6.3 Baseline identification (87-88)

The steps taken to assess the requirement given in paragraph 81 and 82 of the VVM are described below.

The project activity comprises the installation of a new grid-connected renewable power plant. As stated in Section 3.6.1, the DOE was able to validate it through a site visit (17/11/2011) and by analyzing project activity related documents: /**Ref-4**/ up to and including /**Ref-8**/, /**Ref-19**/ and /**Ref-22**/. Consequently, according to the relevant methodology, the baseline scenario is as 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 as described in the "Tool to calculate the emission factor for an electricity system".

The PDD version 04 correctly identifies the baseline scenario as presented above. The relevant grid is the Brazilian National Interconnected System (SIN), as prescribed by the Brazilian DNA in its Resolution nr. 08 /**Ref-H**/.

As methodology ACM0002, version 12.3.0, prescribes the baseline scenario and no further analysis is required, there is no need to take steps to identify the baseline scenario.

Based on the above assessment, the DOE hereby confirms that:

(a) All the assumptions and data used by the project participants are listed in the PDD, including their references and sources;

(b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD;

(c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;

(d) Relevant national and/or sectoral upolicies and circumstances are considered and listed in the PDD;

(e) The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.



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3.6.4 Algorithms and/or formulae used to determine emission reductions (92-93)

The steps taken to assess the requirement outlined in paragraph 89 the VVM are described below.

Project emissions:

Project emissions need to be calculated in accordance with equation (1) of the relevant methodology (ACM0002, version 12.3.0):

 $PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y}$

Where:

 $PE_y = Project emissions in year y (tCO_2e)$

 $PE_{FF,y} = Project$ emissions from fossil fuel consumption in year y (tCO₂) $PE_{GP,y} = Project$ emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (tCO₂e) $PE_{HP,y} = Project$ emissions from reservoirs of hydro power plants in year y (tCO₂e)

According to ACM0002, version 12.3.0, the only possible source of project emissions for hydro power plants are emissions from reservoir ($PE_{HP,y}$). These emissions from reservoir are calculated in accordance with the following two options:

(a) If the power density of the project activity (PD) is greater than 4 W/m^2 and less than or equal to 10 W/m^2 :

$$\mathsf{PE}_{\mathsf{HP},\mathsf{y}} = \frac{\mathsf{EF}_{\mathsf{Res}} * \mathsf{TEG}_{\mathsf{y}}}{1000}$$

Where:

 $PE_{HP,y}$ = Project emissions from reservoirs of hydro power plants in year y (tCO₂e)

 EF_{Res} = Default emission factor for emissions from reservoirs of hydro power plants in year y (kgCO₂e/MWh)

 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 (MWh)

(b) If the power density of the project activity (PD) is greater than 10 W/m^2 :

 $PE_{HP,y} = 0$

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Power density (PD) needs to be calculated in accordance with equation (5) of ACM0002, version 12.3.0:

$$PD = \frac{Cap_{PJ} - Cap_{BL}}{A_{PJ} - A_{BL}}$$

Where:

PD = Power density of the project activity (W/m²)

 Cap_{PJ} = Installed capacity of the hydro power plant after the implementation of the project activity (W)

 Cap_{BL} = Installed capacity of the hydro power plant before the implementation of the project activity (W). For new hydro power plants, this value is zero

 A_{PJ} = Area of the single or multiple reservoirs measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (m²)

 A_{BL} = Area of the single or multiple reservoirs 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 PDD version 04 calculates project's power density: 45.16 W/m^2 .

The DOE was able to validate the above mentioned PD value through analyzing the following documents in conjunction with equation (5) of ACM0002, version 12.3.0, and Equation 9 of the PDD version 04: Installed capacity and reservoir area (needed to calculate PD) are described consistently in the following documents: /Ref-5/, /Ref-6/, /Ref-19/ and /Ref-22/.

Seeing that the DOE was able to validate that the 45.16 W/m² PD value of the SHPP, option (b) above applies and, thus, there are no project emissions from the water reservoir ($PE_{HP,y} = 0$). Consequently, PE_y is correctly considered to be zero, as per the applicable methodology.

Baseline emissions:

Baseline emissions need to be calculated in accordance with equation (6) of the relevant methodology ACM0002, version 12.3.0:

 $BE_y = EG_{PJ,y} * EF_{grid,CM,y}$

Where:

 $BE_y = Baseline emissions in year y (tCO_2)$

 $EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh)



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 $EF_{grid,CM,y}$ = Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the Tool to calculate the emission factor for an electricity system (tCO₂/MWh)

If the project activity is the installation of a new grid-connected renewable power plant/unit at a site where no renewable power plant was operated prior to the implementation of the project activity, then:

 $EG_{PJ,y} = EG_{facility,y}$

Where:

 $EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh)

 $EG_{facility,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh)

In PDD version 04, PPs calculate $EG_{facility,y}$ as the expected net electricity generation supplied by the project plant to the grid in year y (MWh): 114,581 MWh.

PDD version 04 presents the above mentioned value, by multiplying the hours in a year (8,760 hours) by the power plant's "assured energy" (13.08 MW).

The power plant's "assured energy" corresponds to the installed capacity multiplied by the PLF of the plant (0.467). The DOE was able to validate the "assured energy" of the power plant (13.08 MW), as described in the PDD (version 04), with the following documents: **/Ref-5/** and **/Ref-6**/.

The EF_{arid.CM.v} value presented in the PDD version 04 is 0.3095 tCO₂/MWh. This number has been calculated in accordance with the latest version of the Tool to calculate the emission factor for an electricity system, with Operating Margin and Build Margin Emission factors calculated by the Brazilian DNA (0.4787 tCO₂/MWh for OM Emission factor 2010 and 0.1404 tCO₂/MWh for BM Emission factor 2010. The mentioned OM and BM emission factors for 2010 are online available on the website the Brazilian of DNA: http://www.mct.gov.br/index.php/content/view/73318.html. The DOE confirmed on 23/03/2012 that the 2010 values are the most recent values made available by the DNA.

The DOE confirms that all choices made in the PDD version 04 to calculate $EF_{grid,CM,y}$ have been justified adequately and have been presented in accordance with the Tool to calculate the emission factor for an electricity system.



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The latest values made available by the Brazilian DNA are from 2010 and those numbers have been used by PPs to calculate the Combined Margin CO_2 emission factor of the relevant grid. The DOE was able to validate this 0.3095 tCO₂/MWh figure with document /**Ref-20**/, together with the above mentioned link to the Brazilian DNA website.

Leakage:

According to ACM0002, version 12.3.0, no leakage emissions need to be considered. The PDD version 04 correctly describes that no leakage are considered.

Emission reductions:

Emission reductions are calculated in accordance with equation (11) of the relevant methodology ACM0002, version 12.3.0:

 $ER_y = BE_y - PE_y$

Where: $ER_y = Emission reductions in year y (tCO_2e)$ $BE_y = Baseline emissions in year y (tCO_2)$ $PE_y = Project emissions in year y (tCO_2e)$

The DOE was able to validate the BE_y and PE_y values presented in the PDD version 04 and in the CERs calculation spreadsheet (version 03) with documents /**Ref-5**/, /**Ref-6**/, /**Ref-7**/ and /**Ref-22**/.

Based on the above assessment, the DOE hereby confirms that:

(a) All assumptions and data used by the project participants are listed in the PDD, including their references and sources;

(b) All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD;

(c) All values used in the PDD are considered reasonable in the context of the proposed CDM project activity;

(d) The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions;

(e) All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.



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3.7 Additionality of a project activity (97)

The steps taken and sources of information used, to cross-check the information contained in the PDD on this matter are described below.

To demonstrate the additionality of the Project, the PDD has correctly applied the "Tool for the demonstration and assessment of additionality", version 06.0.0 /**Ref-G**/. PPs use an investment analysis to determine that the project is additional. No Barrier Analysis was presented. The details of the DOE's assessment on the Project additionality are described in the Sections 3.7.2 to 3.7.5 below.

The DOE has analyzed the evidences provided by PPs during the validation process, and the sources of information used by the DOE to cross-check the information contained in the PDD can be observed in items 3.7.2 to 3.7.5.

Details on the assessment of the investment and common practice analysis, the authenticity of the documentation and data used are described in Section 3.7.3 and 3.7.5.

3.7.1 Prior consideration of the clean development mechanism (104) The DOE validated the project activity start date of 30/03/2012, provided in the PDD version 04, to be a future date, corresponding to the expected moment of signing the Engineering, Procurement and Construction (EPC) contract.

This is in accordance with the "earliest date at which either the implementation or construction or real action of a project activity begins", as per the Glossary of CDM terms, version 06 /**Ref-I**/. In this particular case, the first "real action" will be the signing of the above mentioned EPC contract.

Seeing that the project design document (PDD) was published for global stakeholder consultation on 12/10/2011 (crosschecked at: http://cdm.unfccc.int/Projects/Validation/DB/U7V1NHX36YC6NTGFARL16 DN1UOGJUI/view.html) and seeing that the starting date of the project activity is after the 2nd of August 08, the assessment of the Prior Consideration of "Serra das Agulhas Small Hydropower Plant Project Activity" was conducted in accordance with paragraph 2 of the Guidelines on the demonstration and assessment of prior consideration of the CDM, version 04 /**Ref-J**/:



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"Such notification^{*} is not necessary if a project design document (PDD) has been published for global stakeholder consultation or a new methodology proposed to the Executive Board for the specific project before the project activity start date".

Seeing the above, the DOE was able to validate PPs' prior consideration in accordance with VVM paragraph 101^{+} .

Based on the above assessment, the DOE hereby confirms that the proposed CDM project activity complies with the requirements of the latest version of the Guidance on prior consideration of CDM.

3.7.1.1 Historical information on project timeline

The main historical information of the project is:

- PDD uploading on the UNFCCC website for global stakeholders comments: from 12 Oct 11 to 10 Nov 11.
- Project expected starting date: 16 Jul 2012. This date corresponds to the estimated date for the signature of the EPC contract.
- Project expected start of operation: 01 May 2014, as per SHPP's physical construction schedule /**Ref-11**/.

3.7.2 Identification of alternatives (107)

The DOE considers the listed alternatives to be credible and complete.

3.7.3 Investment analysis (114)

The project proponent decided to use the "Tool for the demonstration and assessment of additionality", version 6.0.0 **/Ref-G/**, which refers to the Guidelines on the assessment of investment analysis, version 05.0, /**Ref-K**/ and, therefore, these guidelines were used in the following analysis.

Validation Team adopted a five steps strategy to confirm the veracity of the conclusion drawn by the project developer:

a) Evaluating the appropriateness of the benchmark applied for the type of financial indicator presented;

b) Conducting an assessment of parameters and assumptions used in calculating the financial indicator and determining the accuracy and suitability of parameters and cross-checking the parameters against third-party or publicly available sources;

^{*} The Board decided that for project activities with a starting date on or after 2 August 2008, the project participant must inform a Host Party designated national authority (DNA) and the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status (EB62ANN13).

[†] Although not necessary as per EB62ANN13 and VVM paragraph 101, PPs decided to inform the Host Party designated national authority (DNA) and the UNFCCC secretariat in writing of their intention to seek CDM status, as per evidence /**Ref-13**/, /**Ref-14**/ and http://cdm.unfccc.int/Projects/PriorCDM/notifications/index_html



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c) Reviewing feasibility reports, public announcements and annual financial reports related to the proposed CDM project activity and to the project participants;

d) Assessing the correctness of computations carried out and documented; and

e) Subjecting the critical assumptions of the project activity to reasonable variations to determine under what conditions variations in the result would occur, and the likelihood of these conditions.

a) Suitability of financial indicator and benchmark:

<u>Financial indicator:</u> The project participant has chosen IRR to demonstrate the additionality of the project. Additionality Tool (Ver. 06.0.0) /Ref-G/ permits the use of financial indicator, IRR, for demonstrating the additionality using benchmark analysis. The tool permits the use of either project IRR or equity IRR. Since the project developer is demonstrating the financial unattractiveness of the project, IRR is appropriate, as it is often used by the project developers to make a decision on investing in the project. As such, the selection of IRR as financial indicator to demonstrate the additionality of the project is appropriate conforms to the Additionality Tool /Ref-G/.

Based on the Additionality Tool (ver.06.0.0) /Ref-G/ which states: "When applying Option II or Option III, the financial/economic analysis shall be based on parameters that are standard in the market, considering the specific characteristics of the project type, but not linked to the subjective profitability expectation or risk profile of a particular project developer. Only in the particular case where the project activity can be implemented by the project participant, the specific financial/economic situation of the company undertaking the project activity can be considered.", and paragraph 13 from EB 62 Annex 05 which states that "In the cases of projects which could be developed by an entity other than the project participant the benchmark should be based on parameters that are standard in the market. The DOE's validation of the benchmark shall also include its opinion on whether a company-specific benchmark or a benchmark based on parameters that are standard in the market is suitable in the context of the underlying project activity.", the validation team concluded that:

The WACC calculation is based on parameters that are standard in the market, considers the specific characteristics of the project type, and is not linked to the subjective profitability expectation or risk profile of this particular project developer.

Benchmark calculation description: **We** and **Wd** are, respectively, the weights of equity and debt typically observed at the sector. **We** is of 50%, and **Wd** of 50%. These numbers derive from the typical default leverage suggested in the additionality tool.



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Kd is the cost of debt, which is observed in the market related to the project activity, and which already accounts for the tax benefits of contracting debts. Kd is of 4.71%, and also derives from long term loans applied to the sector in Brazil, and therefore is based on Brazilian Bank (from the Portuguese Banco Development Nacional de Desenvolvimento Econômico e Social – BNDES^{*}) financing endeavour credit line's interest rates. BNDES is the major provider of long-term loans in the country; it supplies the financing for small to large scale projects. Long-term loans are scarcely provided by commercial banks, and in general, these entities do not have competitive rates compared to the BNDES.

Ke is the cost of equity, estimated through the Capital Asset Pricing Model (CAPM). **Ke** is of 14.05%. **Ke** derives from a risk free rate plus the market risk premium adjusted to the sector through Beta. The risk-free rate, the market risk premium, and the Beta have been calculated based on publicly available data and presented to the DOE.

Plugging these numbers into WACC formulae:

WACC = 0.50 x 4.71% + 0.50 x 14.05% = 9.38% Benchmark: 9.38%

BVC agrees with all the data used in benchmark calculations and would like to point out that they were clearly presented (/**Ref-21**/), available to consult and correct.

b) Description of the parameters and assumptions used in the investment analysis, description of the means of validation and the procedures to cross-check the parameters against third-party or publicly available sources.

^{*} Available at BNDES' website: <<u>http://www.bndes.gov.br/SiteBNDES/bndes/bndes_en/Institucional/The_BNDES/</u>>.



Input Values/	Value	Means of validation
Input Values/ Assumptions Period of assessment	Value 30 years	Means of validation It was cross-checked by using third-party available sources. The operational lifetime of small hydropower plants (SHPPs) are legally determined by authoritative resolutions issued by ANEEL. However, SHPP Serra das Agulhas' authorization as an Independent Energy Producer ("PIE", from the Portuguese "Produtor Independente de Energia") has not been issued yet. ANEEL's Decree 6,048/2007 [*] /Ref-35/ establishes a 10-year-minimum to 30-year- maximum period for the Electricity Commercialization Contract within the Regulated Environment ("CCEAR", from the Portuguese "Contrato de Comercialização de Energia Elétrica no Ambiente Regulado"). This period is established in the case of electricity generated by alternative sources (wind, cogeneration and small hydropower plant projects). Considering such maximum period, established by ANEEL /Ref-35/, and the fact it is the one usually authorized by ANEEL, the PPs adopted the 30-year assessment period. The DOE has cross- checked the usual 30-year period, accessing some authoritative resolutions
		issued for SHPPs (e.g. ANEEL's Authoritative Resolutions 3,359/2012,

^{*} Available at: <u>http://www.aneel.gov.br/cedoc/dec20076048.pdf</u>. Accessed on 10/04/2012.

[†] Available at: <u>http://www.aneel.gov.br/cedoc/rea20123359ti.pdf</u> (SHPP Moinho), <u>http://www.aneel.gov.br/cedoc/rea20113026.pdf</u> (SHPP Quartel 3) and <u>http://www.aneel.gov.br/cedoc/rea20112994.pdf</u> (SHPP Zé Tunin), in Article 5 of each Authoritative Resolution.



Installed capacity	28 MW	It was cross-checked by using third-party available sources. The DOE has cross- checked the installed capacity of the project activity with ANEEL's official approval of the Consolidated Basic Engineering Project of SHPP Serra das Agulhas – ANEEL's Dispatch 937/2012 – (/ Ref-22 /)*. The DOE was able to confirm PDD's information on installed capacity of the SHPP.
Total	BRL	It was cross-checked by using third-party
Investment	4,953,291	available sources.
	per MW installed	Value based on ANEEL's Technical Summary of the consolidated project design, dated 31/01/2011 (prepared by third party contracted by project participants: VLB Engenharia Ltda.) / Ref-6 /. The DOE crosschecked the value of the total investment cost against a third party source which is publicly available: BNDES (Brazilian Development Bank) public announcement, regarding the investment made to a SHPP (SHPP Paracambi) of 25 MW of installed capacity. According to BNDES, the total investment of Paracambi [‡] SHPP is BRL 157 millions, which corresponds to 6.28 millions per MW installed. Based on the total investment cost comparison, the validation team agreed with the suitability and appropriateness of the referred input value. It is important to highlight that all the information used by the PPs was available at the time of investment decision.

^{*} Available at: <u>http://www.aneel.gov.br/cedoc/dsp2012937ti.pdf</u>. Accessed on 10/04/2012.

[‡] Please see:

http://www.bndes.gov.br/SiteBNDES/bndes/bndes_pt/Institucional/Sala_de_Imprensa/Noticias/2011/energia/20110719_pch.ht ml (accessed 07/03/2012).



(1) O&M costs	(1) BRL	Values determined based on project
+	4.95 per	sponsors experience with another
(2) Environ-	MWh	operational small hydropower plant (SHPP
mental/	+	Pipoca). Confirmed by the DOE, through the
Managerial	(2) BRL	analysis of SHPP Pipoca's contractual
costs	1,362,875	arrangements for O&M and environmental
	per year	management services, from third parties
		(/Ref-32/ and /Ref-33/) and its financial
		report on first semester 2011 /Ref-34/.
		It was cross-checked by using a third party
		available source: Eletrobrás [*] Study for
		SHPP Development (p. 31) /Ref-15/, that
		establishes that an alternative for SHPP's
		O&M costs estimative can be based on 5%
		of total investment per year. For such
		estimative, the above source considers
		environmental and managerial costs to be
		part of O&M costs. For this reason, both
		costs are being presented together.
		Calculations for comparison:
		1) 5% of total investment per year = BRL
		4,953,291 / MW x 28 MW x 0,05 = BRL
		6,934,607 / year
		2) O&M+Environmental/managerial costs
		per year = BRL 4.95 / MWh x 114,581
		MWh / year + BRL 1,362,875 / year =
		BRL 1,930,332 / year
		As it can be seen, the values used for the
		IRR calculation are conservative and, thus,
		suitable for the investment analysis.

Eletrobras is an enterprise controlled by the Brazilian government, which operates in the areas of generation, transmission and distribution of electricity (source: <u>http://www.eletrobras.com/elb/data/Pages/LUMIS482AEFCFPTBRIE.htm</u>).



Sales price or energy price	BRL 151.62 per MWh	It was cross-checked by using a third party available source. The validation team cross- checked the referred input value with 2010 energy auctions results, from August 2010 (BRL 141.93/MWh) adjusted by the inflation rate of 6.83% [†] . The DOE confirms the suitability of the input value based on the fact that at the time of investment decision, the referenced auctions price results were the best assumptions available to estimate the project's energy price. Also, this evidence is publicly available at the CCEE website [‡] , which is a third party not related to the PPs.
PLF	46.7 %	It was cross-checked by using third party available source. As previously stated in Section 3.5 of this validation report, the DOE has verified that the PLF was determined using option b) as defined in the Guidelines for the reporting and validation of plant load factors, version 01.0, EB 48 Report, Annex 11 / Ref-D /: "The plant load factor determined by a third party contracted by the project participants (e.g. an engineering company).", according to evidence: ANEEL's Technical Summary of the consolidated project design, dated 31/01/2011 (prepared by third party contracted by project participants: VLB Engenharia Ltda.) / Ref-6 /, attached to Report 1.344-RE-G00-001 / Ref-5 /, dated 20/05/2011.

^{*} 2nd energy auction for renewable sources conducted by the Brazilian government on 26/08/2010; 3rd reserve energy auction conducted by the Brazilian Government on 25-26/08/2010.

[†] Available at: <u>http://www.portalbrasil.net/ipca.htm</u>. Accessed on: 10/04/2012.

^{* &}lt;u>http://www.ccee.org.br</u>. CCEE is the Brazilian Electric Power Commercialization Chamber, a not-for-profit, private, civil organization company, whose purpose is to carry out the wholesale transactions and commercialization of electric power within the National Interconnected System, for both Regulated and Free Contracting Environments and for the spot market.



Insurance	0.23% of total investment	Value determined based on project sponsors experience with other operational small hydropower plant (SHPP Pipoca). Confirmed by the DOE, through the analysis of the insurance policy / Ref-31 / ("Apólice - Hidrelétrica Pipoca - RCG"; "Apólice - Hidrelétrica Pipoca - RO"). Cross-checked against publicly available source: CDM registered project number 4937: Anhanguera Hydro Power Project, which presented 0.30% as input value for insurance cost [*] . As the input value used for the IRR calculation of SHPP Serra das Agulhas is in line with the CDM registered reference, the referred input value was considered suitable.
TUSD	BRL 6.28 per kW per month	It was based and cross-checked with ANEEL's Resolution 1,127/2011 [†] / Ref-27 / and with Brazilian Law 9,427/1996 [‡] / Ref-28 /, which support the used input value.
ANEEL fee	BRL 385.73 per kW per year	It was based and cross-checked with ANEEL's Dispatch 360/2011 [§] / Ref-29 /, which supports the used input value.
Residual Value	BRL 43,019,997	The calculation of the residual value follows and was based on and cross-checked with ANEEL's Manual on Assets Control for the Electric Sector (from the Portuguese, "Manual de controle patrimonial do setor elétrico") ^{**} / Ref-30 /, from 2009, which is a guideline from the Brazilian government to determine the depreciation and consequently the residual value of the Brazilian energy sector.

^{*} Available at: http://cdm.unfccc.int/Projects/DB/RWTUV1309175127.13/view (see "Appendix 2 - 4937 Financials and CER Calculation"). Accessed on 10/04/2012.

[†] Available at: <u>http://www.aneel.gov.br/cedoc/atreh20111127.pdf</u>. Accessed on 10/04/2012.

[‡] Available at: <u>http://www.aneel.gov.br/cedoc/lei19969427.pdf</u>. Accessed on 10/04/2012.

[§] Available at: <u>http://www.aneel.gov.br/cedoc/dsp2011360.pdf</u>. Accessed on 10/04/2012.

^{**} Available at: http://www.aneel.gov.br/cedoc/aren2009367_2.pdf. Accessed on 10/04/2012.



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Date of investment decision	12/10/2011	The project activity has a future starting date and no investment decision was made before the beginning of the validation process. Thus, the date when PDD version 01 was uploaded in the UNFCCC website, for global stakeholders comments, is considered to be the investment decision date. The DOE was able to validate this through a site visit (17/11/2011), by analyzing / Ref-4 / and confirming the date when the validation process began,
		accessing UNFCCC's website [*] .

Depreciation, and other non-cash items related to the project activity, which have been deducted in estimating gross profits on which tax is calculated, was added back to net profits for the purpose of calculating the project IRR. Taxation was not included as an expense in the IRR calculation.

Input values used in all investment analysis were valid and applicable at the time of the investment decision taken by the project participant. The validation team validated the timing of the investment decision and the consistency and appropriateness of the input values with this timing. Also it were validated that the listed input values had been consistently applied in all calculations. Project participants supplied spreadsheets versions of all investment analysis. All formulas used in this analysis were readable and all relevant cells were viewable and unprotected.

c) There are no feasibility reports, public announcements or annual financial reports related to the proposed CDM project activity and to the project participants.

d) Assessment of correctness of computation: BVC checked all formulas in all spreadsheets presented by the project proponent. The assessment involves checking the data input taken from quotation/documents, adoption of correct accounting principle and arithmetical accuracy. BVC checked the quotation/ documents and ensured that right input has been taken in the project cost and projections. The accounting principles adopted for computing depreciation, tax, costs are found to be in order. The arithmetical accuracy is also found to be correct. The principle adopted by the project participant for computing IRR is in conformity with the "Guidelines on the Assessment of Investment Analysis" issued by the EB (EB 62 Annex 5). Based on the above, the IRR of the project was lower in contrast to the benchmarks. However, the conclusion was checked by subjecting the critical assumptions to reasonable variations.

^{*} http://cdm.unfccc.int/Projects/Validation/DB/U7V1NHX36YC6NTGFARL16DN1UOGJUI/view.html.



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e) Sensitivity analysis: The Guidelines on Assessment of Investment Analysis requires the robustness of the conclusion arrived at to be proved through a sensitivity analysis by varying the critical assumptions to a reasonable variation (\pm 10%). To confirm how solid the investment analysis is, project participants presented a sensitivity analysis varying the most important parameters: (I) increase in energy price, (II) Increase in the project plant load factor (PLF)/energy assured, (III) Reduction in operational costs and (IV) Reduction in project investment.

The sensitivity analysis confirmed that the project activity is not financially attractive once the project internal rate of return is lower than the benchmark in all scenarios analysed. Sensitivity analysis results are available in tables 9 and 10 of the PDD.

The results of table 10 are of a complementary sensitivity analysis carried out by the project participants. They varied the most important parameters, mentioned above, until the IRR reached the benchmark. The resulting scenarios showed variations ranging from 15% (Increase in the energy price) to 56% (Reduction in operational costs).

Conclusion: Project activity's IRR – 7.54% PDD's Benchmark – 9.38%

Based on the foregoing, BVC has concluded that the project activity faces investment constraints as much as the IRR is less than the benchmark return and will continue to remain additional even under most optimistic conditions (based on sensitivity analysis), and thus the validation team has arrived at the conclusion that the project activity is additional and is not a business-as-usual case. The CDM registration would help PP in overcoming the investment case identified above.

CLs BQA 1 to 2 and CARs BQA 1 to 4 were issued and they have been satisfactorily solved and closed. Refer to Appendix A.

The DOE, based on the assessment result by the financial expert engaged, hereby confirms that the underlying assumptions are appropriate and the financial calculations are correct.

3.7.4 Barrier analysis (118)

No Barrier analysis was presented in the PDD version 04.



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3.7.5 Common practice analysis (121)

According to version 04 of the PDD, the common practice analysis has been carried out as per paragraphs 6 (b) and 47 of the Tool for the demonstration and assessment of additionality, version 06.0.0 /**Ref-G**/:

<u>Step 1</u> - Applicable output range defined in accordance with /**Ref-G**/: as +/-50% of the design output or capacity of the proposed project activity: 14 MW - 42 MW.

<u>Step 2</u> - N_{all} calculated in accordance with /**Ref-G**/: out of the hydro power plants operating in the applicable geographical area, 12 deliver the same output or capacity, are within the defined output range and are not CDM Projects. Therefore, N_{all} = 12. The DOE used the following evidences to validate the Step 2 analysis as provided in the PDD version 04:

(1) ANNEL's 2012 Report on the start date of operation of Hydro Power Plants in Brazil: (available online at: <u>http://www.aneel.gov.br/area.cfm?idArea=37&idPerfil=2</u>,

(2) UNEP-RISOE CDM Pipeline – available online at: <u>http://cdmpipeline.org</u>

(3) ANEEL's online database (ANEEL: National Agency for Electric Energy) of all power plants operating in Brazil: online available at: <u>http://www.aneel.gov.br/15.htm</u>

(4) UNFCCC/CDM website: <u>http://cdm.unfccc.int</u>

Regarding the applicable geographical are as defined in the PDD version 04 (the State of Minas Gerais, in Brazil), the DOE used the following evidences to justify the appropriateness of this geographical area:

- Each state has a specific environmental agency responsible for determining the technical standards required to obtain all environmental licenses, with regional regulations and distinct administrative process established by each state region. Crosschecked with CONAMA (National Environmental Board) Resolution 01/86: available at: <u>http://www.mma.gov.br/port/conama/res/res86/res0186.html</u>

- The Spot Price value division into sub-markets (South, Southeast/Midwest, Northeast, and North). Crosschecked with: CCEE's information on the "Settlement Price for the Differences" (translation for

CCEE is a not-for-profit, private, civil organization company in which Agents are gathered in three Categories: Generation, Distribution, and Commercialization. The purpose of CCEE is to carry out the wholesale transactions and commercialization of electric power within the National Interconnected System, for both Regulated and Free Contracting Environments and for the spot market. In addition, CCEE is in charge of financial settlement for the spot market transactions. (Source: <u>http://www.ccee.org.br</u>, accessed on 22/03/2012).



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Preço de Liquidação das Diferenças - PLD). Online available at: <u>http://www.ccee.org.br/cceeinterdsm/v/index.jsp?vgnextoid=7ccaa5c1de88</u> a010VgnVCM100000aa01a8c0RCRD

- The tariff applied for the use of the electricity distribution system follows the Distribution System Use Tariff (in a free translation from the Portuguese Tarifa de Uso do Sistema de Distribuição - TUSD) which varies depending on the state where the power plant is connected to. This was crosschecked with: http://www.aneel.gov.br/visualizar_texto.cfm?idtxt=1573.

<u>Step 3</u> – N_{diff} calculated in accordance with /**Ref-G**/: From the plants identified in Step 2, the following apply technologies different than the technology applied in the proposed project activity:

(1) Large Scale Hydro plants (above 30 MW of installed capacity and with reservoirs larger than 3 km²). Above 30 MW, the hydro power plants are considered to be "large hydro" in Brazil and have a distinctive approval process before the government agencies (ANEEL and environmental agencies) and higher cost of energy generation. Cross-check: <u>http://www.portalpch.com.br/index.php?option=com_content&task=view&id =702</u> and <u>http://www.aneel.gov.br/cedoc/res2003652.pdf</u>

(2) PROINFA Projects were also excluded. This means that projects that received financial incentive from the federal government through PROINFA program^{*} were considered different. SHPP Serra das Agulhas does not receive PROINFA benefits. Information crosschecked by the DOE at:

http://www.eletrobras.com/elb/data/Pages/LUMISABB61D26PTBRIE.htm (under "*Relação de Empreendimentos Contratados e Extratos dos Contratos e Termos Aditivos Celebrados*", where a list of all power plants benefited by the program is presented).

(3) Plants that started operation before the establishment of the new electricity sector framework were also not considered similar. This new structure of the electricity sector was approved by the House of Representatives and published in March of 2004[†]. Crosschecked by the DOE

http://www.ccee.org.br/cceeinterdsm/v/index.jsp?vgnextoid=3df6a5c1de88 a010VgnVCM100000aa01a8c0RCRD

Seeing the above, N_{diff} was defined in the PDD version 04 as 12.

^{*} PROINFA: National Program that provide incentives (financial, contractual and regulatory) for the implementation of power plants that use alternative sources of fuel (renewable biomass, wind, small hydro).

[†] During the years of 2003 and 2004, the Federal Government set the bases for a new model for the Brazilian Electric Sector, supported by Laws nos. 10.847 and 10.848, dated of March 15, 2004, and by Decree no. 5.163, dated of July 30, 2004.



VALIDATION REPORT

Step 4 – In accordance with /**Ref-G**/, the PDD version 04 states that the proposed project activity is not "common practice" within the defined sector in the applicable geographical area seeing that the factor F is lower than 0.2 and N_{all} - N_{diff} is lower than 3.

Seeing the analysis put forward above, the DOE concludes that SHPPs that operate without PROINFA or CDM benefits are not common practice in the applicable geographical area. Consequently, the DOE hereby confirms that the proposed CDM project activity is not common practice.

3.8 Monitoring plan (124)

The DOE hereby confirms that the monitoring plan complies with the requirements of the methodology.

The steps taken to assess whether the monitoring arrangements described in the monitoring plan are feasible within the project design are described below.

The project activity follows methodology ACM0002 - Consolidated baseline methodology for grid-connected electricity generation from renewable sources, version 12.3.0. The project involves the installation of a new grid connected small hydro power plant.

The Combined Margin emission factor will be determined *ex-post*, based on the most recent information available. This data will be obtained from the Brazilian DNA, which calculates the Operating Margin and Build Margin emission factors in accordance with the latest version of the Tool to calculate the emission factor for an electricity system.

In accordance to the monitoring plan, the main parameter that will be monitored is the quantity of net electricity generation supplied by the project plant to the grid in year y, measured by the two electricity meters (principal and back-up) which continuously monitor the electricity generated by the plant and delivered to the grid.

The information will be crosschecked using records of sold energy, produced by the CCEE - Electric Power Commercialization Chamber. CCEE is the independent agency that manages the commercialization of energy in Brazil and keeps the official records for sold energy.

Operational management for the Project is comprehensively detailed in the PDD. It includes description of the responsibility, meters location, process description, data collection procedures, data storage procedures and emission reduction calculation procedures. These are all elements which ensure that the monitoring plan will be followed during the operation of the Project.



VALIDATION REPORT

After interviews carried out with project participants during site visit (17/11/2011) and after analysing documents related to the project activity (/**Ref-5**/, /**Ref-8**/ and /**Ref-19**/), the DOE hereby confirms that the project participants are able to implement the monitoring plan.

3.9 Sustainable development (127)

The host Party's DNA will confirm the contribution of the project to the sustainable development of the Host Party after the validation is completed. Refer to item 3.1 of this report.

3.10 Local stakeholder consultation (130)

The steps taken to assess the adequacy of the local stakeholder consultation are described below.

PPs have invited local stakeholders to comment on the project activity. According to the PDD version 04, letters were sent to:

- City halls of Diamantina and Monjolos;
- Municipal assemblies of Diamantina and Monjolos;
- Environmental agencies of Diamantina and Monjolos;
- NGO Caminhos da Serra (which has influence in both municipalities);
- Environmental Agency of the State of Minas Gerais (FEAM, from the Portuguese, Fundação Estadual do Meio Ambiente de Minas Gerais);
- Federal and State Attorneys for the Public Interest of the State of Minas Gerais; and
- Brazilian Forum of NGOs and Social Movements for the Development and Environment.

Copy of letters and evidence of receipt (A/R) were given to the DOE during site visit /Ref-16/

Analyzing the letters sent to local stakeholders, the DOE could validate that the project activity is described in a manner, which allows the local stakeholders to understand the project activity.

Also, the DOE was able to validate that PPs have invited comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity, seeing that the letters asking for comments were sent to all the local stakeholders prescribed by the second paragraph of the Brazilian DNA's Resolution 7: http://www.mct.gov.br/upd_blob/0023/23744.pdf.


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Reasonable time was given to local stakeholders to respond to invitations to comment on the project: letters were sent to local stakeholders from 29/08/2011 to 08/09/2011 and the validation started only on 12/10/2011 (http://cdm.unfccc.int/Projects/Validation/index.html)

So, PPs comply with the Brazilian DNA's Resolution 7: <u>http://www.mct.gov.br/upd_blob/0023/23744.pdf</u> (which states that letters to local stakeholders should be sent at least 15 days before the start of validation).

According to Section E.2 of the PDD version 04, one comment from local stakeholders was received (/(Ref-17/). The DOE was able to validate that the project participants have taken due account of the comment received and have described this process in the PDD, by observing Section E.3 of the PDD version 04 and by analyzing /Ref-18/.

The DOE hereby confirms that the process of local stakeholder consultation is observed to be adequate.

3.11 Environmental impacts (133)

The project participants have undertaken an analysis of environmental impacts and an environmental impact assessment was prepared in accordance with procedures as required by the host Party (/**Ref-7**/).

According to Brazilian Legislation, there are three environmental licenses needed. First, the LP (Preliminary License), then the LI (Construction License) and last the LO (Operating License).

The project activity has obtained the first license:

- Preliminary License nr. 066/10, issued by Minas Gerais Environmental Agency (COPAM – Conselho Estadual de Política Ambiental) on 09/12/2010 /**Ref-8**/.

The construction license has been requested on 17/05/2011, as per environmental licensing process nr. 01164/2003/002/2011 / **Ref-12**/.

The last environmental license (LO) can only be requested after the construction of the SHPP.



VALIDATION REPORT

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The PDD using methodology ACM0002, version 12.3.0, was webhosted on the UNFCCC for global stakeholders comments as per CDM requirements. The project was webhosted from 12 Oct 11 to 10 Nov 11.

No comments were received during the global stakeholders consultation process (GSC).

5 VALIDATION OPINION

Bureau Veritas Certification has performed a validation of the Serra das Agulhas Small Hydropower Plant Project Activity in Brazil. The validation was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

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

Project participant/s used the latest tool for demonstration of the additionality. In line with this tool, the PDD provides an investment analysis to determine that the project activity itself is not the baseline scenario.

By the construction of a small hydropower plant with an installed capacity of 28 MW and a reservoir area of 0.62 km², renewable energy will be delivered to the Brazilian national electricity grid, and the project is likely to result in reductions of GHG emissions partially. An analysis of the investment demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented and maintained as designed, the DOE hereby confirms that the estimated amount of 248,460 tCO₂e emission reductions, during the 1st crediting period, is correct.

The review of the project design documentation (version 04) and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project correctly applies and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria. Bureau Veritas Certification thus requests registration of Serra das Agulhas Small Hydropower Plant Project Activity as CDM project activity.



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6 REFERENCES

Category 1 Documents:

Documents provided by Sigma Energia S/A, Omega Energia Renovável S/A and Ecopart Assessoria em Negócios Empresariais Ltda that relates directly to the GHG components of the project.

- /1/ CDM-PDD "Serra das Agulhas Small Hydropower Plant Project Activity" version 01 of 25/08/2011
- /2/ CDM-PDD "Serra das Agulhas Small Hydropower Plant Project Activity" version 02 of 17/01/2012
- /3/ CDM-PDD "Serra das Agulhas Small Hydropower Plant Project Activity" version 03 of 14/02/2012
- /4/ ANEEL's Report on Accompanying Studies and Projects of Hydro Power Plants, dated 19/12/2011
- /5/ SHPP Serra das Agulhas Consolidated Basic Engineering Project, dated 20/05/2011 (prepared by third party contracted by project participants: VLB Engenharia Ltda.) Report 1.344-RE-G00-001
- /6/ ANEEL's Technical Summary of the consolidated project design (from the Portuguese Projeto Básico Consolidado – PBC), dated 31/01/2011
- /7/ SHPP Serra das Agulhas' environmental impact study and report documents, prepared by Poente Engenharia e Consultoria Ltda, dated August 2003
- /8/ SHPP Serra das Agulhas Environmental License Preliminary License (LP) nr. 066/10, issued by Minas Gerais Environmental Agency (COPAM – Conselho Estadual de Política Ambiental) on 09/12/2010
- /9/ CERs Calculation Spreadsheet "Serra das Agulhas Small Hydropower Plant Project Activity" version 01 of 25/08/2011
- /10/ CERs Calculation Spreadsheet "Serra das Agulhas Small Hydropower Plant Project Activity" version 02 of 17/01/2012
- /11/ SHPP Serra das Agulhas' physical construction schedule 1.344-DB-G00-006, dated February 2012
- /12/ PPs request nr. 343846/2011, dated 17/05/2011, for the issuance of the environmental construction license, as per licensing process nr. 01164/2003/002/2011
- /13/ Project Participant's communication letter to the Brazilian DNA informing the intention to seek CDM registration for the Project Activity, dated 01/08/2011
- /14/ Brazilian DNA email to Project Participant, acknowledging the receipt of the letter (evidence /13/), dated 03/08/2011
- /15/ Eletrobrás Guidelines for Study and Project of SHPPs, dated January 2000
- /16/ Copy of letters and evidence of receipt (A/R) of letters sent to Local Stakeholders



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- /17/ Copy of the letter sent by local stakeholder (City Hall of Monjolos)
- /18/ Copy of the letter sent by Project Participants to local stakeholder who made comment
- /19/ CDM-PDD "Serra das Agulhas Small Hydropower Plant Project Activity" version 04 of 29/03/2012
- /20/ CERs Calculation Spreadsheet "Serra das Agulhas Small Hydropower Plant Project Activity" version 03 of 29/03/2012
- /21/ WACC ElectricGen_2011 01 v3.1
- /22/ ANEEL's approval of the Consolidated Basic Engineering Project (ANEEL's Dispatch 937/2012), dated 21/03/2012
- /23/ IRR Calculation Spreadsheet "Serra das Agulhas Small Hydropower Plant Project Activity" version 01 of 25/08/2011
- /24/ IRR Calculation Spreadsheet "Serra das Agulhas Small Hydropower Plant Project Activity" version 02 of 17/01/2012
- /25/ IRR Calculation Spreadsheet "Serra das Agulhas Small Hydropower Plant Project Activity" version 03 of 14/02/2012
- /26/ IRR Calculation Spreadsheet "Serra das Agulhas Small Hydropower Plant Project Activity" version 04 of 29/03/2012
- /27/ ANEEL's Resolution 1,127, dated 05/04/2011
- /28/ Brazilian Law 9,427, dated 12/12/1996
- /29/ ANEEL's Dispatch 360, dated 04/02/2011
- /30/ ANEEL's Manual on Assets Control for the Electric Sector (from the Portuguese, "Manual de controle patrimonial do setor elétrico"), dated 11/09/2009
- /31/ SHPP Pipoca's insurance policy ("Apólice Hidrelétrica Pipoca -RCG"; "Apólice - Hidrelétrica Pipoca - RO")
- /32/ SHPP Pipoca's contractual arrangements for O&M services from a third party, dated 01/05/2010
- /33/ SHPP Pipoca's contractual arrangements for environmental management services from a third party, dated 06/12/2010
- /34/ SHPP Pipoca's first semester 2011 financial report, dated 10/08/2011
- /35/ ANEEL's Decree 6,048, dated 27/02/2007

Category 2 Documents:

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

- /A/ Clean Development Mechanism Validation And Verification Manual (Version 01.2)
- /B/ Clean Development Mechanism Project Design Document Form (CDM-PDD), version 03, EB 25 - ANNEX 15.
- /C/ Guidelines for completing the Project Design Document (CDM-PDD) and the Proposed New Baseline and Monitoring Methodologies (CDM-NM), version 07, EB 41 - ANNEX 12.
- /D/ Guidelines for the reporting and validation of plant load factors, version 01, EB 48 – ANNEX 11.



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- /E/ Approved consolidated baseline and monitoring methodology ACM0002: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", version 12.3.0.
- /F/ Tool to calculate the emission factor for an electricity system, version 02.2.1.
- /G/ Tool for the demonstration and assessment of additionality, version 06.0.0.
- /H/ CIMGC Brazilian DNA's #8 Resolution, dated 26/05/2008
- /I/ Glossary of CDM Terms, version 06.
- /J/ Guidelines on the demonstration and assessment of prior consideration of the CDM, version 04, EB 62 ANNEX 13.
- /K/ Guidelines on the assessment of investment analysis, version 05.0

Persons interviewed:

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

- /1/ Leonardo Oliveira (development directory, from Omega Energia Renovável S/A)
- /2/ Michel Obara (environment and sustainability, from Omega Energia Renovável S/A)
- /3/ João Antonio R. da Cunha (strategy analyst, from Sigma Energia S/A)
- /4/ Karen Nagai (analyst, from Ecopart Assessoria em Negócios Empresariais Ltda)



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7 CURRICULA VITAE OF THE DOE'S VALIDATION TEAM MEMBERS

Bureau Veritas Certification – Lead Verifier

Marcelo A. Porto – Graduated in Electrical Engineering, with a graduate specialization in Quality Engineering and a Master's degree in Industrial Engineering. Quality management expert and auditor, he worked in the electro-electronic, mechanical, medical devices, leather and shoes industries. ISO 9001 and SA8000 auditor, he is also trained as ISO 14001 and OHSAS 18001 lead auditor. Marcelo is qualified as Lead Verifier GHG – Green House Gases.

Bureau Veritas Certification - Financial Specialist

Bernardo A. Lima – is graduated in Business Administration with a very expressive experience in valuation of new projects in the electrical and technology sectors; Equity analyst with focus on the consumer staples, consumer discretionary, technology and telecommunications sectors for many companies in Brazil.

Bureau Veritas Certification – Internal Technical Reviewer

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



VALIDATION REPORT

APPENDIX A: COMPANY CDM PROJECT VALIDATION PROTOCOL

Table 1Validation requirements based on the Clean Development Mechanism Validation and Verification Manual
(Version 01.2) and methodology ACM0002 (Version 12.1) – "Consolidated baseline methodology for grid-connected
electricity generation from renewable sources"



CHECKLIST QUESTION	Ref.	§	СОМ	MENTS	Draft Concl	Final Concl
1. Approval			COUNTRY A (Brazil)	COUNTRY B (insert the country name)		
a. Have all Parties involved approved the project activity?	VVM	44	Please refer to item 1.b below	Not applicable	OK	ОК
b. Has the DNA of each Party indicated as being involved in the proposed CDM project activity in section A.3 of the PDD provided a writTen letter of approval? (If yes, provide the reference of the letter of approval, any supporting documentation, and specify if the letter was received from the project participatn or directly from the DNA)	VVM	45	The final decision from the Brazilian DNA will be available only after its first ordinary meeting, after the receiving of all the required documents necessary for evaluation, including this validation report, according to Article 6 of the Resolution number 1 of the Brazilian DNA: CIMGC – Comissão Interministerial de Mudança Global do Clima: http://www.mct.gov.br/ upd_blob/0023/23433. pdf (accessed on 24/11/2011).	Not applicable	OK	OK
 c. Does the letter of approval from DNA of each Party involved: 	VVM	45	-	-	-	-



CHECKLIST QUESTION	Ref.	§	COM	IENTS	Draft Concl	Final Concl
i. confirm that the Party is a Party of the Kyoto Protocol?	VVM	45.a	Please refer to item (1.b) above.	Not applicable	OK	OK
ii. confirm that participation is voluntary?	VVM	45.b	Please refer to item (1.b) above.	Not applicable	OK	OK
iii. confirm that, in the case of the host Party, the proposed CDM project activity contributes to the sustainable development of the country?	VVM	45.c	Please refer to item (1.b) above.	Not applicable	OK	ОК
iv. Refers to the precise proposed CDM project activity title in the PDD being submitted for registration?	VVM	45.d	Please refer to item (1.b) above.	Not applicable	OK	ОК
d. Is(are) the letter(s) of approval unconditional with respect to (i) to (iv) above?	VVM	46	Please refer to item (1.b) above.	Not applicable	OK	OK
e. Has(ve) the letter(s) of approval been issued by the respective Party's designated national authority (DNA) and is valid for the CDM project activity under validation?	VVM	47	Please refer to item (1.b) above.	Not applicable	OK	ОК
f. Is there doubt with respect to the authenticity of the letter of approval?	VVM	48	Please refer to item (1.b) above.	Not applicable	OK	OK
g. If yes, was verified with the DNA that the letter of approval is authentic?	VVM	48	Please refer to item (1.b) above.	Not applicable	OK	OK
2. Participation			PP1 (Omega Energia Renovável S/A); PP2 (Sigma Energia S/A)	PP3 (Ecopart Assessoria em Negócios Empresariais Ltda.)		
a. Have all project participants been listed in a consistent manner in the project documentation?	VVM	51	Yes, project participants are: 1. Omega Energia Renovável S/A (private entity);	See column to the left.	OK	ОК



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CHECKLIST QUESTION	Ref.	§	Сом	MENTS	Draft Concl	Final Concl
			 Sigma Energia S/A (private entities); and Ecopart Assessoria em negócios Empresariais Ltda. (private entity) 			



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
b. Has the participation of the project participants in the project activity been approved by a Party to the Kyoto Protocol?	VVM	51	Please refer to item (1.b) above.	OK	ОК
c. Are the project participants listed in tabular form in section A.3 of the PDD?	VVM	52	Yes. However: <u>CL01:</u> Please, correct spelling of "w <u>h</u> ishes", in the header of last column, in PDD v01, Section A.3. Besides, remove sentence after table.	CL01	ОК
d. Is the information in section A.3 consistent with the contact details provided in annex 1 of the PDD?	VVM	52	The information in Section A.3 is consistent with the contact details in Annex 1 of the PDD.	ОК	ОК
e. Has the participation of each of the project participants been approved by at least one Party involved, either in a letter of approval or in a separate letter specifically to approve participation? (Provide reference of the approval document for each of the project participants)	VVM	52	Please refer to item (1.b) above.	ОК	ОК
f. Are any entities other than those approved as project participants included in these sections of the PDD?	VVM	52	No. See also item (1.b) above.	OK	ОК
g. Has the approval of participation issued from the relevant DNA?	VVM	53	Please refer to item (1.b) above.	OK	ОК
h. Is there doubt with respect to (g) above?	VVM	53	Please refer to item (1.b) above.	OK	OK



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
 If yes, was verified with the DNA that the approval of participation is valid for the proposed CDM project participant? 	VVM	53	Please refer to item (1.b) above.	ОК	ОК
3. Project design document					
a. Is the PDD used as a basis for validation prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website?	VVM	55	The template used for preparing the PDD is the latest template: Version 03.0, EB25 Ann15. See remainder part of Section 3 below for discussions regarding conformity of the PDD with the applicable guidance (GUIDELINES FC COMPLETING THE PROJECT DESIGN DOCUMENT (CDM-PDD) AND THE PROPOSE NEW BASELINE AND MONITORIN METHODOLOGIES (CDM-NM), VERSION 07).	ne OK or th R N D G	ОК
b. Is the PDD in accordance with the applicable CDM requirements for completing the PDD?	VVM	56	Please refer to remainder part of Section 3 below	/	-
c. In CDM-PDD section A.1 are the following	EB	Ann	-	-	-
provided?	41	12			
i. Title of project	EB 41	Ann 12	Yes. "Serra das Agulhas Small Hydropower Plar Project Activity"	t OK	OK
ii. Current version number and date of document	EB 41	Ann 12	Yes. Version 01, dated 25/08/2011.	ОК	OK
d. In CDM-PDD section A.2 are following provided	EB	Ann	-	-	-
(max. one page)?	41	12			
i. A brief description ot the project activity	EB	Ann	Yes. However, see CAR12, CL22 and CL14.	CL02	OK
covering purpose which includes the scenario existing prior to the start or project, present scenario and baseline scenario	41	12	<u>CL02</u> : Please, clarify why ANEEL's small hyd plants schedule of events, dated 16/11/201 does not list Serra das Agulhas. <u>CL03</u> : Please, clarify why Serra das Agulha	ro CL03 1, as	



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			project can be seen as a solution for a 10-year old electricity crisis.		



VALIDATION REPORT			BUREAU		
CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
ii. Explanation on how the GHG emission reductions are effected	EB 41	Ann 12	Yes. According to the PDD: "The project activity will reduce emissions of GHG by avoiding electricity generation from fossil fuel sources, which would be generated (and emitted) in the absence of the project". However: <u>CAR01:</u> PDD v01, Section A.2, does not make reference to the emission sources and gases, described in Section B.3.	CAR01	ОК
iii. The PP's views on the contribution of project activity to sustainable development	EB 41	Ann 12	 Yes. According to the PDD: The project contributes to sustainable development since it meets the present needs without compromising the ability of future generations to meet their own needs, as defined by the Brundtland Commission (1987). In other words, the implementation of small hydroelectric power plants ensures renewable energy generation, reduces the national electric system demand, avoids negative social and environmental impact caused by the construction of large hydropower plants with large reservoirs and fossil fuel thermo power plants, and drives regional economies, increasing quality of life in local communities. However, CAR02: In PDD v01, Section A.2, the second paragraph, related to the PP's views on the contribution of project activity to sustainable development, states "the project [] has 	CAR02	OK

BUREAU VEBLIAS

Report No: BRAZIL-val/BR.1099481 rev.02

VALIDATION REPORT					VERITAS	
CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl	
			<u>developed</u> the regional economy", although it is not yet operational.			



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
iv. Are there any changes/modifications compared to the webhosted PDD?	EB 41	Ann 12	No. There are no changes, compared to the webhosted PDD.	OK	OK
e. In CDM-PDD section A.3 are following provided in the tabular format?	EB 41	Ann 12	See CL01. CL04: Please, remove paragraph right after table.	CL01 CL04	OK
i. List of project participants and parties	EB 41	Ann 12	Yes: Brazil (host Party) and the private entities Omega Energia Renovável S/A, Sigma Energia S/A and Ecopart Assessoria em Negócios Empresariais Ltda.	OK	ОК
ii. Identification of Host Party			Yes: Brazil	OK	OK
iii. Indication whether the Party wishes to be considered as project participant	EB 41	Ann 12	The Party (Brazil) does not wish to be considered as project participant. However, see CL01.	CL01	OK
f. In CDM-PDD section A.4.1 are following provided?	EB 41	Ann 12	-	-	-
i. Technical description, location, host party(ies) and address as required	EB 41	Ann 12	Host Party: Brazil Region/State/Province: State of Minas Gerais City/Town/Community: Diamantina and Monjolos municipalities	ОК	ОК
ii. Detailed physical location with unique identification of the project activity (eg. Longitude/latitude) – not to exceed one page	EB 41	Ann 12	Dam's and power house's coordinates have been confirmed. However: <u>CAR03:</u> PDD v01, Section A.4.1.4, mentions ANEEL Dispatch 675/2003 as the source of both locations. Nevertheless, power house's coordinates are based on the ANEEL's technical summary of the consolidated basic project, dated 31/01/2011.	CAR03	ОК
iii. Are there any changes/modifications compared to the webhosted PDD?	EB 41	Ann 12	No, there are no changes/modifications compared to the webhosted PDD.	OK	OK



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
g. In CDM-PDD section A.4.2 is the list of categories of project activities provided?	EB 41	Ann 12	Yes: Sectoral Scope: 1 - Energy industries (renewable - / non-renewable sources). Category: Renewable electricity generation for a grid.	ОК	ОК
h. In CDM-PDD section A.4.3 are following provided?	EB 41	Ann 12	-	-	-
i. A description of how environmentally safe and sound technology, and know-how, is transferred to the Host Party(ies)	EB 41	Ann 12	<u>CAR04</u> : PDD v01, Section A.4.3, does not include a description of how environmentally safe and sound technology, and know-how to be used, is transferred to the Host Party.	CAR04	ОК
ii. Explanation of purpose of project activity with scenario existing prior to the start of project, scope or present activities and the baseline scenario	EB 41	Ann 12	<u>CAR05</u> : PDD v01, Section A.4.3, does not include a detailed description of the scope of activities/measures that are being implemented within the project activity.	CAR05	ОК
iii. List and arrangement of the main manufacturing/production technologies, systems and equipments involved	EB 41	Ann 12	<u>CAR06:</u> In PDD v01, Section A.4.3, list of main equipments is not complete (e.g. the ones necessary for connecting the plant to the grid). Besides, the arrangement of the main equipments has not been included. <u>CAR07:</u> PDD v01, Section A.4.3, does not include information about the age and average lifetime of the equipments, load factors and efficiencies. <u>CAR08:</u> PDD v01, Section A.4.3, does include the	CAR06 CAR07 CAR08 CAR09 CL05	ОК



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	 1.13	-	1 43	1.1

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			monitoring equipments and their location. <u>CAR09:</u> In PDD v01, Section A.4.3, second paragraph refers to incorrect figure number (Figure 4). <u>CL05:</u> Please, inform power factor of generators.		



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
iv. The emissions sources and GHGs involved	EB 41	Ann 12	<u>CAR10</u> : PDD v01, Section A.4.3, does not include the emissions sources and the greenhouse gases involved in the project activity. <u>CAR11</u> : PDD v01, Section A.4.3, does not include existing and forecast energy and mass flows and balances of the systems and equipments included in the project activity.	CAR10 CAR11	ОК
v. Are there any changes/modifications compared to the webhosted PDD?	EB 41	Ann 12	No. There are no changes compared to the webhosted PDD.	OK	OK
i. In CDM-PDD section A.4.4 is the estimation of emission reductions provided as requested in a tabular format?	EB 41	Ann 12	CAR12: PDD v01, Section A.4.4 (and other sections that refer to 2013 as first year of operation), needs to be updated, in order to reflect the fact the plant will not be operational until 2014. Besides, provide updated implementation schedule of the project activity. CAR13: In PDD v01, Section A.4.4, the calculations have taken into consideration the incorrect number of days (181 and 184) in the first and last years of the crediting period. CAR14: PDD v01, Section A.4.4, should not include any paragraphs, but the table. Besides, text in last line of the table needs to be corrected, as per EB41 Ann12.	CAR12 CAR13 CAR14	OK
 j. In CDM-PDD section A.4.5 is Information regarding Public funding provided? k. In CDM-PDD section B.1 are following provided? 	EB 41 EB	Ann 12 Ann	CAR15: PDD v01, Section A.4.5, comments on "no divergence of Official Development Assistance", whereas it is only relevant when public funding from Parties included in Annex 1 is involved, which is not the case.	CAR15	OK



VALIDATION REPORT					EAU
CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
	41	12			



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
i. The approved methodology and version number	EB 41	Ann 12	Approved methodology: ACM0002 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (Version 12.1.0).	OK	OK
ii. Any methodologies or tools which the above approved methodology draws upon and their version noumber	EB 41	Ann 12	<u>CL06</u> : Since the second paragraph of PDD v01, Section B.1, mentions the " <u>latest</u> approved versions" of the tools listed, as per ACM0002, the PPs are requested to clearly state which versions being used are not the latest but still valid. Besides, please, update "Combined tool" version number. <u>CAR16</u> : PDD v01, Section B.1, lists Version 5.2 of the "Tool for the demonstration and assessment of additionality", which is no longer valid. As per EB65 Meeting Report, §88, Version 6.0.0 shall be applied.	CAR16 CL06	ОК
I. In CDM-PDD section B.2 are following provided?	EB 41	Ann 12	-	-	-
 Justification ot the choice of methodology that the project activity meets each of the applicability conditions 	EB 41	Ann 12	See CL22 and CL14. <u>CAR17:</u> PDD v01, Section B.2, does not list the applicability conditions as presented in ACM0002 v12.1.0. Besides, non-applicability conditions should be included as well.	CAR17 CL22 CL14	ОК
 ii. Documentations with references that had been used. This can be provided in Annex 3 instead. m. In CDM-PDD section B 3 are following provided? 	EB 41 EB	Ann 12	See CAR33. <u>CAR18:</u> PDD v01, Section B.2, does not explain the documentation that has been used neither provides the references to the document or include the documentation in Annex 3.	CAR18 CAR33	OK
				-	-



VALIDATION REPORT					EAU
CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
	41	12			



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
i. Description of all sources and gases included in the project boundary in the table	EB 41	Ann 12	Yes. As per ACM0002 v12.1.0, "the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to". <u>CL07:</u> Please, in Table 5, replace "Excluded for simplification. This emission source is assumed to be very small" by "Minor emission source", as per ACM0002 v12.1.0.	CL07	ОК
ii. A flow diagram of the project boundary physically delineating the project activity	EB 41	Ann 12	Yes	OK	OK
iii. The flow diagram with all equipments, systems and flows of mass and energy etc	EB 41	Ann 12	<u>CAR19</u> : PDD v01, Section B.3, identifies net electricity generation supplied to the grid as EG _y , whereas ACM0002 v12.1.0 identifies it as $EG_{facility,y}$. <u>CL08</u> : Please, name the substation, as well as specify there is a main and a backup meter at the substation.	CAR19 CL08	ОК
n. In CDM-PDD section B.4 are following provided?	EB 41	Ann 12	-	-	-
i. Explanation how the most plausible baseline scenario is identified in accordance with the selected baseline methodology	EB 41	Ann 12	Yes. However, <u>CL09:</u> Make it clear, in Section B.4, that the baseline scenario correctly presented is due to the project activity being the installation of a new grid- connected renewable power plant, as per ACM0002.	CL09	OK
ii. Justification of key assumptions and rationales	EB 41	Ann 12	The baseline scenario is identified in ACM0002. So no assumptions and rationales are needed beyond the statement that the project activity is	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			the installation of a new grid-connected renewable power plant.		



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
iii. Transparent illustration of all data used to determine the baseline scenario (variables, parameters, data sources, etc.)	EB 41	Ann 12	The baseline scenario is identified in ACM0002. So no data is used to determine it.	OK	ОК
iv. A transparent and detailed description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed project activity	EB 41	Ann 12	Yes. Section B.4 correctly states: <i>Electricity</i> 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.	ОК	ОК
 v. Are there any changes/modifications compared to the webhosted PDD? 	EB 41	Ann 12	No, there are no changes compared with the webhosted PDD.	OK	ОК
o. In CDM-PDD section B.5 are following provided?	EB 41	Ann 12	-	-	-
 Explanation of how and why this project activity is additional and therefore not the baseline scenario in accordance with the selected baseline methodology 	EB 41	Ann 12	See CAR16. <u>CL10:</u> Please, clarify why PDD v01, Section B.5, in the identification of alternatives, didn't include other types (e.g. wind, biomass, fossil fuel) of power plant with a similar capacity?	CAR16 CL10	ОК
ii. Justification of key assumptions and rationales	EB 41	Ann 12	See CAR16 and CL10.	CAR16 CL10	OK
iii. Transparent illustration of all data used to determine the baseline scenario (variables, parameters, data sources etc)	EB 41	Ann 12	Yes	OK	OK
iv. Evidence that the incentive from the CDM was seriously considered in the decision to proceed with the project activity, if the starting date of the project activity is before the date of	EB 41	Ann 12	Yes	OK	ОК



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
validation				Contor	Contor
p. In CDM-PDD section B.6.1 are following provided?	EB 41	Ann 12	-	-	-
i. Explanation as to how the procedures, in the approved methodology to calculate project emissions, baseline emissions, leakage emissions and emission reductions are applied to the proposed project activity	EB 41	Ann 12	Yes. However, see CAR20, CAR21, CL11 and CL12.	CAR20 CAR21 CL11 CL12	ОК
ii. Equations used in calculating emission redutions	EB 41	Ann 12	<u>CAR20:</u> Equation 1, in PDD v01, Section B.6.1, states $ER_y = BE_y - PE_y - LE_y$, whereas Equation (11), in ACM0002 v12.1.0, states $ER_y = BE_y - PE_y$. Besides, adjust Section B.6.3, accordingly. <u>CAR21:</u> PDD v01, Section B.6.1, Equation 8, presents a formula that should be identified as $PE_{HP,y}$ instead of PE_y . See Equation (3) of ACM0002 v12.1.0). The same identification applies in the sentence right before Equation 9. Besides, adjust Section B.6.3, accordingly. <u>CL11:</u> Please, adjust data unit of $PE_{GP,y}$, in PDD v01, Section B.6.1, where it is stated that " $PE_{GP,y} = 0 \text{ tCO}_2/\text{year}$ ". Besides, adjust Section B.6.1, under leakage, please, replace "upstream activities" by "upstream emissions from fossil fuel use", as per ACM0002. Besides, adjust Section B.6.3, accordingly.	CAR20 CAR21 CL11 CL12	ОК
iii. Explanation and justification for all relevant methodological choices, including different	EB 41	Ann 12	Yes	OK	OK
scenarios or cases, options and default values					



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
q. In CDM-PDD section B.6.2 are following provided?	EB 41	Ann 12	-	-	-
i. A compilation of information on the data and parameters that are not monitored throughout the crediting period but that are determined only once and thus remains fixed throughout the crediting period AND that are available when validation is undertaken	EB 41	Ann 12	Yes. The PP decided to calculate the grid emission factor ex ante, and thus, the related parameters are stated in this section. <u>CAR22:</u> PDD v01, Section B.6.2, presents an incomplete description of A _{BL} .	CAR22	ОК
ii. The actual value period	EB 41	Ann 12	Yes	OK	OK
iii. Explanation and justification for the choice of the source of data	EB 41	Ann 12	Yes	OK	OK
iv. Clear and transparent references or additional documentation in Annex 3	EB 41	Ann 12	No. Annex 3 has been left blank on purpose. See CAR33.	CAR33	OK
 v. Where values have been measured, a description of the measurement methods and procedures (e.g. which standards have been used), indicated the responsible person/entity having undertaken the measurement, the date of measurement(s) and the measurement results 	EB 41	Ann 12	The measured value is the net electricity generated by the power plants connected to the grid (to the EF calculation) and it is informed that Data from the Electric System National Operator (Offiial Sources) was used.	ОК	ОК
r. In CDM-PDD section B.6.3 are following provided?	EB 41	Ann 12	-	-	-
i. A transparent <i>ex ante</i> calculation of project emissions, baseline emissions (or, where applicable, direct calculation of emission reductions) and leakage emissions expected during the crediting period, applying all relevant equations provided in the approved	EB 41	Ann 12	Yes. However, see CAR20, CAR21, CL11 and CL12.	CAR20 CAR21 CL11 CL12	ОК



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
methodology					
ii. Documentation how each equation is applied,	EB	Ann	Yes	OK	OK
in a manner that enables the reader to	41	12			
reproduce the calculation					
iii. Additional background information and or data	EB	Ann	See CAR33.	CAR33	OK
in Annex 3, including relevant electronic files	41	12	The PPs included backround information, in the		
(i.e. spreadsheets)			spreadsheet "BR EF ex ante 2008 to 2010-def EF		
			tool 2.2-2011.07.27".	01/	
s. In CDM-PDD section B.6.4 are the results of the	EB	Ann	Yes	OK	OK
ex ante estimation of emission reductions for all	41	12			
years of the crediting period, provided in a tabular					
t In CDM DDD spatian B.7.1 are following	ED	Ann			
I. III CDIVI-PDD Section B.7.1 are following		Ann 12	-	-	-
i Specific information on how the data and		1Z Ann	CAP23: PDD v01 Section B 7.1 does not include	CAP23	OK
narameters that need to be monitored would	<u>41</u>	12	EF way a parameter which is required to be	CAR24	OR
actually be collected during monitoring for the		12	monitored according to ACM0002 v12 1 0	0/ 11 12 -	
project activity			CAR24: PDD v01. Section B.7.1. presents a		
			description for EG _{facility} , which is not in accordance		
			with ACM0002 v12.1.0.		
ii. For each parameter the following below	EB	Ann	-	-	-
information, using the table provided:	41	12			
a. The source(s) of data that will be actually	EB	Ann	CAR25: PDD v01, Section B.7.1, presents	CAR25	OK
used for the proposed project activity (e.g.	41	12	incorrect source of data for A _{PJ} .		
which exact national statistics). Where					
several sources may be used, explain and					
justify which data sources should be					
preferred.					
b. Where data or parameters are supposed	EB	Ann	See CL22.	CAR26	OK



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
to be measured, specify the measurement	41	12	<u>CAR26</u> : PDD v01, Section B.7.1, EG _{facility,y} table,	CL22	
methods and procedures, including a			presents measurement and QA/QC procedures	CL13	
specification which accepted industry			which are not in accordance with ACM0002	CL14	
standards or national or international			v12.1.0. Besides, information on measurement	CL15	
standards will be applied, which			procedures is incomplete, considering EB41		
measurement equipment is used, how the			Ann12, B.7.1 (b).		
measurement is undertaken, which			<u>CL13</u> : Please, clarify the difference in terms of		
calibration procedures are applied, what is			average assured energy, when comparing Report		
the accuracy of the measurement method,			1.344-RE-G00-001-0 (13.08 MW) against		
who is the responsible person/entity that			ANEEL's technical summary of the consolidated		
should undertake the measurements and			basic project, dated 31/01/2011 (13.39 MW).		
what is the measurement interval; (i) A			<u>CL14:</u> Please, clarify the difference in terms of		
description of the QA/QC procedures (if			installed power, when comparing ANEELS		
any) that should be applied, (ii) where			against ANEEL's toobainal summary of the		
nelevant. any further comment. Provide			against ANEEL'S technical summary of the		
documentation in Appex 4					
			CI 15: Please adjust description of measurement		
			<u>Deroc</u> rease, adjust description of measurement procedures for $A_{p,i}$ to make it clearer		
u In CDM-PDD section B.7.2 are following	FB	Ann		_	
provided?	41	12			
i. A detailed description of the monitoring plan	EB	Ann	CAR27: PDD v01. Section B.7.2. includes a	CAR27	OK
	41	12	paragraph on enviromental issues, not relevant to	CAR28	••••
			this section.	CL16	
			CAR28: PDD v01, Section B.7.2, states gross	CL17	
			electricity generation will be measured by meters		
			at the plant, whereas, during site visit, it was		
			verified that such measurement will not be carried		
			out.		



VALIDATION REPORT

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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			<u>CL16</u> : Please, confirm whether internal GHG audits will be carried out, as stated in PDD v01, Section B.7.2. <u>CL17</u> : Please, provide a detailed description of the QA/QC procedures for cross checking measurement results.		



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
 The operational and management structure that the project operator will implement in order to monitor emission reductions and any leakage effects generated by the project activity 	EB 41	Ann 12	<u>CL18</u> : Please, describe in a clearer manner the operational and management structure that the project operator will implement in order to monitor emission reductions and any leakage effects.	CL18	ОК
iii. The responsibilities for and institutional arrangements for data collection and archiving	EB 41	Ann 12	<u>CAR29:</u> PDD v01, Section B.7.2, does not clearly indicate the responsibilities for and institutional arrangements for data collection and archiving. <u>CL19:</u> Please, confirm whether relevant information will be produced by ANEEL and ONS. In case it will, describe it in detail.	CAR29 CL19	ОК
 iv. Indication that the monitoring plan reflect good monitoring practice appropriate to the type of project activity 	EB 41	Ann 12	See CAR29, CL16, CL17, CL18 and CL19.	CAR29 CL16 CL17 CL18 CL19	ОК
v. Relevant further background information in Annex 4	EB 41	Ann 12	No. PDD v01, Annex 4, has been left blank on purpose.	OK	ОК
v. In CDM-PDD section B.8 are following provided?	EB 41	Ann 12	-	-	-
 Date of completion of the application of the methodology to the project activity study in DD/MM/YYYY 	EB 41	Ann 12	Yes. 25/08/2011. However, <u>CAR30:</u> PDD v01, Section B.8, presents a title which is not in accordance with EB41 Ann12. Besides, first paragraph must be adjusted, to be in line with EB41 Ann12.	CAR30	OK
 ii. Contact information of the person(s)/entity(ies) responsible for the application of the baseline and monitoring methodology to the project activity 	EB 41	Ann 12	Yes. Responsible entity (Ecopart Assessoria em Negócios Empresariais Ltda.) and its contact information are provided.	OK	ОК



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
iii. Indication if the person/entity is also a project participant listed in Annex 1	EB 41	Ann 12	Yes. "Ecopart Assessoria em Negócios Empresariais Ltda. is Project Advisor and Project Participant".	OK	ОК
w. In CDM-PDD section C.1.1 are following provided?	EB 41	Ann 12	-	-	-
 The starting date of a CDM project activity, which is the earliest of the date(s) on which the implementation or construction or real action of a project activity begins/has begun (EB33, Para 76/CDM Glossary of terms/EB41, Para 67) 	EB 41	Ann 12	Yes. 30/10/2011. However: <u>CL20:</u> Please, provide evidence of starting date of the project activity, since estimated date of 30/10/2011, as informed in PDD v01, Section C.1.1, is no longer a future date. Besides, if EPC contract has been signed, a description of the evidence available to support the start date should be provided.	CL20	ОК
A description of how this start date has been determined, and a description of the evidence available to support this start date	EB 41	Ann 12	See CL20.	CL20	OK
iii. If this starting date is earlier than the date of publication of the CDM-PDD for global stakeholder consultation by a DOE, description in Section B.5 contain a of how the benefits of the CDM were seriously considered prior to the starting date (EB41, Para 68).	EB 41	Ann 12	The alleged starting date (30/10/2011) is later than the date of publication of the CDM-PDD for global stakeholder consultation (12/10/2011). Anyway, on 01/08/2011, as per the <i>Guidelines on</i> <i>the demonstration and assessment of prior</i> <i>consideration of the CDM</i> v04 (EB62 Ann13), the PPs informed the Host Party DNA and the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status. See CL20.	CL20	ОК



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
x. In CDM-PDD section C.1.2 is the expected	EB	Ann	CL21: Please, clarify the basis for an operational	CL21	OK
operational lifetime of the project activity in years	41	12	lifetime of 30 years.		
and months provided?					
y. In CDM-PDD section C.2 is it stated whether the	EB	Ann	CAR31: PDD v01, Section C.2, does not state	CAR31	OK
project activity will use a renewable or a fixed	41	12	whether the project activity will use a renewable or		
crediting period and is C.2.1 or C.2.2 completed			a fixed crediting period.		
accordingly?					
z. In CDM-PDD section C.2.1 is it indicated that	EB	Ann	Although it has not been indicated, in PDD v01,	OK	OK
each crediting period shall be at most 7 years	41	12	Section C.2.1, that each crediting period shall be		
and may be renewed at most two times, provided			at most 7 years and may be renewed at most two		
that, for each renewal, a designated operational			times, no corrective action is requested, since, as		
entity determines and informs the Executive			per EB41 Ann12, it is not a requirement.		
Board that the original project baseline is still					
valid or has been updated taking account of new					
data where applicable?		•	N 01/07/0010	01/	01/
aa. In CDM-PDD section C.2.1.1 are dates in the	EB	Ann	Yes. 01/07/2013.	OK	OK
following format: (DD/MM/YYYY) provided?	41	12		01	
bb. In CDIM-PDD section C.2.1.2 is the length of the	EB	Ann	Yes. 7 years –0 month.	OK	OK
first crediting period in years and months	41	12			
provided?		٨٠٠٠	N1/A	01/	
cc. In CDM-PDD section C.2.2 is the fixed creating		Ann 12	N/A	UK	UN
dd In CDM DDD exertism C.2.2.1 are the dates		1Z Ann	N1/A	OK	OK
ad. In CDIVI-PDD Section C.2.2. Tare the dates		Ann 12	N/A	UK	UN
provided in the following format. (DD/WW/FFFF)?			N1/A	01/	
ee. In CDIM-PDD section C.2.2.2 is the length of the		Ann 12	N/A	UK	UN
ff In CDM DDD position D 2 are the paralusians and		1Z Apr	CL 22: Diagonal clarify the difference in the values	CL 22	
all references to support documentation of an			\bigcirc \square		UN
all references to support documentation of an	41	12	of the reservoir area (0.05 Kill X 0.02 Kill),	GLZ3	
environmental impact assessment undertaken in			considening, respectively, the Environmental		



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
accordance with the procedures as required by the Host Party, if environmental impacts are considered significant by the project participants or the Host, provided?			Control Plan (<i>PCA</i> , May/2011, page 4) vs. SUPRAM's Report 462146/2009 ("Quadro 1"). <u>CL23:</u> Please, update PDD v01, Section D.1, in order to provide more detailed information on construction license (i.e. date when it has been requested: 17/05/2011), <i>EIA/RIMA</i> (i.e. issued in August/2003) and <i>PCA</i> (i.e. issued in May/2011).		
gg. In CDM-PDD section E.1 are the following provided?	EB 41	Ann 12	-	-	-
 i. The process by which comments by local stakeholders have been invited and compiled. An invitation for comments by local stakeholders shall be made in an open and transparent manner, in a way that facilitates comments to be received from local stakeholders and allows for a reasonable time for comments to be submitted. 	EB 41	Ann 12	<u>CAR32</u> : PDD v01, Section E.1, does not mention the fact the Federal Attorney for the Public Interest (<i>Ministério Público Federal</i> , in Portuguese) was invited to comment on the project activity.	CAR32	ОК
 The project activity is described in a manner, which allows the local stakeholders to understand the project activity, taking into account confidentiality provisions of the CDM modalities and procedures. 	EB 41	Ann 12	Yes	ОК	ОК
iii. The local stakeholder process has been completed before submitting the proposed project activity to the DOE for validation.	EB 41 EB	Ann 12 Ann	Invitation letters for comments were sent to local stakeholders on 29/08 and 08/09/2011. Post office delivery confirmations are dated 01, 02 and 12/09/2011. Period for global stakeholder comments, under UNFCCC, was from 12/10 to 10/11/2011.	OK -	OK



VALIDATION REPORT					
CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
	41	12			



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
i. Identification of local stakeholders that have made comments	EB 41	Ann 12	According to the PPs, no comments have been received.	OK	ОК
ii. A summary of this comments.	EB 41	Ann 12	N/A	OK	OK
ii. In CDM-PDD section E.3 is the explanation of how due account have been taken of comments received from local stakeholders provided?	EB 41	Ann 12	N/A	OK	ОК
jj. In CDM-PDD Annex 1 are the following provided?	EB 41	Ann 12	-	-	-
i. Contact information of project participants	EB 41	Ann 12	Yes	OK	OK
ii. For each organisation listed in section A.3 the following mandatory fields: Organization, Name of contact person, Street, City, Postfix/ZIP, Country, Telephone and Fax or e-mail	EB 41	Ann 12	Yes	OK	ОК
kk. In CDM-PDD Annex 2 is information from Parties included in Annex I on sources of public funding for the project activity which shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of those Parties provided?	EB 41	Ann 12	See CAR15.	CAR15	ОК
II. In CDM-PDD Annex 3 is the background information used in the application of the baseline methodology provided?	EB 41	Ann 12	No. PDD v01, Annex 3, has been left blank on purpose. However: <u>CAR33:</u> PDD v01, Annex 3, should refer to sections B.2, B.6.2 and B.6.3, since they are the ones to which EB41 Ann12 refers, instead of B.6.1.	CAR33	OK
mm. In CDM-PDD Annex 4 is the background	EB	Ann	B.6.1. No. PDD v01, Annex 4, has been left blank on	CL24	Oł


VALIDATION REPORT					
CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
information used in the application of the monitoring methodology provided?	41	12	purpose. However: <u>CL24:</u> Please, refer to Section B.7.1, besides B.7.2, since both refer to Annex 4, in EB41 Ann12.		
4. Project description					
a. Does the PDD contain a clear description of the project activity that provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation?	VVM	58	See CAR01, CAR04, CAR05, CAR06, CAR07, CAR08, CAR09, CAR10, CAR11, CL02, CL03 and CL05.	CAR01 CAR04 CAR05 CAR06 CAR07 CAR08 CAR09 CAR10 CAR11 CL02 CL03 CL03 CL05	ОК
b. Is the description of the proposed CDM project activity as contained in the PDD:	VVM	59	-	-	-
i. sufficiently covering all relevant elements?	VVM	59	Refer to Item (3) above: Project design document, for a detailed analysis.	-	-
ii. acurate?	VVM	59	Refer to Item (3) above: Project design document, for a detailed analysis.	-	-
iii. providing the reader with a clear understanding of the nature of the proposed CDM project activity?	VVM	59	Refer to Item (3) above: Project design document, for a detailed analysis.	-	-
iv. Are there any changes/modifications compared to the webhosted PDD?	VVM	59	No. There are no changes/modifications compared to the webhosted PDD.	OK	OK
c. Is the proposed CDM project activity in existing facilities or utilizing existing equipments?	VVM	60	No. The proposed project activity is a Greenfield project.	OK	OK

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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
d. Is the CDM project activity one of the following types:	VVM	60	-	-	-
i. Large scale?	VVM	60	Yes. It is a large scale project, following methodology ACM0002 v12.1.0.	OK	OK
ii. Non-bundled small scale projects with emission reductions exceeding 15,000 tonnes per year?	VVM	60	No. The project is a large scale project activity.	OK	OK
iii. Bundled small scale projects, each with emission reductions not exceeding 15,000 tonnes?	VVM	60	No. The project is a large scale project activity.	OK	ОК
e. If yes to (c) and (d) above, was a physical site inspection conducted to confirm that the description in the PDD reflects the proposed CDM project activity, unless other means are specified in the methodology?	VVM	60	No, because at this point in time (17/11/2011, date of visit to Sigma Energia's office, for doc review), there is no construction work neither equipments at the physical site.	ОК	ОК
f. If yes to (d.iii) above, was the number of physical site visits base on sampling?	VVM	60	N/A	OK	OK
g. If yes is the sampling size appropriately justified through statistical analysis?	VVM	60	N/A	OK	OK
h. For other individual proposed small scale CDM project activities with emission reductions not exceeding 15,000 tonnes per year, was a physical site inspection conducted?	VVM	61	N/A	OK	ОК
 For all other proposed CDM project activities not referred to in paragraphs 59 – 61, was a physical site inspection conducted? 	VVM	62	N/A	OK	OK
j. If no, was it appropriately justified?	VVM	62	N/A	OK	OK
k. Does the proposed CDM project activity involve the alteration of an existing installation or process?	VVM	63	No. The proposed project activity is a Greenfield project.	OK	ОК



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
I. If yes, does the project description clearly state the differences resulting from the project activity compared to the pre-project situation?	VVM	63	N/A	OK	ОК
5. Baseline and monitoring methodology					
a. General requirement					
a. Do the the baseline and monitoring methodologies selected by the project participants comply with the methodologies previously approved by the CDM Executive Board?	VVM	65	Yes. The project has been designed based on ACM0002 v12.1.0 - Consolidated baseline methodology for grid-connected electricity generation from renewable sources.	ОК	ОК
b. Is the selected methodology applicable to the project activity?	VVM	66	Refer to (5.b.a) below.	-	-
c. Had the PP correctly applied the selected methodology?	VVM	66	Refer to (5.b.d) below.	-	-
d. Had the selected methodology been correctly applied with respect to project boundary?	VVM	67	Refer to (5.c) below.	-	-
e. Had the selected methodology been correctly applied with respect to baseline identification?	VVM	67	Refer to (5.d) below.	-	-
f. Had the selected methodology been correctly applied with respect to Algorithms and/or formulae used to determine emission reductions?	VVM	67	Refer to (5.e) below.	-	-
g. Has the selected methodology been correctly applied with respect to additionality?	VVM	67	Refer to Item (6) below: Additionality of a project activity	-	-
 Has the additionality of the project activity been demonstrated and assessed using the latest version of the "Tool for the demonstration and assessment of additionality" agreed by the Board, which is available on the UNFCCC 	ACM	0002 v.11	See CAR16.	CAR16	ОК



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
website? h. Had the selected methodology been correctly applied with respect to monitoring methodology?	VVM	67	Refer to (7.g), (7.h), (7.i), (7.j) and (7.k) below.	-	-
b. Applicability of the selected methodology to the project activity					
a. Is the selected baseline and monitoring methodology, previously approved by the CDM Executive Board, applicable to the project activity? Is the used version valid?	VVM	68	Yes. The selected baseline and monitoring methodology is applicable to the project activity, since all applicability conditions have been met. And ACM0002 v12.1.0 is still valid.	OK	OK
 i. This methodology is applicable to grid- connected renewable power generation project activities that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plants); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s). 	ACM	0002	Yes. The project activity is a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant).	ОК	ОК
b. Has the DOE applied specific guidance provided by the CDM Executive Board in respect to the applicable approved methodology?	VVM	69	Yes, the following guidance were applied: Methguide04: Clarifications on how, through the methodology, it may be demonstrated that a project is additional and therefore not the baseline scenario. Methguide 31: guidance related to use of additionality tool	ОК	ОК



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			Methguide 35: Guidelines for the reporting and validation of plant load factors.		
			Regguide03: Guidelines on the assessment of investment analysis.		
			Regguide04: Guidelines on the demonstration and assessment of prior consideration of the CDM.		



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c. Is the methodology correctly quoted?	VVM	70			OK
d. Are the applicability conditions of the	VVIVI	/1	See CL14 and CL22.	CL14	OK
methodology met?		0000	Vee the prepaged preject activity is a Oreantiald		
addition retrofit or replacement of a power	ACM	0002	res, the proposed project activity is a Greenfield	ÜK	ÜK
plant/unit of one of the following types: hydro					
power plant/unit (either with a run-of-river					
reservoir or an accumulation reservoir), wind					
power plant/unit, geothermal power plant/unit,					
solar power plant/unit, wave power plant/unit					
or tidal power plant/unit		0002	NI/A	OK	
II. In the case of capacity additions, retroins of replacements (except for wind solar wave or	ACIVI	0002	N/A	UK	UN
tidal power capacity addition projects which					
use Option 2: on page 10 to calculate the					
parameter EG_{PIV}): the existing plant started					
commercial operation prior to the start of a					
minimum historical reference period of five					
years, used for the calculation of baseline					
emissions and defined in the baseline					
emission section, and no capacity expansion					
or retrofit of the plant has been undertaken					
between the start of this minimum historical					
project activity					
iii. In case of hydro power plants one of the	ACM	0002	The third condition applies. The project activity	CI 14	ОК
following conditions must apply:		0002	results in a new reservoir and the power density of	CL22	
- The project activity is implemented in an			the power plant is greater than 4 W/m ² . However,		
existing reservoir, with no change in the			see CL14 and CL22.		



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
 volume of reservoir; or The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m2; or The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 w/m2. 					
 iv. The methodology is not applicable to the following conditions. Please confirm Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity Biomass fired power plants; Hydro power plants that result in new reservoirs or in the increase in existing reservoirs where the power density of the power plant is less than 4 W/m2. 	ACM	0002	N/A	ОК	ОК
v. In the case of retrofits, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, i.e. to use the power generation equipment that was already in use prior to the implementation of the project	ACM	0002	N/A	ОК	ОК



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
activity and undertaking business as usual maintenance".					
e. Is the project activity expected to result in emissions other than those allowed by the methodology?	VVM	71	No	OK	ОК
f. Is the choice of the methodology justified?	VVM	71	See CAR17.	CAR17	OK
g. Have the project participants shown that the project activity meets each of the applicability conditions or the approved methodology?	VVM	71	Refer to (5.b.d) above and to CAR17.	CAR17	ОК
h. Have the project participants shown that the project activity meets each of the applicability conditions of any tool or other methodology component referred to the methodology?	VVM	71	<u>CAR34</u> : PDD v01, Section B.2, does not show that the project activity meets each of the applicability conditions of the Tool to calculate the emission factor for an electricity system and of the Tool for the demonstration and assessment of additionality.	CAR34	ОК
i. Are each of the applicability conditions of the "Tool to calculate the emission factor for an electricity system" met?	EB 50	Ann 40	See CAR34.	CAR34	OK
ii. Are each of the applicability conditions of the "Tool for the demonstration and assessment of additionality" met?	EB 39	Ann 10	See CAR34.	CAR34	ОК
iii. Are each of the applicability conditions of the "Combined tool to identify the baseline scenario and demonstrate additionality" met?	EB 28	Ann 14	N/A	OK	ОК
iv. Are each of the applicability conditions of the "Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion" met?	EB 41	Ann 11	N/A	OK	OK
i. Is the DOE, based on local and sectoral knowledge, aware that comparable information is	VVM	71	Yes, see below.	OK	ОК



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
available from sources other than that used in the PDD?					
j. If yes, was the PDD cross checked against the other sources to confirm that the project activity meets the applicability conditions of the methodology? (provide the reference to these choices)	VVM	71	 Yes. The other sources are: ANEEL's technical summary of the consolidated basic project, dated 31/01/2011; Environmental Control Plan (<i>PCA</i>, May/2011; SUPRAM's Report 462146/2009; Environmental Licenses; ANEEL's Resolutions 	ОК	ОК
k. Can a determination regarding the applicability of the selected methodology to the proposed CDM project activity be made?	VVM	72	See CL14 and CL22.	CL14 CL22	OK
I. If no, clarification of the methodoloy was requested, in accordance with the guidance provided by the CDM Executive Board?	VVM	72	See CL14 and CL22.	CL14 CL22	ОК
m. If answer to (5.b.d) above is "no", revision or deviation from the methodology was requested, in accordance with the guidance provided by the CDM Executive Board?	VVM	73	See CL14 and CL22.	CL14 CL22	ОК
 n. If yes to (5.b.l) and (5.b.m) above, a request for registration was submited before the CDM Executive Board has approved the proposed deviation or revision? 	VVM	74	See CL14 and CL22.	CL14 CL22	ОК
c. Project boundary					
a. Does the PDD correctly describe the project	VVM	78	See CL07, CL07i and CL08.	CL07	OK



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
boundary, including the physical delineation of the proposed CDM project activity included within the project boundary for the purpose of calculating project and baseline emissions for the				CL07i CL08	
 Does the extent of the project boundary, as described in the PDD, includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to? 	ACM	0002	Yes. As per ACM0002 v12.1.0, and correctly stated in PDD v01, Section B.3, "the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to".	ОК	ОК
ii. Are the greenhouse gases and emission sources that are included in or excluded from the project boundary shown in a table format as per applicable methodology?	ACM	0002	See CL07.	CL07	ОК
b. Is the delineation in the PDD of the project boundary correct and include identification of all locations, processes and equipment including secondary equipment and associated processes such as logistics etc.?	VVM	79	See CL08.	CL08	ОК
c. Does the delineation in the PDD of the project boundary meet the requirements of the selected baseline?	VVM	79	Yes	ОК	ОК
 d. Have changes been made to the project boundary in comparison to the webhosted PDD. If yes please comment on the reason for the changes. 	VVM	79	No. There are no changes in comparision with the webhosted PDD.	OK	ОК
e. Have all sources and GHGs required by the methodology been included within the project	VVM	79	See CL07.	CL07	OK



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
boundary?					
 f. Does the methodology allow project participant to choose whether a source or gas is to be included within the project boundary 	VVM	79	No, the methodology prescribes which gases are to be included in the project boundary.	OK	ОК
g. If yes, have the project participants justified that choice?	VVM	79	N/A	OK	OK
 h. If yes, is the justification provided reasonable? (provide reference to the supporting documented evidence provided by the project participants) 	VVM	79	N/A	OK	ОК
d. Baseline identification					
a. Does the PDD identify the baseline for the proposed CDM project activity, defined as the scenario that reasonably represents the anthropogenic emissions by sources of GHGs that would occur in the absence of the proposed CDM project activity?	VVM	81	Yes	ОК	ОК
b. Has any procedure contained in the methodology to identify the most reasonable baseline scenario, been correctly applied?	VVM	82	No procedure is to be applied to this kind of project activity, according to the methodology.	OK	ОК
i. If the project activity is the install a new grid- connected renewable power plant/unit (greenfield plant), is the baseline scenario identified appropriately in accordance with the ACM0002 ver.11?	ACM	0002	Yes	OK	OK
ii. If the project activity is a capacity addition to existing grid-connected renewable power plant/unit, is the baseline scenario identified appropriately in accordance with the ACM0002 ver. 11? And is the point of time at which the	ACM	0002	The project activity is not a capacity addition.	ОК	ОК



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
generation facility would likely be replaced or retrofitted (DATE Baseline Retrofit) reasonably defined?					
iii. If the project activity is the retrofit or replacement of existing grid-connected renewable power plant/unit, is the baseline scenario identified following the step-wise procedure in accordance with the ACM0002 ver.11?	ACM	0002	The project activity is not a retrofit or replacement.	ОК	ОК
iv. Are the realistic and credible alternative baseline scenarios for power generation appropriately identified following the Step 1 of the "Combined tool to identify the baseline scenario and demonstrate additionality"? (Step 1)	ACM	0002	N/A	ОК	ОК
v. Are the realistic and credible alternative baseline scenarios i.e. P1, P2 and P3 appropriately applied Barrier analysis following the Step 2 of the "Combined tool to identify the baseline scenario and demonstrate additionality"? (Step 2)	ACM	0002	N/A	ОК	ОК
vi. If more than one alternative is remaining after Step 2, is <i>Investment analysis</i> appropriately applied (apply an Investment Comparison as per step 3 of the "Combined tool to identify the baseline scenario and demonstrate additionality" or a Benchmark Analysis as per step 2b of the "Tool for the demonstration and assessment of additionality")? (Step 3)	ACM	0002	N/A	ОК	ОК



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
c. Does the selected methodology require use of tools (such as the "Tool for the demonstration and assessment of additionality" and the "Combined tool to identify the baseline scenario and demonstrate additionality") to establish the baseline scenario?	VVM	82	No	ОК	ОК
d. If yes, was the methodology consulted on the application of these tools? (In such cases, the guidance in the methodology shall supersede the tool.)	VVM	82	N/A	OK	ОК
e. Does the methodology require several alternative scenarios to be considered in the identification of the most reasonable baseline scenario?	VVM	83	No	OK	ОК
f. If yes, are all scenarios that are considered by the project participants and are supplementary to those required by the methodology reasonable in the context of the proposed CDM project activity?	VVM	83	N/A	OK	ОК
g. Has any reasonable alternative scenario been excluded?	VVM	83	N/A	OK	OK
h. Is the baseline scenario identified reasonably supported by:	VVM	84	-	-	-
i. Assumptions?	VVM	84	The baseline scenario is identified in ACM0002. So no assumptions are needed beyond the statement that the project activity is the installation of a new grid-connected renewable power plant.	OK	ОК
ii. Calculations?	VVM	84	The baseline scenario is identified in ACM0002. So no calculations are needed beyond the statement that the project activity is the installation of a new grid-connected renewable power plant.	OK	ОК



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
iii. Rationales?	VVM	84	The baseline scenario is identified in ACM0002. So no rationales are needed beyond the statement that the project activity is the installation of a new grid-connected renewable power plant.	OK	ОК
i. Are the documents and sources referred to in the PDD correctly quoted and interpreted?	VVM	84	Yes	OK	OK
j. Was the information provided in the PDD cross checked with other verifiable and credible sources, such as local expert opinion, if available? (idendify the sources)	VVM	84	 Yes. The other sources are: ANEEL's technical summary of the consolidated basic project, dated 31/01/2011; Environmental Control Plan (<i>PCA</i>, May/2011; SUPRAM's Report 462146/2009; Environmental Licenses; ANEEL's Resolutions 	ОК	ОК
k. Have all applicable CDM requirements been taken into account in the identification of the baseline scenario for the proposed CDM project activity?	VVM	85	The baseline scenario is identified in ACM0002.	OK	ОК
I. Have all relevant policies and circumstances been identified and correctly considered in the PDD, in accordance with the guidance by the CDM Executive Board?	VVM	85	The baseline scenario is identified in ACM0002.	OK	ОК
m. Does the PDD provide a verifiable description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take	VVM	86	Yes. Section B.4 correctly states: <i>Electricity</i> delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the	OK	ОК

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place in the absence of the proposed CDM project activity?			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.		
e. Algorithms and/or formulae used to determine emission reductions					
a. Do the steps taken and equations applied to calculate project emissions, baseline emissions, leakage and emission reductions comply with the requirements of the selected baseline and monitoring?	VVM	89	Please refer to Section 3, above.	-	-
b. Have the equations and parameters in the PDD been correctly applied with respect those in the select approved methodology?	VVM	90	Please refer to Section 3, above.	-	-
i. Are the Project emissions appropriately calculated?	ACM	0002	Please refer to Section 3, above.	-	-
 ii. Are the Baseline emissions appropriately calculated specifically for (a)greenfield plants or (b) retrofit and replacements or (c) capacity additions? 	ACM	0002	Please refer to Section 3, above.	-	-
iii. Are the Leakage appropriately calculated?	ACM	0002	Please refer to Section 3, above.	-	-
iv. Are the Emission reductions appropriately calculated?	ACM	0002	Please refer to Section 3, above.	-	-
 c. Have project participants prepared as part of the CDM-PDD an estimate of likely emission reductions for the proposed crediting period? This estimate should, in principle, employ the same methodology as selected for the calculation of emission reductions. Where the grid emission 	ACM	0002	Please refer to Section 3, above.	-	-



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factor (EF _{grid,CM,y}) is determined ex post during monitoring, project participants may use models or other tools to estimate the emission reductions				Conci	Conci
d. Does the methodology provide for selection between different options for equations or parameters?	VVM	90	Please refer to Section 3, above.	-	-
e. If yes, has adequate justification been provided (based on the choice of the baseline scenario, context of the proposed CDM project activity and other evidence provided)?	VVM	90	Please refer to Section 3, above.	-	-
f. If yes, have correct equations and parameters been used, in accordance with the methodology selected?	VVM	90	Refer to (5.e.b) above	-	-
g. Will data and parameters be monitored throughout the crediting period of the proposed CDM project activity?	VVM	91	Please refer to Section 3, above.	-	-
h. If no, and these data and parameters will remain fixed throughout the crediting period, are all data sources and assumptions:	VVM	91	Please refer to Section 3, above.	-	-
i. Appropriate and correct?	VVM	91	Please refer to Section 3, above.	-	-
ii. Applicable to the proposed CDM project activity?	VVM	91	Please refer to Section 3, above.	-	-
iii. Resulting in a conservative estimate of the emission reductions?	VVM	91	Please refer to Section 3, above.	-	-
i. Will data and parameters be monitored on implementation and hence become available only after validation of the project activity?	VVM	91	Please refer to Section 3, above.	-	-
j. If yes, are the estimates provided in the PDD for	VVM	91	Please refer to Section 3, above.	-	-



			VERITAS			
CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl	
these data and parameters reasonable?						
6. Additionality of a project activity						
a. Does the PDD describe how a proposed CDM projet activity is additional?	VVM	94	Yes. However, see CAR16.	CAR16	OK	
b. Does the CDM-PDD state the latest version of the additionality tool being used?	ACM	0002	No. See CAR16.	CAR16	OK	
c. Were the following steps of the tool to assess additionality used:	EB 39	Ann 10	-	-	-	
i. Identification of alternatives to the project activity?	EB 39	Ann 10	Yes, see item (6.d) below.	OK	OK	
ii. Investment analysis to determine that the proposed project activity is either: 1) not the most economically or financially attractive, or 2) not economically or financially feasible?	EB 39	Ann 10	Yes. Please refer to Section <i>Investment Analysis</i> , below.	ОК	ОК	
iii. Barriers analysis?	EB 39	Ann 10	The additionality of the project activity has not been demonstrated by barriers.	OK	OK	
iv. Common practice analysis?	EB 39	Ann 10	Yes. However, see CAR16.	CAR16	OK	
d. In step 1 (i) have all the sub-steps as below been followed?	EB 39	Ann 10	-	-	-	
i. Sub-step 1a: Define alternatives to the project activity	EB 39	Ann 10	Yes. Identified alternatives are: Scenario 1: continuation of the current (previous) situation of electricity supplied by the existing power plants from the interconnected system. Scenario 2: The proposed project activity undertaken without being registered as a CDM project activity.	CAR16	ОК	

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			However, see CAR16		



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ii. Sub-step 1b: Consistency with mandatory laws	EB	Ann	Yes	OK	OK
and regulations	59	10			
e. Have the following alternatives been included			-	-	-
i (a) The proposed project activity undertaken	- 39 ED	10	Voo	OK	OK
i. (a) The proposed project activity undertaken			res	UN	Un
activity;	39	10			
ii. (b) Other realistic and credible alternative	EB	Ann	See CL10.	CL10	OK
scenario(s) to the proposed CDM project	39	10			
activity scenario that deliver outputs services or					
services with comparable quality, properties					
and application areas, taking into account,					
where relevant, examples of scenarios					
identified in the underlying methodology;					
iii. (c) If applicable, continuation of the current	EB	Ann	Yes	OK	OK
situation (no project activity or other alternatives	39	10			
undertaken).					
f. Has the project participant included the	EB	Ann	See CAR16	CAR16	OK
technologies or practices that provide outputs or	39	10			
services with comparable quality, properties and					
application areas as the proposed CDM project					
activity and that have been implemented					
previously or are currently being introduced in the					
relevant country/region?					
g. Has the outcome of Step 1a: Identified realistic	EB	Ann	The PDD identified as alternatives:	CL10	OK
and credible alternative scenario(s) to the project	39	10	Scenario 1: continuation of the current (previous)		
activity done correctly? Please briefly mention the			situation of electricity supplied by the existing		
outcome.			power plants from the interconnected system.		
			Scenario 2: The proposed project activity		



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			undertaken without being registered as a CDM project activity. See CL10.		



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h. Is the alternative(s) in compliance with all mandatory applicable legal and regulatory requirements, even if these laws and regulations have objectives other than GHG reductions, e.g. to mitigate local air pollution.?	EB 39	Ann 10	Yes. However, see CL10.	CL10	ОК
i. If an alternative does not comply with all mandatory applicable legislation and regulations, has it been shown that, based on an examination of current practice in the country or region in which the law or regulation applies, those applicable legal or regulatory requirements are systematically not enforced and that noncompliance with those requirements is widespread in the country?	EB 39	Ann 10	There are no alternatives that do not comply with applicable legislation and requirements.	ОК	ОК
j. Has the outcome of Step 1b: Identified realistic and credible alternative scenario(s) to the project activity that are in compliance with mandatory legislation and regulations taking into account the enforcement in the region or country and EB decisions on national and/or sectoral policies and regulations done correctly? Please state the outcome.	EB 39	Ann 10	Yes. The outcome is that both scenarios, 1 and 2, comply with mandatory laws and regulations.	ОК	ОК
 k. Has PP selected Step 2 (Investment analysis) or Step 3 (Barrier analysis) or both Steps 2 and 3? 	EB 39	Ann 10	The PPs selected Step 2 – Investment Analysis.	OK	OK
I. In step 2, have all the sub-steps as below been followed?	EB 39	Ann 10	-	-	-
 Sub-step 2a: Determine appropriate analysis method; 	EB 39	Ann 10	Yes. Please refer to Section <i>Investment Analysis</i> , below.	OK	OK
ii. Sub-step 2b: Option I. Apply simple cost	EB	Ann	Not applied. Please refer to Section Investment	OK	OK



analysis; 39 10 Analysis, below. iii. Sub-step 2b: Option II. Apply investment comparison on analysis; 39 10 Analysis, below. OK iv. Sub-step 2b: Option III. Apply benchmark analysis; 39 10 Analysis, below. OK OK iv. Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III); BE Ann Yes. Please refer to Section Investment Analysis, OK OK OK v. Sub-step 2d: Sensitivity analysis (only applicable to Options II and III); BE Ann Yes. Please refer to Section Investment Analysis, OK OK OK with sub-step 2a has the determination of appropriatic method of analysis if the CDM project activity analysis on as per the guidance as below? BAnn Yes. Please refer to Section Investment Analysis, OK OK OK i. Simple cost analysis if the CDM project activity analysis (Option II). BB Ann Please refer to Section Investment Analysis, OK OK iii. Otherwise, use the investment comparison of analysis (Option II). BB Ann Please refer to Section Investment Analysis, OK OK iii. Otherwise, use the investment comparison tensor EB Ann Please refer to Section Investment Analysis, OK OK iii. Otherwise, use the inv	CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
iii. Sub-step 2b: Option III. Apply investment comparison analysis; EB Ann Not applied. Please refer to Section Investment Analysis, oK OK OK iv. Sub-step 2b: Option III. Apply benchmark EB Ann Yes. Please refer to Section Investment Analysis, ok OK OK OK v. Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II EB Ann Yes. Please refer to Section Investment Analysis, ok OK OK vi. Sub-step 2c: Calculation and comparison of analysis (only applicable to Options II and III). B 10 below. Obelow. OK OK OK vi. Sub-step 2d: Sensitivity analysis (only applicable to Options II and III). B 10 below. Obelow. OK OK OK m. In sub-step 2a has the determination of guidance as below? EB Ann Yes. Please refer to Section Investment Analysis, OK OK OK i. Simple cost analysis if the CDM project activity and the alternatives identified in Step 1 generate no financial or economic benefits other than CDM related income (Option I). B Ann Please refer to Section Investment Analysis, OK OK OK	analysis;	39	10	Analysis, below.		
comparison analysis; 39 10 Analysis, below. iv. Sub-step 2b: Option III. Apply benchmark analysis; EB Ann Yes. Please refer to Section Investment Analysis, OK OK v. Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III); EB Ann Yes. Please refer to Section Investment Analysis, OK OK vi. Sub-step 2d: Sensitivity applicable to Options II and III). 39 10 Below. Delow. OK OK m. In sub-step 2a has the determination of guidance as below? EB Ann Yes. Please refer to Section Investment Analysis, 00K OK OK i. Simple cost analysis if the CDM project activity and the alternatives identified in Step 1 generate no financial or economic benefits 0(Dption III). EB Ann Please refer to Section Investment Analysis, 00K OK OK ii. Otherwise, use the investment comparison analysis (Option III) or the benchmark analysis (Option III). EB Ann Please refer to Section Investment Analysis, 00K OK OK n. Has the below guideline followed for sub-step 2b EB Ann Please refer to Section Investment Analysis, 00ption II. Apply simple cost analysis? Document the costs associated with the CDM project activity and the alternatives identified in Step 1 00ption II. Apply simple cost analysis? D	iii. Sub-step 2b: Option II. Apply investment	EB	Ann	Not applied. Please refer to Section Investment	OK	OK
iv. Sub-step 2b: Option III. Apply benchmark analysis; EB Ann Yes. Please refer to Section Investment Analysis, OK OK v. Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III); EB Ann Yes. Please refer to Section Investment Analysis, OK OK OK vi. Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III). EB Ann Yes. Please refer to Section Investment Analysis, OK OK OK vi. Sub-step 2d: Sensitivity analysis (only applicable to Options II and III). EB Ann Yes. Please refer to Section Investment Analysis, OK OK OK m. In sub-step 2a has the determination of guidance as below? EB Ann Please refer to Section Investment Analysis, OK OK OK i. Simple cost analysis if the CDM project activity and the alternatives identified in Step 1 39 10 below. Please refer to Section Investment Analysis, OK OK OK i. Other han CDM related income (Option I). EB Ann 10 below. Please refer to Section Investment Analysis, OK OK OK OK OK <td< td=""><td>comparison analysis;</td><td>39</td><td>10</td><td>Analysis, below.</td><td></td><td></td></td<>	comparison analysis;	39	10	Analysis, below.		
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CHECKLIST QUESTION	Ref.	§				СОММЕ	NTS		Draft Concl	Final Concl
Identify the financial indicator, such as IRR, NPV, cost benefit ratio, or unit cost of service most suitable for the project type and decision-making context. Please specify										
p. Has the below guideline followed for Sub-step 2b: Option III. Apply benchmark analysis?	EB 39	Ann 10	Please below.	refer	to	Section	Investment	Analysis,	OK	ОК
 Identify the financial/economic indicator, such as IRR, most suitable for the project type and decision context. 	EB 39	Ann 10	Please below.	refer	to	Section	Investment	Analysis,	OK	ОК
ii. When applying Option II or Option III, the financial/economic analysis shall be based on parameters that are standard in the market, considering the specific characteristics of the project type, but not linked to the subjective profitability expectation or risk profile of a particular project developer. Only in the particular case where the project activity can be implemented by the project participant, the specific financial/economic situation of the company undertaking the project activity can be considered.	EB 39	Ann 10	Please below.	refer	to	Section	Investment	Analysis,	ОК	ОК
 iii. Discount rates and benchmarks shall be derived from: (a) Government bond rates, increased by a suitable risk premium to reflect private investment and/or the project type, as substantiated by an independent (financial) expert or documented by official publicly available financial data; (b) Estimates of the cost of financing and required return on capital 	EB 39	Ann 10	Please below.	refer	to	Section	Investment	Analysis,	ОК	ОК



CHECKLIST QUESTION	Ref.	§				COMME	NTS		Draft Concl	Final Concl	
(e.g. commercial lending rates and guarantees required for the country and the type of project activity concerned), based on bankers views and private equity investors/funds' required return on comparable projects; (c) A company internal benchmark (weighted average capital cost of the company), only in the particular case referred to above in 2. The project developers shall demonstrate that this benchmark has been consistently used in the past, i.e. that project activities under similar conditions developed by the same company used the same benchmark; (d) Government/official approved benchmark where such benchmarks are used for investment decisions; (e) Any other indicators, if the project participants can demonstrate that the above Options are not applicable and their indicator is appropriately justified. Please specify benchmark and justify.											
 q. Has the below guideline followed for Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III)? 	EB 39	Ann 10	Please below.	refer	to	Section	Investment	Analysis,	OK	OK	
 Calculate the suitable financial indicator for the proposed CDM project activity and, in the case of Option II above, for the other alternatives. Include all relevant costs (including, for example, the investment cost, the operations and maintenance costs), and revenues (excluding CER revenues, but possibly 	EB 39	Ann 10	Please below.	refer	to	Section	Investment	Analysis,	ОК	ОК	



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
including inter alia subsidies/fiscal incentives, ODA, etc, where applicable), and, as appropriate, non-market cost and benefits in the case of public investors if this is standard practice for the selection of public investments in the host country.					
ii. Present the investment analysis in a transparent manner and provide all the relevant assumptions, preferably in the CDM-PDD, or in separate annexes to the CDM-PDD.	EB 39	Ann 10	Please refer to Section Investment Analysis, below.	OK	ОК
iii. Justify and/or cite assumptions.	EB 39	Ann 10	Please refer to Section Investment Analysis, below.	OK	OK
iv. In calculating the financial/economic indicator, the project's risks can be included through the cash flow pattern, subject to project-specific expectations and assumptions.	EB 39	Ann 10	Please refer to Section Investment Analysis, below.	OK	ОК
v. Assumptions and input data for the investment analysis shall not differ across the project activity and its alternatives, unless differences can be well substantiated.	EB 39	Ann 10	Please refer to Section Investment Analysis, below.	ОК	ОК
vi. Present in the CDM-PDD a clear comparison of the financial indicator for the proposed CDM activity.Please specify details for above.	EB 39	Ann 10	Please refer to Section Investment Analysis, below.	OK	ОК
r. Has the below guideline followed for Sub-step 2d: Sensitivity analysis (only applicable to Options II and III)? Include a sensitivity analysis that shows whether the conclusion regarding the financial/economic attractiveness is robust to reasonable variations in the critical assumptions.	EB 39	Ann 10	Please refer to Section Investment Analysis, below.	ОК	ОК



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
s. Has the outcome of Step 2 clearly mentioned with justification?	EB 39	Ann 10	Please refer to Section Investment Analysis, below.	OK	OK
t. In step 3: Barrier analysis have all the sub-steps as below been followed?	EB 39	Ann 10	-	-	-
 Sub-step 3a: Identify barriers that would prevent the implementation of the proposed CDM project activity; 	EB 39	Ann 10	The additionality of the project activity has not been demonstrated by barriers.	OK	ОК
Sub-step 3 b: Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity).	EB 39	Ann 10	The additionality of the project activity has not been demonstrated by barriers.	OK	ОК
u. Has the below guideline followed for Sub-step 3a: Identify barriers that would prevent the implementation of the proposed CDM project?	EB 39	Ann 10	The additionality of the project activity has not been demonstrated by barriers.	OK	OK
 i. (a) Investment barriers: For alternatives undertaken and operated by private entities: Similar activities have only been implemented with grants or other non-commercial finance terms. No private capital is available from domestic or international capital markets due to real or perceived risks associated with investment in the country where the proposed CDM project activity is to be implemented, as demonstrated by the credit rating of the country or other country investments reports of reputed origin. 	EB 39	Ann 10	The additionality of the project activity has not been demonstrated by barriers.	OK	ОК
ii. (b) Technological barriers: Skilled and/or properly trained labour to operate and maintain the technology is not available in the relevant	EB 39	Ann 10	The additionality of the project activity has not been demonstrated by barriers.	OK	OK



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
country/region, which leads to an unacceptably high risk of equipment disrepair and malfunctioning or other underperformance; Lack of infrastructure for implementation and logistics for maintenance of the technology, Risk of technological failure: the process/technology failure risk in the local circumstances is significantly greater than for other technologies that provide services or outputs comparable to those of the proposed CDM project activity, as demonstrated by relevant scientific literature or technology manufacturer information, The particular technology used in the proposed project activity					
iii. (c) Barriers due to prevailing practice: The project activity is the "first of its kind".	EB 39	Ann 10	The additionality of the project activity has not been demonstrated by barriers.	ОК	ОК
iv. (d) Other barriers, preferably specified in the underlying methodology as examples.	EB 39	Ann 10	The additionality of the project activity has not been demonstrated by barriers.	OK	ОК
v. Has the outcome from Step 3a clearly mentioned in PDD?	EB 39	Ann 10	The additionality of the project activity has not been demonstrated by barriers.	OK	OK
 w. Has the below guideline followed for Sub-step 3 b: Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity)? 	EB 39	Ann 10	The additionality of the project activity has not been demonstrated by barriers.	ОК	ОК
i. If the identified barriers also affect other alternatives, explain how they are affected less strongly than they affect the proposed CDM	EB 39	Ann 10	The additionality of the project activity has not been demonstrated by barriers.	ОК	ОК



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
project activity. In other words, demonstrate that the identified barriers do not prevent the implementation of at least one of the alternatives. Any alternative that would be prevented by the barriers identified in Sub-step 3a is not a viable alternative, and shall be eliminated from consideration.					
 Provide transparent and documented evidence, and offer conservative interpretations of this documented evidence, as to how it demonstrates the existence and significance of the identified barriers and whether alternatives are prevented by these barriers. 	EB 39	Ann 10	The additionality of the project activity has not been demonstrated by barriers.	ОК	ОК
 iii. The type of evidence to be provided should include at least one of the following: (a) Relevant legislation, regulatory information or industry norms; (b) Relevant (sectoral) studies or surveys (e.g. market surveys, technology studies, etc) undertaken by universities, research institutions, industry associations, companies, bilateral/multilateral institutions, etc; (c) Relevant statistical data from national or international statistics; (d) Documentation of relevant market data (e.g. market prices, tariffs, rules); (e) Written documentation of independent expert judgments from industry, educational institutions (e.g. universities, technical schools, training centres), industry associations and others. Please specify. 	EB 39	Ann 10	The additionality of the project activity has not been demonstrated by barriers.	OK	OK



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
x. Has the outcome from Step 3 clearly mentioned in PDD?	EB 39	Ann 10	The additionality of the project activity has not been demonstrated by barriers.	OK	OK
y. In step 4: Common practice analysis have all the sub-steps as below been followed?	EB 39	Ann 10	-	-	-
 Sub-step 4a: Analyze other activities similar to the proposed project activity; 	EB 39	Ann 10	See CAR16.	CAR16	OK
ii. Sub-step 4b: Discuss any similar Options that are occurring.	EB 39	Ann 10	See CAR16.	CAR16	ОК
Z. Has the below guideline followed for Sub-step 4a: Analyze other activities similar to the proposed project activity? Provide an analysis of any other activities that are operational and that are similar to the proposed project activity. Other CDM project activities are not to be included in this analysis. Provide documented evidence and, where relevant, quantitative information. On the basis of that analysis, describe whether and to which extent similar activities have already diffused in the relevant region.	EB 39	Ann 10	See CAR16.	CAR16	OK
aa. Has the below guideline followed for Sub-step 4b: Discuss any similar Options that are occurring? If similar activities are identified, then it is necessary to demonstrate why the existence of these activities does not contradict the claim that the proposed project activity is financially/economically unattractive or subject to barriers. This can be done by comparing the proposed project activity to the other similar	EB 39	Ann 10	See CAR16.	CAR16	ОК



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
activities, and pointing out and explaining essential distinctions between them that explain why the similar activities enjoyed certain benefits that rendered it financially/economically attractive (e.g., subsidies or other financial flows) and which the proposed project activity cannot use or did not face the barriers to which the proposed project activity is subject. In case similar projects are not accessible, the PDD should include justification about non-accessibility of data/information.					
bb.Has the outcome from Step 4 clearly mentioned in PDD?	EB 39	Ann 10	See CAR16.	CAR16	OK
cc. Has it been proved that the porject is additional?	EB 39	Ann 10	Yes	OK	OK



CHECKLIST QUESTION		Ref.	§	COMMENTS	Draft Concl	Final Concl
a. Prior consideration of development mechanism	the clean					
 a. Is the project ativity start date prior to publication of the PDD for comments? 	o the date of stakeholder	VVM	98	As mentioned before (Item 3.w.iii), the alleged starting date (30/10/2011) is later than the date of publication of the CDM-PDD for global stakeholder consultation (12/10/2011). See CL20.	CL20	ОК
b. If yes, were the CDM benefits necessary in the decision to ur project as a proposed CDM project a	considered ndertake the activity?	VVM	98	As mentioned before (Item 3.w.iii), on 01/08/2011, as per the <i>Guidelines on the demonstration and</i> <i>assessment of prior consideration of the CDM</i> v04 (EB62 Ann13), the PPs informed the Host Party DNA and the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status. See CL20.	CL20	ОК
c. Is the start date of the project activity the PDD, in accordance with the CDM terms", which states that "The of a CDM project activity is the ea which either the implementation or or real action of a project activity beg	y, reported in "Glossary of starting date rliest date at construction ins."?	VVM	99	See CL20.	CL20	ОК
 d. Does the project activity require retrofit or other modifications? 	construction,	VVM	99	It requires construction, since it is a Greenfield project.	OK	OK
e. If yes, is it ensured that the commissioning cannot be consider project activity start date?	ne date of ered as the	VVM	99	Yes	OK	ОК
f. Is it a new project activity (a project a	activity with a	VVM	100	It is a new project activity.	OK	OK



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
start date on or after 02 August 2008) or an existing project activity (a project activity with a start date before 02 August 2008)?					
g. For a new project, for which PDD has not been published for global stakeholder consultation or a new methodology proposed to the CDM Executive Board before the project activity start date, had PPs informed the host Party DNA and the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status? (Provide reference to such confirmation from host Party DNA and UNFCCC secretariat).	VVM	101	As mentioned before (Item 3.w.iii), the alleged starting date (30/10/2011) is later than the date of publication of the CDM-PDD for global stakeholder consultation (12/10/2011). Anyway, on 01/08/2011, as per the <i>Guidelines on</i> <i>the demonstration and assessment of prior</i> <i>consideration of the CDM</i> v04 (EB62 Ann13), the PPs informed the Host Party DNA and the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status. See CL20.	CL20	ОК
h. For an existing project activity, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, are the following evidences provided:	VVM	102	N/A	OK	ОК
ii. evidence that must indicate that awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project, including, inter alia:	VVM	102	N/A	ОК	ОК
a. minutes and/or notes related to the consideration of the decision by the Board of Directors, or equivalent, of the project	VVM	102	N/A	OK	ОК



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
participant, to undertake the project as a proposed CDM project activity?					
 iii. reliable evidence from project participants that must indicate that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation, including, inter alia: 	VVM	102	N/A	ОК	OK
a. contract with consultants for CDM/PDD/methodology services?	VVM	102	N/A	OK	OK
b. Emission Reduction Purchase Agreements or other documentation related to the sale of the potential CERs (including correspondence with multilateral financial institutions or carbon funds)?	VVM	102	N/A	ОК	ОК
c. evidence of agreements or negotiations with a DOE for validation services?	VVM	102	N/A	OK	OK
d. submission of a new methodology to the CDM Executive Board?	VVM	102	N/A	OK	OK
e. publication in newspaper?	VVM	102	N/A	OK	OK
f. interviews with DNA?	VVM	102	N/A	OK	OK
g. earlier correspondence on the project with the DNA or the UNFCCC secretariat?	VVM	102	N/A	OK	OK
h. Has the chronology of events including time lines been appropriately captured and explained/detailed in the PDD?	VVM	102	N/A	OK	OK
b. Identification of alternatives					
a. Does the approved methodology that is selected by the proposed CDM project activity prescribe	VVM	105	Yes	ОК	OK



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
the baseline scenario and hence no further analysis is required?					
b. If no, does the PDD identify credible alternatives to the project activity in order to determine the most realistic baseline scenario?	VVM	105	N/A	OK	ОК
c. Does the list of alternatives given in the PDD esure that:	VVM	106	-	-	-
 the list of alternatives includes as one of the options that the project activity is undertaken without being registered as a proposed CDM project activity? 	VVM	106	N/A	OK	ОК
ii. the list contains all plausible alternatives that the DOE, on the basis of its local and sectoral knowledge, considers to be viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity?	VVM	106	N/A	ОК	ОК
iii. the alternatives comply with all applicable and enforced legislation?	VVM	106	N/A	OK	ОК
c. Investment analysis					
a. Has investment analysis been used to demonstrate the additionality of the proposed CDM project activity?	VVM	108	Yes.The proposed project activity used the investment analysis to demonstrate the additionality.	OK	ОК
 b. If yes, does the PDD provide evidence that the proposed CDM project activity would not be: 	VVM	108	See Below.	OK	OK
i. the most economically or financially attractive alternative?	VVM	108	Not Applicable.	NA	NA
ii. economically or financially feasible, without the revenue from the sale of certified	VVM	108	Yes. The PDD and the spreadsheet demonstrate that the project is not attractive without the	OK	OK



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
emission reductions (CERs)?			revenue from the sale of certified emission reductions (CERs)		
c. Was this shown by one of the following approaches?	VVM	109	See Below.	OK	OK
 i. The proposed CDM project activity would produce no financial or economic benefits other than CDM-related income. Document the costs associated with the proposed CDM project activity and the alternatives identified and demonstrate that there is at least one alternative which is less costly than the proposed CDM project activity. 	VVM	109	Not Applicable.	NA	NA
ii. The proposed CDM project activity is less economically or financially attractive than at least one other credible and realistic alternative.	VVM	109	Not Applicable	NA	NA
 iii. The financial returns of the proposed CDM project activity would be insufficient to justify the required investment. 	VVM	109	Yes.The PP demonstrated in the spreadsheet that the financial returns of the proposed CDM project activity are insufficient to justify the required investiment.	OK	ОК
d. Is the period of assessment limited to the proposed crediting period of the CDM project activity?	EB 61	Ann 13	No.	OK	ОК
e. Does the project IRR and equity IRR calculations reflect the period of expected operation of the underlying project activity (technical lifetime), or - if a shorter period is chosen - include the fair value of the project activity assets at the end of the assessment period?	EB 61	Ann 13	CAR BQA 1 – According to the Guidelines on the Assessment of Investment Analysis version 5, "The period of assessment should not be limited to the proposed crediting period of the CDM project activity. Both project IRR and equity IRR calculations shall as a preference reflect the	CAR BQA 1	ОК



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			period of expected operation of the underlying project activity (technical lifetime), or if a shorter period is chosen include the fair value of the project activity assets at the end of the assessment period". In the spreadsheet "FCF_PCH_Serra_das_Agulhas rev.xls" the tab 'FICHA-RESUMO' on the cell 'K121' the technical lifetime is 50 years. According to the PDD and the financial spreadsheet, the investment analysis is made considering the period of 30 years.		


	CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
f. D m ar as	poes the IRR calculation include the cost of major maintenance and/or rehabilitation if these re expected to be incurred during the period of ssessment?	EB 61	Ann 13	Yes. The Spreadsheet contains the costs of major maintenance through the O&M costs.	ОК	ОК
g. Do ap th wi	the project participants justify the ppropriateness of the period of assessment in the context of the underlying project activity, without reference to the proposed CDM crediting eriod?	EB 61	Ann 13	Refer to CAR BQA 1.	CAR BQA 1	ОК
h. De va th	boes the cash flow in the final year include a fair alue of the project activity assets at the end of the assessment period?	EB 61	Ann 13	Refer to CAR BQA 1.	CAR BQA 1	ОК
i. Ha wi	las the fair value been calculated in accordance vith local accounting regulations where available, r international best practice?	EB 61	Ann 13	Refer to CAR BQA 1.	CAR BQA 1	ОК
j. Do bo e> re	ooes the fair value calculations include both the ook value of the asset and the reasonable xpectation of the potential profit or loss on the ealization of the assets?	EB 61	Ann 13	Refer to CAR BQA 1.	CAR BQA 1	ОК
k. W re de is pu IR	Vas depreciation, and other non-cash items elated to the project activity, which have been educted in estimating gross profits on which tax s calculated, added back to net profits for the urpose of calculating the financial indicator (e.g. RR, NPV)?	EB 61	Ann 13	Yes.	ОК	ОК
I. Ha IR be fo	las taxation been included as an expense in the RR/NPV calculation in cases where the enchmark or other financial indicator is intended or post-tax comparisons?	EB 61	Ann 13	Yes, it has been included.	OK	ОК



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
m. Are the input values used in all investment analysis valid and applicable at the time of the investment decision taken by the project	EB 61	Ann 13	<u>CL BQA 1</u> – Clarify with evidences the moment of investment decision, in order to guarantee that the input values are the correct ones at this moment	CL BQA 1	OK
participant?			in the project chronology.		
n. Is the timing of the investment decision consistent and appropriate with the input values?	EB 61	Ann 13	Refer to the CL BQA 1.	CL BQA 1	OK
 Are all the listed input values been consistently applied in all calculations? 	EB 61	Ann 13	Yes.	OK	ОК
p. Does the investment analysis reflect the economic decision making context at point of the decision to recomence the project in the case of project activities for which implementation ceases after the commencement and where implementation is recommenced due to consideration of the CDM?	EB 61	Ann 13	Not Applicable.	NA	NA
q. Have project participants supplied the spreadsheet versions of all investment analysis?	EB 61	Ann 13	Yes.	OK	OK
r. Are all formulas used in this analysis readable and all relevant cells be viewable and unprotected?	EB 61	Ann 13	Yes. All formulas and cells are viewable and could be verified by de DOE.	OK	ОК
s. In cases where the project participant does not wish to make such a spreadsheet available to the public has the PP provided an exact read-only or PDF copy for general publication?	EB 61	Ann 13	Not Applicable.	NA	NA
t. In case the PP wishes to black-out certain elements of the publicly available version, is it justifiable?	EB 61	Ann 13	Not Applicable.	NA	NA
u. Was the cost of financing expenditures (i.e. loan repayments and interest) included in the	EB 61	Ann 13	Not applicable.	NA	NA



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
 calculation of project IRR? v. In the calculation of equity IRR, has only the portion of investment costs which is financed by equity been considered as the net cash outflow? 	EB 61	Ann 13	Yes.	ОК	ОК
w. Has the portion of the investment costs which is financed by debt been considered a cash outflow in the calcualtion of equity IRR? (this is not allowed)	EB 61	Ann 13	No.	ОК	ОК
x. Was a pre-tax benchmark be applied?	EB 61	Ann 13	No.	OK	OK
y. In cases where a post-tax benchmark is applied, is actual interest payable taken into account in the calculation of income tax?	EB 61	Ann 13	<u>CAR BQA 2</u> – Interest was not calculated according to the prevailing commercial interest rates in the region, preferably by assessing the cost of other debt recently acquired by the project developer and by applying a debt-equity ratio	CAR BQA 2	ОК
z. In such situations, was interest calculated according to the prevailing commercial interest rates in the region, preferably by assessing the cost of other debt recently acquired by the project developer and by applying a debt-equity ratio used by the project developer for investments taken in the previous three years?	EB 61	Ann 13	Refer to CAR BQA 2.	CAR BQA 2	ОК
aa. In cases where a benchmark approach is used is the applied benchmark appropriate to the type of IRR calculated?	EB 61	Ann 13	Refer to CAR BQA 2.	CAR BQA 2	ОК
bb. Has local commercial lending rates or weighted average costs of capital (WACC) selected as appropriate benchmarks for a project IRR?	EB 61	Ann 13	Refear to CAR BQA 2.	CAR BQA 2	ОК



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
cc. Has required/expected returns on equity selected	EB	Ann	Yes.	OK	OK
as appropriate benchmark for an equity IRR?	61	13			
dd. In case benchmarks supplied by relevant national	EB	Ann	Not Applicable.	NA	NA
authorities selected is it applicable to the project	61	13			
activity and the type of IRR calculation					
presented?		A			
ee. In the cases of projects which could be	EB 61	Ann	Yes.	OK	OK
participant is the henchmark applied based on	01	13			
parameters that are standard in the market?					
ff Whether a company-specific benchmark or a	FB	Ann	Not Applicable	NA	NA
benchmark based on parameters that are	61	13			
standard in the market is suitable in the context	-	_			
of the underlying project activity?					
gg. Have internal company benchmarks/expected	EB	Ann	Not Applicable.	NA	NA
returns (including those used as the expected	61	13			
return on equity in the calculation of a weighted					
average cost of capital - WACC) been applied in					
cases where there is only one possible project					
bh In such cases, have these values been used for	EB	Ann	Not Applicable	ΝΔ	ΝΛ
similar projects with similar risks developed by	61	13		11/7	
the same company or, if the company is brand	01	10			
new, would have been used for similar projects in					
the same sector in the country/region?					
ii. Has a minimum clear evidence of the resolution	EB	Ann	Not Applicable.	NA	NA
by the company's Board and/or shareholders	61	13			
been provided to the effect as above?					
jj. Has a thorough assessment of the financial	EB	Ann	Not Applicable.	NA	NA



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
statements of the project developer - including the proposed WACC - to assess the past financial behavior of the entity during at least the last 3 years in relation to similar projects been conduted?	61	13			
kk. If the benchmark is based on parameters that are standard in the market, is the cost of equity determined either by: (a) selecting the values provided in Appendix A; or by (b) calculting the cost of equity using best financial practices, based on data sources which can be clearly validated by the DOE, while properly justifying all underlying factors?	EB 61	Ann 13	Yes.	ОК	ОК
II. If a company internal benchmark is used, are the values in the table in Appendix A used, as a simple default option?	EB 61	Ann 13	Not applicable.	NA	NA
mm. If a company's internal benchmark is used for the expected return on equity, is the cost of debt based on the weighted average cost of debt financing of the legal entity owning the CDM project activity?	EB 61	Ann 13	Not applicable.	NA	NA
nn. For loans, is the weighted average cost of outstanding long-term debt used?	EB 61	Ann 13	Not applicable.	NA	NA
oo. For bonds, is the weighted average yield of the bonds during the last three months prior to the submission of the CDM-PDD for validation or prior to the investment decision, whichever is earlier, used? The use of bonds to determine the cost of debt is only appropriate for corporate	EB 61	Ann 13	Not applicable.	NA	NA



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
bonds issued in the host country of the CDM					
project.					
pp. In cases where the debt finance structure of the	EB	Ann	Not applicable.	NA	NA
project is not yet available (e.g. a letter of intent	61	13			
for debt funding is not available), the cost of debt					
can be assumed as the commercial lending rate					
in the country or the yield of a 10 year bond					
issued by the government of the host country or,					
if this is not available, the bond with the maturity					
which is closest to 10 years. Was the following					
documented in the CDM-PDD?					
i. for bonds: the key parameters of the bond	EB	Ann	Not applicable.	NA	NA
including the time of maturity, yield,	61	13			
registration issuance in the financial system					
and set-up in the market;					
ii. for loans from a financial institution: the	EB	Ann	Not applicable.	NA	NA
contract of lending between the financial	61	13			
institution and the legal entity owning the					
assets of the project activity, or, in absence					
of the contract, a letter from the bank					
stating its intention to award the loan and					
the key terms for the loan;					
iii. for debt financing from a parent company:	EB	Ann	Not applicable.	NA	NA
the transfer of capital to the legal entity,	61	13			
documented with the contract of lending					
between the parent company and the legal					
entity owning the assets of the project					
activity and/or the parameters of the					
corporate bonds as mentioned above. (This					



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
latter option is only valid for corporate bonds issued in the host country of the CDM project activity)					
qq. If the benchmark is based on parameters that are standard in the market, is the cost of debt e calculated as the cost of financing in the capital markets (e.g. commercial lending rates and guarantees required for the country and the type of project activity concerned), based on documented evidence from financial institutions with regard to the cost of debt financing of comparable projects?	EB 61	Ann 13	Yes.	ОК	ОК
rr. In cases where this data is not available, is the commercial lending rate in the host country used to calculate the cost of debt?	EB 61	Ann 13	Not applicable.	NA	NA
ss. If a company's internal benchmark is used for the expected return on equity, is the percentage of debt financing and equity financing reflect the long-term debt/equity finance structure of the legal entity owning the assets of the project activity?	EB 61	Ann 13	Not applicable.	NA	NA
tt. If: (a) the legal entity owning the assets of the project activity has balance sheets audited by a third party within two years prior to the submission of the CDM-PDD for validation; and (b) the accounting books of the legal entity reflect at least the total value of all the assets needed for the project activity. Is the percentage determined based on the latest balance sheet	EB 61	Ann 13	Not applicable.	NA	NA



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
provided under local fiscal/accounting standards and rules?					
uu. If the debt/equity finance structure is not yet available, was 50% debt and 50% equity financing assumed as a default?	EB 61	Ann 13	Not applicable.	NA	NA
vv. Is the benchmark based on parameters that are standard in the market?	EB 61	Ann 13	See below.	OK	OK
ww. If yes, is the typical debt/equity finance structure observed in the sector of the country used?	EB 61	Ann 13	Yes.	OK	ОК
xx. If such information is not readily available, was 50% debt and 50% equity financing assumed as a default?	EB 61	Ann 13	Not Applicable.	NA	NA
yy. Has an investment comparison analysis and not a benchmark analysis used when the proposed baseline scenario leaves the project participant no other choice than to make an investment to supply the same (or substitute) products or services?	EB 61	Ann 13	Not Applicable.	NA	NA
zz. Have variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues been subjected to reasonable variation (positive and negative) and the results of this variation been presented in the PDD and be reproducible in the associated spreadsheets?	EB 61	Ann 13	Yes.	ОК	ОК
aaa. Have a corrective action been raised for a variable to be included in the sensitivity analysis which constitute less than 20% and have a	EB 61	Ann 13	Not Applicable.	NA	NA



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
material impact on the analysis ?				Contor	Contor
bbb. Is the range of variations selected is	EB	Ann	Yes.	OK	OK
reasonable in the project context?	61	13			
ccc. Dos the variations in the sensitivity	EB	Ann	Yes.	OK	OK
analysis at least cover a range of +10% and -	61	13			
10%, unless this is not deemed appropriate in the					
context of the specific project circumstances?					
ddd. In cases where a scenario will result in the	EB	Ann	Not Applicable.	NA	NA
project activity passing the benchmark or	51	58			
becoming the most financially attractive					
alternative, is an assessment done of the					
probability of the occurrence of this scenario in					
in the presented investment analysis, taking into					
consideration correlations between the variables					
as well as the specific socio-economic and policy					
context of the project activity?					
eee. Was the plant load factor defined ex-ante	EB	Ann	See Below.	OK	ОК
in the CDM-PDD according to one of the	48	11		-	_
following options:					
i. The plant load factor provided to banks	EB	Ann	CAR BQA 03 – Explain how was determined the	CAR	OK
and/or equity financiers while applying the	48	11	plant load factor.	BQA 3	
project activity for project financing, or to					
the government while applying the project					
activity for implementation approval?					
ii. The plant load factor determined by a third	EB	Ann	Refer to CAR BQA 03.	CAR	OK
party contracted by the project participants	48	11		BQA 3	
(e.g. an engineering company)?				01/	
ttt. Was a thorough assessment of all parameters	VVM	111	Yes. All parameters and assumptions used in	OK	OK



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
and assumptions used in calculating the relevant financial indicator, and determine the accuracy and suitability of these parameters using the available evidence and expertise in relevant accounting practices conducted?			calculating the relevant indicator are suitable and accurate.		
ggg. Were the parameters cross-checked agains third-party or publicly available sources, such as invoices or price indices?	VVM	111	CAR BQA 04 – Present all evidences to support the followings input values. Make sure that all information and evidences are based on the relevant information available at the time of the investment decision and not information available at an earlier or later point. Provide the dates of each evidence. Plant Export Capacity (MW)= 28; Plant Capacity Factor=47,8%; Transmission Loss (CCEE)=0%; Power Output (MWh)=117,296 PPA price (R\$/MWh)=151,62 Obras Civis= 60,621.02 x10 ³ R\$ Equipamentos Eletrônicos= 33,340.00 x10 ³ R\$ Meio Ambiente= 3,701.97 x10 ³ R\$ Custos Indiretos= 11,287.50 x10 ³ R\$ Sistema de Transmissão Associado= 17,139.35 x10 ³ R\$ Taxa de Juros=12% Período de Utilização da Usina= 50 anos Custo da Energia Gerada=4,970.14 x10 ³ R\$ Taxa de Câmbio=1.7 R\$/US\$ O&M (R\$/MWh)= 5.17 Environmental/Managerial (R\$/year)= 1,248,072	CAR BQA 4	ОК



VALIDATION REPORT

BUREAU VERITAS

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			Insurance (% of assets)=0.27% TUSD (R\$/kW/month)= 6.28 ANEEL= 385.7		



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
hhh. Were feasibility reports, public announcements and annual financial reports related to the proposed CDM project activity and the project participants reviewed?	VVM	111	Refer to CAR BQA 04.	CAR BQA 04	ОК
iii. Was the correctnes of computations carried out and documented by the project participants assessed?	VVM	111	Yes. Although, refer to CAR BQA 04.	CAR BQA 04	OK
jjj. Was the sensitivity analysis by the project participants to determine under what conditions variations in the result would occur, and the likelihood of these conditions assessed?	VVM	111	Yes. PP has applied the variables to significant variations and in addition determined the value of the variation that would reach the IRR for each variable analysed. All values were validated and it is unlikely that these values could occur.	ОК	ОК
kkk. Is the type of benchmark applied is suitable for the type of financial indicator presented?	VVM	112	Yes.	OK	OK
III. Do any risk premiums applied determining the benchmark reflect the risks associated with the project type or activity?	VVM	112	Yes.	OK	ОК
mmm. To determine this, was it assessed whether it is reasonable to assume that no investment would be made at a rate of return lower than the benchmark by:	VVM	112	See Below.	OK	ОК
 assessing previous investment decisions by the project participants involved? 	VVM	112	Not Applicable.	OK	OK
ii. determining whether the same benchmark has been applied?	VVM	112	Not Applicable.	OK	OK
iii. determining if there are verifiable circumstances that have led to a change in the benchmark?	VVM	112	Not Applicable.	OK	OK



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
nnn. Did the project participants rely on values from Feasibility Study Reports (FSR) that are approved by national authorities for proposed CDM project activities?	VVM	113	<u>CL BQA 02</u> - Did the project participants rely on values from Feasibility Study Reports (FSR) that are approved by national authorities for proposed CDM project activities?	CL BQA 02	OK
ooo. If yes:	VVM	113	See Below.	OK	OK
 i. has the FSR been the basis of the decision to proceed with the investment in the project, i.e. that the period of time between the finalization of the FSR and the investment decision is sufficiently short for the DOE to confirm that it is unlikely in the context of the underlying project activity that the input values would have materially changed? 	VVM	113	Refer to CL BQA 02.	CL BQA 02	ОК
ii. Are the values used in the PDD and associated annexes fully consistent with the FSR?	VVM	113	Refer to CL BQA 02.	CL BQA 02	ОК
iii. If not, was the appropriateness of the values validated?	VVM	113	Refer to CL BQA 02.	CL BQA 02	OK
iv. On the basis of its specific local and sectoral expertise, is confirmation provided, by cross-checking or other appropriate manner, that the input values from the FSR are valid and applicable at the time of the investment decision?	VVM	113	Refer to CL BQA 02.	CL BQA 02	ОК
d. Barrier analysis					
a. Has barrier analysis been used to demonstrated the additionality of the proposed CDM project activity?	VVM	115	The additionality of the project activity has not been demonstrated by barriers.	ОК	OK



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
b. If yes, does the PDD demonstrate that the proposed CDM project activity faces barriers that:	VVM	115	The additionality of the project activity has not been demonstrated by barriers.	OK	OK
 prevent the implementation of this type of proposed CMD project activity? 	VVM	115	The additionality of the project activity has not been demonstrated by barriers.	OK	OK
ii. do not prevent the implementation of at least one of the alternatives?	VVM	115	The additionality of the project activity has not been demonstrated by barriers.	OK	OK
c. Are there any issues that have a clear direct impact on the financial returns of the project activity, other than: risk related barriers, for example risk of technical failure, that could have negative effects on the financial performance; or barriers related to the unavailability of sources of finance for the project activity? {If yes, these issues cannot be considered barriers and shall be assessed by investment analysis. [Refer to (6.c) above]}	VVM	116	The additionality of the project activity has not been demonstrated by barriers.	ОК	ОК
d. Were the barriers determined as real by:	VVM	117	The additionality of the project activity has not been demonstrated by barriers.	OK	ОК
 assssing the available evidence and/or undertaking interviews with relevant individuals (including members of industry associations, government officials or local experts if necessary) to determine whether the barriers listed in the PDD exist? 	VVM	117	The additionality of the project activity has not been demonstrated by barriers.	ОК	ОК
ii. ensuring that existence of barriers is substantiated by independent sources of data such as relevant national legislation, surveys of local conditions and national or international statistics?	VVM	117	The additionality of the project activity has not been demonstrated by barriers.	OK	OK



	CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
	 iii. Is existence of a barrier substantiated only by the opinions of the project participants? (If yes, this barrier cannot be considered as adequately substantiated) 	VVM	117	The additionality is not demonstrated by barrier analysis.	OK	ОК
e.	Were the barriers determined as preventing the implementation of the project activity but not the implementation of at least one of the possible alternatives by applying local and sectoral expertise to judge whether a barrier or set of barriers would prevent the implementation of the proposed CDM project activity and would not equally prevent implementation of <i>at least one of</i> the possible alternatives, in particular the identified baseline scenario?	VVM	117	The additionality is not demonstrated by barrier analysis.	ОК	ОК
	e. Common practice analysis					
a.	Is this a proposed large-scale, or first-of-its kind small-scale project activity?	VVM	119	It is a large scale project activity.	OK	OK
b.	If yes, was common practice analysis carried out as a credibility check of the other available evidence used by the project participants to demonstrate additionality?	VVM	119	Yes. A common practice analysis was carried out. However, see CAR16.	CAR16	ОК
с.	Was it assessed whether the geograpphical scope (e.g. defined region) of the common practice analysis is appropriate for the assessment of common practice related to the project activity's technology or industry type? (For certain technologies the relevant region for assessment will be local and for others it may be transnational/global.	VVM	120	Yes. The geographical scope is the entire host country and is appropriate to this kind of project activity.	ОК	ОК



	CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
d.	Was a region other than the entire host country chosen?	VVM	120	No	OK	OK
e.	If yes, was the explanation why this region is more appropriate assessed?	VVM	120	N/A	OK	OK
f.	Using official sources and local and industry expertise, was it determined to what extent similar and operational projects (e.g., using similar technology or practice), other than CDM project activities, have been undertaken in the defined region?	VVM	120	See CAR16.	CAR16	ОК
g.	Are similar and operational projects, other than CDM project activities, already "widely observed and commonly carried out" in the defined region?	VVM	120	See CAR16.	CAR16	ОК
h.	If yes, was it assessed whether there are essential distinctions between the proposed CDM project activity and the other similar activities?	VVM	120	See CAR16.	CAR16	ОК
7.	Monitoring plan					
a.	Does the PDD include a monitoring plan?	VVM	122	Yes	OK	OK
b.	Is this monitoring plan based on the approved monitoring methodology applied to the proposed CDM project activity?	VVM	122	Yes. The monitoring plan is based on ACM0002 v12.1.0.	OK	OK
C.	Were the list of parameters required by the the selected methodology identified?	VVM	123	Yes	OK	ОК
d.	Does the monitoring plan contains all necessary parameters?	VVM	123	Yes	OK	OK
e.	Are the parameters clearly described?	VVM	123	See CAR24.	CAR24	OK
f.	Does the means of monitoring described in the plan comply with the requirements of the methodology?	VVM	123	See CAR26.	CAR26	ОК



CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
g. Are all data and parameters monitored as per monitoring methodology?	ACM	0002	See CAR26.	CAR26	ОК
h. Are all data collected as part of monitoring archived electronically and kept at least for 2 years after the end of the last crediting period?	ACM	0002	It is not clear in the PDD. So, <u>CL25</u> : Please, include in the PDD the information that the data will be kept at least for 2 years after the end of the last crediting period.	CL25	ОК
i. Are 100% of the data monitored, if not indicated otherwise?	ACM	0002	Yes	OK	OK
j. Are measurements conducted with calibrated measurement equipment according to relevant industry standards?	ACM	0002	See CAR26.	CAR26	ОК
k. Are the monitoring provisions in the tools referred to in the methodology correctly applied?	ACM	0002	Not applicable. The EF is fixed ex ante.	OK	OK
I. Are the monitoring arrangements described in the monitoring plan feasible within the project design?	VVM	123	Yes	OK	ОК
m. Are the following means of implementation of the monitoring plan sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified:	VVM	123	-	-	-
 data management procedures? 	VVM	123	Yes	OK	OK
ii. quality assurance procedures?	VVM	123	Yes	OK	OK
iii. quality control procedures?	VVM	123	Yes	OK	OK
8. Sustainable development					
a. Does the CDM project activity assists Parties not included in Annex I to the Convention in achieving sustainable development?	VVM	125	Please refer to item 1.b. above.	OK	ОК
b. Does the letter of approval by the DNA of the	VVM	126	Please refer to item 1.b. above.	OK	OK



Draft Final **CHECKLIST QUESTION** Ref. § COMMENTS Concl Concl host Party confirm the contribution of the proposed CDM project activity to the sustainable development of the host Party? 9. Local stakeholder consultation a. Were local stakeholders (public, including VVM 128 See items 3.gg, 3.hh and 3.ii, above, for the OK OK individuals, groups or communities affected, of analysis of the local stakeholder consultation likely to be affected, by the proposed CDM process. project activity or actions leading to the implementation of such an activity) invited by the PPs to comment on the proposed CDM project activity prior to the publication of the PDD on the **UNFCCC** website? b. Have comments by local stakeholders that can See items 3.gg, 3.hh and 3.ii, above, for the VVM 129 OK OK reasonably be considered relevant for the analysis of the local stakeholder consultation proposed CDM project activity been invited? process. c. Is the summary of the comments received as See items 3.gg, 3.hh and 3.ii, above, for the OK VVM 129 OK provided in the PDD complete? analysis of the local stakeholder consultation process. d. Have the project participants taken due account See items 3.gg, 3.hh and 3.ii, above, for the VVM 129 OK OK of any comments received and described this analysis of the local stakeholder consultation process in the PDD? process. 10. Environmental impacts Yes. The DOE had access to EIA/RIMA, issued in a. Have the project participants VVM OK OK submitted 131 documentation on the analysis of the August/2003, and to PCA, issued in May/2011. environmental impacts of the project activity? b. Have the project participants undertaken an VVM 132 Yes. However, see CL23. CL23 OK analysis of environmental impacts? c. Does the host Party require an environmental VVM 132 Yes. However, see CL23. CL23 OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
impact assessment?					
d. If yes, have the project participants undertaken	VVM	132	Yes. However, see CL23.	CL23	OK
an environmental impact assessment?					



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Table 2 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in Table 1	Summary of project owner response	Validation team conclusion
<u>CAR01</u> : PDD v01, Section A.2, does not make reference to the emission sources and gases, described in Section B.3.	EB41 Ann12	Considering the DOE comments, the Project Participants (PPs) revised the PDD to include emission sources and gases following ACM0002 and as described in section B.3. of the PDD.	PDD v02, Section A.2, makes reference to CH4, as per ACM0002. CAR01 is closed.
<u>CAR02</u> : In PDD v01, Section A.2, the second paragraph, related to the PP's views on the contribution of project activity to sustainable development, states "the project [] <u>has</u> <u>developed</u> the regional economy", although it is not yet operational.	EB41 Ann12	To the understanding of the PPs, the contribution of the project activity to sustainable development starts before the operation start of the project. Before small hydropower plants become operational, many diagnostics and environmental studies shall be conducted for the identification of the impacts caused by the project implementation. Furthermore, many social and environmental programs shall be implemented in order to mitigate these impacts. These actions, as result of the licensing process, aim the local environmental sustainability. In addition, these actions contribute for the creation of jobs and drive economy of the region where the project is being implemented.	Explanation provided on how PPs view the contribution of the project activity to sustainable development justifies the original text on PDD v01, so it has been accepted. CAR02 is closed.



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		Therefore, the contribution of Serra das Agulhas project for sustainable development occurs not only as result of the renewable energy generation. Detailed description on how the project contributes to sustainable development is presented in the report called "Anexo III", prepared by the PPs for the issuance of the Letter of Approval of the project. Considering explanation above, the PDD was not revised.	
<u>CAR03:</u> PDD v01, Section A.4.1.4, mentions ANEEL Dispatch 675/2003 as the source of both locations. Nevertheless, power house's coordinates are based on the ANEEL's technical summary of the consolidated basic project, dated 31/01/2011.	EB41 Ann12	ANEEL dispatch nr. 675/2003 presents the geographical coordinates of the dam exactly the same as presented in the ANEEL's technical summary of the consolidated project design (from the Portuguese <i>Projeto Básico Consolidado –</i> <i>PBC</i>) dated May 2011. ANEEL dispatch nr. 675/2003 is available at: < <u>http://www.aneel.gov.br/cedoc/dsp20036</u> <u>75.pdf</u> >. However, since the ANEEL's technical summary presents a more complete description of the geographical coordinates (dam and power house), the PPs revised the source of the geographical coordinates of the PDD. Please refer to the second version of the document.	Footnote 3 informs another source for the project activity's geographical coordinates. CAR03 is closed.
CAR04: PDD v01, Section A.4.3, does not	EB41	The PDD was revised as requested by	Transfer of technology and know-
include a description of how environmentally safe	Ann12	DOE. Please refer to the second version	how has been addressed in PDD



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and sound technology, and know-how to be used, is transferred to the Host Party.		of the document.	v02, Section A.4.3. CAR04 is closed.
<u>CAR05:</u> PDD v01, Section A.4.3, does not include a detailed description of the scope of activities/measures that are being implemented within the project activity.	EB41 Ann12	As discussed during the audit visit, no activities/measures have been implemented in the project site for the project construction (only environmental diagnosis and social/environmental programs implemented for the Construction License issuance). Currently, the project sponsor is waiting for the Construction License issuance by the environmental agency, which was requested on May 17 th , 2011 by the project sponsor. In parallel, the project sponsor is analyzing quotations received for the equipment purchase and is negotiating the EPC contract. Until the Construction License is issued and EPC contract is signed, the project construction cannot start. Although none activities/measures were taken at the project site, the PPs included in section A.4.3 the main activities that will be conducted for the project implementation as described in chapter 6 of the PBC dated May 2011. Please refer to the second version of the PDD.	Description of the scope of activities/measures being implemented within the project activity has been included in PDD v02, Section A.4.3. CAR05 is closed.
<u>CAR06</u> : In PDD v01, Section A.4.3, list of main equipments is not complete (e.g. the ones	EB41 Ann12	Considering the DOE comments, the PPs included information related to the	List of main equipments has been revised, in PDD v02, Section A.4.3.
necessary for connecting the plant to the grid).		transmission lines according to the PBC	CAR06 is closed.
Besides, the arrangement of the main equipments		of the project. Please also refer to the	



has not been included.	PPs response in CAR08, CAR11 and	
	CL08.	



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CAR07: PDD v01, Section A.4.3, does not include information about the age and average lifetime of the equipments, load factors and efficiencies. EB41 Ann12	EB41 Ann12	First response (17/01/2012):Since equipment of the project was not purchased and the manufacturer was not defined yet, the PPs considered the average lifetime of the main equipment (turbine and generator) based on the ANEEL's publication: "Manual de controle patrimonial do setor elétrico" available at 	First analysis: What has been named as "power load factor" of the generator is actually its power factor. Load factor has not yet been informed. <i>CAR07 is not closed.</i> Second analysis: Plant load factor has been informed, in Section A.4.3. CAR07 is closed.
		The table XVI of the document (page 213), presents the depreciation rates. Through the depreciation rates, it is possible to reach the average lifetime of generator, which is 30 years and hydraulic turbine, which is 40 years.	
		Furthermore, age of equipment was not included in the PDD since turbines and generators of Serra das Agulhas project were not purchased yet.	
		Efficiencies of turbines/generators and power load factor of the generator were also included in table 3 of section A.4.3 based on the ANEEL's technical	



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		summary of the PBC of the project.	
		Second response (14/02/2012):	
		The PPs considered in table 3 "technical description of the project activity" of the PDD the same description of the ANEEL's technical summary. Therefore, for the generator we have:	
		- Load factor: 0.9	
		- Average efficiency: 90%	
		Please refer to the third version of the PDD.	
		Furthermore, the PPs included the plant load factor (PLF) in table 3 of the PDD. Please refer to the third version of the document.	
CAR08: PDD v01, Section A.4.3, does include	EB41	Considering the DOE comments, the	Monitoring equipments and their



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the monitoring equipments and their location.	Ann12	PDD was revised to include information related to the monitoring equipment and their location. Please also refer to the PPs response in CAR06, CAR11 and CL08.	location have been included in Section A.4.3 of PDD v02. CAR08 is closed.
<u>CAR09</u> : In PDD v01, Section A.4.3, second paragraph refers to incorrect figure number (Figure 4).	EB41 Ann12	Correction was made in the PDD (version 2).	In PDD v02, Section A.4.3, reference to Figure 3 has been corrected. CAR09 is closed.
<u>CAR10</u> : PDD v01, Section A.4.3, does not include the emissions sources and the greenhouse gases involved in the project activity.	EB41 Ann12	Considering the DOE comments, GHG emissions in the baseline scenario and the project activity scenario were included in the PDD. Please refer to the second version of the document.	Information on emission sources and GHG involded in the project activity has been included in Section A.4.3 of PDD v02. CAR10 is closed.
<u>CAR11</u> : PDD v01, Section A.4.3, does not include existing and forecast energy and mass flows and balances of the systems and equipments included in the project activity.	EB41 Ann12	The PDD was revised considering the DOE requests. Please also refer to the PPs response in CAR06, CAR08 and CL08.	Section A.4.3, in PDD v02, has been revised. CAR11 is closed.
<u>CAR12</u> : PDD v01, Section A.4.4 (and other sections that refer to 2013 as first year of operation), needs to be updated, in order to reflect the fact the plant will not be operational until 2014. Besides, provide updated implementation schedule of the project activity.	EB41 Ann12	<i>First response (17/01/2012):</i> In fact, the starting date of the project commercial operation has changed considering some delays for the project implementation start. The new estimated date for the project becomes fully operational is on January 1 st , 2014. This estimative is based on the EPC contract signature in March 2012 and around 22-24 months for the project construction as described in the ANEEL's technical summary and PBC dated May 2011. Therefore, the PDD was revised (version 2). Please also refer to the PPs response	<u>First analysis:</u> Section A.4.4, of PDD v02, has been revised. However, updated implementation schedule has not been provided. <i>CAR12 is not closed.</i> <u>Second analysis:</u> Implementation schedule, dated Feb/2012, has been provided. CAR12 is closed.



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CAR13: In PDD v01, Section A.4.4, the	EB41	in CAR13 and CL20. <u>Second response (14/02/2012):</u> The PPs attached to this response the estimated schedule of the project implementation dated February 2012. Since the estimated date for the project	In PDD v02, Section A.4.4, annual
calculations have taken into consideration the incorrect number of days (181 and 184) in the first and last years of the crediting period.	Ann12	become fully operational has changed for January 2014, the calculation of emission reductions has also been revised in the PDD. Please also refer to the PPs response in CAR 12 and CL20. Furthermore, the PPs revised the emission reductions for the years of 2016 and 2020, since they are leap years. Please refer to the second version of the CERs spreadsheet and PDD.	estimations of emission reductions have been revised. CAR13 is closed.
<u>CAR14</u> : PDD v01, Section A.4.4, should not include any paragraphs, but the table. Besides, text in last line of the table needs to be corrected, as per EB41 Ann12.	EB41 Ann12	To the understanding of the PPs, there is no restriction to include text in section A.4.4. However, considering the DOE comments, the PPs revised section A.4.4 of the PDD.	Paragraphs have been deleted and last line of the table corrected. CAR14 is closed.
CAR15: PDD v01, Section A.4.5, comments on "no divergence of Official Development Assistance", whereas it is only relevant when public funding from Parties included in Annex 1 is involved, which is not the case.	EB41 Ann12	Considering DOE comments, the PPs withdrawal sentence from the PDD. Please refer to the second version of the document.	Section A.4.5, in PDD v02, has been revised. CAR15 is closed.
<u>CAR16</u> : PDD v01, Section B.1, lists Version 5.2 of the "Tool for the demonstration and assessment of additionality", which is no longer valid. As per EB65 Meeting Report. §88, Version	EB41 Ann12	At the time of the validation start (GSP start) of the project, the revision of the methodological tool "Demonstration and assessment of additionality" (version	Section B.1, of PDD v02, refers to latest version of each tool. CAR16 is closed.



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6.0.0 shall be applied.		6.0.0) was not made available. Therefore, the PPs revised the PDD following the updated version of the Addtionality Tool, which includes the revision of the common practice analysis and information related to the project reservoir (single or multiple) mainly. Furthermore, all tools listed in section B.1 were updated. Please refer to the second version of the document. Spreadsheet presenting the common practice analysis is also attached to this response.	
<u>CAR17</u> : PDD v01, Section B.2, does not list the applicability conditions as presented in ACM0002 v12.1.0. Besides, non-applicability conditions should be included as well.	EB41 Ann12	The PDD was revised to update the version of ACM0002, which includes the applicability conditions of the methodology. Please refer to the second version of the document.	Applicability conditions have been correctly described and addressed in Section B.2, in PDD v02. CAR17 is closed.
<u>CAR18</u> : PDD v01, Section B.2, does not explain the documentation that has been used neither provides the references to the document or include the documentation in Annex 3.	EB41 Ann12	Considering the DOE comments, the PPs revised section B.2 to include the PCB of the project as reference of the project design and power density calculation. Please refer to the second version of the PDD.	The use of the document describing the consolidated project design has been informed, in Section B.2, of PDD v02. CAR18 is closed.
<u>CAR19</u> : PDD v01, Section B.3, identifies net electricity generation supplied to the grid as EG_y , whereas ACM0002 v12.1.0 identifies it as $EG_{facility,y}$.	EB41 Ann12	The figure in section B.3 was revised accordingly. Please refer to the second version of the PDD.	Electricity generation supplied to the grid is now identified as EG _{facility,y} , in Section B.3, PDD v02. CAR19 is closed.
<u>CAR20</u> : Equation 1, in PDD v01, Section B.6.1, states $ER_y = BE_y - PE_y - LE_y$, whereas Equation (11), in ACM0002 v12.1.0, states $ER_y = BE_y - PE_y$. Besides, adjust Section B.6.3, accordingly.	EB41 Ann12	Sections B.6.1 and B.6.3 were revised according to ACM0002. Please refer to the second version of the PDD.	Emission reductions equation has been adjusted in sections B.6.1 and B.6.3, in PDD v02. CAR20 is closed.



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<u>CAR21</u> : PDD v01, Section B.6.1, Equation 8, presents a formula that should be identified as $PE_{HP,y}$ instead of PE_{y} . See Equation (3) of ACM0002 v12.1.0). The same identification applies in the sentence right before Equation 9. Besides, adjust Section B.6.3, accordingly.	EB41 Ann12	Parameter of project emissions from water reservoir was revised in sections B.6.1, B.6.3 and equations. Please refer to the second version of the PDD.	Emissions from water reservoirs of HPPs are now identified as PE _{HP,y} , in sections B.6.1 and B.6.3, PDD v02. CAR21 is closed.
CAR22: PDD v01, Section B.6.2, presents an incomplete description of A _{BL} .	EB41 Ann12	First response (17/01/2012):Parameters Cap _{BL} and A _{BL} presented in the tables of section B.6.2 were revised according to ACM0002. Tables were also revised according to the methodology. Please refer to the second version of the PDD.Second response (14/02/2012): The PPs revised description of A _{BL} parameter in section B.6.2 according to ACM0002. Please refer to the third version of the PDD.	First analysis:"when the reservoir is full" is stillmissing in the description of A_{BL} , inSection B.6.2, PDD v02.CAR22 is not closed.Second analysis: A_{BL} description has beencomplemented in Section B.6.2,PDD v03.CAR22 is closed.
<u>CAR23</u> : PDD v01, Section B.7.1, does not include EF _{grid,CM,y} , a parameter which is required to be monitored, according to ACM0002 v12.1.0.	EB41 Ann12	<u>First response (17/01/2012):</u> The first version of the PDD did not include the $EF_{grid, CM, y}$ as a parameter to be monitored since the data vintage chose by the PPs for the CO ₂ emission factor of the grid was <i>ex-ante</i> . However, as discussed during the audit visit, the PPs changed opinion, and opted for the <i>ex- post</i> data vintage based on official source of data (the Brazilian DNA, "CIMGC" from the Portuguese <i>Comissão Interministerial</i> <i>de Mudanca Global do Clima</i>). Therefore,	<u>First analysis:</u> Considering EF _{grid,CM,y} will be determined ex post, during monitoring, its value will be updated annually. However, Section B.7.1, in PDD v02, states an "hourly and yearly" monitoring frequency. <i>CAR23 is not closed.</i> <u>Second analysis:</u> Monitoring frequency of EF _{grid,CM,y} has been revised in Section B.7.1,



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		the PDD was revised accordingly. Please refer to the second version of the document.	PDD v03. CAR23 is closed.
		<u>Second response (14/02/2012)</u> : The "hourly and yearly" monitoring frequency included in the $EF_{grid,CM,y}$ parameter table was considered in section B.7.1 since some parameters used for the $EF_{grid,CM,y}$ calculation are monitored in hourly frequency and others in yearly frequency as presented in the "Tool to calculate the emission factor for an electricity system". However, considering the DOE comments, the PPs revised section B.7.1 for yearly monitoring frequency. Please refer to the third version of the PDD.	
<u>CAR24</u> : PDD v01, Section B.7.1, presents a description for $EG_{facility,y}$ which is not in accordance with ACM0002 v12.1.0.	EB41 Ann12	Description of EG _{facility,y} parameter was revised according to ACM0002. Please refer to the second version of the PDD.	Correct description of EG _{facility,y} is provided in Section B.7.1, PDD v02. CAR24 is closed.
<u>CAR25</u> : PDD v01, Section B.7.1, presents incorrect source of data for A _{PJ} .	EB41 Ann12	Source of data for the A_{PJ} parameter was revised according to ACM0002. Please refer to the second version of the PDD.	Correct source of data of A _{PJ} is provided in Section B.7.1, PDD v02. CAR25 is closed.
<u>CAR26:</u> PDD v01, Section B.7.1, $EG_{facility,y}$ table, presents measurement and QA/QC procedures which are not in accordance with ACM0002 v12.1.0. Besides, information on measurement procedures is incomplete, considering EB41 Ann12, B.7.1 (b).	EB41 Ann12	<i>First response (17/01/2012):</i> As explained in the 1 st version of the PDD, net electricity generation of the project activity can be checked by internal control and sales receipt OR by documents from the Chamber of Electric Energy Commercialization (from the	First analysis: Revisions made to "Measurement procedures" and "QA/QC procedures", Section B.7.1, of PDD v02, do yet comply with ACM0002 and EB41 Ann12. <i>CAR26 is not closed.</i>



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	Portuguese Câmara Comercializadora de Energia Elétrica – CCEE). Then, sales of receipt means the same of "records for sold electricity" mentioned in ACM0002. The PPs did not include the exact excerpt of ACM0002 ("cross check measurement results with records for sold electricity") only, since sales of receipt may not represent the net electricity dispatched to the grid by the project. It is really common, in the Brazilian electric sector, power generators negotiate the electricity sold based on the assured energy of the project. In this case, sales of receipt may not represent the quantity of electricity in fact exported to the grid but the electricity negotiated under the Power Purchase Agreements (PPAs). Therefore, the sales of receipt will always have the same amount of electricity even if the project generates more or less electricity. Since there are no signed PPAs for Serra das Agulhas project and the negotiation of electricity is not defined yet, the PPs decided to consider the internal controls which can be cross-checked by sales of receipt OR by data from CCEE (an official source of data). Considering information above, the PPs revised the EG _{facility,y} table in section B.7.1 only to include information that sales of	Second analysis: EG _{facility,y} table, in Section B.7.1, has been adjusted. CAR26 is closed.

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		sold electricity.	
		<u>Second response (14/02/2012):</u> Considering the DOE comments, the PPs revised section B.7.1 of the PDD. Please	
OADOZ DDD 104 Oration D.Z.O. includes a		Perer to the third version of the document.	Dens mente en en inconsectel inconse
CAR27: PDD V01, Section B.7.2, includes a	EB41	Paragraph presenting information related	Paragraph on environmental issues
paragraph on environmental issues, not relevant	Ann12	to environmental issues was withdrawal	has been removed from Section
to this section.		from section B.7.2.	B.7.2, PDD v02.
			CAR27 is closed.
<u>CAR28</u> PDD v01, Section B.7.2, states gross	EB41	As discussed during the audit visit, no	Section B.7.2, in PDD v02, has
electricity generation will be measured by meters	Ann12	measures/activities have been conducted	been revised, in order to remove
at the plant, whereas, during site visit, it was		for the project construction and some	reference to meters at the plant.
verified that such measurement will not be carried		operational arrangements are not defined	CAR28 is closed.
out.		yet. However, the project sponsor will	
		follow all the necessary requirements	
		from the Chamber of Electrical Energy	
		Commercialization ("CCEE" from the	
		Portuguese Câmara de Comercialização	
		de Energia Elétrica) and the National	
		Electric System Operator ("ONS" from the	
		Portuguese Operador Nacional do	
		Sistema Elétrico). Therefore, there will be	
		energy meters (principal and backup) in	
		the connection point/substation that will	
		be constructed by the project sponsor	
		Monjolos municipality. In principle, there	
		will be only meters at the substation and,	
		if required by CCEE or ONS, there will be	
		meters at the project site. Considering	
		information above, the PPs revised the	



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		monitoring plan of the project. Please refer to the second version of the PDD.	
<u>CAR29</u> : PDD v01, Section B.7.2, does not clearly indicate the responsibilities for and institutional arrangements for data collection and archiving.	EB41 Ann12	<i>First response (17/01/2012):</i> The PPs revised section B.7.2 based on the parameters presented in section B.7.1. Please refer to the second version of the document. In addition, please refer to the PPs response in CAR28.	First analysis: PDD v02, Section B.7.2, does not yet clearly indicate the responsibilities for and institutional arrangements for data collection and archiving. CAR29 is not closed.
		<u>Second response (14/02/2012):</u> The responsibilities and institutional arrangements for data collection and archiving related to the proposed project activity are from Omega Energia. However, these responsibilities are not defined among its internal departments. This will be defined just before the project start operation. This information was included in section B.7.2 of the PDD (version 3).	Second analysis: Explanation as to the reason such definition has not been made yet has been included in Section B.7.2, of PDD v03. CAR29 is closed.
CAR30: PDD v01, Section B.8, presents a title which is not in accordance with EB41 Ann12. Besides, first paragraph must be adjusted, to be in line with EB41 Ann12.	EB41 Ann12	The necessary adjustments were made in the PDD (version 2).	Section B.8, in PDD v02, has been adjusted. CAR30 is closed.
<u>CAR31</u> : PDD v01, Section C.2, does not state whether the project activity will use a renewable or a fixed crediting period.	EB41 Ann12	To the understanding of the PPs, section C.2 does not need to be filled since sections that need to be filled are C.2.1. and C.2.2. (sub-items of section C.2). These sub-items present information related to the choice of the crediting period and related information. However.	Section C.2 needs to be filled out. First relevant paragraph, in EB41 Ann12, requires that: "Please state whether the project activity will use a renewable or a fixed crediting period". As information has been presented in PDD v02,



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		the PPs revised the PDD according the DOE request. Please refer to the second version of the document	CAR31 is closed.
CAR32: PDD v01, Section E.1, does not mention the fact the Federal Attorney for the Public Interest (<i>Ministério Público Federal</i> , in Portuguese) was invited to comment on the project activity.	EB41 Ann12	Ministério Público Federal was included in section E.1 as one of the entities invited for making comments related to the project activity according to documented evidence presented to DOE. In addition, the PPs included more information related to the content of the letter sent for the local stakeholder consultation. Please refer to section E.1 of the PDD. As verified by DOE during the audit visit, the project participants received an official letter (nr. 61/2011) from the Municipal Assembly of Monjolos. Summary of the comment received and information related to the actions/measures taken by the PPs related to the comment received were included in sections E.2 and E.3 of the PDD. Please refer to the second version of the document. Copy of the response sent by the PPs and post office confirmation of receipt communication are attached to this response. The official letter nr. 61/2011 from the Municipal Assembly was already presented to the DOE during the audit visit and, therefore, it is not attached.	PDD v02, Section E.1, correctly states the Federal Attorney for the Public Interest has been invited to comment on the project activity. CAR32 is closed.
CAR33: PDD v01, Annex 3, should refer to	EB41	Considering the DOE comments, the PPs	Reference to sections has been
sections B.2, B.6.2 and B.6.3, since they are the	Ann12	included section B.2 in Annex 3 since it	revised in PDD v02, Annex 3.



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ones to which EB41 Ann12 refers, instead of B.6.1.		refers to the identification of the baseline scenario of the project. Furthermore, sections B.6.2 and B.6.3 were also included since they refer to information for the calculation of the baseline emissions. However, B.6.1 was not withdrawal from Annex 3 since it presents the methodological choices for the calculation of the baseline emissions. Please refer to the second version of the document.	CAR33 is closed.
<u>CAR34</u> : PDD v01, Section B.2, does not show that the project activity meets each of the applicability conditions of the Tool to calculate the emission factor for an electricity system and of the Tool for the demonstration and assessment of additionality.	VVM 71	Considering the DOE comments and the revision of ACM0002 methodology, section B.2 of the PDD was revised. Please refer to the second version of the document.	Last paragraph of Section B.2, in PDD v02, refers to applicability conditions of the tools. CAR34 is closed.
CAR BQA 1 – According to the Guidelines on the Assessment of Investment Analysis version 5, "The period of assessment should not be limited to the proposed crediting period of the CDM project activity. Both project IRR and equity IRR calculations shall as a preference reflect the period of expected operation of the underlying project activity (technical lifetime), or if a shorter <i>period is chosen include the fair value of the</i> <i>project activity assets at the end of the</i> <i>assessment period". In the spreadsheet</i> <i>"FCF_PCH_Serra_das_Agulhas rev.xls" the tab</i> <i>'FICHA-RESUMO' on the cell 'K121' the technical</i> <i>lifetime is 50 years. According to the PDD and the</i> <i>financial spreadsheet, the investment analysis is</i>		The period of 30 years – considered as the project operational lifetime in section C.1.2 of the PDD and in the project cash flow – is based on the authorizations granted for electricity generation from small hydropower plants in Brazil. Please refer to the PPs response in CL21. Thus, since the authorization to explore the hydropower potential of a small hydropower project is valid for 30 years, to the understanding of the PPs, it is reasonable to consider this period as the project lifetime and, for this reason, no residual value was considered in the IRR calculation.	Answer 1 (10/02/2012) The period of investment assessment of 30 years has been accepted. CAR BQA 1 is closed.



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made considering the period of 30 years.	 However, by analyzing the technical lifetime of the project main equipment (turbine and generator), it was possible to verify that the technical lifetime (in the case of the hydraulic turbines) is estimated in 40 years. Please refer to the PPs response in CAR07. Therefore, for conservativeness reasons, the PPs revised the IRR calculation in order to include the fair value for each input considered in the total investment of the project (transmission system, indirect costs, civil works, environment and equipment). As explained in the PPs response in CAR07, since no investment was made for the project construction and, therefore, no manual from the manufacturer or contract from service provider companies are available, the PPs considered the average lifetime presented in the ANEEL's publication: "Manual de controle patrimonial do setor elétrico" available at the ANEEL's website: http://www.aneel.gov.br/cedoc/aren2009367_2.pdf. In items that there is no reference of the average lifetime in ANEEL's publication (environment and indirect costs), the PPs considered 50 years of average lifetime for the items 	


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		observed for ANEEL's repor Furthermore, t years presente record is based the project reso	hydropowe t. he PPs clari ed in the ANE d on the aver ervoir.	er plants in fy that the 50 EL's technical rage lifetime of	
CAR BQA 2 - Interest was not calculated	EB61	The IRR calcu	lation of Serr	a das Agulhas	Answer 1 (10/02/2012)
according to the prevailing commercial interest	Ann13	project does	not take into	o account the	
rates in the region, preferably by assessing the		debt-equity rat	tio. Therefore	e, interest has	All changes have been accepted
cost of other debt recently acquired by the project		no impact on t	he IRR, sinc	e it is used for	and are in accordance to the CDM
developer and by applying a debt-equity ratio.		financing and a	amortization.		rules.
		The dept-equit	y ratio can b	e observed in	CAR ROA 2 is alread
		(Moightod Av	orage Cost	of Capital -	CAR BQA 2 IS Closed.
		WACC) In th	erage Cost he second v	ersion of the	
		PDD, some c	hanges were	e made in the	
		parameters	used for	the WACC	
		calculation as f	follows:		
			1st	2nd	
		Deversetere	version	version	
		Parameters	of the	of the	
			PDD	PDD	
		Wd	68.97%	50%	
		We	31.03%	50%	
		Credit risk rate	2.50%	2.00%	
		US expected inflation	1.32%	1.98%	
		Equity risk	6.57%	6.03%	



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	premium	
	Sectorial 2.50% 1.55%	
	 Justification for the changes made in the values mentioned above is presented below: i. Wd/We. Debt-equity ratio has been changed following the "Guidelines on the assessment of investment analysis" (paragraph 18, Annex 5, EB62), where it presents the default value of 50% debt (Wd) and 50% (We) equity. Detailed explanation related to the choice of the PPs is presented in the PDD (version 2). j. Credit risk rate. According to the Brazilian Central Bank (BNDES) (http://www.bndes.gov.br/SiteBN DES/bndes/bndes_pt/Institucion al/Apoio_Financeiro/Produtos/FI NEM/meio_ambiente.html), the Credit Risk Rate is up to 3.57% depending on the company risk. The value of 2.00% instead 2.50% was chosen for a 	



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	 conservative calculation. k. US expected inflation. For the inflation calculation, it is considered the 10 Year Treasury Note (^TNX), and the TIPS (Treasury Inflation Protected Securities), which are readily quoted in the US market. The ^TNX index carries inflation on their value while the TIPS is an index without inflation. The subtraction from the chosen period average values from the ^TNX and the TIPS results in the estimated inflation. The previous value of 1.32% considered the inflation indexed Bond of 10 years minus a 20 year Bond without inflation. For more consistency, the inflation was calculated as the difference from an indexed Bond of 10 years between a 10 year bond without inflation. The value was updated to 6.03%, since the previous value considered of 	VERITAS



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VALIDATION REPORT		fully referenced. In addition, the value of 6.03% is more conservative than 6.57%. m. Sectorial risk. For the sectorial risk, the Wd and We is used for its calculation. Since the equity/debt proportion has been changed, the sectorial risk changed from 2.50 to 1.55. Furthermore, the PPs revised the text presented in sub-step 2b. of the PDD to include more explanations related to the calculation of the benchmark considering the changes made in the WACC calculation from the 1st version of the PDD to the 2nd version	VERITAS	
		understanding about the methodological calculation choices. Please refer to the second version of		
		the PDD and benchmark spreadsheet.	A (40/00/0040)	
<u>CAR BQA 03</u> – Explain how was determined the plant load factor.	EB48 Ann11	As presented in section B.6.3 of the PDD, the electricity to be dispatched to the grid by Serra das Agulhas shall be based on the "assured energy" of the project. However, the "average energy" was wrongly used for the calculation of emission reductions and IRR of the project. Please refer to the PPs response in CL13	Answer 1 (10/02/2012) All changes have been accepted and are in accordance to the CDM rules. CAR BQA 3 is closed.	



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	Since the "assured energy" of Serra das Agulhas is 13.08 MW-ave, the plant load factor of the project is 46.7% (13.08 MW- ave ÷ 28 MW = 46.7%) as presented in the PBC dated May 2011 (page 74). Considering information above, the cash flow spreadsheet was revised considering the "assured energy" of the project instead of the "average energy". Please refer to the second version of the PDD and IRR spreadsheet.	
VVM 111	All reference used for the input values considered in the IRR calculation is presented in the cash flow spreadsheet. The PPs also clarify that the ANEEL's technical summary presented in the cash flow spreadsheet is one of the annexes presented in the PBC of the project. This PBC was presented to ANEEL. Since input data of the cash flow was presented to a third-party entity, it has been considered in the financial analysis of the project. Therefore: → Plant export capacity, plant load (PLF), power output, plant investment (civil works, equipment, environment, indirect costs and transmission system costs) are based on the PBC of the project as presented during the audit visit. As mentioned in the PPs response of	Answer 1 (11/02/2012) All evidences have been checked and were considered applicable. Detailed explanation about the suitability of each input value can be found in the validation report. CAR BQA 4 is closed.
	VVM 111	 Since the "assured energy" of Serra das Agulhas is 13.08 MW-ave, the plant load factor of the project is 46.7% (13.08 MW-ave ÷ 28 MW = 46.7%) as presented in the PBC dated May 2011 (page 74). Considering information above, the cash flow spreadsheet was revised considering the "assured energy" of the project instead of the "average energy". Please refer to the second version of the PDD and IRR spreadsheet. VVM 111 All reference used for the input values considered in the IRR calculation is presented in the cash flow spreadsheet. The PPs also clarify that the ANEEL's technical summary presented in the cash flow spreadsheet is one of the annexes presented in the PBC of the project. This PBC was presented to ANEEL. Since input data of the cash flow was presented to a third-party entity, it has been considered in the financial analysis of the project. Therefore: → Plant export capacity, plant load (PLF), power output, plant investment (civil works, equipment, environment, indirect costs and transmission system costs) are based on the PBC of the project as presented during the audit visit.



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Taxa de Câmbio=1.7 R\$/US\$ O&M (R\$/MWh)= 5.17 Environmental/Managerial (R\$/year)= 1,248,072 Insurance (% of assets)=0.27% TUSD (R\$/kW/month)= 6.28 ANEEL= 385.7	audit visit, the PLF was revised in the cash flow spreadsheet based on the "assured energy" of the project as presented in the project PCB. → The energy price was based on the results of the energy auctions conducted by the Brazilian government in 2010: - 3 rd reserve energy auction ("LER" from the Portuguese <i>Leilão de Energia de Reserva</i>) held on August 25-26th; - 2 rd energy auction for renewable sources ("LFA" from the Portuguese <i>Leilão de Fontes</i> <i>Alternativas</i>) held on August 26 th . The results of the energy auction can be seen at the Chamber of Electrical Energy Commercialization (CCEE) website: http://www.ccee.org.br/>. The energy price considered in the IRR calculation is the average of the energy price negotiated for small hydropower plants only, adjusted to the Extended National Consumer Price Index ("IPCA" from the Portuguese <i>Índice Nacional de Preços ao Consumidor Amplo</i>) to July 2011. → Operational and management (O&M) costs, environmental/managerial and insurance were based on the project	



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	 sponsor experience with other operational small hydropower plant of the group (PCH Pipoca). For the O&M and environmental costs, the PPs are waiting for the authorization from the contracting party to present the contract to DOE. Regarding the managerial expenses, the PPs attached to this response the financial statement of Pipoca project ("DF e Parecer Pipoca - Junho 2011.pdf"). For the insurance, the PPs attached to this response, the insurance policy ("Apólice - Hidrelétrica Pipoca - RCG.pdf"; "Apólice - Hidrelétrica Pipoca - RCG.pdf"). Given the slight difference from the values considered in the first version of the project cash flow and the attached evidences, the PPs revised the cash flow spreadsheet of Serra das Agulhas based on the documented evidence from Pipoca project attached to this response. → Transmission costs ("TUSD" from the Portuguese <i>Tarifa de Uso do Sistema de Distribuição</i>) are based on the ANEEL Resolution nr. 1,127 dated April 5th, 2011. Available at: <http: 20111127.pdf="" atreh="" cedoc="" www.aneel.gov.br="">.</http:> 	



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		 → ANEEL tax ("TFSEE" from the Portuguese Taxa de Fiscalização de Serviços de Energia Elétrica) is based on ANEEL Dispatch nr. 360 dated February 4th, 2011. Available at: <http: cedoc="" dsp2<br="" www.aneel.gov.br="">011360.pdf>.</http:> The PPs revised the cash flow spreadsheet to include the source of information for the IRR calculation. Please refer to the second version of the spreadsheet. 		
<u>CL01</u> : Please, correct spelling of "whishes", in the header of last column, in PDD v01, Section A.3. Besides, remove sentence after table.	VVM 52	The PPs corrected the word "whishes" in Table 1. Although, to the understanding of the PPs, there is no restriction to include text in section A.3., the PDD was revised considering the DOE comments. Please refer to the second version of the document.	Adjustments made in Section A.3, PDD v02. CL01 is closed.	
<u>CL02:</u> Please, clarify why ANEEL's small hydro plants schedule of events, dated 16/11/2011, does not list Serra das Agulhas.	EB41 Ann12	The document "Acompanhamento das Pequenas Centrais Hidrelétricas", which presents the schedule of events for small hydropower plants, is a report published by the Brazilian Power Regulatory Agency ("ANEEL" from the Portuguese <i>Agência Nacional de Energia Elétrica</i>). This report presents the status of the small hydropower plants under PROINFA, with and without Construction License issued. However, the PPs do not know	Another official document, from ANEEL, has been provided, which presents a schedule for SHPP Serra das Agulhas. CL02 is closed.	



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		why Serra das Agulhas is not listed in this report as one of the small hydropower plants (without Construction License). However, Serra das Agulhas is one of the projects under ANEEL analysis and supervision, which can be evidenced in another report published by ANEEL "Relatório de Acompanhamento de Estudos e Projetos de Usinas Hidrelétricas" available at: < <u>http://www.aneel.gov.br/area.cfm?idArea</u> <u>=428</u> >. The most recent version available of this report is dated 19/12/2011.	
<u>CL03</u> : Please, clarify why Serra das Agulhas project can be seen as a solution for a 10-year old electricity crisis.	EB41 Ann12	Considering the DOE comments, the PPs rephrase the sentence. Please refer to the second version of the document.	Text has been adjust in Section A.2, in PDD v02. CL03 is closed.
CL04: Please, remove paragraph right after table.	EB41 Ann12	The PPs make the necessary adjustments in the PDD (version 2) based on the DOE request. Please also refer to the PPs response in CL01.	Relevant paragraph has been removed. CL04 is closed.
<u>CL05</u> : Please, inform power factor of generators.	EB41 Ann12	Power factor of generators were included in the new version of the PDD (version 2). Please also refer to the PPs response in CAR07.	Power factor of the generators has been informed in Section A.4.3, of PDD v02. CL05 is closed.
<u>CL06</u> : Since the second paragraph of PDD v01, Section B.1, mentions the " <u>latest</u> approved versions" of the tools listed, as per ACM0002, the PPs are requested to clearly state which versions being used are not the latest but still valid. Besides, please, update "Combined tool" version number.	EB41 Ann12	The tools listed in section B.1 were updated. Please refer to CAR 16 and CAR 17.	Section B.1, in PDD v02, now mentions the lates version of the tools, which have been in fact applied by the PPs. CL06 is closed.



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CL07: Please, in Table 5, replace "Excluded for simplification. This emission source is assumed to be very small" by "Minor emission source", as per ACM0002 v12.1.0.	EB41 Ann12	The PPs revised Table 5 according to ACM0002. Please refer to the second version of the document.	Table 5 has been adjusted. CL07 is closed.
CL08: Please, name the substation, as well as specify there is a main and a backup meter at the substation.	EB41 Ann12	<i>First response (17/01/2012):</i> The PPs did not include the name of the substation, since the substation to be connected into the CEMIG's transmission line have to be constructed. As explained in the PBC, a substation (from the Portuguese <i>subestação elevadora</i>) will be constructed in Monjolos municipality to connect the power plant into the national grid. In reality, this substation will be connected in the existent CEMIG's transmission line. For a better understanding of the project configuration under the national grid, the PPs included Figure 4 in section A.4.3. of the PDD. Please also refer to the PPs response in CAR06, CAR08 and CAR11.	First analysis: Name of substation has not been included, since it has not been implemented yet. The existence of main and back up meters has been informed. However, Figure 4, in Section A.4.3, of PDD v02, illustrates a S-SE-MW grid, whereas the entire national grid should have been illustrated. <i>CL08 not is closed.</i> Second analysis: Figure 4, in PDD v03, has been revised, to correctly name the Brazilian grid system. CL08 is closed.
CL09: Make it clear, in Section B.4, that the baseline scenario correctly presented is due to the project activity being the installation of a new	EB41 Ann12	The PDD was revised to include information request by DOE. Please refer to the second version of the document	First paragraph of Section B.4, in PDD v02, has been adjusted.



			TE UTING.
grid-connected renewable power plant, as per ACM0002.			
<u>CL10:</u> Please, clarify why PDD v01, Section B.5, in the identification of alternatives, didn't include other types (e.g. wind, biomass, fossil fuel) of power plant with a similar capacity?	EB41 Ann12	As presented in sub-step 1a, there are two alternatives to the proposed project activity: (i) the electricity generated by the grid-connected power plants (current scenario) and (ii) the proposed project activity without the CDM incentives. A fossil fuel thermal power plant is not an alternative to the project sponsor since its activities are based in renewable energy generation only. Regarding the implementation of other types of renewable energy generation projects – biomass and wind –, as explained in sub-step 2a, these are no potential alternatives at the site where Serra das Agulhas project is planned. Furthermore, the PPs revised section B.5 to exclude the sentence "GSP is expected to occur before the project starting date" and to include the period when the project GSP occurred. In addition, the sentence "existing project activities" was withdrawal from the PDD.	It has been clarified why PDD v01, Section B.5, in the identification of alternatives, didn't include other types (e.g. wind, biomass, fossil fuel) of power plant with a similar capacity. CL10 is closed.
<u>CL11:</u> Please, adjust data unit of $PE_{GP,y}$, in PDD	EB41	The PPs revised data unit of the	Data unit of $PE_{GP,y}$, in PDD v02,
v01, Section B.6.1, where it is stated that "PE _{GP,y}	Ann12	parameters presented in the PDD	sections B.6.1 and B.6.3, has been
= 0 tCO ₂ /year". Besides, adjust Section B.6.3,		according to ACM0002. Please refer to	adjusted.
accordingly.		the second version of the document.	CL11 is closed.
CL12: In PDD v01, Section B.6.1, under leakage,	EB41	The PPs revised the PDD to include	Texts under leakage have been
please, replace "upstream activities" by "upstream	Ann12	information of leakage according to	adjusted in sections B.6.1 and



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emissions from fossil fuel use", as per ACM0002. Besides, adjust Section B.6.3, accordingly.		ACM0002. Please refer to the second version of the document.	B.6.3, in PDD v02. CL12 is closed.
<u>CL13:</u> Please, clarify the difference in terms of average assured energy, when comparing Report 1.344-RE-G00-001-0 (13.08 MW) against ANEEL's technical summary of the consolidated basic project, dated 31/01/2011 (13.39 MW).	EB41 Ann12	The "average energy" (in a free translation from the Portuguese <i>energia média</i>) is calculated based on hydrological data, height of the dam and efficiency of turbine/generator/transformer. The "assured energy" (from the Portuguese <i>energia assegurada</i>) considers the average energy (mentioned above) minus forced and programmed unavailability of the power plant. In the case of Serra das Agulhas project, the "average energy" is 13.39 MW-ave as presented in Table 4.33 (page 70) and Table 4.35 (page 74) of the PBC of the project. The forced unavailability is 2.333% and the programmed unavailability is 2.333% and the programmed unavailability is 0% as presented in Table 4.30 of the PBC (page 67). Since the "assured energy" is the "average energy" minus the forced and programmed unavailability (as explained above), we have: 13.39 MW-ave – [(2.333% + 0%) x 13.39 MW-ave]] = 13.39 MW-ave – 0.31 MW-ave = 13.08 MW-ave. This confirms the "assured energy" of 13.08 MW-ave (114,581 MWh/year) for Serra das Agulhas considering 28 MW installed capacity. This information is	The difference related to average assured energy has been clarified. CL13 is closed.





		MW installed capacity (emission reductions calculation and financial analysis).	
CL15: Please, adjust description of measurement procedures for A _{PJ} , to make it clearer.	EB41 Ann12	As described in section B.7.1, the reservoir area will be monitored through topographical data in the location of the project activity (made once at the time of the project design) and the reservoir level, which will yearly monitored by project sponsor. In table 4.17 of the project design (PBC) (page 31), it is presented the study of quota x area x volume ("curva cota x area x volume"). Through this study, it is possible to calculate the reservoir area of the project based on the water level of the reservoir. Therefore, it will be possible to know the reservoir area of the project based on this topographical study and the water level that will be monitored during the crediting period of Serra das Agulhas project. The water level to be compared with the topographical study will be based on the average water level that will be verified annually. This last information was included in the revision of the PDD (version 2).	Measurement procedures for A _{PJ} have been described in a clearer manner, in Section B.7.1, PDD v02. CL15 is closed.
<u>CL16</u> : Please, confirm whether internal GHG audits will be carried out, as stated in PDD v01, Section B.7.2.	EB41 Ann12	This sentence was withdrawal from the PDD since no internal GHG audits are planning to be carrying out in the project activity. Please refer to the second	Reference to internal GHG audits has been removed from PDD v02, since they are not planned to be carried out.



		version of the document.	CL16 is closed.
CL17: Please, provide a detailed description of the QA/QC procedures for cross checking measurement results.	EB41 Ann12 EB41	QA/QC procedures presented in section B.7.1 were revised in the new version of the PDD (version 2).	Information on QA/QC procedures for cross-checking measurements results has been added to Section B.7.2 of PDD v02. CL17 is closed.
<u>CC18</u> Please, describe in a clearer manner the operational and management structure that the project operator will implement in order to monitor emission reductions and any leakage effects.	Ann12	<i>First response (17/01/2012):</i> Since Serra das Agulhas project is in a preliminary stage, the operational and management structure for the emission reductions under CDM is not defined yet. Currently, the project sponsor's priorities are to fulfill the requirements for the Construction License issuance (as the implementation of social/environmental programs), to obtain financing for the project implementation, to analyze price quotation for the equipment purchase and to make the necessary arrangements for the signature of the EPC contract. Therefore, the structure for the operational controlling of emission reductions will be developed when the issues mentioned above were solved.	Please, include such explanation (or an equivalent text) in Section B.7.2, of PDD v02. <i>CL18 is not closed.</i> Second analysis: Explanation has been included in Section B.7.2, of PDD v03. CL18 is closed.



CL19: Please, confirm whether relevant	EB41	Information was revised in the PDD	Clarification has been provided.
information will be produced by ANEEL and ONS.	Ann12	(version 2). Please also refer to the PPs	CL19 is closed.
In case it will, describe it in detail.		response in CAR27, CAR28 and CAR29.	
<u>CL20</u> : Please, provide evidence of starting date	EB41	In fact, the project starting date -	Starting date is a new future date,
of the project activity, since estimated date of	Ann12	considered as the signature of the EPC	since EPC contract has not been
30/10/2011, as informed in PDD v01, Section		contract – did not occur in October 2011	signed yet.
C.1.1, is no longer a future date. Besides, if EPC		considering some delays in the process	CL20 is closed.
contract has been signed, a description of the		for the project construction starting. No	
evidence available to support the start date		significant expenditures occurred until	
should be provided.		then that can be considered as the project	
•		starting date. Currently, the project	
		sponsor is receiving price quotations for	
		the budget planning, which includes the	
		main equipment acquisition (turbines and	
		generators). Therefore, the new	
		estimated date for the signature of the	
		EPC contract is March 30 th 2012	
		Considering the delay in the project	
		construction start the estimated date to	
		Serra das Agulhas become fully	
		operational changed for January 2014 -	
		considering 22-24 months for the project	
		implementation as described in the	
		ANEEL's technical summary and DBC	
		deted May 2011 Therefore the starting	
		deta of the oraditing pariod has been	
		revised Diseas also refer to the DDs	
		reasonance in CAR12 CAR12 and CL RCA	
		response in CARTZ, CART3 and CL BQA	
		1.	



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CL21: Please, clarify the basis for an operational lifetime of 30 years.	EB41 Ann12	The operational lifetime of hydropower projects are presented in the concession contract and authorizations issued by ANEEL; concessions are granted for large hydropower projects and authorizations are issued for small scale hydropower plants, which is the case of Serra das Agulhas project. However, the authorization of Independent Energy Producer ("PIE" from the Portuguese <i>Produtor Independente de Energia</i>) was not issued yet for Serra das Agulhas project. Generally, the authorization is issued for 30 years for small hydropower plants. Therefore, this figure was used in the first version of the PDD. Since ANEEL authorization cannot be used as documented evidence of the operational lifetime of Serra das Agulhas, the PPs investigate the legislation of the electricity sector. According to Decree nr. 2,003 dated September 10 th , 1996 (http://www.aneel.gov.br/cedoc/dec19962 <u>003.pdf</u>), concessions are valid for 35 years from the date of the signature of the concession contract and authorizations are valid for 30 years from the issuance of the authorization. However, the Decree nr. 2,003/1996 was repealed by Decree nr. 5,163 dated July	Operational lifetime of 30 years has been clarified. CL21 is closed.



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	7 th 2004	
	(http://www.aneel.gov.br/cedoc/dec20045	
	163 pdf) which regulates the electricity	
	commercialization and the concession	
	and authorization process	
	Then Decree pr $5.163/2004$ was	
	changed by Decree nr. 6.048 dated	
	Echruchy 27 th 2007	
	(http://www.opeol.gov/br/codeo/doo20076	
	(<u>http://www.aneei.gov.bi/cedoc/dec20076</u> 048.pdf).	
	The Decree nr. 6,048/2007 establishes a	
	minimum 10-year period and maximum	
	30-year period for the Electricity	
	Commercialization Contract within the	
	Regulated Contracting Ambience	
	("CCEAR" from the Portuguese Contrato	
	de Comercialização de Energia Elétrica	
	no Ambiente Regulado). These periods	
	are established in the case of electricity	
	generated by alternative sources (wind,	
	cogeneration and small hydropower plant	
	projects) Therefore the operational	
	lifetime of Serra das Agulhas presented in	
	the PDD corresponds to the maximum	
	period as mentioned in Decree nr.	
	6 048/2007 (30 years) which is the period	
	commonly presented in the authorizations	
	issued for small hydropower plants	
	The PPs clarify that National Council of	
	Hydrological Resources ("CNRH" from	
	the Portuguese Conselho Nacional de	
	Recursos Hidrícos) Resolution pr. 16	
	$\mathbf{R} = \mathbf{R} + $	



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CL22: Please, clarify the difference in the values of the reservoir area (0.65 km ² x 0.62 km ²), considering, respectively, the Environmental Control Plan (<i>PCA</i> , May/2011, page 4) vs. SUPRAM's Report 462146/2009 ("Quadro 1").	EB41 Ann12	datedMay8th,2001(http://www.cnrh.gov.br/sitio/index.php?option=com_docman&task=doc_details&gid=62&Itemid=)establishes, in the case ofelectricity generation, the authorization ofthe water use for electricity generation asthe period of the concession/authorizationissued by ANEEL (<i>i.e.</i> 30 years in thecase of small hydropower plants).Therefore, the period for which the wateruse authorization is valid is the same asthe authorization issued by ANEEL forelectricity generation.Although the Environmental Control Planpresents a reservoir area of 0.65 km² forSerra das Agulhas project, the correctreservoir area is 0.62 km² as presented inthe EIA/RIMA dated August 2003,Technical Opinion ("Parecer Único")issued by the environmental agency inSeptember 2010 and the project PBCdated May 2011. Therefore, the reservoirarea presented in the first version of thePDD continues to be the same.Considering information above, the PPscall attention that slight difference of thereservoir area presented in the PCA doesnot impact the Preliminary License orANEEL authorizations issued for Serradas Agulhas project.Furthermore, it is important to mentionthat the reservoir area of the project is a	Clarification has been provided on the difference of the values of the reservoir area. CL22 is closed.



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		parameter that will be monitored during the crediting period of the project. Therefore, differences in the reservoir area will be pointed during the project verification.	
CL23: Please, update PDD v01, Section D.1, in order to provide more detailed information on construction license (i.e. date when it has been requested: 17/05/2011), <i>EIA/RIMA</i> (i.e. issued in August/2003) and <i>PCA</i> (i.e. issued in May/2011).	EB41 Ann12	Considering the DOE comments, the PPs revised section D.1 of the PDD. Please refer to the second version of the document.	More detailed information has been provided in Section D.1, of PDD v02. CL23 is closed.
<u>CL24</u> : Please, refer to Section B.7.1, besides B.7.2, since both refer to Annex 4, in EB41 Ann12.	EB41 Ann12	Considering the DOE comments, the PPs include section B.7.1. in Annex 4 of the PDD. Please refer to the second version of the document.	Annex 3, of PDD v02, refers to sections B.7.1 and B.7.2. CL24 is closed.
<u>CL25</u> : Please, include in the PDD the information that the data will be kept at least for 2 years after the end of the last crediting period.	ACM 0002	 Section B.7.2 of the PDD (version 1) states that: <i>"Data monitored and required for verification and issuance will be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later'.</i> This information is according to the "Guidelines for completing the CDM-PDD and CDM-NM" (version 7). However, section B.7.2 was revised to include the exact sentence presented in ACM0002. 	Last paragraph of Section B.7.2, in PDD v02, has been revised. CL25 is closed.
<u>CL BQA 1</u> – Clarify with evidences the moment of investment decision, in order to guarantee that	EB61 Ann13	In the case of Serra das Agulhas, the date of the investment decision is	Answer 1 (10/02/2012)
the input values are the correct ones at this		considered as the same date of the	Now it is clear the moment of



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moment in the project chronology.	project starting date. According to the Glossary of CDM Terms, the starting date is the "earliest date at which either the implementation or construction or real action of a project activity begins".
	 Furthermore, it clarifies that: "the start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity. This, for example, can be the date on which contracts have been signed for equipment or construction/operation services required for the project activity". As mentioned in the PPs response in CAR05 and CL18, the project is in a preliminary stage and no activities/measures were taken at the project site for the project construction. As mentioned in the first version of the PDD, the only expense incurred for the project implementation is related to the issuance of the Preliminary License ("LP" from the Portuguese Licença Prévia) nr. 066 issued on December 9th, 2010.
	considered as the project starting date since the LP issuance is classified as



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_		minor pre-project expenses.	
		Therefore, no significant expenditures have been committed for the construction of the project activity that can be configured as the project starting date. Considering information above, the PPs conducted the financial analysis of the project (IRR and WACC calculation) based on the most recent data/ information available at the time of the submission of the PDD for GSP (Global Stakeholder Process), <i>i.e.</i> the first	
		Please also refer to the PPs response in	
		CAR05, CAR12, CL18 and CL20.	
<u>CL BQA 02</u> - Did the project participants rely on values from Feasibility Study Reports (FSR) that	VVM 113	The PPs clarify that there are no Feasibility Study Reports (FSR) approved	Answer 1 (10/02/2012)
cDM project activities?		financial/investment decision is from the project developer (Brazil is not a centrally planned economy).	The answer was accepted.
			CL BQA 2 is closed.