

# VALIDATION REPORT

## FOZ DO CHAPECÓ ENERGIA S.A.



Document Prepared By:

Bureau Veritas Certification Holding SAS

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### Summary:

Bureau Veritas Certification (BVC) has made the validation of the Foz do Chapecó Project of Foz do Chapecó Energia S.A. located in the Southern Region of Brazil, between the cities of Águas de Chapecó, state of Santa Catarina (SC) and Alpestre, state of Rio Grande do Sul (RS).

The project activity consists of the supply of clean hydroelectric energy to the Brazilian National Interconnected System (SIN) through the implantation and operation of a Greenfield Hydro Power Plant (HPP) named Foz do Chapecó. The Plant has an installed capacity of 855 MW and is expected to generate 3,784,320 MWh/year of clean and renewable electric energy.

Validation was performed on the basis of the VCS Standard (version 3.2), the VCS Program Guide (version 3.3) and UNFCCC criteria for the CDM (as far as applicable to the VCS Program), as well as criteria given to provide for consistent project operations, monitoring and reporting.

The validation scope is defined as an independent and objective review of the project description document, the project's baseline study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final validation report and opinion. The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

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

In summary, it is Bureau Veritas Certification's opinion that the project correctly applies the UNFCCC-CDM baseline and monitoring methodology ACM0002 version 13.0.0 and meets the relevant VCS and UNFCCC requirements.

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## **INTRODUCTION**

### **1.1 Objective**

The validation serves as project design verification and is a requirement of all VCS 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 VCS and UNFCCC 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 VCS projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Verified Carbon Units (VCUs).

### **1.2 Scope and Criteria**

The validation scope is defined as an independent and objective review of the project description document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against VCS Standard and Program 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 Level of assurance**

The level of assurance is considered reasonable, with respect to material errors, omissions and misrepresentations.

BVC has conducted the validation, from Contract Review to Validation Report & Opinion, using BVC's internal procedures. Data and information was validated by crosschecking evidences provided by Project Proponents with third party and/or publicly available sources, such as: ANEEL (Brazilian National Agency for Electric Energy) online database<sup>1</sup>, actual signed contracts (i.e. EPC Contract and Power Purchase Agreements), CCEE (Brazilian Chamber of Commerce for Electric Energy) energy generation reports, Environmental Licenses emitted by IBAMA (Brazilian Institute of Environment and Renewable Natural Resources), Consolidated Basic Engineering Project prepared by third party contracted by Project Proponents, etc.

In addition to the above, BVC points out that the validation report underwent an Internal Technical Review (ITR) before being finalized.

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.

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<sup>1</sup> <http://www.aneel.gov.br/15.htm>

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 VCS 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 and CLs during the validation exercise and 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 VCS registry system.

## **1.4 Summary Description of the Project**

The project activity consists of the supply of clean hydroelectric energy to the Brazilian National Interconnected System (SIN) through the implantation and operation of a Greenfield Hydro Power Plant (HPP) named Foz do Chapecó. The Plant has an installed capacity of 855 MW and is expected to generate 3,784,320 MWh/year of clean and renewable electric energy. The Plant has started its commercial operations on 14/10/2010.

In the absence of the project activity, the clean electricity supplied by Foz do Chapecó Hydro Power Plant to the SIN would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources.

## **2 VALIDATION PROCESS**

### **2.1 Method and Criteria**

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 version 3.2 of the VCS Standard and also according to applicable UNFCCC-CDM criteria. 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 VCS 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.

## 2.2 Document Review

The Project Description (PD) submitted by Foz Do Chapecó Energia S.A. and additional background documents related to the project design and baseline, i.e. country Law, Project Description Template, Approved UNFCCC-CDM methodology, applicable UNFCCC-CDM validation requirements (Tools, Guidelines, etc.) were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests, Foz Do Chapecó Energia S.A. revised the PD and resubmitted it on 20/07/2012.

The validation findings presented in this report relate to the project as described in the PD version 03.

## 2.3 Interviews

On 29/05/2012 Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Project Proponents Foz Do Chapecó Energia S.A. and Enerbio Consultoria Ltda. were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

| Interviewed organization   | Interview topics                                                                                                                                                                                                                                                                                                           |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Foz Do Chapecó Energia S.A | <ul style="list-style-type: none"><li>➤ Project background information,</li><li>➤ Project technology, operation and maintenance,</li><li>➤ Project monitoring and management plan,</li><li>➤ Stakeholder consultation process,</li><li>➤ Project status,</li><li>➤ Environmental aspects / impacts and licenses.</li></ul> |
| Enerbio Consultoria Ltda.  | <ul style="list-style-type: none"><li>➤ Baseline methodology,</li><li>➤ Additionality,</li><li>➤ Monitoring methodology and plan,</li><li>➤ Emission Reduction Calculation,</li><li>➤ Emission Factor Calculation.</li></ul>                                                                                               |

## 2.4 Site Inspections

On 29/05/2012 Bureau Veritas Certification performed a site inspection at Foz do Chapecó Hydro Power Plant. The objective of this site visit was to confirm that the project description included in the PD (version 3) is in accordance with the actual project operation on site. To do so, BVC's lead verifier checked the equipments used on site (turbines, generators, measuring systems, etc.) and respectively identification plates. Also, interviews were held with operation and management staff, to discuss issues related to the Projects' operation.

All inconsistencies found during site visit were addressed in CARs or CLs included in the validation protocol (Appendix A). All issues have been resolved by Project Proponents and all CARs and CLs opened were successfully closed (Please refer to CAR 3 and CL 5 in Appendix A).

## 2.5 Resolution of Any Material Discrepancy

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) VCS and/or 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 VCS/CDM requirements have been met.

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

## 3 VALIDATION FINDINGS

### 3.1 Project Design

The validation team hereby confirms that the PD in its version 3 (**/Ref-36/**) complies with the latest forms of the guidance documents for completion of VCS PDs (**/Ref-A/**). Below follows a discussion on how BVC was able to validate the Project Design, as included in the PD (version 3).

- Project scope, type, technologies and measures implemented, and eligibility of the project:

The project comprises the installation and operation of a Greenfield Hydro Power Plant. The facility is connected to the SIN and, therefore, the Project fits in the VCS category of sectoral scope 1 - Energy (renewable/non-renewable).

The facility's total installed capacity is 855 MW, consisting of four sets of hydroelectric Francis turbines with nominal capacity of 217.14 MW and the electricity generators nominal power is (4x) 213.75 MW. The (long-term average) energy supplied to the grid is expected to be 3,784,320 MWh/year. The Plant includes a water reservoir of 80.02 km<sup>2</sup>.

BVC was able to validate the project's implemented technology as described above and in the PD (version 3) by conducting a site visit to the Power Plant (29/05/2012) and by crosschecking information with the following third party sources/evidences:

- Installed capacity of 855 MW, nominal power of turbines (4x217.14 MW) and nominal power of generators (4x213.75 MW): Equipment identification plates from manufactures, Construction (EPC) Contract (**/Ref-06/**), Consolidated Basic Engineering Project (**/Ref-08/**) and ANEEL online database of all

power plants operating in Brazil:  
<http://www.aneel.gov.br/aplicacoes/capacidadebrasil/capacidadebrasil.asp> (accessed on 22/08/2012).

- Project's water reservoir (80.02 km<sup>2</sup>): ANEEL's Dispatch 911 of 30/03/2007 (**/Ref-07/**), online available at: <http://www.aneel.gov.br/cedoc/dsp2007911.pdf> (accessed on 22/08/2012), for flooded reservoir area of 79.93 km<sup>2</sup>. In Addition, Project Proponents have included the flooded are of the passage way (after the intake tunnels and before the engine room) of 0.09 km<sup>2</sup> to the Power Plants total reservoir area to be conservative. Therefore, the total reservoir are of the Plant is defined in the PD version 3 as 80.02 km<sup>2</sup>. Evidence for the 0.09 km<sup>2</sup> passage way is: Consolidated Basic Engineering Project prepared by CENEC Engenharia S.A. "HFC-RT1P-GEG00-1001-0" (page 80) (**/Ref-08/**). Please refer also to CL 05 (Appendix A).

Plant's expected electricity supply to the grid of 3,784,320 MWh/year: ANEEL's online database, containing the Physical Guarantee <sup>2</sup> (assured energy) of all power plants operating in Brazil: <http://www.aneel.gov.br/aplicacoes/capacidadebrasil/energiaassegurada.asp> (accessed on 22/08/2012). For the Foz do Chapecó Plant, ANEEL has defined a physical guarantee on 432 MW<sup>3</sup>. See also CL 06 (Appendix A).

Project proponent:

Project Proponents are Foz do Chapecó Energia S.A. and Enerbio Consultoria Ltda. This could be validated by BVC through: Federal Government Concession Decree of 15/10/2001 (**/Ref-09/**), ANNEL Concession Contract (**/Ref-10/**) and ANEEL online database: <http://www.aneel.gov.br/aplicacoes/capacidadebrasil/GeracaoTipoFase.asp?tipo=1&fase=3> (accessed on 22/08/2012).

Project start date:

Project's start date is defined in the PD (version 3) as 14/10/2010, being the start date of operation of the first turbine. This was validated by BVC with: ANNEL Dispatch 3,058 of 13/10/2010 (**/Ref-11/**).

Project crediting period:

Project's crediting period is defined in the PD (version 3) as 14/10/2010 to 14/10/2020 (10 years renewed at most two times). This has been done in accordance to VCS Standard version 3.2. Also, the start date of the first crediting period could be validated by BVC with ANNEL Dispatch 3,058 of 13/10/2010 (**/Ref-11/**).

Project scale and estimated GHG emission reductions or removals:

As described in the PD (version 3), the project scale is "Project", as the average expected emission reductions is 767,825 tCO<sub>2</sub>e/yr. This has been done in accordance to VCS Standard version 3.2. (**/Ref-**

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<sup>2</sup> According to ANEEL's online glossary (<http://www.aneel.gov.br/biblioteca/glossario.cfm?att=G>), the Physical Guarantee is defined by the Ministry of Mines and Energy (MME) and corresponds to the maximum quantity of energy and power that can be commercialized by a power plant through contractual arrangements.

<sup>3</sup> 432 MW x 8,760 hours/year = 3,784,320 MWh/year

B/). Please refer to Section 3.2.6 below for a description on how BVC was able to validate the Project's expected GHG emission reductions.

Project location:

According to the PD (version 3), the Project is located in the Southern Region of Brazil, between the cities of Águas de Chapecó, state of Santa Catarina (SC) and Alpestre, state of Rio Grande do Sul (RS). The geographical coordinates are: Latitude 27° 08' 24' South and Longitude of 53° 02' 36' West. The exact location was validated by BVC through conducting a site visit and by analyzing /Ref-07/.

Project compliance with applicable laws, statutes and other regulatory frameworks:

As described in Section 1.11 of the PD (version 3), the Project is in compliance with applicable national laws. BVC was able to validate this with the following evidence: ANNEL Concession Contract (/Ref-10/) and ANEEL online database: <http://www.aneel.gov.br/aplicacoes/capacidadebrasil/GeracaoTipoFase.asp?tipo=1&fase=3> (accessed on 22/08/2012). Also, the Project complies with applicable environmental regulation. This could be validated by BVC with: Environmental Licenses (/Ref-12/ to /Ref-15/).

Ownership and Right of use:

Please refer to item "Project Proponent" above for a description on how BVC was able to validate the ownership of the Project.

Project does not applied to other emission trading programs or other forms of environmental credit and is not part of any compliance scheme (bidding limits).

Project Proponents have applied for CDM registration. However, the validation process was terminated before completion. Please refer to Section 1.12.5 of the PD (version 3) and to CL 2 (Appendix A).

## **3.2 Application of Methodology**

### **3.2.1 Title and Reference**

The PD correctly mentions as applicable methodology UNFCCC-CDM ACM0002 (version 13.0.0) "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (/Ref-D/). This methodology is online available at: <http://cdm.unfccc.int/methodologies/DB/UB3431UT9I5KN2MUL2FGZXZ6CV71LT> (accessed on 22/08/2012).

### **3.2.2 Applicability**

The steps taken to assess the relevant information contained in the PD against each applicability condition of applicable methodologies and tools are described below.

**Applicability conditions of the UNFCCC-CDM Methodology ACM0002 version 13.0.0:**

1. *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 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 Project consists of the installation of a new grid-connected hydro power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant). BVC was able to validate this by conducting a site inspection and by analyzing the following documents:

- Construction (EPC) Contract (/Ref-06/).
- ANEEL online database: <http://www.aneel.gov.br/15.htm> (accessed on 24/08/2012).
- ANEEL's Dispatch 911 of 30/03/2007 (/Ref-07/).
- ANEEL Dispatch 3,058 of 13/10/2010 (/Ref-11/).
- Consolidated Basic Engineering Project prepared by CENEC Engenharia S.A. "HFC-RT1P-GEG00-1001-0" (/Ref-08/).
- Environmental Licenses (/Ref-12/ to /Ref-15/).

2. *The methodology is applicable under 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;*
- *In the case of capacity additions, retrofits or replacements (except for wind, solar, wave or tidal power capacity addition projects which use Option 2: on page 10 to calculate the parameter  $EG_{P,J,y}$ ): 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 reference period and the implementation of the project activity.*

The project is the installation of a hydro power plant. Please refer to applicability condition 1 above, for a description on how BVC was able to validate this requirement.

3. *In case of hydro power plants:*

- *One of the following conditions must apply:*
  - o *The project activity is implemented in an existing single or multiple reservoirs, with no change in the volume of any of reservoirs; or*
  - o *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 the definitions given in the project emissions section, is greater than 4 W/m<sup>2</sup>; or*

*o 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<sup>2</sup>.*

The project activity results in new single reservoir and the power density of the reservoir is greater than 4 W/m<sup>2</sup> (10.68 W/m<sup>2</sup>). BVC was able to validate the reservoir's power density of 10.68 W/m<sup>2</sup> with:

- Installed capacity of 855 MW: Equipment identification plates from manufactures, Construction (EPC) Contract (**/Ref-06/**), Consolidated Basic Engineering Project (**/Ref-08/**) and ANEEL online database <http://www.aneel.gov.br/aplicacoes/capacidadebrasil/GeracaoTipoFase.asp?tipo=1&fase=3> (accessed on 23/08/2012).

- Reservoir area of 80.02 km<sup>2</sup>: ANEEL's Dispatch 911 of 30/03/2007 (**/Ref-07/**) for reservoir area of 79.93 km<sup>2</sup>. In Addition, Project Proponents have included the flooded area of the "passage way" (after the intake tunnels and before the engine room) of 0.09 km<sup>2</sup> to the Power Plants total reservoir area to be conservative. Therefore, the total reservoir are of the Plant is defined in the PD version 3 as 80.02 km<sup>2</sup>. Evidence for the 0.09 km<sup>2</sup> passage way is: **/Ref-08/** - Basic Engineering Project prepared by CENEC Engenharia S.A. "HFC-RT1P-GEG00-1001-0" (page 80). Please refer also to CL 05 (Appendix A).

*4. In case of hydro power plants using multiple reservoirs where the power density of any of the reservoirs is lower than 4 W/m<sup>2</sup> all the following conditions must apply:*

- . The power density calculated for the entire project activity using equation 5 is greater than 4 W/m<sup>2</sup>;*
- . Multiple reservoirs and hydro power plants located at the same river and where are designed together to function as an integrated project that collectively constitute the generation capacity of the combined power plant;*
- . Water flow between multiple reservoirs is not used by any other hydropower unit which is not a part of the project activity;*
- . Total installed capacity of the power units, which are driven using water from the reservoirs with power density lower than 4 W/m<sup>2</sup>, is lower than 15 MW;*
- . Total installed capacity of the power units, which are driven using water from reservoirs with power density lower than 4 W/m<sup>2</sup>, is less than 10% of the total installed capacity of the project activity from multiple reservoirs.*

Not applicable. Please refer to applicability condition 3 above.

*5. The methodology is not applicable to the following:*

- . 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;*
- . Biomass fired power plants;*

- . *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<sup>2</sup>.*

Not applicable. Please refer to applicability condition 1, 2 and 3 above.

*6. 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 activity and undertaking business as usual maintenance.*

Not applicable. Please refer to applicability condition 1 and 2 above.

**Applicability conditions of the UNFCCC-CDM Tool to calculate the emission factor for an electricity system, version 02.2.1 (/Ref-E):**

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

The (PD version 3) uses the Tool to calculate the emission factor for an electricity system version 02.2.1. BVC validated that the project activity will supply electricity to a grid, by analysis of project activity related document: /Ref-16/ - PPA (Power Purchase Agreement).

**Applicability conditions of the UNFCCC-CDM Tool for the demonstration and assessment of additionality”, version 06.0.0 (/Ref-F):**

*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 PD version 3 uses the UNFCCC-CDM Tool for the demonstration and assessment of additionality (Version 06.0.0). BVC validated the applicability of this Tool by analyzing the UNFCCC website at: <http://cdm.unfccc.int/methodologies/DB/UB3431UT9I5KN2MUL2FGZXZ6CV71LT> (accessed on 22/08/2012), wherein it is stated that the additionality of projects using the ACM0002v13.0.0 methodology shall be demonstrated and assessed using the Tool for the demonstration and assessment of additionality.

BVC hereby confirms that the selected UNFCCC-CDM baseline and monitoring methodology (ACM0002 version 13.0.0), the UNFCCC-CDM Tool for the demonstration and assessment of additionality” (Version 06.0.0) and the UNFCCC-CDM Tool to calculate the emission factor for an electricity system (version 02.2.1) are previously approved by the CDM Executive Board, and is applicable to the VCS project activity, which, complies with all the applicability conditions therein.

### 3.2.3 Project Boundary

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 2.3 of the PD version 3, the project boundary comprises the project power plant and all the power plants physically connected to the project electricity system. This system has been defined in the PD as the Brazilian National Interconnected Electricity System (SIN).

Also, the PD version 3 contains a table where the greenhouse gases and emission sources included in or excluded from the project boundary are shown.

BVC was able to validate that the definition of the project boundary in the PD is in accordance with the relevant methodology through: Brazilian CDM-DNA Authority Resolution nr. 08, which defines the Brazilian National Interconnected Electricity System (SIN) as the electricity system for projects in Brazil using UNFCCC-CDM ACM0002 methodology (**/Ref-17/**). 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, BVC was able to validate that the hydro power plant is physically connected to the project electricity system (the Brazilian SIN), through site inspection and by analyzing related documents **/Ref-06/** to **/Ref-11/** and **/Ref-16/**.

In addition, BVC was able to validate that the greenhouse gases and emission sources included in or excluded from the project boundary through document analysis of PD related documents: **/Ref-06/** and **/Ref-12/** to **/Ref-15/**.

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

### 3.2.4 Baseline Scenario

The project activity comprises the installation of a new grid-connected renewable power plant. 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 described in the Tool to calculate the emission factor for an electricity system.”*

The PD version 3 correctly identifies the baseline scenarios as presented above. The relevant grid is the Brazilian National Interconnected Electricity System (SIN), as prescribed by the Brazilian CDM-DNA Authority in its resolution nr 08: **/Ref-17/**.

As methodology ACM0002 (version 13.0.0) prescribes the baseline scenario and no further analysis is required, there is no need to take steps to identify the baseline scenarios.

### 3.2.5 *Additionality*

To demonstrate the additionality of the Project, the PD has correctly applied the “Tool for the demonstration and assessment of additionality” (Version 06.0.0) /**Ref-F**/. PP uses an investment analysis to determine that the project is additional. No Barrier Analysis was presented. The details of BVC’s assessment on the Project additionality are described below.

#### 1. Identification of alternatives:

In the PD version 3, the identified alternatives are:

Alternative 1: The project activity undertaken without being registered as a VCS project;

Alternative 2: The continuation of the current situation. The additional electricity generated by the project would be generated by existing or new power plants connected to the national electric system.

BVC considers the listed alternatives to be credible, complete and in conformity with mandatory legislation and regulations.

#### 2. Investment analysis:

The project proponent decided to use the CDM-UNFCCC “Tool for the demonstration and assessment of additionality” version 6.0.0 /**Ref-F**/, which refers to the CDM-UNFCCC “Guidelines on the assessment of investment analysis” version 5 /**Ref-G**/ 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;
- c) Reviewing annual financial reports related to the project participant;
- 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:

Financial indicator: The project participant has chosen project IRR to demonstrate the additionality of the project. Additionality Tool (Ver. 06.0.0) permits the use of financial indicator, project 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, project IRR is appropriate, as it is often used by the project developers to make a decision on investing in

a project. As such, the selection of project IRR as financial indicator to demonstrate the additionality of the project is appropriate conforms to the Additionality Tool.

The referred document states the following:

“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 in which the project activity can be implemented solely by the project participant, the specific financial/economic situation of the company undertaking the project activity should be considered”.

Paragraph 13 from EB62 Annex 05 (“Guidelines on Assessment of Investment Analysis”, version 5) 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”.

Still, according to “Guidelines on the assessment of investment analysis” version 5, local commercial lending rates can be used as benchmark for the economic assessment of projects. Since the PP decided to apply Option III (Benchmark Analysis) in order to demonstrate additionality, and the referred project is understood to be developed by any entity, BVC has evaluated the input values for either the calculation of the financial indicator used by PP and of the benchmark through comparison with market standards, government policies and other similar projects. Based on publicly available data, the validation team concluded the following:

The financial benchmark used to assess the financial attractiveness of the project is based on the WACC formula, and on the CAPM formula to calculate the cost of equity of the project. Through the CAPM formula, PP has calculated the risk free rate using the average yields from 2003 to 2006 of NTN-C bonds in Brazil<sup>4</sup> (8.72%), on a beta based on the comparison of IBOVESPA index return and of the return of electrical sector in Brazil<sup>5</sup> (0.97) and on the market return discounted by the risk free rate, based on average IBOVESPA returns<sup>6</sup> from 2003 to 2006 (24.92%), which leads to a cost of equity of 32.88%. (Cost of equity=Ke= Risk free rate + beta\*market risk premium)

The cost of debt and the ratio debt to equity were based on BNDES data<sup>7</sup>. The average cost of debt from BNDES is 9.30%, nominal, and the ratio debt to equity from the projects typically financed by the

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<sup>4</sup> [http://www.tesouro.fazenda.gov.br/tesouro\\_direto/historico.asp](http://www.tesouro.fazenda.gov.br/tesouro_direto/historico.asp)

<sup>5</sup> <http://www.bmfbovespa.com.br/indices/ResumoEvolucaoDiaria.aspx?Indice=IEE&idioma=pt-br>

<sup>6</sup> <http://www.bmfbovespa.com.br/indices/ResumoEvolucaoDiaria.aspx?Indice=Ibovespa&idioma=pt-br>

<sup>7</sup> [http://www.bndes.gov.br/SiteBNDES/bndes/bndes\\_pt/Institucional/Apoio\\_Financeiro/Produtos/FINEM/energias\\_alter\\_nativas.html](http://www.bndes.gov.br/SiteBNDES/bndes/bndes_pt/Institucional/Apoio_Financeiro/Produtos/FINEM/energias_alter_nativas.html)

institution is 70% debt and 30% equity. Considering the effect of inflation on the calculation of the cost of debt, we would have a real cost of debt of 4.59%, since the inflation target in Brazil is 4.5%<sup>8</sup>. Thus, we would have a WACC, the financial benchmark, of  $32.88\% \times 0.30 + 4.59\% \times 0.7 \times (1 - 0.34) = 11.99\%$ .

BVC agrees with all the data used in benchmark calculations and points out that they were clearly presented, 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.

The input values for the "Foz do Chapecó HPP" are listed below:

| Input Values /Assumptions | Value                                                                                                                                                                                                                         | Means of validation                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Installed Capacity        | 855 MW                                                                                                                                                                                                                        | As stated in the concession contract from government agency for electric sector (ANEEL) (/Ref-10/)                                                                                                                                                                                                                                                                                     |
| PLF                       | 50.53%                                                                                                                                                                                                                        | As stated in the concession contract from ANEEL (/Ref-10/), the assured energy capacity is 432 MW, which leads to a load factor of 50.53%, when compared to the installed capacity. Since ANEEL is a government institution in Brazil, BVC accepts the value for PLF and considers the input valid.                                                                                    |
| Period of assessment      | 35 years                                                                                                                                                                                                                      | As stated in the concession contract from ANEEL (/Ref-10/), the project life time is 35 years, which means that the concession period goes until 2036, since the contract was signed in 2001. However, PP has decided to invest in the project in 2007, which leads to an economic assessment duration of 30 years.                                                                    |
| Energy tariff             | 124.45 BRL/MWh<br><ul style="list-style-type: none"> <li>• 124.17 BRL/MWh for 26.7% of energy produced</li> <li>• 122.53 BRL/MWh for 13.3% of energy produced</li> <li>• 125.00 BRL/MWh for 60% of energy produced</li> </ul> | The energy selling price is comprised of the two signed PPA's, which were closed in 2002 (/Ref-16/). Also, PP has considered the result of the auction that took place on Dec-2006 (/Ref-23/) as the basis for the estimate for the energy, which had not been commercialized. Actually, PP has estimated a higher price than the average price for HPP's in the auction, which can be |

<sup>8</sup> <http://www.bcb.gov.br/pec/metast/InflationTargetingTable.pdf>

|                                                         |                         |                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                         |                         | considered a conservative approach. Considering the data from the sheet "Revenues" in the financial spreadsheet (/Ref-24/), the average energy selling price for Foz do Chapecó HPP is of 124.45 BRL/MWh. Since PP has used signed contracts and official result from an auction held by a government agency as evidences, BVC considers the input valid. |
| Financial Compensation for Hydric Resources Utilization | 3.78 BRL/kW.month       | As stated in ANEEL document release <sup>9</sup> , page 1, and on the Law 9.648/1998 (Art 17) (/Ref-34/). The first document considers a value of 55.94 BRL/MWh, while the second estates that 6.75% of this value may be paid, according to the assured capacity of energy production.                                                                   |
| Inspection Fee for Electric Power Service (TFSEE)       | 1,656.65 BRL/year       | As stated in ANEEL document release <sup>10</sup> , page 1, and on the law 9.427/1996 (art.12) (/Ref-25/). The first document considers a value of 331.33 BRL/kW, while the second estates that 0.5% of this value may be paid, according to the nominal capacity of energy production.                                                                   |
| Transmission costs                                      | 3.75 BRL/kW. month      | As stated in ANEEL Resolution Nbr. 549 of 10.09.2007 (/Ref-26/).                                                                                                                                                                                                                                                                                          |
| R&D expenses                                            | 1% of net revenues      | As stated in Law 9.991/2000 (/Ref-27/).                                                                                                                                                                                                                                                                                                                   |
| Concession of public use                                | 31,486,921.97 BRL/year  | As stated in the result of auction notice from 28/06/2001(/Ref-28/), in which the company which owns Foz do Chapeco has presented the greatest value for the right of building the HPP.                                                                                                                                                                   |
| Rate the National Electric System Operator(ONS)         | 2.5% of TFSEE           | As stated in Authorizing Resolution 328/2004 (Statute ONS) <sup>11</sup> , which rules ONS activities.                                                                                                                                                                                                                                                    |
| Rate Board of Electricity Trading (CCCE)                | 25% of TFSEE            | As stated on ANEEL Decree 5.177/2004.                                                                                                                                                                                                                                                                                                                     |
| CPMF                                                    | 0.38% of total expenses | As stated on Law nbr. 9.311 of 24/10/1996 (/Ref-29/). Although CPMF does not exist anymore, by                                                                                                                                                                                                                                                            |

<sup>9</sup> <http://www.aneel.gov.br/cedoc/ren2005192.pdf>

<sup>10</sup> <http://www.aneel.gov.br/cedoc/dsp20052268.pdf>

<sup>11</sup> <http://www.aneel.gov.br/cedoc/rea2004328.pdf>

|                                    |                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                    | (OPEX+CAPEX)                                                                                                                                                                         | the time of the investment decision, it was still valid. In order to show that CPMF extinction would not affect the project's additionality, PP has conducted a study in the sensitivity analysis showing it.                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Income Tax and Social contribution | 25% income before taxes (income tax)<br><br>9% of income before taxes (social contribution)                                                                                          | As stated on Brazilian Law nbr. 7.689 from 15/12/1988 ( <b>/Ref-30/</b> ).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| PIS and COFINS                     | 3.65% over revenues, for the signed PPAs<br><br>9.25% over revenues for the part of energy which had not been sold.                                                                  | As stated on Brazilian Law nbr. Law 10.833 from 29/12/2003 ( <b>/Ref-31/</b> ).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Investment cost                    | Total Investment Cost:<br>2,124,493,541.75 BRL<br>Total investment per MW:<br>2,484,787 BRL, or 1,321,695 USD per MW, according to exchange rate BRL/USD on 01/08/2007 <sup>12</sup> | PP has presented evidences for the investment cost through the EPC contract ( <b>/Ref-06/</b> ), the concession auction contract ( <b>/Ref-10/</b> ) and the approved budget from the board ( <b>/Ref-32/</b> ). In order to validate the input value, BVC has crosschecked the referred value with a third party source. According to this source <sup>13</sup> , the investment for hydropower plants whose capacity is above 10 MW ranges from 1,750,000 USD/MW to 6,000,000 USD/MW, with a typical figure around 4,000,000 USD/MW. Since the investment cost per MW for this HPP stands below the range, BVC considered the value of the investment appropriate. |

<sup>12</sup> [www.bcb.gov.br](http://www.bcb.gov.br)

<sup>13</sup> <http://www.iea-etsap.org/web/E-TechDS/PDF/E07-hydropower-GS-gct.pdf>

|                          |              |                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| O&M cost                 | 6.84 BRL/MWh | PP has estimated the O&M costs for the referred project according to ANEEL Resolution 132/2004, which uses the average O&M costs in HPP's in Brazil to determine the energy rate optimization. Since PP has based their estimate on publicly available data from an international association, BVC accepts the value and considers the input valid. |
| Investment decision date | 01/08/2007   | PP has chosen the moment of EPC contract signature ( <b>/Ref-06</b> ) as the investment decision date, which represents the moment of the first major commitment to disbursement of the project.                                                                                                                                                    |

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. PP has chosen to use a post tax indicator in order to demonstrate additionality, comparing it with a post tax benchmark.

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) PP has provided the financial reports of 2010 and 2011 of Foz do Chapeco HPP (**/Ref-33/**), in order to illustrate the current situation of the plant. However, since the investment decision date is 01/08/2007, these reports would not serve to assess the feasibility of the project in the moment of the decision. Thus, the investment analysis was based on the estimates and other evidences provided by the PP and crosschecked by BVC. Additionally, there are no feasibility reports related to the project, nor official public announcements.

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 project IRR is in conformity with the "Guidelines on the Assessment of Investment Analysis" issued by the CDM-EB. Based on the above, the project IRR was lower in comparison to the benchmark. However, the conclusion was checked by subjecting the critical assumptions to reasonable variations.

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 revenues, which covers the energy tariff and the energy output, (ii) decrease in project's investment cost and (iii) decrease in O&M costs. Additionally, PP has also simulated the effect of the extinction of CPMF (a federal tax over financial transactions) in the financial indicator. In all the cases, the necessary variations to make the project financially attractive are much larger than a typical wind farm may face.

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 is available in table 5 from the PD version 03.

Conclusion:

Project's IRR – 9.87%, for “Foz do Chapecó” as stated in (/Ref-24/)

Project's Benchmark – 11.99%

The economic assessment of project was conducted in accordance with “Guidelines on the Assessment of Investment Analysis” (version 5) and thus is considered valid. Based on the foregoing, BVC has concluded that the project activity faces investment constraint in as much as the project 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 concluded that the project activity is additional and is not a business-as-usual case. The VCS registration would help PP in improving the investment case described above.

CLs APG 1 to 5 and CARs APG 1 to 2 were issued and they have been satisfactorily solved and closed. Refer to Appendix A.

The validation team, 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. Barrier analysis:

No Barrier analysis is presented in the PD version 03.

4. Common practice analysis:

Step 4 of the additionality analysis in the PD version 3 has been prepared according to paragraphs 6(b) and 47 of the last version of the “Tool for demonstration and assessment of additionality” (Version 06.0.0) /Ref-F/”:

Step 1: Calculate applicable output range as +/-50% of the design output or capacity of the proposed project activity:

The project has an installed capacity of 855 MW. Therefore, the PD version 3 correctly defines the applicable range as 427.5 MW – 1,282.5 MW.

Step 2: In the applicable geographical area, identify all plants that deliver the same output or capacity, within the applicable output range calculated in Step 1, as the proposed project activity and have started commercial operation before the start date of the project. Note their number  $N_{all}$ . Registered CDM project activities and projects activities undergoing validation shall not be included in this step<sup>14</sup>:

- Output: The additionality tool defines output as “goods or services with comparable quality, properties, and application areas (e.g. clinker, lighting, residential cooking)”. Therefore, in the case of this project, the output considered is the electricity generated by grid-connected power plants.

- Geographical area: PP has chosen the entire country of Brazil as geographic area.

According to the PD and the common practice spread sheet (**Ref-18**),  $N_{all}$  is 37.

BVC was able to validate the  $N_{all}$  value included in the PD version 3 by analysing the following documents:

- ANEEL online database: <http://www.aneel.gov.br/15.htm> (accessed on 24/08/2012).
- CDM project database: <http://cdm.unfccc.int/Projects/projsearch.html> (accessed on 24/08/2012).
- VCS project database: <http://www.vcsprojectdatabase.org/> (accessed on 24/08/2012).
- ANEEL Document: “General Summary of New Generation Projects”, February 2012 (**Ref-19**).
- ANEEL Energy Atlas 2008 (**Ref-20**).

Step 3: Within plants identified in Step 2, identify those that apply technologies different that the technology applied in the proposed project activity. Note their number  $N_{diff}$ :

According to the PD (version 3), of the 37 identified Plants, 13 plants apply different energy sources/fuel (12 thermal power plants and 1 nuclear power plant). This was validate by BVC with:

- ANEEL online database: <http://www.aneel.gov.br/15.htm> (accessed on 24/08/2012).

Also, 22 plants started operation before 2004, which means that they started before the new Electric Model Regulatory Framework, in a different institutional framework than Foz do Chapecó HPP. The new Regulatory framework is described in item 2.5 of the VCS PD version 3. The start of a new regulatory framework in 2004 was validated by BVC with:

- Federal Law of 15/03/2004: [http://www.planalto.gov.br/ccivil\\_03/ato2004-2006/2004/lei/l10.848.htm](http://www.planalto.gov.br/ccivil_03/ato2004-2006/2004/lei/l10.848.htm) (accessed on 24/08/2012).

- CCEE website: history of the Brazilian energy Sector:

[http://www.ccee.org.br/portal/faces/pages\\_publico/quem-somos/historia?\\_afLoop=379104972806000&\\_afWindowId=thg475vwd\\_1#%40%3F\\_afWindowId%3Dthg475vwd\\_1%26\\_afLoop%3D379104972806000%26\\_afWindowMode%3D0%26\\_adf.ctrl-state%3Dthg475vwd\\_29](http://www.ccee.org.br/portal/faces/pages_publico/quem-somos/historia?_afLoop=379104972806000&_afWindowId=thg475vwd_1#%40%3F_afWindowId%3Dthg475vwd_1%26_afLoop%3D379104972806000%26_afWindowMode%3D0%26_adf.ctrl-state%3Dthg475vwd_29) (accessed on 24/08/2012).

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<sup>14</sup> PP has also excluded VCS Projects in Step 2.

Seeing the above, BVC was able to validate  $N_{diff} = 35$

Step 4: Calculate factor  $F=1-N_{diff}/N_{all}$  representing the share of plants using technology similar to the technology used in the proposed project activity in all plants that deliver the same output or capacity as the proposed project activity:

Seeing the explanation provide above (steps 1-3), BVC was able to validate the information provided in Table 8 of the PD (version 3):

| Parameters                 | Values/Results |
|----------------------------|----------------|
| $N_{all}$                  | 37             |
| $N_{dif}$                  | 35             |
| $F = 1-(N_{diff}/N_{all})$ | 0.05           |
| $N_{all}-N_{diff}$         | 2              |

PP has provided a spread sheet (**/Ref-18/**) with the complete common practice analysis as described above. Concluding, BVC hereby confirms that the proposed VCS project activity is not common practice.

In conclusion, as demonstrated in accordance with the “Tool for the demonstration and assessment of additionality”, the proposed VCS project activity is additional.

### 3.2.6 Quantification of GHG Emission Reductions and Removals

The steps taken and the equations and parameters applied in the VCS PD to calculate project emissions, baseline emissions, leakage and emission reductions comply with the requirements of the selected methodology including applicable tool(s). Please see below:

#### Project emissions:

Project emissions need to be calculated in accordance with equation (1) of the relevant methodology (ACM0002v13.0.0):

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

Where:

$PE_y$  = Project emissions in year y (tCO<sub>2</sub>e/yr)

$PE_{FF,y}$  = Project emissions from fossil fuel consumption in year y (tCO<sub>2</sub>/yr)

$PE_{GP,y}$  = Project emissions from the operation of geothermal power plants due to the release of non-condensable gases in year y (tCO<sub>2</sub>e/yr)

$PE_{HP,y}$  = Project emissions from water reservoirs of hydro power plants in year y (tCO<sub>2</sub>e/yr)

According to ACM0002v13.0.0, 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 single or multiple reservoirs (PD) is greater than  $4 \text{ W/m}^2$  and less than or equal to  $10 \text{ W/m}^2$ :

$$PE_{HP,y} = \frac{EF_{Res} * TEG_y}{1000}$$

Where:

$PE_{HP,y}$  = Project emissions from water reservoirs ( $\text{tCO}_2\text{e/yr}$ )

$EF_{Res}$  = Default emission factor for emissions from reservoirs of hydro power plants in year y ( $\text{kgCO}_2\text{e/MWh}$ )

$TEG_y$  = 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  $10 \text{ W/m}^2$ :

$$PE_{HP,y} = 0$$

Power density (PD) needs to be calculated in accordance with equation (5) of ACM0002v13.0.0:

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

Where:

PD = Power density of the project activity ( $\text{W/m}^2$ )

$Cap_{PJ}$  = 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 ( $\text{m}^2$ )

$A_{BL}$  = 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 ( $\text{m}^2$ ). For new reservoirs, this value is zero

The PD version 3 calculates project's power density:  $10.68 \text{ W/m}^2$ .

Please refer to Section 3.2.2 above for a description on how BVC was able to validate the project's power density. Seeing that the Project's PD is greater than  $10 \text{ W/m}^2$ , option (b) above applies and, therefore,  $PE_{HP,y} = 0$ .

### Baseline emissions:

Baseline emissions need to be calculated in accordance with equation (6) of the relevant methodology (ACM0002v.13.0.0):

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

Where:

$BE_y$  = Baseline emissions in year y (tCO<sub>2</sub>/yr)

$EG_{PJ,y}$  = 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/yr)

$EF_{grid,CM,y}$  = Combined margin CO<sub>2</sub> 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” (tCO<sub>2</sub>/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/yr)

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

In the CERs calculation spread sheet version 03 (**/Ref-05/**) and in the PD version 3, PP calculates  $EG_{facility,y}$  as the expected net electricity generation supplied by the project plants to the grid in year y (MWh/yr): 3,784,320 MWh/yr

The PD version 3 presents the above-mentioned value, by multiplying the hours in a year (8,760 hours) with the power plant's assured energy of 432 MW. Please refer to Section 3.1 above for a description on how BVC was able to validate the 432 MW assured energy value.

Also, as the Power Plant has already started operations, the CERs calculations for the first crediting period of the project activity was done taking into consideration the actual registered energy generation data of the Power Plant for the years 2010 and 2011. Please refer also to CAR 05 and CL 6 in Appendix A. BVC was able to validate the 2010 and 2011 values as provided in the PD version 3 and in the calculation spread sheet (version 3) with:

- CCEE official generation spread sheet for 12 months of 2011 (**/Ref-21/**).

- Net electricity generation from months October – December 2010 (See **/Ref-5/**).

The  $EF_{grid,CM,y}$  value presented in the PD version 3 is 0.1988 tCO<sub>2</sub>/MWh. This number has been calculated in accordance with the latest version of the Tool to calculate the emission factor for an electricity system (version 02.2.1), with Operating Margin and Build Margin Emission factors calculated by the Brazilian DNA, according to **/Ref-05/**<sup>15</sup>. The 2011 EF values are the latest values made available by the Brazilian DNA.

BVC confirms that all choices made in the PD version 3 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.

The authenticity of the documentation presented by PP was determined and by accessing the Brazilian DNA website: <http://www.mct.gov.br/index.php/content/view/333605.html#ancora> (accessed on 24/08/2012).

In conclusion, BVC confirms that the value included in the PD (version 3) for BE<sub>y</sub> (752,243 tCO<sub>2</sub>e) has been justified adequately, as presented above.

#### **Leakage:**

According to ACM0002v13.0.0, no leakage emissions need to be considered. The PD version 3 correctly describes that no leakage needs to be considered.

#### **Emission reductions:**

Emission reductions are calculated in accordance with equation (11) of the relevant methodology (ACM0002v13.0.0):

$$ER_y = BE_y - PE_y$$

Where:

ER<sub>y</sub> = Emission reductions in year y (tCO<sub>2</sub>e/yr)

BE<sub>y</sub> = Baseline emissions in year y (tCO<sub>2</sub>/yr)

PE<sub>y</sub> = Project emissions in year y (tCO<sub>2</sub>e/yr)

Seeing that project emissions is zero, ER<sub>y</sub> = BE<sub>y</sub>. See above how BVC was able to validate the BE<sub>y</sub> values presented in the PD version 3.

In conclusion, BVC confirms that the value included in the PD (version 3) for ER<sub>y</sub> (752,243 tCO<sub>2</sub>e) has been justified adequately, as presented above.

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<sup>15</sup> W<sub>OM</sub> = 0.5 and W<sub>BM</sub> = 0.5.

BVC has conducted the validation, from Contract Review to Validation Report & Opinion, using BVC's internal procedures. Data and information was validated by crosschecking evidences provided by Project Proponents with third party and/or publicly available sources, such as: ANEEL (Brazilian National Agency for Electric Energy) online database<sup>16</sup>, actual signed contracts (i.e. EPC Contract and Power Purchase Agreements), CCEE (Brazilian Chamber of Commerce for Electric Energy) energy generation reports, Environmental Licenses emitted by IBAMA (Brazilian Institute of Environment and Renewable Natural Resources), Consolidated Basic Engineering Project prepared by third party contracted by Project Proponents, etc.

Uncertainties associated with the calculation of emissions are considered small, since main parameters used for calculation,  $EG_{\text{facility},y}$  and  $EF_{\text{grid,CM},y}$ , have been defined with data from third party and publicly available official sources, ANEEL (assured energy) and Brazilian DNA (OM and BM EF values).

In summary, BVC confirms that, given that the project is implemented and maintained as designed, the project is likely to achieve the total estimated amount of emission reductions as described in the PD (version 3): 7,678,253 tCO<sub>2</sub>e.

### **3.2.7 Methodology Deviations**

Not applicable, as the used methodology is fully applicable (see 3.2.2 above).

### **3.2.8 Monitoring Plan**

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

The Project uses the methodology ACM0002 Consolidated baseline methodology for grid-connected electricity generation from renewable sources, version 13.0.0. The project involves the installation of a new grid connected hydro power plant.

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

#### *Data and Parameters Available at Validation:*

Cap<sub>BL</sub> = The value of this parameter has been defined in the PD (version 3) as 0 (zero), in accordance with the relevant methodology, seeing that the project comprises the installation of a greenfield power plant.

A<sub>BL</sub> = The value of this parameter has been defined in the PD (version 3) as 0 (zero), in accordance with the relevant methodology, seeing that the project comprises the installation of a greenfield power plant.

#### *Data and Parameters Monitored:*

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<sup>16</sup> <http://www.aneel.gov.br/15.htm>

$EF_{grid,CM,y}$  = 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.

$EG_{facility,y}$  = 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 continuously by the power plant's meters installed in the Project's substation (connection point to the grid). Each Generation Unit (4 in total) has two specific meters (principal and backup) located in the substation that register the net electricity supplied to the Grid by each unit. The measurement will be continuously done and recorded monthly.

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

$Cap_{PJ}$  = The value of this parameter has been defined in the PD (version 3) as 855.000.000 W. Please refer to Section 3.1 above for a description on how BVC was able to validate this value. The monitoring provisions as described in Section 4.2 of the PD (version 3) are in accordance with the relevant methodology.

$A_{PJ}$  = The value of this parameter has been defined in the PD (version 3) as 80.020.000 m<sup>2</sup>. Please refer to Section 3.1 above for a description on how BVC was able to validate this value. The monitoring provisions as described in Section 4.2 of the PD (version 3) are in accordance with the relevant methodology.

Furthermore, operational management for the Project is comprehensively detailed in the PD. It includes description of the responsibility, meters location, process description and data collection procedures. These are all elements that ensure that the monitoring plan will be followed during the operation of the Project.

BVC hereby confirms that the project participants are able to implement the monitoring plan.

### 3.3 Environmental Impact

According to the legislation in force, an Environmental Impact Study (EIA) is required to be carried out before the project can receive its environmental licenses.

The project participants have undertaken an analysis of environmental impacts and an environmental impact assessment was prepared in accordance with procedures as required by federal legislation (/Ref-22/).

According to Brazilian Legislation, there are three environmental licenses needed. First, the LP (Preliminary License), then the LI (Construction License) and as last the LO (Operating License). The project has received all of the above-mentioned licenses: /Ref-12/ to /Ref-15/.

As can be observed in the PD (version 3), section 5, the EIA (/Ref-22/), identified the project's impacts on the environment and also the necessary mitigation actions.

BVC had access to the following documents to validate that the project is carrying out the environmental mitigation actions (environmental programs) in accordance with national legislation:

- Environmental Operation License (LO) granted by IBAMA – 949/2010 (25-08-2010) valid until 25-08-2014 (**/Ref-15/**)
- Report by Foz do Chapecó submitted and received by IBAMA, containing the actions carried out regarding the mitigation actions (environmental programs) CE-FCE-0055/12-CO of 15/03/2012 (**/Ref-35/**).

### 3.4 Comments by stakeholders

During the environmental licensing process, the Environmental Impact Report is presented to stakeholders and the stakeholders are invited to provide comments about the project. A public audience is performed coordinated by Environmental Agency. This process was performed by the entrepreneurs and comments are registered in the documents related to the licensing process. BVC used the following documents to validate the comments:

- Minutes of Stakeholders meeting at Alpestre, held on 11/04/2002 (**/Ref-37/**).
- Minutes of the Stakeholders meeting at Chapecó, held on 12/04/2002 (**/Ref-38/**).

Also, BVC was able to validate the information provided by PP in Section 6 of the PD version 3 regarding communication with affected population and other stakeholders during the construction of the Plant with:

- Basic Environmental Project Report – prepared by: ECSA – Engenharia e Consultoria Sócio-Ambiental S/C Ltda, dated April, 2003 (**/Ref-39/**).
- Agreement Term signed between Project Participant (Foz do Chapecó Energia S.A.) and Municipal Negotiation Committee of Municipality Águas do Chapecó: “Policies, guidelines and criteria for relocation of people affected by the AHFC construction”, Signed on 23/11/2004 (**/Ref-40/**).
- Agreement Term signed between Project Participant (Foz do Chapecó Energia S.A.) and Municipal Negotiation Committee of Municipality Erval Grande: “Policies, guidelines and criteria for relocation of people affected by the AHFC construction”, Signed on 24/11/2004 (**/Ref-41/**).
- Agreement Term signed between Project Participant (Foz do Chapecó Energia S.A.) and Municipal Negotiation Committee of Municipality Nonoai: “Policies, guidelines and criteria for relocation of people affected by the AHFC construction”, Signed on 24/11/2004 (**/Ref-42/**).
- Agreement Term signed between Project Participant (Foz do Chapecó Energia S.A.) and Municipal Negotiation Committee of Municipality Paial: “Policies, guidelines and criteria for relocation of people affected by the AHFC construction”, Signed on 25/11/2004 (**/Ref-43/**).

## 4 VALIDATION CONCLUSION

Bureau Veritas Certification has performed a validation of the Foz do Chapecó Project in Brazil. The validation was performed on the basis of VCS/UNFCCC-CDM 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 UNFCCC-CDM tool for demonstration of the additionality. In line with this tool, the PD provides analysis of investment to determine that the project activity itself is not the baseline scenario.

By the construction and operation of a Greenfield Hydro Power Plant with installed capacity of 855 MW and a reservoir area of 80.02 km<sup>2</sup>, 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 project is likely to achieve the estimated amount of emission reductions.

The review of the project documentation (version 3) 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 VCS and UNFCCC-CDM requirements. Specifically, the project conforms to the validation criteria for projects, as set out in VCS Stander (version 3.2). Therefore, Bureau Veritas Certification thus requests registration of Foz do Chapecó Project as VCS project activity.

Guilherme Borba Lefèvre  
Team Leader  
Date: 21/09/2012

Diego Machado Serrano  
Internal Technical Reviewer  
Date: 21/09/2012

## 5 REFERENCES

### Category 1 Documents:

Documents provided by Foz do Chapecó Energia S.A. that relate directly to the GHG components of the project.

- /1/ Foz do Chapecó VCS Project Description, version 1 (17-04-2012)
- /2/ Foz do Chapecó VCS Project Description, version 2 (20-07-2012)
- /3/ CERs and Emission factor calculation spread sheet, version 1 (17-04-2012)
- /4/ CERs and Emission factor calculation spread sheet, version 2 (18-06-2012)
- /5/ CERs and Emission factor calculation spread sheet, version 3 (20-07-2012)
- /6/ EPC (Construction) Contract. Document is signed between Project Proponent and Construction Consortium on 01-08-2007
- /7/ ANEEL's Dispatch 911 (30-03-2007) – Approval of Consolidated Basic Engineering Project
- /8/ Consolidated Basic Engineering Project prepared by CENEC Engenharia S.A. “HFC-RT1P-GEG00-1001-0” (April, 2007)
- /9/ Federal Government Concession Decree – Concedes to Project Proponent the rights to develop the Project (15-10-2001)
- /10/ ANEEL Concession Contract 128/2001 (07-11-2011)
- /11/ ANEEL Dispatch 3,058 (13-10-2010) – Approval of start of operations for 14-10-2010
- /12/ Environmental Previous License (LP) by IBAMA – 147/2002 (13-12-2002)
- /13/ Environmental Construction License (LI) by IBAMA – 284/2004 (21-09-2004)
- /14/ Environmental Construction License (LI renewal) by IBAMA – 187/2006 (05-12-2006)
- /15/ Environmental Operation License (LO) by IBAMA – 949/2010 (25-08-2010)
- /16/ PPA Power Purchase Agreements (FOZ-PA/2002 214-1 and FOZ-PA/2002 213-1) and amendments of 25-11-2003 and 31-03-2007.
- /17/ Brazilian CDM-DNA Resolution 08 (26-05-2008)
- /18/ Common Practice spread sheet version 1 (17-04-2012)
- /19/ ANEEL Document: “General Summary of New Generation Projects” (February, 2012)
- /20/ ANEEL Electric Energy Atlas - 2008

- /21/ CCEE Official reports for 12 months of energy generation of HPP Foz do Chapecó in 2011.
- /22/ EIA (Environmental Impact Analysis) Foz do Chapecó HPP, Prepared by Engevix / Desenvix (2001).
- /23/ 2006 A-5 auction results: " Estimativa Preço energia 2006"
- /24/ Financial Spreadsheet: " Cash Flow\_FOZV03"
- /25/ Law 9.427/1996: " lei 9427\_1996"
- /26/ ANEEL Resolution Nr. 549 of 10.09.2007.
- /27/ Law 9.991 from 2000: " lei 9.991\_2000"
- /28/ Law 9.648/1998 <http://www.aneel.gov.br/cedoc/blei19989648.pdf>  
Evidence for percentage of 6.75%: <http://www.aneel.gov.br/arquivos/PDF/14-02-2011-TAR-link.pdf>
- /29/ Law 9.311 of 24/10/1996: " lei 9.311\_1996"
- /30/ Law 7.689 from 15/12/1988: "lei 7689\_1998"
- /31/ Law 10.833 from 29/12/2003: "lei 10.833\_2003"
- /32/ Results of the budget meetings from the board: " ATAS - ORÇAMENTO.zip"
- /33/ Financial reports from 2010 and 2011: "DFs 31-12-2010" and " 2 - DFs 31-12-2011 "
- /34/ Law 9.648/1998: " lei 9648\_1998"
- /35/ Report by Foz do Chapecó submitted and received by IBAMA, containing the actions carried out regarding the mitigation actions (environmental programs) CE-FCE-0055/12-CO of 15/03/2012.
- /36/ Foz do Chapecó VCS Project Description, version 3 (15-09-2012)
- /37/ Minutes of Stakeholders meeting at Alpestre, held on 11/04/2002.
- /38/ Minutes of the Stakeholders meeting at Chapecó, held on 12/04/2002.
- /39/ Basic Environmental Project Report – prepared by: ECSA – Engenharia e Consultoria Sócio-Ambiental S/C Ltda, dated April, 2003.
- /40/ - Agreement Term signed between Project Participant (Foz do Chapecó Energia S.A.) and Municipal Negotiation Committee of Municipality Águas do Chapecó: "Policies, guidelines and criteria for relocation of people affected by the AHFC construction", Signed on 23/11/2004.
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- /42/ - Agreement Term signed between Project Participant (Foz do Chapecó Energia S.A.) and Municipal Negotiation Committee of Municipality Nonoai: "Policies, guidelines and criteria for

relocation of people affected by the AHFC construction”, Signed on 24/11/2004.

- /43/ - Agreement Term signed between Project Participant (Foz do Chapecó Energia S.A.) and Municipal Negotiation Committee of Municipality Paial: “Policies, guidelines and criteria for relocation of people affected by the AHFC construction”, Signed on 25/11/2004.

**Category 2 Documents:**

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

- A. VCS PD form - Current Version: v3.0 Issued: 8 March 2011
- B. VCS Standard - Current Version: v3.2 Issued: 1 February 2012
- C. VCS Program Guide - Current Version: v3.3 Issued: 1 May 2012
- D. UNFCCC-CDM ACM0002 (version 13.0.0) “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”
- E. UNFCCC-CDM Tool to calculate the emission factor for an electricity system, version 02.2.1
- F. UNFCCC-CDM Tool for the demonstration and assessment of additionality”, version 06.0.0
- G. UNFCCC-CDM Guidelines on the assessment of investment analysis

**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/ Denis R. Padoveze – Project Analyst, Enerbio Consultoria Ltda.
- /2/ Eduardo Baltar – Director, Enerbio Consultoria Ltda.
- /3/ Gerson Luiz Amadeo – Project Manager, Foz do Chapecó S.A.

## 6 CURRICULA VITAE OF THE VALIDATION TEAM MEMBERS

**Lead Verifier BVC - Guilherme Borba Lefèvre** – is graduated in Law with experience in GHG Programs, both compulsory and voluntary. Guilherme has vast experience in the development and analysis of CDM, VCS, Social Carbon and CCBS projects. Guilherme has an MSc degree in Environmental Science (São Paulo University). Guilherme is trained as a lead auditor in the fields of environment (ISO 14001) and GHG – Green House Gas.

**Financial Specialist BVC - Antonio Vinicius Pimpão Gomes** - is graduated in Industrial Engineering and holds a MBA from Coppead/UFRJ School of Business with previous experience in economic assessment of greenfield projects in electrical sector, as well as projects related to renewable energy and energy conservation.

**Internal Technical Review BVC - Diego Serrano** - He is a forest engineer graduated by the ESALQ / USP Superior School of Agriculture "Luiz de Queiroz." University of São Paulo, Diego has master degree in Energetic System Planning with forest residues in the State University of Campinas (UNICAMP). His abilities include coordination and elaboration of PDD's in the scopes 1, 4, 13 and 14. Diego is trained as a lead auditor in the fields of environment (ISO 14001) and GHG – Green House Gas.

## APPENDIX A: COMPANY CDM PROJECT VALIDATION PROTOCOL

### VALIDATION PROTOCOL

**Table 1** Validation requirements based on the Voluntary Carbon Standard version 3 (1 February 2012, v3.2)

| CHECKLIST QUESTION | Ref. | item | COMMENTS | Draft<br>Concl | Final<br>Concl |
|--------------------|------|------|----------|----------------|----------------|
|--------------------|------|------|----------|----------------|----------------|

| CHECKLIST QUESTION                                                                                                                                                                                                                                                        | Ref. | item   | COMMENTS                                                                                                                                                                                                                                                                                                                                    | Draft<br>Concl | Final<br>Concl |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------|
| <b>1. VCS Program specific issues</b>                                                                                                                                                                                                                                     |      |        |                                                                                                                                                                                                                                                                                                                                             |                |                |
| a. Have the project(s) created another form of environmental credit (for example renewable energy certificates)?                                                                                                                                                          | VCS  | 3.12.3 | No.                                                                                                                                                                                                                                                                                                                                         | OK             | OK             |
| b. If yes, have the project participants provided a letter from the program operator that the credit has not been used and has been cancelled from the relevant programme?                                                                                                | VCS  | 3.12.3 | Not applicable.                                                                                                                                                                                                                                                                                                                             | OK             | OK             |
| c. Are the VCS PD, monitoring reports, and other documents required under the VCS Program in English?                                                                                                                                                                     | VCS  | 2.2    | Yes. All documents are in English.                                                                                                                                                                                                                                                                                                          | OK             | OK             |
| <b>2. Project level requirements</b>                                                                                                                                                                                                                                      |      |        |                                                                                                                                                                                                                                                                                                                                             |                |                |
| <b>a. General requirements</b>                                                                                                                                                                                                                                            |      |        |                                                                                                                                                                                                                                                                                                                                             |                |                |
| 1. Have the project proponent applied an approved VCS Program methodology or a methodology from an approved GHG Program based on the list of current VCS Program approved GHG Programs and methodologies as set out on <a href="http://www.v-c-s.org">www.v-c-s.org</a> ? | VCS  | 3.1.3  | Yes. CDM-ACM0002. However:<br><br>CL 01: In Section 2.1 of the PD version 1, please adjust the methodology to the latest version available. Also, please adjust the applicability conditions in Section 2.2. In Addition, please also include the Tool for the demonstration and assessment of additionality version 06.0.0 in Section 2.1. | CL 01          | OK             |

| CHECKLIST QUESTION                                                                                                                                                      | Ref. | item  | COMMENTS                                                                                                                                                                                                                                                                                                         | Draft<br>Concl | Final<br>Concl |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------|
| 2. Does the project include multiple project activities? Is there more than one methodology? If yes, was each project activity specified separately?                    | VCS  | 3.2   | Not.                                                                                                                                                                                                                                                                                                             | OK             | OK             |
| 3. Does the project include more than one project activity instance?                                                                                                    | VCS  | 3.3   | Not.                                                                                                                                                                                                                                                                                                             | OK             | OK             |
| 4. Do standards and factors used to derive GHG emission data as well as any supporting data for additionality and baseline scenario(s) meet the following requirements: | VCS  | 4.8.2 | See below:                                                                                                                                                                                                                                                                                                       | OK             | OK             |
| - be publicly available from a reputable and recognised source (e.g. IPCC, published Government data etc)?                                                              | VCS  | 4.8.2 | <p>Emission factor (OM and BM) calculated by Brazilian DNA in accordance with the latest version of the CDM-Tool to calculate the emission factor for an electricity system.</p> <p>Energy generation data in accordance with reports published by CCEE – Chamber of Commerce for electric energy in Brazil.</p> | OK             | OK             |
| - be reviewed as part of its publication by a recognised competent organization?                                                                                        |      |       | Yes, CDM-DOE's validated the EF calculations of the DNA in Brazil                                                                                                                                                                                                                                                | OK             | OK             |

| CHECKLIST QUESTION | Ref. | item | COMMENTS | Draft<br>Concl | Final<br>Concl |
|--------------------|------|------|----------|----------------|----------------|
|                    |      |      |          |                |                |

| CHECKLIST QUESTION                                                                                                                          | Ref.       | item                  | COMMENTS                                                   | Draft<br>Concl | Final<br>Concl |
|---------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------------------|------------------------------------------------------------|----------------|----------------|
| <b><i>b. Grouped Project</i></b>                                                                                                            |            | <b>3.4</b>            |                                                            |                |                |
| 1. Is this a grouped project?                                                                                                               | VCS        | 3.4                   | No.                                                        | OK             | OK             |
| 2. If yes, was this grouped project described in one VCS PD?                                                                                | VCS        | 3.4                   | Not applicable.                                            | OK             | OK             |
| 3. Does the grouped project clearly defined geographic areas within which project activity instances may be developed?                      | VCS        | 3.4.2                 | Not applicable.                                            | OK             | OK             |
| 4. Do the baseline scenario and demonstration of additionality are based upon the initial project activity instances?                       | VCS        | 3.4.3                 | Not applicable.                                            | OK             | OK             |
| 5. Has been incorporated multiple project activities?                                                                                       | VCS        | 3.4.4                 | Not applicable.                                            | OK             | OK             |
| 6. Have the baseline scenario and the additionality been determined for each designated geographic area in accordance with the methodology? | VCS        | 3.4.5<br>and<br>3.4.6 | Not applicable.                                            | OK             | OK             |
| 7. Does the capacity limit included in the project?                                                                                         | VCS        | 3.4.8                 | Not applicable.                                            | OK             | OK             |
| 8. Does this PD include a description of the central GHG information system and controls associated with the project and its monitoring?    | VCS        | 3.4.1<br>2            | Not applicable.                                            | OK             | OK             |
| <b><i>c. Project Start Date</i></b>                                                                                                         | <b>VCS</b> | <b>3.8</b>            |                                                            |                |                |
| 1. When is the project start date?                                                                                                          | VCS        | 3.8.1                 | 14/10/2010 (Operation Starting Date of the First Turbine). |                |                |

| CHECKLIST QUESTION | Ref. | item | COMMENTS                                                               | Draft<br>Concl | Final<br>Concl |
|--------------------|------|------|------------------------------------------------------------------------|----------------|----------------|
|                    |      |      | <p>Validated with:</p> <p>ANEEL ORDINANCE Nº 3.058, of 13/10/2010.</p> |                |                |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                                                                  | Ref. | item   | COMMENTS                        | Draft<br>Concl | Final<br>Concl |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------|---------------------------------|----------------|----------------|
| 2. Will this AFOLU validation be completed with a project start date on or after 8 March 2008, within five years of the Project Start Date?                                                                                                                                                                         | VCS  | 3.8.2  | Not applicable.                 | OK             | OK             |
| 3. Will this non-AFOLU validation be completed within five years of the Project Start Date?                                                                                                                                                                                                                         | VCS  | 3.8.3  | Yes.                            | OK             | OK             |
| 4. Is this a renewal of the Project Crediting Period?                                                                                                                                                                                                                                                               | VCS  | 3.9.5  | No.                             | OK             | OK             |
| 5. If yes, have a VCS Program approved validator determined that the original project baseline scenario(s) and additionality is still valid or has been updated taking account of new data and changed VCS Program requirements where applicable?                                                                   | VCS  | 3.9.5  | Not applicable.                 | OK             | OK             |
| <b>d. Ownership and other programs</b>                                                                                                                                                                                                                                                                              |      |        |                                 |                |                |
| 1. Has been evidenced the right of use?                                                                                                                                                                                                                                                                             | VCS  | 3.12.1 | Yes, ANEEL Concession Contract. | OK             | OK             |
| i. A right of use arising or granted under statute, regulation or decree by a competent authority?                                                                                                                                                                                                                  |      |        | Yes. Federal Government Decree. | OK             | OK             |
| ii. A right of use arising under law?                                                                                                                                                                                                                                                                               |      |        | Not applicable                  | OK             | OK             |
| iii. A right of use arising by virtue of a property or contractual right in the plant, equipment or process that generates GHG emission reductions and/or removals (where the right includes the right of use of such reductions or removals and the project proponent has not been divested of such right of use)? |      |        | Not applicable                  | OK             | OK             |
| iv. a right of use arising by virtue of a property or contractual right in the land, vegetation or conservational or management process that                                                                                                                                                                        |      |        | Not applicable                  | OK             | OK             |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                          | Ref. | item   | COMMENTS                                                                                                                  | Draft<br>Concl | Final<br>Concl |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------|---------------------------------------------------------------------------------------------------------------------------|----------------|----------------|
| generates GHG emission reductions and/or removals (where such right includes the right of use of such reductions or removals and the project proponent has not been divested of such right of use)?                                                                         |      |        |                                                                                                                           |                |                |
| v. an enforceable and irrevocable agreement with the holder of the property or contractual right in the plant, equipment or process that generates GHG emission reductions and/or removals which vests the right of use in the project proponent?                           |      |        | Not applicable                                                                                                            | OK             | OK             |
| vi. an enforceable and irrevocable agreement with the holder of the property or contractual right in the land, vegetation or conservational or management process that generates GHG emission reductions or removals which vests the right of use in the project proponent? |      |        | Not applicable                                                                                                            | OK             | OK             |
| 2. Does the project reduce GHG emissions from activities that are included in an emissions trading program; or take place in a jurisdiction or sector in which binding limits are established on GHG emissions?                                                             | VCS  | 3.12.2 | <p>No.</p> <p>Brazil does not have binding limits.</p> <p>Activities are not included in an emission trading program.</p> | OK             | OK             |
| 3. If yes, have the project proponents provided evidence that the reductions or removals generated by the project have or will not be used in the                                                                                                                           | VCS  | 3.12.  | Not applicable                                                                                                            | OK             | OK             |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Ref. | item   | COMMENTS                                                                                                                                                                                                                                                                                                                | Draft<br>Concl | Final<br>Concl |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|----------------|
| emissions trading program or for the purpose of demonstrating compliance with the binding limits that are in place in that jurisdiction or sector? [Such evidence could include: a letter from the program operator or designated national authority that emissions allowances (or other GHG credits used in the program) equivalent to the reductions or removals generated by the project have been cancelled from the program; or national cap as applicable or; purchase and cancellation of GHG allowances equivalent to the GHG emissions reductions or removals generated by the project related to the program or national cap] |      | 2      |                                                                                                                                                                                                                                                                                                                         |                |                |
| 4. Has the project been registered under other GHG Programs?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | VCS  | 3.12.4 | <p>Project was submitted for validation under the CDM. Validation was terminated before completion.</p> <p>CL 02: Please provide a statement from the DOE responsible for validation informing that CDM validation was terminated, including any additional explanations regarding the reason for this termination.</p> | CL 02          | OK             |

| CHECKLIST QUESTION                                                                                                                                                                                         | Ref. | item    | COMMENTS                                                                                                                                                                                                             | Draft<br>Concl     | Final<br>Concl |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------|
| 5. Has this project been rejected by other GHG Programs?                                                                                                                                                   | VCS  | 3.12.21 | No.                                                                                                                                                                                                                  | OK                 | OK             |
| 6. If yes, have project proponents:                                                                                                                                                                        | VCS  | 3.12.21 | Not applicable.                                                                                                                                                                                                      | OK                 | OK             |
| i. clearly stated in its VCS PD all GHG Programs for which the project has applied for credits and why the project was rejected? (Such information shall not be deemed commercially sensitive information) | VCS  | 3.12.21 | Not applicable.                                                                                                                                                                                                      | OK                 | OK             |
| ii. provided the VCS Program validator and verifier, VCS Program project database and VCS Program Registry with the actual rejection document(s) including any additional explanations?                    | VCS  | 3.12.21 | Not applicable.                                                                                                                                                                                                      | OK                 | OK             |
| <b>e. Content of the VCS PD</b>                                                                                                                                                                            |      |         |                                                                                                                                                                                                                      |                    |                |
| <b>e.1 Project Details</b>                                                                                                                                                                                 |      |         |                                                                                                                                                                                                                      |                    |                |
| a. Is the PDD used as a basis for validation prepared in accordance with the latest template and guidance from the VCS?                                                                                    | VCS  | 3.19    | Yes. version 3 of PD form.                                                                                                                                                                                           | OK                 | OK             |
| b. Is there a project title?                                                                                                                                                                               | PD   |         | Foz do Chapecó                                                                                                                                                                                                       | OK                 | OK             |
| c. Is a brief description of the project provided?                                                                                                                                                         | PD   | 1.1     | Yes. However:<br><br>CL 03: Please include in Section 1 of the PD version 1, a reference (i.e the source of the information) for the following statements:<br><br>- "The installation of HPP Foz do Chapecó provides | CL 03<br><br>CL 04 | OK             |

| CHECKLIST QUESTION | Ref. | item | COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Draft<br>Concl | Final<br>Concl |
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|                    |      |      | <p>the generation of enough electricity to the supply of 25% of the energetic demand of the state of Santa Catarina or 18% of the total energy consumed in the state of Rio Grande do Sul.”</p> <p>- “The geographic coordinates are: Latitude 27° 08’ 22’ 75” South and Longitude of 53° 02’ 50’ 59” West.”</p> <p>- “(...) the projection of the Ministry of Mines and Energy (MME) pointed to a total growth in the offer of thermoelectric energy in the country of 10,486 MW in the period of 2006 – 2015 (...)”</p> <p>CL 04: In Section 1.1 of the PD version 1, please inform the version of the “Tool to calculate the emission factor for an electricity system”. Also, please inform that this Tool is from the Clean Development Mechanism (CDM).</p> |                |                |

| CHECKLIST QUESTION                                                                                                                                                       | Ref. | item | COMMENTS                                                                                                                                                                                                                                                            | Draft Concl | Final Concl |
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| d. Project Type and Sectoral Scope:                                                                                                                                      | PD   | 1.2  | CAR 01: In Section 1.2 of the PD version 1, the Sectoral Scope of the project needs to be: "1. Energy (renewable/non-renewable)", in accordance with information provided in the VCS website. <u>Also, please remove the name "BAESA Project" from Section 1.3.</u> | CAR 01      | OK          |
| i. Has the sectoral scope been indicated?                                                                                                                                | PD   | 1.2  | See e.1.d                                                                                                                                                                                                                                                           | OK          | OK          |
| ii. Has the AFOLU category and activity type project been provided?                                                                                                      | PD   | 1.2  | Not applicable                                                                                                                                                                                                                                                      | OK          | OK          |
| iii. Is it specified if the project is a Grouped project?                                                                                                                | PD   | 1.2  | Yes. It is not a group project.                                                                                                                                                                                                                                     | OK          | OK          |
| e. Are project proponents roles and responsibilities, including contact information of the project proponent, other project participants provided?                       | PD   | 1.3  | Yes.                                                                                                                                                                                                                                                                | OK          | OK          |
| f. Are project proponents roles and responsibilities, including contact information of any other entities involved in the development of the project proponent provided? | PD   | 1.4  | Yes.                                                                                                                                                                                                                                                                | OK          | OK          |
| g. Has the Project Start Date, specified the day, month and year been indicated?                                                                                         | PD   | 1.5  | 14/10/2010 (Operation Starting Date of the First Turbine).<br><br>Validated with:                                                                                                                                                                                   | OK          | OK          |

| CHECKLIST QUESTION | Ref. | item | COMMENTS                                 | Draft<br>Concl | Final<br>Concl |
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|                    |      |      | ANEEL ORDINANCE N° 3.058, of 13/10/2010. |                |                |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                                      | Ref.            | item                | COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Draft<br>Concl | Final<br>Concl |
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| h. Has the Crediting Period, specified the day, month and year for the start and end dates and the total number of years been provided?                                                                                                                                                 | PD              | 1.6                 | CAR 02: In Sections 1.6, 1.7 and 3.4 of the PD version 1, the crediting period comprises only 9 years instead of the prescribed 10 years.                                                                                                                                                                                                                                                                                                                                                                                                              | CAR 02         | OK             |
| i. Is the amount of emission reductions over the crediting period estimated, including project size? (Project: Less than or equal 1,000,000 tonnes CO2 equivalent emissions reductions per year; Mega Project: More than 1,000,000 tonnes CO2 equivalent emissions reductions per year) | PD<br>Or<br>VCS | 1.7<br>Or<br>3.21.1 | Mega Project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | OK             | OK             |
| j. Has the project activity or activities been provided?                                                                                                                                                                                                                                | PD              | 1.8                 | See below                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | OK             | OK             |
| k. Is a description of how the project will achieve GHG emission reductions and/or removal enhancements provided?                                                                                                                                                                       | PD              | 1.8                 | CL 05: Regarding the size of the reservoir (Section 1.9 of PD version 1), please clarify if the flooded area from the “reservatório de passage” is included in the 79.2 km <sup>2</sup> of the reservoir. Moreover, during site visit (29/05/2012) the validator noticed a second flooded area (after the intake tunnels and before the engine room). Therefore, PP is requested to demonstrate (with evidence) the size of the total flooded area. Also, according to ANEEL Dispatch 911 of 30/03/2007, the reservoir area is 79.93 km <sup>2</sup> . | CL 05          | OK             |

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| CHECKLIST QUESTION                                                                                                                                                                                                  | Ref. | item | COMMENTS                                                                                                                                                                                                                                                                                                                                        | Draft<br>Concl | Final<br>Concl |
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| l. Are project technologies, products, services and the expected level of activity described?                                                                                                                       | PD   | 1.8  | CAR 03: According to identification plates on equipment installed in the Hydro Power Plant, as was observed during site visit on 29/05/2012, the generators have an installed capacity of 213.75 MW. Section 1.8 of the PD version 1 needs be revised.                                                                                          | CAR 03         | OK             |
| m. Is the project location, including geographic and physical information allowing the unique identification and delineation of the specific extent of the project, and including GPS project boundaries, provided? | PD   | 1.9  | <p>Yes. Geographic coordinates are provided:</p> <p>“HPP Foz do Chapecó is located in Uruguay River, between the municipalities of Águas de Chapecó/SC e Alpestre/RS, in Brazil. The geographic coordinates are: Latitude 27° 08’ 22’ 75” South and Longitude of 53° 02’ 50’ 59” West.”</p> <p>Crosschecked during site visit (29/05/2012).</p> | OK             | OK             |

| CHECKLIST QUESTION | Ref. | item | COMMENTS                                         | Draft<br>Concl | Final<br>Concl |
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|                    |      |      | However see CL regarding geographic coordinates. |                |                |

| CHECKLIST QUESTION                                                                                                                                 | Ref. | item  | COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Draft<br>Concl | Final<br>Concl |
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| n. Are the conditions prior to project initiation provided?                                                                                        | PD   | 1.21  | Yes. Project is a greenfield activity.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | OK             | OK             |
| o. Does the VCS PD include identification of relevant local laws and regulations related to the project and demonstration of compliance with them? | PD   | 1.11  | <p>Yes:</p> <p><i>“The project has all relevant environmental licenses and permissions issued and in compliance with Brazilian Regulation. The Preliminary License was issued by the Environmental Ministry (Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis – IBAMA) environmental agency, on December 13th, 2002, PL number 147. The Installation License was issued on September 21st, 2004, IL number 284 and renewed on December 5th, 2006. The Operation License nº 949/2010 was issued on 25/08/2010 by IBAMA and it is valid until 25/08/2014.</i></p> <p><i>The concession contract firmed with the Brazilian Government, through the National Agency of Electric Energy (ANEEL) is a proof that the project is in compliance with the Government requirements.”</i></p> |                |                |
| p. Proof of title evidence was provided?                                                                                                           | PD   | 1.12. | Yes. ANEEL Concession Contract                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | OK             | OK             |

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| CHECKLIST QUESTION                                                                                                                                                                                                                                                             | Ref. | item                  | COMMENTS            | Draft<br>Concl | Final<br>Concl |
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| q. Does the PD provide confirmation that the project was not implemented to create GHG emissions primarily for the purpose of its subsequent removal or destruction?                                                                                                           | PD   | 1.12.<br>2/1.1<br>2.3 | See item 2.d above. | OK             | OK             |
| r. Has the project created another form of environmental credit (for example renewable energy certificates)?                                                                                                                                                                   | PD   | 1.12.<br>4            | See item 2.d above. | OK             | OK             |
| s. Was the project rejected under other GHG programs (if applicable)?                                                                                                                                                                                                          | PD   | 1.12.<br>5            | See item 2.d above. | OK             | OK             |
| t. If yes, does the project:                                                                                                                                                                                                                                                   | PD   | 1.12.<br>5            | See item 2.d above. | OK             | OK             |
| i. clearly state in its VCS PD all GHG programs for which the project has applied for credits and why the project was rejected? (Such information shall not be deemed commercially sensitive information)                                                                      | PD   | 1.12.<br>5            | See item 2.d above. | OK             | OK             |
| ii. If yes, has the proponent provided a letter from the program operator that the credit has not been used and has been cancelled from the relevant program?                                                                                                                  | PD   | 1.12.<br>5            | See item 2.d above. | OK             | OK             |
| u. Is any information relevant for the eligibility of the project and quantification of emission reductions or removal enhancements, including legislative, technical, economic, sectoral, social, environmental, geographic, site-specific and temporal information provided? | PD   | 1.13                  | No.                 | OK             | OK             |
| v. Is there any commercially sensitive information that has been excluded from the public version of the VCS PD that will be displayed on the VCS Project Database? If yes, was it listed?                                                                                     | PD   | 1.13                  | No.                 | OK             | OK             |

| CHECKLIST QUESTION                                                                                                                                          | Ref.      | item       | COMMENTS                                                                        | Draft<br>Concl | Final<br>Concl |
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| <b>e.2 Application of Methodology</b>                                                                                                                       | <b>PD</b> | <b>2.0</b> |                                                                                 |                |                |
| a. Are title and reference of the VCS methodology applied to the project activity and explanation of methodology choices provided?                          | PD        | 2.1        | Methodology used is CDM-ACM0002.                                                | OK             | OK             |
| b. Are the choice of the methodology and its applicability to the project activity justified?                                                               | PD        | 2.2        | Yes.                                                                            | OK             | OK             |
| c. Are project boundary, relevant GHG sources, sinks and reservoirs identified for the baseline scenario and for the project?                               | PD        | 2.3        | Yes.                                                                            | OK             | OK             |
| d. Is it described how the baseline scenario is identified?                                                                                                 | PD        | 2.4        | Yes, baseline scenario is in accordance with CDM-ACM0002 for greenfield plants. | OK             | OK             |
| e. Has the project proponent selected the most reasonable baseline scenario for the project?                                                                | PD        | 2.4        | Yes, baseline scenario is in accordance with CDM-ACM0002 for greenfield plants. | OK             | OK             |
| f. Has the project proponent selected the most conservative baseline scenario for the project, based on the requirements in the applicable VCS methodology? | VCS       | 3.14.1     | Yes, baseline scenario is in accordance with CDM-ACM0002 for greenfield plants. | OK             | OK             |

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| CHECKLIST QUESTION                                                                                                                                                                                                                                                                | Ref. | item   | COMMENTS                                                                        | Draft<br>Concl | Final<br>Concl |
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| g. Has the project proponent demonstrated equivalence in type and level of activity of products or services provided between the project and the baseline scenario and has explained, as appropriate, any significant differences between the project and the baseline scenario ? | VCS  | 3.14.2 | Yes, baseline scenario is in accordance with CDM-ACM0002 for greenfield plants. | OK             | OK             |
| h. In developing the baseline scenario, has the project proponent selected the assumptions, values and procedures that help ensure that GHG emissions reductions or removal enhancements are not over-estimated?                                                                  | VCS  | 3.14.3 | Yes, baseline scenario is in accordance with CDM-ACM0002 for greenfield plants. | OK             | OK             |
| i. Does it reflect what most likely would have occurred in the absence of the project?                                                                                                                                                                                            | PD   | 2.5    | Yes, baseline scenario is in accordance with CDM-ACM0002 for greenfield plants. | OK             | OK             |
| j. Is it described how the emissions of GHG by source in baseline scenario are reduced below those that would have occurred in the absence of the project activity (assessment and demonstration of additionality)?                                                               | PD   | 2.5    | Yes, baseline scenario is in accordance with CDM-ACM0002 for greenfield plants. | OK             | OK             |
| k. Has the project proponent demonstrated and assessed in accordance with the requirements set out                                                                                                                                                                                | PD   | 2.5    |                                                                                 | OK             | OK             |

| CHECKLIST QUESTION                                                                                                                                                                   | Ref.         | item               | COMMENTS                                                                                                                                                                                                                                                                            | Draft<br>Concl  | Final<br>Concl |
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| in the methodology applied to the project?                                                                                                                                           |              |                    | Yes.                                                                                                                                                                                                                                                                                |                 |                |
| I. Does the project use one of the VCS program approved project methodologies and provide information relevant to methodology deviations or methodology revisions? Was it justified? | PD or<br>VCS | 2.6<br>or<br>3.5.1 | Methodology used is CDM-ACM0002.                                                                                                                                                                                                                                                    | OK              | OK             |
| <b>e.3 Quantification of GHG emissions and removals</b>                                                                                                                              | <b>PD</b>    | <b>3.0</b>         |                                                                                                                                                                                                                                                                                     |                 |                |
| a. Are GHG emissions and/or removals for the baseline scenario quantified?                                                                                                           | PD           | 3.1                | CAR 06: In Sections 3.1 and 3.2 of the PD version 1, PP does not describe the procedure for quantification of project emissions. Moreover, PP shall include equations (1), (3), (4) and (5) from ACM0002 version 13 regarding project emissions.                                    | CAR 06          | OK             |
| b. Are GHG emissions and/or removals for the project quantified?                                                                                                                     | PD           | 3.2                | CAR 07: In Section 2.3 of the PD version 1, according to ACM0002 version 13.0.0, the parameter $TEG_y$ does not need to be monitored, since the HPP has a power density greater than 10 W/m. On the other hand, the parameter $A_{p,j}$ needs to be included as monitored parameter | CAR 07<br>CL 08 | OK             |

| CHECKLIST QUESTION | Ref. | item | COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                                              | Draft<br>Concl | Final<br>Concl |
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|                    |      |      | <p>CL 08: In 3.4 of the PD version 1:</p> <ul style="list-style-type: none"> <li>- Please use “SIN” as abbreviation for the National Interconnected System instead of SIC;</li> <li>- OM means “Operating Margin” and not “Operational Margin”;</li> <li>- Please use OM and BM 2011 values as published by the Brazilian DNA for ex-ante estimation of CERs, since these are the latest values made available by the DNA.</li> </ul> |                |                |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                                                                                                                                                                                               | Ref.      | item       | COMMENTS                                                                                                                                                                                                                                                                                                                                    | Draft Concl                                           | Final Concl |
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| c. Are GHG emissions for leakage quantified?                                                                                                                                                                                                                                                                                                                                                                                                     | PD        | 3.3        |                                                                                                                                                                                                                                                                                                                                             |                                                       |             |
| <b>e.4 Monitoring</b>                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>PD</b> | <b>4.0</b> |                                                                                                                                                                                                                                                                                                                                             |                                                       |             |
| a. Are data and parameters monitored/selecting relevant GHG sources, sinks and reservoirs for monitoring or estimating GHG emissions and removals described in the tabular form including (data unit, description, source of data, description of measurement methods and procedures to be applied, frequency of monitoring/recording, value applied, monitoring equipment, QA/QC procedures to be applied, calculation method and any comment)? | PD        | 4.2        | Yes. Tabular format is provided in accordance with ACM0002.                                                                                                                                                                                                                                                                                 | OK                                                    | OK          |
| b. Has data and parameters used for the quantification of GHG emission reductions and/or removals provided in accordance with the methodology?                                                                                                                                                                                                                                                                                                   | VCS       | 3.17.1     | <p>Yes:</p> <p><i>"The main parameters that will be controlled were:</i></p> <ul style="list-style-type: none"> <li><i>Net Electricity Supplied to the Grid (MWh);</i></li> <li><i>Emission Factor for Electricity Generation Connected to the Brazilian Interconnected Grid (tCO<sub>2</sub>e/MWh);"</i></li> </ul> <p><i>However:</i></p> | <p>CAR 04</p> <p>CAR 05</p> <p>CL 06</p> <p>CL 07</p> | OK          |

| CHECKLIST QUESTION | Ref. | item | COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Draft<br>Concl | Final<br>Concl |
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|                    |      |      | <p>CAR 04: Regarding Section 4.2 of the PD version 1, the parameters <math>Cap_{PJ}</math> and <math>A_{PJ}</math> also need to be monitored according to ACM0002 version 13.</p> <p>CAR 05: In Section 4.2 of the PD version 1, the monitored parameter <math>EG_y</math> needs to be presented in accordance with ACM0002 version 13: <math>EG_{facility,y}</math>. Also, please provide the: copies of the “generation spreadsheets available at the CCEE’s Website”.</p> <p>CL 06: Regarding the amount of energy (MWh) already dispatched to the grid by the HPP, please clarify the following: According to the PD, the HPP is expected to deliver to the grid 3,784,320 MWh each year. However, according to the PD, the HPP delivered 5,114,507 MWh to the grid in 2011.</p> <p>CL 07: In Section 4.2 and 4.3 of the PD version 1, regarding <math>EG_{facility,y}</math>, please clarify in the PD that monitoring and recording frequency is in accordance with ACM0002 version 13: “<u>Continuous measurement</u> and at least monthly recording”.</p> |                |                |

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| CHECKLIST QUESTION                                                                                                                                                                                                                                                                                                                                                         | Ref. | item   | COMMENTS                                                                                                                                                                                                                                                                                                                                                                        | Draft<br>Concl | Final<br>Concl |
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| c. Has the project proponent established and applied quality management procedures to manage data and information of GHG emissions and/or removals?                                                                                                                                                                                                                        | VCS  | 3.17.2 |                                                                                                                                                                                                                                                                                                                                                                                 | OK             | OK             |
| d. Is the monitoring plan described?                                                                                                                                                                                                                                                                                                                                       | PD   | 4.3    | <p>Yes:</p> <p><i>“Monitoring has the objective of measuring the emission reductions achieved by the project. To elaborate the monitoring plan, it was followed the Monitoring Methodology present in consolidated baseline methodology for grid-connected electricity generation from renewable sources ACM0002, version 12.3.0 (methodology applied to the project).”</i></p> | OK             | OK             |
| e. Has the project proponent shall established and applied quality management procedures to manage data and information criteria and procedures for obtaining, recording, compiling and analysing data and information important for quantifying and reporting GHG emissions and/or removals relevant for the project and baseline scenario (i.e. GHG information system)? | VCS  | 3.17.3 | <p>Emission factor (OM and BM) calculated by Brazilian DNA in accordance with the latest version of the CDM-Tool to calculate the emission factor for an electricity system.</p> <p>Energy generation data in accordance with</p>                                                                                                                                               | OK             | OK             |

| CHECKLIST QUESTION | Ref. | item | COMMENTS                                                                       | Draft<br>Concl | Final<br>Concl |
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|                    |      |      | reports published by CCEE – Chamber of Commerce for electric energy in Brazil. |                |                |

| CHECKLIST QUESTION                                                                                                                        | Ref.            | item                | COMMENTS                                                                                                                                                                                                                                                                                                                                                                                 | Draft Concl | Final Concl |
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| f. Do the monitoring procedures include the roles and responsibilities?                                                                   | PD<br>or<br>VCS | 4.3<br>or<br>3.17.4 | Yes,<br><br>Please refer to the organizational structure as provided in Section 4.3 of the PD.                                                                                                                                                                                                                                                                                           | OK          | OK          |
| g. Does the project provided deviations from the monitoring plan?                                                                         | VCS             | 3.6.1               | No.                                                                                                                                                                                                                                                                                                                                                                                      | OK          | OK          |
| h. Has an organizational structure been identified?                                                                                       | PD              | 4.3                 | Yes,<br><br>Please refer to the organizational structure as provided in Section 4.3 of the PD.                                                                                                                                                                                                                                                                                           | OK          | OK          |
| i. Have the methods for generating, recording, storing, aggregating, colating and reporting data on monitores parameters been identified? | PD              | 4.3                 | Yes.                                                                                                                                                                                                                                                                                                                                                                                     | OK          | OK          |
| j. Have the procedures for handling internal auditing and non-conformities been identified?                                               | PD              | 4.3                 | Enerbio will cross-check internal control generation spreadsheet with electricity generation data supplied by CCEE. If non-conformities are identified, an email is sent to Operation and Maintenance Foz do Chapecó Manager. The non-conformity is investigated and if the problem is in the internal control, the spreadsheet is corrected. Up to now, no non-conformity has happened. | OK          | OK          |

| CHECKLIST QUESTION                                                                                                                                       | Ref.      | item       | COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Draft Concl | Final Concl |
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| k. Where measurement and monitoring equipment is used, does the project proponent ensure the equipment is calibrated according to current good practice? | VCS       | 3.17.5     | ONS Grid Procedures (Sub-module 12.3) defines the calibration frequency and other maintenance procedures. By the time of completion of this document, the frequency of calibration is a maximum of two years, but in the case of any changes occurred in the ONS Grid Procedures, the project owners shall follow the rules from the relevant sector organizations (e.g. ONS, ANEEL, CCEE). In HPP Foz do Chapecó, there is a Measurement Billing System (SMF- from the Portuguese Sistema de Medição de Faturamento) according the technical specifications defined by ONS Grid Procedures. The communication of this SMF with CCEE occurs directly through a VPN (Virtual Private Network) and, this way, SCDE (Sistema de Coleta de Dados de Energia Elétrica/ Electric Power Data Collection System) has direct access to the mass memory of the electricity meters. | OK          | OK          |
| <b>e.5 Environmental Impact</b>                                                                                                                          | <b>PD</b> | <b>5.0</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |             |             |
| a. Has a summary of environmental impact assessment been provided, when such an assessment is required by applicable legislation or regulation?          |           |            | Yes, please refer to item 5 of the PD.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | CL 11       | OK          |

| CHECKLIST QUESTION | Ref. | item | COMMENTS                                                                                                                                    | Draft<br>Concl | Final<br>Concl |
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|                    |      |      | CL 11: In the PD version 1, please indicate that Section “Environmental Impact” is Section 5 and that “Stakeholders Comments” is Section 6. |                |                |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                              | Ref. | item | COMMENTS                                                                                       | Draft<br>Concl | Final<br>Concl |
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| <b>e.6 Stakeholder comments</b>                                                                                                                                                                                                                                                 |      |      |                                                                                                |                |                |
| a. Have relevant outcomes from stakeholder consultations and mechanisms for on-going communication been provided?                                                                                                                                                               | PD   | 6.0  | Yes. Please refer to item 6 of the PD                                                          | OK             | OK             |
| b. Has the methodology switched?                                                                                                                                                                                                                                                | VCS  | 3.7  | No.                                                                                            | OK             | OK             |
| c. Does the project reduce GHG emissions from activities that participate in an emissions trading program, or take place in a jurisdiction or sector in which binding limits are established on GHG emissions?                                                                  | PD   | 8.2  | No.                                                                                            | OK             | OK             |
| d. If yes, have project proponents provided evidence that the reductions or removals generated by the project have or will not be used in the Program or jurisdiction for the purpose of demonstrating compliance, such as:                                                     | PD   | 8.2  | Not applicable.                                                                                | OK             | OK             |
| e. a letter from the Program operator or designated national authority that emissions allowances (or other GHG credits used in the Program) equivalent to the reductions/removals generated by the project have been cancelled from the Program; or national cap as applicable? | PD   | 8.2  | Not applicable.                                                                                | OK             | OK             |
| f. purchase and cancellation of GHG allowances equivalent to the reductions/removals generated by the project related to the Program or national cap?                                                                                                                           | PD   | 8.2  | Not applicable.                                                                                | OK             | OK             |
| <b>f. Additionality</b>                                                                                                                                                                                                                                                         |      |      |                                                                                                |                |                |
| a. Has additionality been demonstrated in accordance with the requirements set out in the methodology applied to the project?                                                                                                                                                   | VCS  | 3.15 | Additionality is demonstrated by the used of the CDM Tool for the demonstration and assessment | OK             | OK             |

| CHECKLIST QUESTION | Ref. | item | COMMENTS                     | Draft<br>Concl | Final<br>Concl |
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|                    |      |      | of additionality version 06. |                |                |

| CHECKLIST QUESTION                                                                                                                           | Ref. | item      | COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Draft<br>Concl       | Final<br>Concl |
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| b. Does the methodology that applies to the project prescribe the use of the CDM Tool for the demonstration and assessment of additionality? | VCS  | 3.15      | Yes. ACM0002 indicates that the CDM Tool for the demonstration and assessment of additionality needs to be used.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | OK                   | OK             |
| c. Does the PD state the latest version of the additionality tool being used?                                                                | EB65 | Ann<br>21 | <p>CAR 08: Regarding Section 2.5 of the PD version 2, evidence shows that the “Start of minor/pre-project actions (Preliminary Contract) occurred on 15/12/2006 (signing date of pre-EPC contract). Also, table 1 in 2.5 does not “evidence that the carbon credits were seriously considered in the decision to proceed with the development and implementation of the project activity”.</p> <p>CAR 09: Since PP is demonstrating the additionality of the project activity by applying the Tool for the demonstration and assessment of additionality (version 06.0.0), the information provided in the PD in Section 2.5 needs to be presented following the 4 steps of this Tool, including all applicable sub-steps.</p> <p>CL 09: In Section 2.5 of the PD version 1, the phrase: “This section is elaborated based on the project test provided by VCS Standard and the “Tool for demonstration and assessment of additionality”</p> | CAR 08<br><br>CAR 09 | OK             |

| CHECKLIST QUESTION | Ref. | item | COMMENTS                                                                                                                                                                                 | Draft<br>Concl | Final<br>Concl |
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|                    |      |      | (version 6.0.0)" needs to be revised. Moreover, the "project test" is provided in the VCS 2007.1 Standard and the PD uses the VCS 3.3 Standard, which does not include a "project test". |                |                |

| CHECKLIST QUESTION                                                                                                                                                                      | Ref.         | item      | COMMENTS                                                                                              | Draft Concl | Final Concl |
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| d. Has the following steps of the tool to assess additionality been used?                                                                                                               | CDM<br>EB 65 | Ann<br>21 | See below:                                                                                            | OK          | OK          |
| - Identification of alternatives to the project activity?                                                                                                                               | CDM<br>EB 65 | Ann<br>21 | Yes.                                                                                                  | OK          | OK          |
| - 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? | CDM<br>EB 65 | Ann<br>21 | Yes. PP provides a benchmark analysis                                                                 | OK          | OK          |
| - Barriers analysis?                                                                                                                                                                    | CDM<br>EB 65 | Ann<br>21 | No barrier analysis is provided                                                                       | OK          | OK          |
| - Common practice analysis?                                                                                                                                                             | CDM<br>EB 65 | Ann<br>21 | Yes.                                                                                                  | OK          | OK          |
| e. In step 1 (i) have all the sub-steps as below been followed?                                                                                                                         | CDM<br>EB 65 | Ann<br>21 | See below:                                                                                            | OK          | OK          |
| - Sub-step 1a: Define alternatives to the project activity                                                                                                                              | CDM<br>EB 65 | Ann<br>21 | Yes.<br><br>Alternative 1: The project activity undertaken without being registered as a VCS project; | OK          | OK          |

| CHECKLIST QUESTION | Ref. | item | COMMENTS                                                                                                                                                                                                           | Draft<br>Concl | Final<br>Concl |
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|                    |      |      | <p>Alternative 2: The continuation of the current situation. The additional electricity generated by the project would be generated by existing or new power plants connected to the national electric system.</p> |                |                |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                                                            | Ref.         | item      | COMMENTS   | Draft Concl | Final Concl |
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| - Sub-step 1b: Consistency with mandatory laws and regulations                                                                                                                                                                                                                                                | CDM<br>EB 65 | Ann<br>21 | Yes.       | OK          | OK          |
| f. Have the following alternatives been included while defining alternatives as per sub-step 1a?                                                                                                                                                                                                              | CDM<br>EB 65 | Ann<br>21 | See below: | OK          | OK          |
| - The proposed project activity undertaken without being registered as a VCS project activity;                                                                                                                                                                                                                | CDM<br>EB 65 | Ann<br>21 | Yes.       | OK          | OK          |
| - Other realistic and credible alternative scenario(s) to the proposed project 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;    | CDM<br>EB 65 | Ann<br>21 | No.        | OK          | OK          |
| - If applicable, continuation of the current situation (no project activity or other alternatives undertaken).                                                                                                                                                                                                | CDM<br>EB 65 | Ann<br>21 | Yes.       | OK          | OK          |
| g. Has the project participant included the technologies or practices that provide outputs or services with comparable quality, properties and application areas as the proposed project activity and that have been implemented previously or are currently being introduced in the relevant country/region? | CDM<br>EB 65 | Ann<br>21 | No         | OK          | OK          |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                                                                                                                                                  | Ref.         | item      | COMMENTS                                                                                                                                                                                                                                                                                                                                                                       | Draft<br>Concl | Final<br>Concl |
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| g. Has the outcome of Step 1a: Identified realistic and credible alternative scenario(s) to the project activity done correctly? Please briefly mention the outcome.                                                                                                                                                                                                                                | CDM<br>EB 65 | Ann<br>21 | <p>Yes. There are two alternatives to the project:</p> <p>. Alternative 1: The project activity undertaken without being registered as a VCS project;</p> <p>. Alternative 2: The continuation of the current situation. The additional electricity generated by the project would be generated by existing or new power plants connected to the national electric system.</p> | OK             | OK             |
| 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.?                                                                                                                                                                        | CDM<br>EB 65 | Ann<br>21 | Yes.                                                                                                                                                                                                                                                                                                                                                                           | OK             | OK             |
| 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? | CDM<br>EB 65 | Ann<br>21 | Not applicable.                                                                                                                                                                                                                                                                                                                                                                | OK             | OK             |
| 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                                                                                                                                                                                          | CDM<br>EB 65 | Ann<br>21 | Yes.                                                                                                                                                                                                                                                                                                                                                                           | OK             | OK             |

| CHECKLIST QUESTION                                                                                                                                   | Ref.         | item      | COMMENTS                                                                                                                                                                                                         | Draft<br>Concl | Final<br>Concl |
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| enforcement in the region or country and EB decisions on national and/or sectoral policies and regulations done correctly? Please state the outcome. |              |           | All alternatives 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 |                |                |
| k. Has PP selected Step 2 (Investment analysis) or Step 3 (Barrier analysis) or both Steps 2 and 3?                                                  | CDM<br>EB 65 | Ann<br>21 | Please refer to item "Investment analysis" below.                                                                                                                                                                | OK             | OK             |
| l. In step 2, have all the sub-steps as below been followed?                                                                                         | CDM<br>EB 65 | Ann<br>21 | Please refer to item "Investment analysis" below.                                                                                                                                                                | OK             | OK             |
| - Sub-step 2a: Determine appropriate analysis method;                                                                                                | CDM<br>EB 65 | Ann<br>21 | Please refer to item "Investment analysis" below.                                                                                                                                                                | OK             | OK             |
| - Sub-step 2b: Option I. Apply simple cost analysis;                                                                                                 | CDM<br>EB 65 | Ann<br>21 | Please refer to item "Investment analysis" below.                                                                                                                                                                | OK             | OK             |
| - Sub-step 2b: Option II. Apply investment comparison analysis;                                                                                      | CDM<br>EB 65 | Ann<br>21 | Please refer to item "Investment analysis" below.                                                                                                                                                                | OK             | OK             |
| - Sub-step 2b: Option III. Apply benchmark analysis;                                                                                                 | CDM<br>EB 65 | Ann<br>21 | Please refer to item "Investment analysis" below.                                                                                                                                                                | OK             | OK             |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                                                       | Ref.         | item      | COMMENTS                                          | Draft<br>Concl | Final<br>Concl |
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| - Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III);                                                                                                                                                                                               | CDM<br>EB 65 | Ann<br>21 | Please refer to item “Investment analysis” below. | OK             | OK             |
| - Sub-step 2d: Sensitivity analysis (only applicable to Options II and III).                                                                                                                                                                                                                             | CDM<br>EB 65 | Ann<br>21 | Please refer to item “Investment analysis” below. | OK             | OK             |
| m. In sub-step 2a has the determination of appropriate method of analysis done as per the Guidelines on the assessment of investment analysis <sup>17</sup> ?                                                                                                                                            | CDM<br>EB 65 | Ann<br>21 | Please refer to item “Investment analysis” below. | OK             | OK             |
| - Simple cost analysis if the project activity and the alternatives identified in Step 1 generate no financial or economic benefits other than the related income (Option I).                                                                                                                            | CDM<br>EB 65 | Ann<br>21 | Please refer to item “Investment analysis” below. | OK             | OK             |
| - Otherwise, use the investment comparison analysis (Option II) or the benchmark analysis (Option III). Specify option used with justification.                                                                                                                                                          | CDM<br>EB 65 | Ann<br>21 | Please refer to item “Investment analysis” below. | OK             | OK             |
| n. Has the guideline (footnote 1) followed for sub-step 2b Option I. Apply simple cost analysis? Document the costs associated with the project activity and the alternatives identified in Step1 and demonstrate that there is at least one alternative which is less costly than the project activity. | CDM<br>EB 65 | Ann<br>21 | Please refer to item “Investment analysis” below. | OK             | OK             |

<sup>17</sup> UNFCCC website EB 62 Annex 5

| CHECKLIST QUESTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Ref.         | item      | COMMENTS                                          | Draft<br>Concl | Final<br>Concl |
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| o. Has the guideline (footnote 1) followed for sub-step 2b Option II. Apply investment comparison analysis? 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                                                                                                                                                                                                                                            | CDM<br>EB 65 | Ann<br>21 | Please refer to item “Investment analysis” below. | OK             | OK             |
| p. Has the guideline (footnote 1) followed for Sub-step 2b: Option III. Apply benchmark analysis?                                                                                                                                                                                                                                                                                                                                                                                                                                     | CDM<br>EB 65 | Ann<br>21 | Please refer to item “Investment analysis” below. | OK             | OK             |
| - Identify the financial/economic indicator, such as IRR, most suitable for the project type and decision context.                                                                                                                                                                                                                                                                                                                                                                                                                    | CDM<br>EB 65 | Ann<br>21 | Please refer to item “Investment analysis” below. | OK             | OK             |
| - 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. | CDM<br>EB 65 | Ann<br>21 | Please refer to item “Investment analysis” below. | OK             | OK             |
| - 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                                                                                                                                                                        | CDM<br>EB 65 | Ann<br>21 | Please refer to item “Investment analysis” below. | OK             | OK             |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Ref.         | item      | COMMENTS                                          | Draft<br>Concl | Final<br>Concl |
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| capital (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 guideline (footnote 1) followed for Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III)?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | CDM<br>EB 65 | Ann<br>21 | Please refer to item "Investment analysis" below. | OK             | OK             |
| - Calculate the suitable financial indicator for the proposed 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 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                                                                                                                                                                                                                                                                                                                                                              | CDM<br>EB 65 | Ann<br>21 | Please refer to item "Investment analysis" below. | OK             | OK             |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                                                         | Ref.         | item      | COMMENTS                                          | Draft<br>Concl | Final<br>Concl |
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| of public investments in the host country.                                                                                                                                                                                                                                                                 |              |           |                                                   |                |                |
| - Present the investment analysis in a transparent manner and provide all the relevant assumptions, preferably in the PD, or in separate annexes to the PD.                                                                                                                                                | CDM<br>EB 65 | Ann<br>21 | Please refer to item “Investment analysis” below. | OK             | OK             |
| - Justify and/or cite assumptions.                                                                                                                                                                                                                                                                         | CDM<br>EB 65 | Ann<br>21 |                                                   |                |                |
| - 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.                                                                                                                            | CDM<br>EB 65 | Ann<br>21 | Please refer to item “Investment analysis” below. | OK             | OK             |
| - Assumptions and input data for the investment analysis shall not differ across the project activity and its alternatives, unless differences can be well substantiated.                                                                                                                                  | CDM<br>EB 65 | Ann<br>21 | Please refer to item “Investment analysis” below. | OK             | OK             |
| - Present in the PD a clear comparison of the financial indicator for the proposed project activity. Please specify details for above.                                                                                                                                                                     | CDM<br>EB 65 | Ann<br>21 | Please refer to item “Investment analysis” below. | OK             | OK             |
| r. Has the guideline (footnote 1) 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. | CDM<br>EB 65 | Ann<br>21 | Please refer to item “Investment analysis” below. | OK             | OK             |
| s. Has the outcome of Step 2 clearly mentioned with justification?                                                                                                                                                                                                                                         | CDM<br>EB 65 | Ann<br>21 | Please refer to item “Investment analysis” below. | OK             | OK             |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Ref.         | item      | COMMENTS                                                                                                     | Draft Concl | Final Concl |
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| t. In step 3: Barrier analysis have all the sub-steps as below been followed?                                                                                                                                                                                                                                                                                                                                                                                                                                       | CDM<br>EB 65 | Ann<br>21 | No barrier analysis is provided. PP demonstrates the additionality of the project through a barrier analysis | OK          | OK          |
| - Sub-step 3a: Identify barriers that would prevent the implementation of the proposed project activity;                                                                                                                                                                                                                                                                                                                                                                                                            | CDM<br>EB 65 | Ann<br>21 | No barrier analysis is provided. PP demonstrates the additionality of the project through a barrier analysis | OK          | OK          |
| - Sub-step 3b: Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity).                                                                                                                                                                                                                                                                                                                                                   | CDM<br>EB 65 | Ann<br>21 | No barrier analysis is provided. PP demonstrates the additionality of the project through a barrier analysis | OK          | OK          |
| u. Has the below guideline followed for Sub-step 3a: Identify barriers that would prevent the implementation of the proposed project?                                                                                                                                                                                                                                                                                                                                                                               | CDM<br>EB 65 | Ann<br>21 | No barrier analysis is provided. PP demonstrates the additionality of the project through a barrier analysis | OK          | OK          |
| - 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 project activity is to be implemented, as demonstrated by the credit rating of the country or other country investments reports of reputed origin. | CDM<br>EB 65 | Ann<br>21 | No barrier analysis is provided. PP demonstrates the additionality of the project through a barrier analysis | OK          | OK          |
| - Technological barriers: Skilled and/or properly trained labour to operate and maintain the technology is not available in the relevant country/region, which leads to an unacceptably                                                                                                                                                                                                                                                                                                                             | CDM<br>EB 65 | Ann<br>21 | No barrier analysis is provided. PP demonstrates the additionality of the project through a barrier analysis | OK          | OK          |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Ref.         | item      | COMMENTS                                                                                                     | Draft<br>Concl | Final<br>Concl |
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| 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 project activity, as demonstrated by relevant scientific literature or technology manufacturer information, The particular technology used in the proposed project activity is not available in the relevant region. |              |           |                                                                                                              |                |                |
| - Barriers due to prevailing practice: The project activity is the “first of its kind” <sup>18</sup> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | CDM<br>EB 65 | Ann<br>21 | No barrier analysis is provided. PP demonstrates the additionality of the project through a barrier analysis | OK             | OK             |
| - Other barriers, preferably specified in the underlying methodology as examples.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | CDM<br>EB 65 | Ann<br>21 | No barrier analysis is provided. PP demonstrates the additionality of the project through a barrier analysis | OK             | OK             |
| - Has the outcome from Step 3a clearly mentioned in PD?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | CDM<br>EB 65 | Ann<br>21 | No barrier analysis is provided. PP demonstrates the additionality of the project through a barrier analysis | OK             | OK             |
| w. Has the below guideline followed for Sub-step 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | CDM          | Ann       | No barrier analysis is provided. PP demonstrates                                                             | OK             | OK             |

<sup>18</sup> UNFCCC website EB 63 Annex 11

| CHECKLIST QUESTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Ref.         | item      | COMMENTS                                                                                                     | Draft<br>Concl | Final<br>Concl |
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| b: Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity)?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | EB 65        | 21        | the additionality of the project through a barrier analysis                                                  |                |                |
| - If the identified barriers also affect other alternatives, explain how they are affected less strongly than they affect the proposed 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.                                                                                                                                                                                                                                | CDM<br>EB 65 | Ann<br>21 | No barrier analysis is provided. PP demonstrates the additionality of the project through a barrier analysis | OK             | OK             |
| - 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.                                                                                                                                                                                                                                                                                                                                                                                                                   | CDM<br>EB 65 | Ann<br>21 | No barrier analysis is provided. PP demonstrates the additionality of the project through a barrier analysis | OK             | OK             |
| - 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, | CDM<br>EB 65 | Ann<br>21 | No barrier analysis is provided. PP demonstrates the additionality of the project through a barrier analysis | OK             | OK             |

| CHECKLIST QUESTION                                                                             | Ref.         | item      | COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Draft<br>Concl      | Final<br>Concl |
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| training centres), industry associations and others.<br>Please specify.                        |              |           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                     |                |
| x. Has the outcome from Step 3 clearly mentioned in PD?                                        | CDM<br>EB 65 | Ann<br>21 | No barrier analysis is provided. PP demonstrates the additionality of the project through a barrier analysis                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | OK                  | OK             |
| y. In step 4: Common practice analysis <sup>19</sup> have all the sub-steps as below followed? | CDM<br>EB 65 | Ann<br>21 | <p>.</p> <p>CAR 10: Regarding the common practice analysis in Section 2.5 of the PD version 1, PP can exclude all reference to the sub-steps 4a and 4b of the Tool for the demonstration and assessment of additionality (version 06.0.0), seeing that the common practice analysis for this type of project needs to be presented in accordance with paragraphs 6(b) and 47 of the referred Tool. <u>Also, please provide the 4 steps mentioned in paragraph 47. Moreover, in the PD version 1, PP only provides 3 steps.</u></p> <p>CL 10: In step 02 of the common practice stepwise approach, please clarify in the PD what is the</p> | CAR 10<br><br>CL 10 | OK             |

<sup>19</sup> UNFCCC website EB 63 Annex 12

| CHECKLIST QUESTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Ref.         | item      | COMMENTS                                                                                                                                                        | Draft<br>Concl | Final<br>Concl |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |              |           | "applicable geographical area".                                                                                                                                 |                |                |
| - Sub-step 4a: Analyse other activities similar to the proposed project activity;                                                                                                                                                                                                                                                                                                                                                                                                                                                         | CDM<br>EB 65 | Ann<br>21 | PP uses paragraph 47 of the Tool for the demonstration and assessment of additionality (version 06.0.0) to demonstrate that the project is not common practice. | OK             | OK             |
| - Sub-step 4b: Discuss any similar Options that are occurring.                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | CDM<br>EB 65 | Ann<br>21 | PP uses paragraph 47 of the Tool for the demonstration and assessment of additionality (version 06.0.0) to demonstrate that the project is not common practice. | OK             | OK             |
| 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 similar 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. | CDM<br>EB 65 | Ann<br>21 | PP uses paragraph 47 of the Tool for the demonstration and assessment of additionality (version 06.0.0) to demonstrate that the project is not common practice. | OK             | OK             |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Ref.         | item      | COMMENTS                                                                                                                                                        | Draft<br>Concl | Final<br>Concl |
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| - Has the guideline (footnote 1) 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 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 PD should include justification about non-accessibility of data/information. | CDM<br>EB 65 | Ann<br>21 | PP uses paragraph 47 of the Tool for the demonstration and assessment of additionality (version 06.0.0) to demonstrate that the project is not common practice. | OK             | OK             |
| - Does the stepwise approach for common practice analysis been applied? If yes:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | CDM<br>EB 65 | Ann<br>21 | Yes.                                                                                                                                                            | OK             | OK             |
| - Step 1: Calculate applicable output range as +/- 50% of the design output or capacity of the proposed project activity.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | CDM<br>EB 65 | Ann<br>21 | Yes. Range of +/-50% is calculated                                                                                                                              | OK             | OK             |
| - Step 2: In the applicable geographical area, identify all plants that deliver the same output or capacity, within the applicable output range calculated in Step 1, as the proposed project activity and have started commercial operation before the start date of the project. Note their number $N_{all}$ .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | CDM<br>EB 65 | Ann<br>21 | Yes. $N_{all}$ is 37                                                                                                                                            | OK             | OK             |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                            | Ref.           | item      | COMMENTS                                                                                                                                                                                                                                                                                                      | Draft<br>Concl | Final<br>Concl |                  |    |                  |    |                                              |      |                                     |   |    |    |
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| Registered CDMproject activities shall not be included in this step                                                                                                                                                                                                           |                |           |                                                                                                                                                                                                                                                                                                               |                |                |                  |    |                  |    |                                              |      |                                     |   |    |    |
| - Step 3: Within plants identified in Step 2, identify those that apply technologies different that technology applied in the proposed project activity. Note their number N <sub>diff</sub> .                                                                                | CDM<br>EB 65   | Ann<br>21 | Yes. N <sub>all</sub> is 37                                                                                                                                                                                                                                                                                   | OK             | OK             |                  |    |                  |    |                                              |      |                                     |   |    |    |
| - Step 4: Calculate factor F=1-N <sub>diff</sub> /N <sub>all</sub> representing the share of plants using technology similar to the technology used in the proposed project activity in all plants that deliver the same output or capacity as the proposed project activity. | CDM<br>EB 65   | Ann<br>21 | Yes. <div><table><tr><th>Parameters</th><th>Values/Results</th></tr><tr><td>N<sub>all</sub></td><td>37</td></tr><tr><td>N<sub>dif</sub></td><td>35</td></tr><tr><td>F = 1-(N<sub>diff</sub>/N<sub>all</sub>)</td><td>0.05</td></tr><tr><td>N<sub>all</sub>-Nd<sub>iff</sub></td><td>2</td></tr></table></div> | Parameters     | Values/Results | N <sub>all</sub> | 37 | N <sub>dif</sub> | 35 | F = 1-(N <sub>diff</sub> /N <sub>all</sub> ) | 0.05 | N <sub>all</sub> -Nd <sub>iff</sub> | 2 | OK | OK |
| Parameters                                                                                                                                                                                                                                                                    | Values/Results |           |                                                                                                                                                                                                                                                                                                               |                |                |                  |    |                  |    |                                              |      |                                     |   |    |    |
| N <sub>all</sub>                                                                                                                                                                                                                                                              | 37             |           |                                                                                                                                                                                                                                                                                                               |                |                |                  |    |                  |    |                                              |      |                                     |   |    |    |
| N <sub>dif</sub>                                                                                                                                                                                                                                                              | 35             |           |                                                                                                                                                                                                                                                                                                               |                |                |                  |    |                  |    |                                              |      |                                     |   |    |    |
| F = 1-(N <sub>diff</sub> /N <sub>all</sub> )                                                                                                                                                                                                                                  | 0.05           |           |                                                                                                                                                                                                                                                                                                               |                |                |                  |    |                  |    |                                              |      |                                     |   |    |    |
| N <sub>all</sub> -Nd <sub>iff</sub>                                                                                                                                                                                                                                           | 2              |           |                                                                                                                                                                                                                                                                                                               |                |                |                  |    |                  |    |                                              |      |                                     |   |    |    |
| - Is the factor F greater than 0.2 and N <sub>all</sub> -N <sub>diff</sub> greater than 3                                                                                                                                                                                     | CDM<br>EB 65   | Ann<br>21 | F = 0.005                                                                                                                                                                                                                                                                                                     | OK             | OK             |                  |    |                  |    |                                              |      |                                     |   |    |    |
| - Has the outcome from Step 4 clearly mentioned in PD?                                                                                                                                                                                                                        | CDM<br>EB 65   | Ann<br>21 | Yes.                                                                                                                                                                                                                                                                                                          | OK             | OK             |                  |    |                  |    |                                              |      |                                     |   |    |    |
| - Has it been proved that the project is additional?                                                                                                                                                                                                                          | CDM<br>EB 65   | Ann<br>21 | Yes.                                                                                                                                                                                                                                                                                                          | OK             | OK             |                  |    |                  |    |                                              |      |                                     |   |    |    |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                                                                                           | Ref.                 | item             | COMMENTS                                                                                                         | Draft<br>Concl | Final<br>Concl |
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| <b>f.1 Investment analysis</b>                                                                                                                                                                                                                                                                                                               | <b>CDM<br/>EB 62</b> | <b>Ann<br/>5</b> |                                                                                                                  |                |                |
| a. Has investment analysis been used to demonstrate the additionality of the proposed CDM project activity?                                                                                                                                                                                                                                  | VVM                  | 108              | Yes, investment analysis been used to demonstrate the additionality of the proposed CDM project activity         | OK             | OK             |
| b. If yes, does the PDD provide evidence that the proposed CDM project activity would not be:                                                                                                                                                                                                                                                | VVM                  | 108              | Not applicable                                                                                                   | NA             | NA             |
| i. the most economically or financially attractive alternative?                                                                                                                                                                                                                                                                              | VVM                  | 108              | Yes, the PDD provide evidence the project is not the most economically or financially attractive alternative     | OK             | OK             |
| ii. economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs)?                                                                                                                                                                                                                         | VVM                  | 108              | Not applicable                                                                                                   | NA             | NA             |
| c. Was this shown by one of the following approaches?                                                                                                                                                                                                                                                                                        | VVM                  | 109              |                                                                                                                  |                |                |
| 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                                                                                                                                                                                                                                                     | VVM                  | 109              | Yes, it's shown that financial returns of the proposed CDM project activity would be insufficient to justify the | OK             | OK             |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                                    | Ref.  | item   | COMMENTS                                                                                                                                                                      | Draft Concl | Final Concl |
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| justify the required investment.                                                                                                                                                                                                                                                      |       |        | required investment.                                                                                                                                                          |             |             |
| d. Is the period of assessment limited to the proposed crediting period of the CDM project activity?                                                                                                                                                                                  | EB 62 | Ann 05 | No, the period of assessment is not limited to the crediting period of the CDM activity                                                                                       | OK          | OK          |
| 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 62 | Ann 05 | Yes, IRR calculations reflect the the period of expected operation of the underlying project activity (technical lifetime).                                                   | OK          | OK          |
| f. Does the IRR calculation include the cost of major maintenance and/or rehabilitation if these are expected to be incurred during the period of assessment?                                                                                                                         | EB 62 | Ann 05 | Yes, the maintenance costs are included in the IRR calculation                                                                                                                | OK          | OK          |
| g. Do the project participants justify the appropriateness of the period of assessment in the context of the underlying project activity, without reference to the proposed CDM crediting period?                                                                                     | EB 62 | Ann 05 | Yes, the PP justify the appropriateness of the period of assessment in the context of the underlying project activity, without reference to the proposed CDM crediting period | OK          | OK          |
| h. Does the cash flow in the final year include a fair value of the project activity assets at the end of the assessment period?                                                                                                                                                      | EB 62 | Ann 05 | No, a fair value was not included, since the cash flow period covers equals the technical lifetime                                                                            | OK          | OK          |
| i. Has the fair value been calculated in accordance with local accounting regulations where available, or international best practice?                                                                                                                                                | EB 62 | Ann 05 | Not applicable                                                                                                                                                                | NA          | NA          |
| j. Does the fair value calculations include both the book value of the asset and the reasonable                                                                                                                                                                                       | EB    | Ann    | Not applicable                                                                                                                                                                | NA          | NA          |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                | Ref.  | item   | COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Draft Concl | Final Concl |
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| expectation of the potential profit or loss on the realization of the assets?                                                                                                                                                                                     | 62    | 05     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |             |             |
| k. Was depreciation, and other non-cash items related to the project activity, which have been deducted in estimating gross profits on which tax is calculated, added back to net profits for the purpose of calculating the financial indicator (e.g. IRR, NPV)? | EB 62 | Ann 05 | Yes, depreciation was deducted in order to calculate taxes and added back to the cash flow                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | OK          | OK          |
| l. Has taxation been included as an expense in the IRR/NPV calculation in cases where the benchmark or other financial indicator is intended for post-tax comparisons?                                                                                            | EB 62 | Ann 05 | Yes, taxation has been included, since the financial indicator used is intended for post-tax comparisons                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | OK          | OK          |
| m. Are the input values used in all investment analysis valid and applicable at the time of the investment decision taken by the project participant?                                                                                                             | EB 62 | Ann 05 | CL APG 01: Please provide the following documents:<br>1. Planilha Foz FA (for price of energy)<br>Please also clarify the following questions about the input values:<br>2. Also specify the investment decision date on a DD/MM/YYYY format<br>1. Explain why the O&M costs are similar to the optimization energy tariff (TEO), as stated item 11 of operational expenditures<br>2. Explain the composition of the financial compensation for utilization of hydro resources<br>3. Public Assets Utilization - since the auction took place on 2001 and the investment decision data is 2002, this expense should not be taken in account.<br>4. CPMF is no long a valid tax<br>5. Since the investment decision date is 2002, the project should not have any evidences after this year | CL APG 01   | OK          |

| CHECKLIST QUESTION | Ref. | item | COMMENTS | Draft<br>Concl | Final<br>Concl |
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| CHECKLIST QUESTION                                                                                                                                                                                                                                                                                | Ref.  | item   | COMMENTS                                                                                            | Draft Concl | Final Concl |
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| n. Is the timing of the investment decision consistent and appropriate with the input values?                                                                                                                                                                                                     | EB 62 | Ann 05 | Please refer to CL APG 01                                                                           | CL APG 01   | OK          |
| o. Are all the listed input values been consistently applied in all calculations?                                                                                                                                                                                                                 | EB 62 | Ann 05 | Please refer to CL APG 01                                                                           | CL APG 01   | OK          |
| p. Does the investment analysis reflect the economic decision making context at point of the decision to recommence 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 62 | Ann 05 | No, the project was not interrupted and resumed due to CDM                                          | OK          | OK          |
| q. Have project participants supplied the spreadsheet versions of all investment analysis?                                                                                                                                                                                                        | EB 62 | Ann 05 | CL APG 02: Please inform how many spreadsheets related to the financial analysis are there          | CL APG 02   | OK          |
| r. Are all formulas used in this analysis readable and all relevant cells be viewable and unprotected?                                                                                                                                                                                            | EB 62 | Ann 05 | Yes, all formulas used in this analysis readable and all relevant cells be viewable and unprotected | OK          | OK          |
| 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 62 | Ann 05 | Not applicable                                                                                      | NA          | NA          |
| t. In case the PP wishes to black-out certain elements of the publicly available version, is it justifiable?                                                                                                                                                                                      | EB 62 | Ann 05 | Not applicable                                                                                      | NA          | NA          |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                                                                                 | Ref.  | item   | COMMENTS                                                                                                                                                                       | Draft Concl | Final Concl |
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| u. Was the cost of financing expenditures (i.e. loan repayments and interest) included in the calculation of project IRR?                                                                                                                                                                                                          | EB 62 | Ann 05 | Yes, the cost of financing expenditures (i.e. loan repayments and interest) included in the calculation of project IRR                                                         | NA          | NA          |
| 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 62 | Ann 05 | Yes, only the portion of investment costs which is financed by equity has been considered as the net cash outflow                                                              | OK          | OK          |
| w. Has the portion of the investment costs which is financed by debt been considered a cash outflow in the calculation of equity IRR? (this is not allowed)                                                                                                                                                                        | EB 62 | Ann 05 | No, the portion of the investment costs which is financed by debt has not been considered a cash outflow in the calculation of equity IRR                                      | CAR APG 01  | OK          |
| x. Was a pre-tax benchmark be applied?                                                                                                                                                                                                                                                                                             | EB 62 | Ann 05 | No, a post-tax benchmark was applied                                                                                                                                           | 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 62 | Ann 05 | Yes, the interest payable was taken into account in the calculation of income tax                                                                                              | OK          | OK          |
| 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 62 | Ann 05 | The project has already a signed contract with a financial institution in order to finance the project, which is in accordance with commercial rates from the referred lender. | OK          | OK          |
| aa. In cases where a benchmark approach is used is the applied benchmark appropriate to the type of IRR calculated?                                                                                                                                                                                                                | EB 62 | Ann 05 | Yes, the benchmark is in accordance with the type or IRR calculated                                                                                                            | OK          | OK          |

| CHECKLIST QUESTION                                                                                                                                                                                                                                      | Ref.     | item      | COMMENTS                                                                                 | Draft<br>Concl | Final<br>Concl |
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| bb. Has local commercial lending rates or weighted average costs of capital (WACC) selected as appropriate benchmarks for a project IRR?                                                                                                                | EB<br>62 | Ann<br>05 | Yes, the WACC was used as a benchmark for project IRR                                    | OK             | OK             |
| cc. Has required/expected returns on equity selected as appropriate benchmark for an equity IRR?                                                                                                                                                        | EB<br>62 | Ann<br>05 | Not applicable. The PP used project IRR                                                  | OK             | OK             |
| dd. In case benchmarks supplied by relevant national authorities selected is it applicable to the project activity and the type of IRR calculation presented?                                                                                           | EB<br>62 | Ann<br>05 | Not applicable                                                                           | OK             | OK             |
| ee. In the cases of projects which could be developed by an entity other than the project participant is the benchmark applied based on parameters that are standard in the market?                                                                     | EB<br>62 | Ann<br>05 | Yes, the benchmark applied is based on parameters that are standard in the market        | OK             | OK             |
| ff. 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?                                                                              | EB<br>62 | Ann<br>05 | Yes, since this project can be developed others, market based parameters are appropriate | OK             | OK             |
| gg. Have internal company benchmarks/expected returns (including those used as the expected 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 developer? | EB<br>62 | Ann<br>05 | Not applicable                                                                           | NA             | NA             |
| hh. In such cases, have these values been used for similar projects with similar risks, developed by the same company or, if the company is brand new, would have been used for similar projects in the same sector in the country/region?              | EB<br>62 | Ann<br>05 | Not applicable                                                                           | NA             | NA             |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                                                                                                                    | Ref.     | item      | COMMENTS                                                                                                                          | Draft<br>Concl | Final<br>Concl |
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| ii. Has a minimum clear evidence of the resolution by the company's Board and/or shareholders been provided to the effect as above?                                                                                                                                                                                                                                   | EB<br>62 | Ann<br>05 | Not applicable                                                                                                                    | NA             | NA             |
| jj. Has a thorough assessment of the financial 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 conducted?                                                                                                               | EB<br>62 | Ann<br>05 | Not applicable                                                                                                                    | NA             | NA             |
| 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) calculating 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<br>62 | Ann<br>05 | The cost of equity was calculated using best financial practices, based on data sources which could clearly validated by the DOE. | OK             | OK             |
| ll. If a company internal benchmark is used, are the values in the table in Appendix A used, as a simple default option?                                                                                                                                                                                                                                              | EB<br>62 | Ann<br>05 | 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<br>62 | Ann<br>05 | Not applicable                                                                                                                    | NA             | NA             |
| nn. For loans, is the weighted average cost of outstanding long-term debt used?                                                                                                                                                                                                                                                                                       | EB<br>62 | Ann<br>05 | Not applicable                                                                                                                    | NA             | NA             |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                                                                                                                                                                                           | Ref.     | item          | COMMENTS                                                                                                                      | Draft<br>Concl | Final<br>Concl |
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| 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 bonds issued in the host country of the CDM project.                                                                                          | EB<br>62 | Ann<br><br>05 | Not applicable                                                                                                                | NA             | NA             |
| pp. In cases where the debt finance structure of the project is not yet available (e.g. a letter of intent 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? | EB<br>62 | Ann<br><br>05 | The debt finance structure of the project is already available and the interests rates are appropriate to the project context | OK             | OK             |
| i. for bonds: the key parameters of the bond including the time of maturity, yield, registration issuance in the financial system and set-up in the market;                                                                                                                                                                                                                                                                                  | EB<br>62 | Ann<br><br>05 | Not applicable                                                                                                                | NA             | NA             |
| ii. for loans from a financial institution: the contract of lending between the financial 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;                                                                                                                                         | EB<br>62 | Ann<br><br>05 | CAR APG 01: please refer to BNDES loan contract in the VCS PD. The document does not mention this contract                    | CAR<br>APG 01  | OK             |
| iii. for debt financing from a parent company: the transfer of capital to the legal entity, documented with the contract of lending between the parent company and the legal                                                                                                                                                                                                                                                                 | EB<br>62 | Ann<br><br>05 | Not applicable                                                                                                                | NA             | NA             |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                                                                                                                                                         | Ref.  | item   | COMMENTS                                                                                                                                                    | Draft Concl | Final Concl |
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| entity owning the assets of the project activity and/or the parameters of the corporate bonds as mentioned above. (This 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 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 62 | Ann 05 | Yes, the benchmark is based on parameters that are standard to the market                                                                                   | OK          | OK          |
| 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 62 | Ann 05 | 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 62 | Ann 05 | 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                                                          | EB 62 | Ann 05 | CL APG 03: Please inform if there are financial statements audited by a third party within two years prior to the submission of the CDM-PDD for validation. | CL APG 03   | OK          |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                                                     | Ref.  | item   | COMMENTS                                                                                                                                                                                                           | Draft Concl | Final Concl |
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| determined based on the latest balance sheet 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 62 | Ann 05 | The project finance struture is already defined: 77.94% debt and 22.06 equity                                                                                                                                      | OK          | OK          |
| vv. Is the benchmark based on parameters that are standard in the market?                                                                                                                                                                                                                              | EB 62 | Ann 05 | Yes, benchmark is based on parameters that are standard in the market                                                                                                                                              | OK          | OK          |
| ww. If yes, is the typical debt/equity finance structure observed in the sector of the country used?                                                                                                                                                                                                   | EB 62 | Ann 05 | Yes, the debt/equity structure of the project is commonly observed in the sector                                                                                                                                   | NA          | NA          |
| xx. If such information is not readily available, was 50% debt and 50% equity financing assumed as a default?                                                                                                                                                                                          | EB 62 | Ann 05 | 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 62 | Ann 05 | 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 | EB 62 | Ann 05 | Yes. The relevant variables have been subjected to reasonable variation. The results of the sensitivity analysis related to the variation have been presented in the PDD and can be reproduced in the spreadsheet. | OK          | OK          |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Ref.     | item      | COMMENTS                                                                                            | Draft<br>Concl | Final<br>Concl |
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| associated spreadsheets?                                                                                                                                                                                                                                                                                                                                                                                                                                               |          |           |                                                                                                     |                |                |
| 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 material impact on the analysis ?                                                                                                                                                                                                                                                                                        | EB<br>62 | Ann<br>05 | No. None of the remaining variables have significant impact in the project IRR                      | OK             | OK             |
| bbb. Is the range of variations selected is reasonable in the project context?                                                                                                                                                                                                                                                                                                                                                                                         | EB<br>62 | Ann<br>05 | Yes. The range of variations seems reasonable for the project context                               | OK             | OK             |
| ccc. Dos the variations in the sensitivity analysis at least cover a range of +10% and -10%, unless this is not deemed appropriate in the context of the specific project circumstances?                                                                                                                                                                                                                                                                               | EB<br>62 | Ann<br>05 | Yes, the variations in the sensitivity analysis at least cover a range of +10% and -10%             | OK             | OK             |
| ddd. In cases where a scenario will result in the project activity passing the benchmark or becoming the most financially attractive alternative, is an assessment done of the probability of the occurrence of this scenario in comparison to the likelihood of the assumptions 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? | EB<br>51 | Ann<br>58 | None of the scenarios produces a financial indicator which surpasses the benchmark                  | OK             | OK             |
| eee. Was the plant load factor defined ex-ante in the CDM-PDD according to one of the following options:                                                                                                                                                                                                                                                                                                                                                               | EB<br>48 | Ann<br>11 |                                                                                                     |                |                |
| i. The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval?                                                                                                                                                                                                                                                   | EB<br>48 | Ann<br>11 | The plant load factor was determined by the contract of sale of energy by the project's power plant | OK             | OK             |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                           | Ref.  | item   | COMMENTS                                                                                                                                                                                                                                                                                                   | Draft Concl | Final Concl |
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| ii. The plant load factor determined by a third party contracted by the project participants (e.g. an engineering company)?                                                                                                                                                  | EB 48 | Ann 11 | Not applicable                                                                                                                                                                                                                                                                                             | NA          | OK          |
| fff. Was a thorough assessment of all parameters 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? | VVM   | 111    | Please refer to CL APG 01. Besides the requests, all the assumptions and the model concept are relevant for the analysis                                                                                                                                                                                   | CL APG 01   | OK          |
| ggg. Were the parameters cross-checked against third-party or publicly available sources, such as invoices or price indices?                                                                                                                                                 | VVM   | 111    | Please refer to CL APG 01                                                                                                                                                                                                                                                                                  | CL APG 01   | OK          |
| hhh. Were feasibility reports, public announcements and annual financial reports related to the proposed CDM project activity and the project participants reviewed?                                                                                                         | VVM   | 111    | CL APG 04: Please inform if there is any public announcements, annual financial reports or feasibility reports related to the project                                                                                                                                                                      | CL APG 04   | OK          |
| iii. Was the correctness of computations carried out and documented by the project participants assessed?                                                                                                                                                                    | VVM   | 111    | CAR APG 02:<br>All the calculations seem correct. However, please correct the portuguese terms in the "Cash Flow Foz", sheet "Assumptions", column B, lines 34 to 55, column E, lines 5 to 66. Please also inform the years on a calendar basis, related to each year of operation, instead of (1,2,3,...) | CAR APG 02  | 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    | CL APG 05: Please determine under what conditions variations in the result would occur, and the likelihood of these conditions assessed, related to the sensitivity analysis                                                                                                                               | CL APG 05   | OK          |
| kkk. Is the type of benchmark applied is suitable for the type of financial indicator presented?                                                                                                                                                                             | VVM   | 112    | Yes, the benchmark applied is suitable for the type of financial indicator presented                                                                                                                                                                                                                       | OK          | OK          |
| lll. Do any risk premiums applied determining the benchmark reflect the risks associated with the                                                                                                                                                                            | VVM   | 112    | Yes, the rik premium applied reflects the risks associated to the project                                                                                                                                                                                                                                  | OK          | OK          |

| CHECKLIST QUESTION                                                                                                                                                                                                                                                                                                                                                | Ref. | item | COMMENTS                                                                        | Draft<br>Concl | Final<br>Concl |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|------|---------------------------------------------------------------------------------|----------------|----------------|
| project type or activity?                                                                                                                                                                                                                                                                                                                                         |      |      |                                                                                 |                |                |
| 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  |                                                                                 |                |                |
| i. assessing previous investment decisions by the project participants involved?                                                                                                                                                                                                                                                                                  | VVM  | 112  | Not applicable                                                                  | NA             | NA             |
| ii. determining whether the same benchmark has been applied?                                                                                                                                                                                                                                                                                                      | VVM  | 112  | The benchmark applied is the very well known and used for the same project type | OK             | OK             |
| iii. determining if there are verifiable circumstances that have led to a change in the benchmark?                                                                                                                                                                                                                                                                | VVM  | 112  | Not applicable                                                                  | NA             | NA             |
| 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  | Please refer to CL APG 04                                                       | CL<br>APG 04   | OK             |
| ooo. If yes:                                                                                                                                                                                                                                                                                                                                                      | VVM  | 113  |                                                                                 |                | 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  | Please refer to CL APG 04                                                       | CL<br>APG 04   | OK             |
| ii. Are the values used in the PDD and associated annexes fully consistent with the FSR?                                                                                                                                                                                                                                                                          | VVM  | 113  | Please refer to CL APG 04                                                       | CL<br>APG 04   | OK             |
| iii. If not, was the appropriateness of the values validated?                                                                                                                                                                                                                                                                                                     | VVM  | 113  | Please refer to CL APG 04                                                       | CL             | OK             |

| CHECKLIST QUESTION                                                                                                                                                                                                                          | Ref. | item       | COMMENTS                                          | Draft<br>Concl | Final<br>Concl |
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|                                                                                                                                                                                                                                             |      |            |                                                   | APG 04         |                |
| 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        | Please refer to CL APG 04                         | CL<br>APG 04   | OK             |
| <b><i>g. Records relating to the project</i></b>                                                                                                                                                                                            |      |            |                                                   |                |                |
| Has the project proponent kept all documents and records in a secure and retrievable manner for at least two years after the end of the project crediting period.?                                                                          | VCS  | 3.18       | Not applicable. This is the validation procedure. | OK             | OK             |
| <b><i>h. Information to validator and verifier</i></b>                                                                                                                                                                                      |      |            |                                                   |                |                |
| Has the project proponent made available to the validator the VCS PD, evidence of right of use and any requested supporting information and data needed to evidence statements and data in the VCS PD and evidence of right of use?         | VCS  | 3.18.<br>2 | Yes.                                              | OK             | OK             |

\* Definition of Project Start Date differ between VCS PD late and VCS 2007.1 and VCS v.3. This protocol applies the VCS v.3.

**Table 3 Resolution of Corrective Action and Clarification Requests**

| Draft report clarifications and corrective action requests by validation team                                                                                                                                                                                       | Ref. to checklist question in table 1 and 2 | Summary of project owner response                                                                                 | Validation team conclusion                                                                                                                                                                                                          |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CAR 01: In Section 1.2 of the PD version 1, the Sectoral Scope of the project needs to be: "1. Energy (renewable/non-renewable)", in accordance with information provided in the VCS website. <u>Also, please remove the name "BAESA Project" from Section 1.3.</u> |                                             | Section 1.2 was modified in accordance to VCS website. Also Baesa Project was changed for Foz do Chapecó Project. | In the PD version 2, PP now indicates that the sectoral scope of the project is: 1. Energy (renewable/non-renewable)"<br><br>Also, the reference to other project (BAESA) was removed.<br><br>Seeing the above, the CAR was closed. |
| CAR 02: In Sections 1.6, 1.7 and 3.4 of the PD version 1, the crediting period comprises only 9 years instead of the prescribed 10 years.                                                                                                                           |                                             | Sections 1.6, 1.7 and 3.4 was modified for 10 years.                                                              | The referred sections were modified and in the PD version 2, they now mention a period of 10 years.<br><br>Seeing the above, the CAR was closed.                                                                                    |
| CAR 03: According to identification plates on equipment installed in the Hydro Power Plant, as was observed during site visit on 29/05/2012, the generators have an installed capacity of 213.75 MW. Section 1.8 of the PD version 1 needs be revised.              |                                             | Section 1.8 was modified with correct generators capacity.                                                        | Section 1.8 of the PD version 2 now indicates the correct generators capacity.<br><br>Seeing the above, the CAR was closed.                                                                                                         |

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| CAR 04: Regarding Section 4.2 of the PD version 1, the parameters $Cap_{PJ}$ and $A_{PJ}$ also need to be monitored according to ACM0002 version 13.                                                                                                           |  | The parameters $Cap_{PJ}$ and $A_{PJ}$ were included according to ACM0002, version 13.0.0                                                                                                                                                                                                                                                               | In Section 4.2 of the PD version 2, the parameters $Cap_{PJ}$ and $A_{PJ}$ were included.<br><br>Seeing the above, the CAR was closed.                                                                                                                                  |
| CAR 05: In Section 4.2 of the PD version 1, the monitored parameter $EG_y$ needs to be presented in accordance with ACM0002 version 13: $EG_{facility,y}$ . Also, please provide the: copies of the “generation spreadsheets available at the CCEE’s Website”. |  | The monitored parameter was in accordance with ACM0002.<br>The “generation spreadsheets” is available in CCEE website:<br><a href="http://www.ccee.org.br/portal/faces/pages_publico/o-que-fazemos/resultados">http://www.ccee.org.br/portal/faces/pages_publico/o-que-fazemos/resultados</a> .<br><br>and in the evidence: “Relatório de Geração CCEE” | In Section 4.2 of the PD version 2, the monitored parameter $EG_y$ is now presented in accordance with ACM0002 version 13: $EG_{facility,y}$ .<br><br>Also, the generating spreadsheets of CCEE were provided as evidence.<br><br>Seeing the above, the CAR was closed. |
| CAR 06: In Sections 3.1 and 3.2 of the PD version 1, PP does not describe the procedure for quantification of project emissions. Moreover, PP shall include equations (1), (3), (4) and (5) from ACM0002 version 13 regarding project emissions.               |  | The equations (1), (3), (4) and (5) from ACM0002 version 13 were included in the section 3.1 and 3.2                                                                                                                                                                                                                                                    | The equations (1), (3), (4) and (5) from ACM0002 version 13 were included in the section 3.1 and 3.2 of the PD version 2.<br><br>Seeing that this has been done in accordance with ACM0002v13, this CAR was closed.                                                     |

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| <p>CAR 07: In Section 2.3 of the PD version 1, according to ACM0002 version 13.0.0, the parameter <math>TEG_y</math> does not need to be monitored, since the HPP has a power density greater than 10 W/m. On the other hand, the parameter <math>A_{PJ}</math> needs to be included as monitored parameter.</p>                                                                               |  | <p>The parameter <math>TEG_y</math> was removed from the section 2.3. The parameter <math>A_{PJ}</math> was included in section 4.2 as monitored parameter.</p>                                                                                                                                      | <p>In the PD version 2, the parameter <math>TEG_y</math> was removed from the section 2.3 and the parameter <math>A_{PJ}</math> was included.</p> <p>This was done in accordance to ACM0002 v 13 and the CAR is closed.</p> <p>Seeing the above, the CAR was closed.</p>                                                                                                                                                                                                                                                                            |
| <p>CAR 08: Regarding Section 2.5 of the PD version 2, evidence shows that the “Start of minor/pre-project actions (Preliminary Contract) occurred on 15/12/2006 (signing date of pre-EPC contract). Also, table 1 in 2.5 does not “evidence that the carbon credits were seriously considered in the decision to proceed with the development and implementation of the project activity”.</p> |  | <p>The date of pre-EPC contract was updated.</p> <p>The reference “evidence that the carbon credits were seriously considered in the decision to proceed with the development and implementation of the project activity” was removed from the VCS PD because it’s not a requirement of the VCS.</p> | <p>In Section 2.5 of the PD version 2, the date of “Start of minor/pre-project actions (Preliminary Contract) was corrected to 15/12/2006 (signing date of pre-EPC contract). This is in accordance with evidence provided.</p> <p>Also, the following phrase was removed: “evidence that the carbon credits were seriously considered in the decision to proceed with the development and implementation of the project activity”. Since this is not a VCS requirement, the removal was accepted.</p> <p>Seeing the above, the CAR was closed.</p> |

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| <p>CAR 09: Since PP is demonstrating the additionality of the project activity by applying the Tool for the demonstration and assessment of additionality (version 06.0.0), the information provided in the PD in Section 2.5 needs to be presented following the 4 steps of this Tool, including all applicable sub-steps.</p>                                                                                                                                                                                           |  | <p>Section 2.5 was according to the version 6.0.0 of the “Tool for the demonstration and assessment of additionality”</p>                         | <p>In Section 2.5 of the PD version 2, PP now presents the 4 steps of the Additionality Tool (version 6), including all applicable sub-steps.</p> <p>Seeing the above, the CAR was closed.</p>                                                                                                                                                             |
| <p>CAR 10: Regarding the common practice analysis in Section 2.5 of the PD version 1, PP can exclude all reference to the sub-steps 4a and 4b of the Tool for the demonstration and assessment of additionality (version 06.0.0), seeing that the common practice analysis for this type of project needs to be presented in accordance with paragraphs 6(b) and 47 of the referred Tool. <u>Also, please provide the 4 steps mentioned in paragraph 47. Moreover, in the PD version 1, PP only provides 3 steps.</u></p> |  | <p>The reference of sub-step 4a and 4b were excluded from the section 2.5.</p> <p>The 4 steps were provided in section 2.5 – Common practice.</p> | <p>In the common practice analysis in Section 2.5 of the PD version 2, PP now presents the common practice analysis for this type of project in accordance with paragraphs 6(b) and 47 of the referred Tool. Also, the 4 steps mentioned in paragraph 47 of the Tool are provided in version 2 of the PD.</p> <p>Seeing the above, the CAR was closed.</p> |

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| <p>CL 01: In Section 2.1 of the PD version 1, please adjust the methodology to the latest version available. Also, please adjust the applicability conditions in Section 2.2. In Addition, please also include the Tool for the demonstration and assessment of additionality version 06.0.0 in Section 2.1.</p> |  | <p>The methodology was adjusted to the latest version applicable. Also the Tool for the demonstration and assessment of additionality version 06.0.0 was included.</p> | <ul style="list-style-type: none"> <li>- In Section 2.1 of the PD version 2, the methodology was adjusted to the latest version available (version 13).</li> <li>- The applicability conditions in Section 2.2 were adjusted to be in conformity to the latest version available (13).</li> <li>- The Tool for the demonstration and assessment of additionality version 06.0.0 was included in Section 2.1.</li> </ul> <p>Seeing the above, the CL was closed.</p> |
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| <p>CL 02: Please provide a statement from the DOE responsible for validation informing that CDM validation was terminated, including any additional explanations regarding the reason for this termination.</p> |  | <p>Proof that the CDM validation is terminated can be checked at the UNFCCC website:<br/><a href="http://cdm.unfccc.int/Projects/Validation/index.html">http://cdm.unfccc.int/Projects/Validation/index.html</a></p> <p>DOE that worked in the validation does not supply any statement regarding that. Also, DOE is not obliged to that and Project Owner also cannot force DOE to do that.</p> <p>However, the consulting company that hired DOE to perform the CDM Validation required DOE to provide such document. However, DOE did not supply any statement. Proof of that is the file is : “3 - <i>Withdrawal of CDM Project – 1</i>”.</p> | <p>PP has provided two evidences:</p> <ul style="list-style-type: none"> <li>- Proof that the CDM validation is terminated can be checked at the UNFCCC website:<br/><a href="http://cdm.unfccc.int/Projects/Validation/index.html">http://cdm.unfccc.int/Projects/Validation/index.html</a></li> <li>(crosschecked on 16.07.2012: “validation contract has been terminated”).</li> <li>- Letter containing statement from DOE (DNV) confirming the termination of the CDM project validation process.</li> </ul> <p>Since the CDM Project was not rejected and did not receive a negative validation, the DOE accepts PP’s answer. This CL was closed.</p> <p>Also, through interviews held during site visit, PP has informed the DOE that it had decided to stop the CDM validation process because PP could not prove the CDM prior consideration requirement. Since this is not a requirement for the VCS validation process, PP decided to apply for VCS registration.</p> |
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| <p>CL 03: Please include in Section 1 of the PD version 1, a reference (i.e the source of the information) for the following statements:</p> <ul style="list-style-type: none"> <li>- “The installation of HPP Foz do Chapecó provides the generation of enough electricity to the supply of 25% of the energetic demand of the state of Santa Catarina or 18% of the total energy consumed in the state of Rio Grande do Sul.”</li> <li>- “The geographic coordinates are: Latitude 27° 08’ 22’ 75” South and Longitude of 53° 02’ 50’ 59” West.”</li> <li>- “(...) the projection of the Ministry of Mines and Energy (MME) pointed to a total growth in the offer of thermoelectric energy in the country of 10,486 MW in the period of 2006 – 2015 (...)”</li> </ul> |  | <p>The statements “The installation of HPP Foz do Chapecó provides the generation of enough electricity to the supply of 25% of the energetic demand of the state of Santa Catarina or 18% of the total energy consumed in the state of Rio Grande do Sul” was removed from the VCS PD.</p> <p>The statement “The geographic coordinates are: Latitude 27° 08’ 22’ 75” South and Longitude of 53° 02’ 50’ 59” West.” was adjusted. The reference is the file: “<i>Despacho aneel 911</i>” provided by Dispatch 911 of 30/03/2007 in the website <a href="http://www.aneel.gov.br/cedoc/dsp2007911.pdf">http://www.aneel.gov.br/cedoc/dsp2007911.pdf</a>.</p> <p>For the statement “(...) the projection of the Ministry of Mines and Energy (MME) pointed to a total growth in the offer of thermoelectric energy in the country of 10,486 MW in the period of 2006 – 2015 (...)” the reference is: <a href="http://www.epe.gov.br/PDEE/20060702_01.pdf">http://www.epe.gov.br/PDEE/20060702_01.pdf</a> page 85.</p> | <ul style="list-style-type: none"> <li>- The statement (“The installation of HPP Foz do Chapecó provides the generation of enough...”) was removed from the PD version 2.</li> <li>- the geographic coordinates mentioned in the PD version 2 were crosschecked with ANEEL evidence: <a href="http://www.aneel.gov.br/cedoc/dsp2007911.pdf">http://www.aneel.gov.br/cedoc/dsp2007911.pdf</a>. (crosschecked by DOE on 16.07.2012).</li> <li>- Regarding the total growth in the offer of thermoelectric energy in the country of 10,486 MW in the period of 2006 – 2015, PP provided the following evidence: <a href="http://www.epe.gov.br/PDEE/20060702_01.pdf">http://www.epe.gov.br/PDEE/20060702_01.pdf</a> (page 86) (crosschecked by DOE on 16.07.2012).</li> </ul> <p>Seeing the above, the CL was closed.</p> |
| v3.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  | 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

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| <p>CL 04: In Section 1.1 of the PD version 1, please inform the version of the “Tool to calculate the emission factor for an electricity system”. Also, please inform that this Tool is from the Clean Development Mechanism (CDM).</p> |  | <p>The version of the tool and the text was adjusted.</p> | <p>The version of the tool was included in section 1.1 of the PD version 2. Also, the reference to the CDM was included.</p> <p>Seeing the above, the CL was closed.</p> |
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| <p>CL 05: Regarding the size of the reservoir (Section 1.9 of PD version 1), please clarify if the flooded area from the “reservatório de passage” is included in the 79.2 km<sup>2</sup> of the reservoir. Moreover, during site visit (29/05/2012) the validator noticed a second flooded area (after the intake tunnels and before the engine room). Therefore, PP is requested to demonstrate (with evidence) the size of the total flooded area. Also, according to ANEEL Dispatch 911 of 30/03/2007, the reservoir area is 79.93 km<sup>2</sup>.</p> |  | <p>Information provided in the section 1.9 of PD version 01 was wrong. The reservoir area of 79.93 km<sup>2</sup>, provided by Dispatch 911 of 30/03/2007, is the size of the “principal reservoir”. In page 18 of the Basic Engineering Project prepared by CENEC Engenharia S.A. “HFC-RT1P-GEG00-1001-0”(page 19/130).</p> <p>The flooded area (called “passage way”) has 0.09 km<sup>2</sup>. (This value can be checked in attached file “8 - Reservatório de passage” and in the Basic Engineering Project prepared by CENEC Engenharia S.A. “HFC-RT1P-GEG00-1001-0” (page 80/130)</p> | <p>PP has changed the size of the reservoir from 79.2 km<sup>2</sup> (PD version 1) to the correct 79.93 km<sup>2</sup> (PD version 2). The evidence for this value is:</p> <p>- ANEEL Dispatch 911 of 30/03/2007, online available at: <a href="http://www.aneel.gov.br/cedoc/dsp2007911.pdf">http://www.aneel.gov.br/cedoc/dsp2007911.pdf</a>. (crosschecked by DOE on 16.07.2012).</p> <p>In Addition, PP has included the flooded are of the passage way (after the intake tunnels and before the engine room) of 0.09 km<sup>2</sup> to the Power Plants total reservoir area to be conservative. Therefore, the total reservoir are of the Plant is defined in the PD version 2 as 80.02 km<sup>2</sup>.</p> <p>Evidence for the 0.09 km<sup>2</sup> passage way is:</p> <p>Page 18 of the Basic Engineering Project prepared by CENEC Engenharia S.A. “HFC-RT1P-GEG00-1001-0” (page 80).</p> <p>Seeing the above, the CL was closed.</p> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

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| <p>CL 06: Regarding the amount of energy (MWh) already dispatched to the grid by the HPP, please clarify the following: According to the PD, the HPP is expected to deliver to the grid 3,784,320 MWh each year. However, according to the PD, the HPP delivered 5,114,507 MWh to the grid in 2011.</p> | <p>It is important to highlight that this electricity generation variability is normal once it is highly associated to rainfall regime. In 2011, the river had a river flow of 2,059 m<sup>3</sup>. However the historical series between 1931 and 1994 had a river flows of 1,247 m<sup>3</sup>. These values can be checked in the evidences: <b>Relatório Vazão 2011</b>,” in the web site <a href="http://www.ons.org.br/operacao/previsao_vazoes.aspx">http://www.ons.org.br/operacao/previsao_vazoes.aspx</a> and “HFC-RT1P-GEG00-1001-0” page 18/130.”</p> <p>Therefore, this increase of electricity delivered to the grid was directly connected to the hydraulic generation of energy, which depends significantly on the volume of water in the basin of the rivers in which the plant is located. Scarce rains, floods, or any other natural factor may cause an impact on the generation capacity of the project.</p> <p>The assured energy considers a long term historical series of the river’s flow and the rainfall regime of the region. Electricity generation variability is normal once it is highly associated to rainfall regime. But, in the long-term and during all the concession period, electricity generation should be closed to the assured electricity.</p> | <p>PP provides explanation regarding the above average energy generation in 2011. According to PP, an above average rainfall is the cause of this increase.</p> <p>The DOE was able to validate the long term average rainfall of 1,247 m<sup>3</sup> with:</p> <p>Page 18 of the Basic Engineering Project prepared by CENEC Engenharia S.A. “HFC-RT1P-GEG00-1001-0”.</p> <p>The DOE was able to validate the 2,059 M<sup>3</sup> of rainfall for 2011 with the following evidence:</p> <p>Relatório Vazao 2011 – Produced by Third Party: FUNDRAGO.</p> <p>PP explains that expect energy generation described in the PD is based on the “assured energy”. This value is defined by Brazilian National Agency for Electric Energy and is based on long term rainfall averages of the involved river. The assured energy (432 MW) of this plant is available at: <a href="http://www.aneel.gov.br/aplicacoes/capacidadebrasil/energiaassegurada.asp">http://www.aneel.gov.br/aplicacoes/capacidadebrasil/energiaassegurada.asp</a>.</p> |
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|  |  |  | <p>This is the value that PP has used to calculate the Power Plant's yearly expected energy generation of the Project:</p> <p>432 MW x 8760 (hours in year) = 3,784,320 MWh/year.</p> <p>Seeing that the value used (432 MW) is defined by a Brazilian government agency (ANEEL), the DOE accepted PP's response.</p> <p>Also, for the year 2011, the DOE validated the values of actual energy generation with:</p> <p>- <i>CCEE's official generation spread sheet for 12 months of 2011 for the HPP Foz do Chapecó. CCEE is the Brazilian Chamber of Commerce for electricity and manages all commercialization of energy in Brazil. CCEE keeps the official records of sold energy for all grid-connected power plants in Brazil.</i></p> <p>Regarding difference between value for 2011 in CL 06 (5,114,507 MWh) and in PD v.2 (4,936,896 MWh/yr), due to CL 06, PP provided additional evidence for energy generation in 2011. This evidence showed the value of 4,936,896 MWh/yr. Therefore, this was changed in version 02 of the PD.</p> <p>Seeing the above, the CL was closed.</p> |
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| <p>CL 07: In Section 4.2 and 4.3 of the PD version 1, regarding EGfacility,y, please clarify in the PD that monitoring and recording frequency is in accordance with ACM0002 version 13: “Continuous measurement and at least monthly recording”.</p> |  | <p>The monitoring and recording frequency was updated in section 4.2 and 4.3.</p> | <p>The frequency was adjusted in section 4.2 of the PD version 2 to be in compliance with ACM0002v13 to:</p> <p>“Continuous measurement and at least monthly recording”.</p> <p>Seeing the above, the CL was closed.</p> |
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| <p>CL 08: In 3.4 of the PD version 1:</p> <ul style="list-style-type: none"> <li>- Please use “SIN” as abbreviation for the National Interconnected System instead of SIC;</li> <li>- OM means “Operating Margin” and not “Operational Margin”;</li> <li>- Please use OM and BM 2011 values as published by the Brazilian DNA for ex-ante estimation of CERs, since these are the latest values made available by the DNA.</li> </ul> |  | <p>The abbreviation was adjusted. The OM and BM were updated.</p> | <ul style="list-style-type: none"> <li>- “SIN” as abbreviation for the National Interconnected System has been adopted in the PD version 2.</li> <li>- “Operating Margin” was adopted in the PD version 2.</li> <li>- OM and BM 2011 values as published by the Brazilian DNA for ex-ante estimation of CERs were used in the PD version 2. Crosschecked at Brazilian DNA website:<br/><a href="http://www.mct.gov.br/index.php/content/view/333605.html#ancora">http://www.mct.gov.br/index.php/content/view/333605.html#ancora</a></li> </ul> <p>Seeing the above, the CL was closed.</p> |
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| CL 09: In Section 2.5 of the PD version 1, the phrase: “This section is elaborated based on the project test provided by VCS Standard and the “Tool for demonstration and assessment of additionality” (version 6.0.0)” needs to be revised. Moreover, the “project test” is provided in the VCS 2007.1 Standard and the PD uses the VCS 3.3 Standard, which does not include a “project test”. |  | The text in section 2.5 was changed according to the “Tool for demonstration and assessment of additionality” (version 6.0.0)” | <p>The text now in section 2.5 of the PD version 2 only refers to the additionality tool. This is in accordance with VCS Standard 3.3.</p> <p>Seeing the above, the CL was closed.</p>                                  |
| CL 10: In step 02 of the common practice stepwise approach, please clarify in the PD what is the “applicable geographical area”.                                                                                                                                                                                                                                                                |  | The step 02 was adjusted. The geographical area is the country where the project is located.                                   | <p>The applicable geographical area is the entire country of Brazil. This is indicated in the PD version 2 and is in conformity with the additionality tool of the CDM.</p> <p>Seeing the above, the CL was closed.</p> |
| CL 11: In the PD version 1, please indicate that Section “Environmental Impact” is Section 5 and that “Stakeholders Comments” is Section 6.                                                                                                                                                                                                                                                     |  | The VCs PD was adjusted.                                                                                                       | The VCS PD version 2 was adjusted and CL 11 was closed.                                                                                                                                                                 |
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| <p>CL APG 01: Please provide the following documents:</p> <ol style="list-style-type: none"> <li>1. Planilha Foz FA (for price of energy)</li> </ol> <p>Please also clarify the following questions about the input values:</p> <ol style="list-style-type: none"> <li>2. Also specify the investment decision date on a DD/MM/YYYY format</li> </ol> <ol style="list-style-type: none"> <li>1. Explain why the O&amp;M costs are similar to the optimization energy tariff (TEO), as stated item 11 of operational expenditures</li> <li>2. Explain the composition of the financial compensation for utilization of hydro resources</li> <li>3. Public Assets Utilization - since the auction took place on 2001 and the investment decision data is 2002, this expense should not be taken in account.</li> <li>4. CPMF is no long a valid tax</li> <li>5. Since the investment decision date is 2002, the project should not have any evidences after this year</li> <li>6. Referring to the benchmark input values, the beta calculation chosen by PP ("Power sector", on Damodaran website) considers companies whose operations are related to new technologies, which are riskier than the well known and stable hydropower generation. Please consider the possibility of using the beta from "electric utilities" sector, which may reflect appropriately the risks from hydropower generation.</li> </ol> | <p>EB 62 Ann5</p> | <p>1 – Planilha FOZ FA is not being used in the financial analysis. The evidence for electricity price are described below:<br/>Project Owners sold an amount of electricity through Power Purchase Agreements directly to two buyers (xx and yy) and it sold the remaining amount through contracts established in auctions organized by ANEEL (CCEAR – Contrato de Compra e Venda de Energia no Ambiente Regulado)</p> <p><b>Power Purchase Agreement (PPA) Companhia Paulista de Força e Luz:</b></p> <p>According to PPA (reference "11 - 1º TA AO PA 2002-213-1 – PAULISTA" (clause 7.1, page 04/10), the electricity price was R\$ 106.34/MWh at base-date 03/11/2003. According to clause 7.1 (page 04/10), the electricity price must be adjusted every year in april. The following equation must be applied:</p> <p>Energy Price = VR*IGPM - Mi/IGMP - Mo<br/>VR = Reference Value<br/>IGPM – Mi= previous month IGPM<br/>IGMP- Mo= march 2003 IGPM</p> <p>The spreadsheet "Variation Price IGPM" shows how the electricity price was updated to the value used in the financial analysis (R\$ 124.17/MWh).</p> <p><b>Power Purchase Agreement (PPA) Companhia Piratininga de Força e Luz:</b></p> <p>PPA Piratininga<br/>According to PPA (reference "12 - 1º TA AO PI 2002-214-1 PIRATININGA" (clause 7.1, page 02/08), the electricity price was R\$ 107.19/MWh at base-date 29/10/2003. According to clause 7.1 (page 02/08), the electricity price must be adjusted every year in april. The following equation must be applied:</p> <p>Energy Price = VR*IGPM - Mi/IGMP - Mo<br/>VR = Reference Value<br/>IGPM – Mi= previous month IGPM<br/>IGMP- Mo= september 2003 IGPM</p> <p>The spreadsheet "Variation Price GPM" shows how the electricity price was updated to the value used in the financial analysis (R\$ 122.53/MWh).</p> <p><b>CCEAR</b></p> <p>At the time of the investment decision, the Project Owners had not sold the electricity in the auction (that occurred in 16/10/2007). At that time, Project Owners expected R\$ 125.00/MWh as the electricity price. However, project owners sold electricity in the auction (date 16/10/2007) as R\$ 131.49/MWh (reference "Auction Results"). The price used in the spreadsheet for these contracts was R\$ 125.00.</p> <p>In the financial analysis, the total electricity price of energy was a weighted average of PPA Paulista, PPA Piratininga and CCEARs (Sheet "Assumptions cell C10"). The weighted electricity price used in the spreadsheet is R\$ 124.45.</p> <p>DOE answer: Please provide evidences for the price of 125 BRL/MWh used in the estimations. Please also correct the related label in financial spreadsheet ("Cash Flow_FOZV02", sheet "Assumptions", cells E9.</p> | <p>Please also clarify the following questions about the input values:</p> <ol style="list-style-type: none"> <li>2. The investment decision date was corrected and the new investment decision date is presented on a DD/MM/YYYY format. Please note that the investment decision date is just mentioned on the financial spreadsheet. It is not mentioned in the VCS PD.</li> </ol> <p><b>DOE Answer</b><br/>DOE understands that the investment decision date was changed to 01/08/2007, as stated in the Financial Spreadsheet. However, the BNDES contract dates from 04/09/2007, after the investment decision date. Please, provide valid evidences for the debt contract, whose date is prior the investment decision date</p> <ol style="list-style-type: none"> <li>1. According the Decree 2,655, article 22, TEO is a tax established by ANEEL to cover the costs associated operation and maintenance costs of hydro plants that have to generate electricity to the Relocation Electricity System. As TEO is defined by ANEEL based on average of the O&amp;M costs of the hydro plants, PPs believe that this was a good reference to estimate this cost. Evidence is supplied to DOE. <b>DOE answer: DOE could access the document and accepts the response.</b></li> <li>2. The financial compensation for utilization of hydro resources is formed by 6.75% of the total value of the electricity produced (MWh) (Law 9,648/1998 (Article 17)) multiplied by the reference tariff (TAR) defined by ANEEL Resolution 192/2005, available at: <a href="http://www.aneel.gov.br/cedoc/ren2005192.pdf">http://www.aneel.gov.br/cedoc/ren2005192.pdf</a> <b>DOE could check the document and accepts the answer.</b></li> <li>3. The investment decision date was corrected for 01/08/2007 (There was an error in the spreadsheet). Therefore, the public assets utilization should be taken into account. <b>DOE answer: according to EB 62 Annex 5, expenses prior to investment decision date should be considered as sunk costs, that is, the do not are relevant for the investment decision. Since the costs took place in 2001, they should not impact the investment analysis.</b></li> <li>4 – CPMF was valid at the time of the investment decision. The financial analysis should reflect the time of the investment decision. A sensitivity analysis was added to reflect the scenario without CPMF costs. <b>DOE answer: DOE accepts the response</b></li> <li>5 – The investment decision was corrected. <b>DOE could check the actual investment decision date.</b></li> <li>6 – When developing the WACC calculation, PP's noted that beta calculated for the definition "electrical utilities" just consider companies acting in EUA and different results are produced for different regions of EUA. Also, the number of firms considered for each option is smaller that the numbers of firms of the "power sector". Despite the "power sector" published by Damodaran considers some companies with technologies riskier than hydropower, this definition considers also firms of emergent markets. These markets are more similar to the Brazilian Market that is also a emerring market. PPs consider that use just data from american market is not the best option for the project. Therefore, we consider that beta used is suitable for theis project. <b>DOE response: The objective of beta<sup>20</sup> consists simply on adjust the market risk to the sector, considering the sectors could be riskier or safer than the average. In this sense, considering that the hydropower operation is the same around the world, there is no relevance in the location of the projects. Also, the difference between countries in terms of risk is addressed in other terms, such as the country risk rate</b></li> </ol> |
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<sup>20</sup> <http://www.investopedia.com/terms/b/beta.asp#axzz210IhxCWZ>

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| CL APG 02: Please inform how many spreadsheets related to the financial analysis are there                                                                                   | EB 62 Ann5 | <p>The financial analysis uses just two Excel Files. The financial model is named "Cash Flow_Foz". This excel file has 6 spreadsheets: (1) assumptions which presents the assumptions taken at the time of the investment decision; (2) Cash Flow where the calculations are done; (3) Sensitivity Analysis where the sensitivity analysis is presented; (4) loan auxiliary 1 and (5) Loan Auxiliary 2 where information about the Loan is presented and (6) Revenue where the information of power purchase agreements are presented.</p> <p>The second excel file is called "Wacc Foz do Chapecó" where all components of the benchmark is presented. This file is formed by 5 spreadsheets. The spreadsheet "CAPM" presents the consolidated result for the financial benchmark.</p> | DOE could access both documents. CL APG 01 is closed.                                                                                      |
| CL APG 03: Please inform if there are financial statements audited by a third party within two years prior to the submission of the CDM-PDD for validation.                  | EB 62 Ann5 | Yes. Financial statements audited by a third party are supplied to DOE.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | DOE could access the documents referred to the financial statements. Net income values are lower than those projected. CL APG 03 is closed |
| CL APG 04: Please inform if there is any public announcements, annual financial reports or feasibility reports related to the project                                        | VVM 111    | There are no <i>public announcements or feasibility report related to the project</i> . The financial statements (please refer to CL APG 03) are supplied to the DOE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | DOE accepts the response. CL APG 040 is closed                                                                                             |
| CL APG 05: Please determine under what conditions variations in the result would occur, and the likelihood of these conditions assessed, related to the sensitivity analysis | VVM 111    | The PDD already provided an assessment of the likelihood of the sensitivity analysis scenarios (please refer to section 2.5). Information was added mainly to the project revenues assessment.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | DOE could find the analysis. CL APG 05 is closed                                                                                           |

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| CAR APG 01: please refer to BNDES loan contract in the VCS PD. The document does not mention this contract                                                                                                                                                                                                                                                                       | EB 62 Ann5 | The VCS PD mentioned in item 2.5, table 01 that the financial closure was defined on 04/09/2007. Information that this contract was established with BNDES is added in the same table of the VCS PD.               | DOE could find the reference. CAR APG 01 is closed, although further clarifications are needed. Please refer to CL APG 01 |
| <p>CAR APG 02:</p> <p><i>All the calculations seem correct. However, please correct the portuguese terms in the "Cash Flow Foz", sheet "Assumptions", column B, lines 34 to 55, column E, lines 5 to 66. Please also inform the years on a calendar basis, related to each year of operation, instead of (1,2,3,...) or provide evidences for the investment start date.</i></p> | VVM 111    | <p>Portuguese terms were translated. The years on a calendar base were also provided. A note was included in the cash flow to express that: For simplification effects, the cash flow considered entire years.</p> | CAR APG 02 is closed. PP has provided all the requested modifications                                                     |

