



# VALIDATION REPORT MABANAFT CARBON B. V.

## VALIDATION OF THE TUCANO CDM PROGRAMME OF ACTIVITIES FOR THE PROMOTION OF SMALL HYDROPOWER PLANTS IN BRAZIL

REPORT No. BRAZIL-VAL/ BR.1099494

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BUREAU VERITAS CERTIFICATION

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## VALIDATION REPORT



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Client: <b>Mabanaft Carbon B. V.</b>	Client ref.: <b>Mrs. Patrícia Rosenthal</b>

**Summary:**

Bureau Veritas Certification has made the validation of the TUCANO CDM Programme of Activities for the Promotion of Small Hydropower Plants in Brazil located in Brazil, on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

The validation scope is defined as an independent and objective review of the PoA-DD, generic CPA-DD, the baseline study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the PoA design and the baseline and monitoring plan; ii) follow-up interviews with 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 (CL and CAR), presented in Appendix A. Taking into account this output, the Coordinating/Managing Entity revised its PoA design documents.

In summary, it is Bureau Veritas Certification's opinion that the PoA correctly applies the baseline and monitoring methodology ACM0002 version 12.3.0 and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

The only change from version 02 to version 02.1 of this Validation Report is to reflect the receipt of the Letter of Approval, dated August 22<sup>nd</sup>, 2012, of the Designated National Authority in Brazil, which is the Interministerial Commission on Global Climate Change.

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Project title: <b>TUCANO CDM Programme of Activities for the Promotion of Small Hydropower Plants in Brazil</b>	
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Internal Technical Review carried out by: <b>Guilherme Lefèvre</b>	
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**Indexing terms**

Work approved by:

**Flavio Gomes – Global Product Manager**

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## 1 INTRODUCTION

Mabanaft Carbon B. V. has commissioned Bureau Veritas Certification to validate its CDM project TUCANO CDM Programme of Activities for the Promotion of Small Hydropower Plants in Brazil (hereafter called “the PoA”) in Brazil.

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

### 1.1 Objective

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

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

### 1.2 Scope

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

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

### 1.3 Validation Team

The validation team consists of the following personnel:

FUNCTION	NAME	TA 1.2		TASK PERFORMED*
Team Leader	Rubens Ferreira	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/> DR <input checked="" type="checkbox"/> SV <input checked="" type="checkbox"/> RI
Team Member	N.A.	<input type="checkbox"/>		<input type="checkbox"/> DR <input type="checkbox"/> SV <input type="checkbox"/> RI
Technical Specialist	N.A.	<input type="checkbox"/>		<input type="checkbox"/> DR <input type="checkbox"/> SV <input type="checkbox"/> RI
Financial Specialist	Bernardo Lima	<input type="checkbox"/>		<input checked="" type="checkbox"/> DR <input type="checkbox"/> SV <input checked="" type="checkbox"/> RI



<b>Financial Specialist</b>	Antonio Vinicius Gomes	<input type="checkbox"/>		<input checked="" type="checkbox"/> DR <input type="checkbox"/> SV <input checked="" type="checkbox"/> RI
<b>Internal Technical Reviewer (ITR)</b>	Guilherme Lefèvre	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/> DR <input type="checkbox"/> SV <input type="checkbox"/> RI
<b>Specialist supporting ITR</b>	N.A.	<input type="checkbox"/>		<input type="checkbox"/> DR <input type="checkbox"/> SV <input type="checkbox"/> RI

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

## 2 METHODOLOGY

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

In order to ensure transparency, a validation protocol was customized for the programme, according to the Clean Development Mechanism Validation and Verification Manual (version 1.2) /9/ and the Procedures for registration of a programme of activities as a single CDM project activity and issuance of certified emission reductions for a programme of activities (Version 04.1) /6/ issued by the Executive Board at its 55<sup>th</sup> meeting on 30/06/2010. The protocol shows, in a transparent manner, criteria (requirements), means of validation and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

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

### 2.1 Review of Documents

The PoA-DD and generic CPA-DD submitted by Mabanaft Carbon B. V. and additional background documents related to the project design and baseline, i.e. country Law, PoA-DD form, CPA-DD form, Approved methodology, Kyoto Protocol, Clarifications on Validation Requirements to be Checked by a Designated Operational Entity were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests, Mabanaft Carbon B. V. revised the PoA-DD and generic CPA-DD and resubmitted it on 02/04/2012.

The validation conclusions presented in this report relate to the PoA as described in the PoA-DD version 04 (ref/I/) and generic CPA-DD version 03 (ref/J/).

### 2.2 Follow-up Interviews

On 20/12/2011 Bureau Veritas Certification performed interviews with stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Ecopart Assessoria em Negócios Empresariais Ltda. (EQAO) were

interviewed (see References). The main topics of the interviews are summarized in Table 1.

**Table 1 Interview topics**

Interviewed organization	Interview topics
CME: Ecopart Assessoria em Negócios Empresariais Ltda. (EQAQ)	<ul style="list-style-type: none"> <li>➤ CDM-PoA-DD, and a generic CDM-CPA-DD</li> <li>➤ Technology description</li> <li>➤ Additionality assessment</li> <li>➤ Environmental assessment</li> <li>➤ Monitoring plan</li> <li>➤ Monitoring methodology</li> <li>➤ Baseline emission estimation</li> <li>➤ Project emission estimation</li> <li>➤ Emission reduction estimation</li> <li>➤ Stakeholder consultation process</li> <li>➤ Environmental requirement compliance</li> <li>➤ Record keeping system of the PoA</li> </ul>

## 2.3 Resolution of Clarification and Corrective Action Requests

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

Corrective Action Requests (CAR) is issued, where:

- (a) The CME/project participants have made mistakes that will influence the ability of the programme of activities to achieve real, measurable additional emission reductions;
- (b) The applicable CDM requirements have not been met;
- (c) There is a risk that emission reductions cannot be monitored or calculated.

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

The validation team may also raise a forward action request (FAR) during validation to identify issues related to programme implementation that require review during the first verification of the CPA under the PoA.

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

## 2.4 Internal Technical Review

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

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



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

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

The validation activity has been performed by the team by exercising utmost diligence and complete adherence to the CDM rules and requirements.

The review encompasses all aspects related to the project which includes PoA design, baseline, additionality, monitoring plan and emission reduction calculations, internal quality assurance systems of the CME as well as the PoA, review of the stakeholder comments and responses, closure of CARs, CLs and FARs during the validation exercise, review of sample documents.

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

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

### **3 VALIDATION CONCLUSIONS**

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

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

The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the Project resulted in 36 Corrective Action Requests (CARs) and 26 Clarification Requests (CLs).

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

The number between brackets at the end of each section correspond to the VVM paragraph

#### **3.1 Approval (49-50)**

Bureau Veritas Certification received a letter of approval (ref/O/) from Mabanaft Carbon B. V. and does not doubt its authenticity.

The title and contents of the letter of approval refer to the precise proposed CDM programme activity title in the PoA-DD being submitted for registration.

According to the Letter of Approval of DNA:





- The State of the Netherlands ratified the Kyoto Protocol on May 31, 2002.
- The State of the Netherlands participates voluntary in the “Tucano CDM Programme of Activities from the Promotion of the Small Hydropower Plants in Brazil” in Brazil (the “CDM Programme of Activities”).
- The State of the Netherlands, as a Party indirectly involved in the “CDM Programme of Activities” authorizes the participation of “Mabanaft Carbon BV” as a Project Participant in the “CDM Programme of Activities”.

A letter of approval (/Ref-P/) has been received from the Brazilian DNA-Designated National Authority, dated August 22<sup>nd</sup>, 2012

Bureau Veritas Certification received this letter from project participant Ecopart Assessoria em Negócios Empresariais Ltda. and does not doubt its authenticity.

According to DNA's Letter of Approval:

- The Federative Republic of Brazil ratified the United Nations Framework Convention on Climate Change on February 28<sup>th</sup>, 1994 and the Kyoto Protocol on August 23<sup>rd</sup>, 2002;
- The Federative Republic of Brazil participates voluntarily in the CDM; and
- The CDM Project “TUCANO CDM Programme of Activities for the Promotion of Small Hydropower Plants in Brazil” will assist the Federative Republic of Brazil in achieving sustainable development.

The DOE considers the Letter of Approval to be in accordance with paragraphs 45-48 of the VVM.

### 3.2 Participation (54)

The participation for each project participant has been approved by a Party of the Kyoto Protocol<sup>1</sup>. Please, refer to section 3.1 of this Validation Report.

### 3.3 Project design document (57)

The validation team hereby confirms that the PoA-DD complies with the latest PoA-DD form and the Generic CPA DD complies with latest CPA-DD form.

Besides, the content between PoA-DD and Generic CPA DD is consistent.

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<sup>1</sup> Information confirmed at <http://maindb.unfccc.int/public/country.pl?country=BR> and <http://maindb.unfccc.int/public/country.pl?country=NL>



### 3.4 Changes in the Programme of Activity (18)

During the site visit no changes were observed in the PoA as compared to details mentioned in webhosted CDM-PoA-DD, version 01 and Generic CDM-CPA-DD version 01.

All the changes occurred between the final versions from the CDM-PoA-DD, version 4 and the Generic CDM-CPA-DD, version 3 and the webhosted versions (on 22/10/2011), CDM-PoA-DD, version 01 and the Generic CDM-CPA-DD, version 01, were due to modifications made required by CARs and CLs raised during the validation process.

### 3.5 PoA description (64)

This PoA is a voluntary coordinated action by the managing entity *Ecopart Assessoria em Negócios Empresariais Ltda. (EQAQ)*, consisting of the implementation of renewable energy projects in Brazil. The hub of this PoA is the construction of small hydropower plants as defined by the Brazilian Regulatory Agency ("ANEEL" from the Portuguese *Agência Nacional de Energia Elétrica*) ("PCH" from Portuguese *Pequena Central Hidrelétrica*) connected to the Brazilian Interconnected System (from the Portuguese *Sistema Interligado Nacional – SIN*).

The Programme of Activities will be implemented within the geographical area of Brazil. All the CDM programme activities (CPAs) included in the PoA will be implemented in Brazil taking into consideration all applicable national and/or sectoral policies and regulations.

All CPAs under this PoA consist of the implementation of small hydropower plants in Brazil as defined by ANEEL. According to ANEEL Resolution nr. 394/1998<sup>2</sup>, small hydropower plants consist of a utility with an installed capacity between 1 MW and 30 MW, and reservoir area smaller than 3 km<sup>2</sup>. However, ANEEL Resolution nr. 652/2003<sup>3</sup> presents other criteria to classify utilities with installed capacity between 1 MW to 30 MW, whose reservoir areas are greater than 3 km<sup>2</sup>. Therefore, only plants under ANEEL classification of small hydropower plants will be considered and included in this PoA independently of the installed capacity and reservoir area.

The technology to be employed in the small hydropower plants of this PoA is based on hydraulic turbines. There are many types of hydraulic turbines. The main types are Francis, Kaplan and Pelton (Figure 1); depending on the project waterfall and water flow, the type of turbine that better fits to the project design will be chosen.

<sup>2</sup> ANEEL. Agência Nacional de Energia Elétrica. Resolution nr. 394 issued on December 4<sup>th</sup>, 1998. Available at: <http://www.aneel.gov.br/cedoc/RES1998394.PDF>.

<sup>3</sup> ANEEL. Agência Nacional de Energia Elétrica. Resolution nr. 652 issued on December 9<sup>th</sup>, 2003. Available at: <http://www.aneel.gov.br/cedoc/res2003652.pdf>.



**Figure 1 – Examples of Pelton, Kaplan and Francis turbines, respectively**

Source: ANEEL (2005)<sup>4</sup>

The technology to be used in the project activities which will be included in this PoA will be detailed in each CPA-DD.

The length of the PoA was defined as 28 years.

The process undertaken to validate the accuracy and completeness of the project description includes a document review of the PoA-DD version 04 (ref/I/). CPA-DD generic version 03 (ref/J/), ANEEL's Resolution nr. 394/1998, ANEEL's Resolution nr. 652/2003, interviews with the CME -Representatives of Ecopart Assessoria em Negócios Empresariais Ltda. (EQAQ), and a site visit on 20/12/2011.

The validation team hereby confirms that the programme description in PoA-DD (ref /I/) is accurate and complete in all respects.

### **3.6 Operational and management arrangements (166)**

A clear and transparent operational and management arrangement has been established by the management/coordinating entity. Complying with **para.166/VVM**, the Validation team is able to conclude that the operational and management arrangements have been established by the coordinating/managing entity and are suitable for the PoA being validated. Bureau Veritas Certification considers that the arrangements are sufficient to ensure that the coordinating/managing entity will have control of all records and information related to the implementation of individual CPAs.

By a document review of CME's record keeping system for the inclusion of CPAs in "TUCANO CDM Programme of Activities for the Promotion of Small Hydropower Plants in Brazil" (ref/K/) and of CME's database for the registered CDM Project Activities under ACM0002 and under AMSID in Brazil and for Brazilian registered CDM Programme of Activities (ref/L/), interviewing with CME during on site visit, the validation team confirms that the CME has the competencies to check the features of potential CPAs and ensure that each CPA meets all requirements and eligibility criteria before inclusion in the registered PoA. For details of management system, please refer to section 3 of Table 1 in appendix A.

<sup>4</sup> ANEEL (2005). Chapter 4 – Hydraulic energy. "Atlas de Energia Elétrica". 2<sup>nd</sup> edition. Agência Nacional de Energia Elétrica. Available at: <<http://www.aneel.gov.br/aplicacoes/Atlas/download.htm>>. Accessed on July 7<sup>th</sup>, 2011.

### 3.7 Eligibility criteria for inclusion a CPA in the PoA (167)

The Validation team has assessed the eligibility criteria for inclusion a CPA in the PoA in accordance with **para.167/VVM** and “Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities” and confirms that:

- The eligibility criteria are verifiable
- The eligibility criteria are sufficiently objective and comprehensive to permit the assessment of the inclusion of CPAs in the PoA.
- The specified eligibility criteria in the PoA-DD are sufficient to ensure that all CPAs would comply with the CDM requirement applicable to the PoA, for details of eligibility criteria are:
  1. The geographical boundary of the CPA including any time-induced boundary consistent with the geographical boundary set in the PoA.
  2. Conditions that avoid double counting of emission reductions like unique identifications of product and end-user locations (e.g. programme logo).
  3. The specifications of technology/measure including the level and type of service, performance specifications including compliance with testing/certifications.
  4. Conditions to check the start date of the CPA through documentary evidence.
  5. Conditions that ensure compliance with applicability and other requirements of single or multiple methodologies applied by CPAs.
  6. The conditions that ensure that CPAs meet the requirements pertaining to the demonstration of additionality.
  7. The PoA-specific requirements stipulated by the CME including any conditions related to undertaking local stakeholder consultations and environmental impact analysis.
  8. Conditions to provide an affirmation that funding from Annex I parties, if any, does not result in a diversion of Official Development Assistance (ODA).
  9. The CPA has to include small hydropower plant(s) defined by ANEEL only.
  10. No energy generating equipment shall be transferred from another activity located in a non-annex I party and no existing equipment shall be transferred from the project to another activity.

### 3.8 Baseline and monitoring methodology

#### 3.8.1 Applicability of the selected baseline and monitoring methodology (76-77)

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

According to the PoA-DD, the CPAs under the PoA will apply the consolidated baseline and monitoring methodology ACM0002, version 12.3.0 /1/.

Applicability condition (a): *The project activity is the installation of a grid-connected hydropower plant/unit (either with a run-of-river reservoir or an accumulation reservoir) at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant);*

Document review, in accordance with the second paragraph of item II Section E.6.1: "The CPAs to be added to this PoA in the future may consist of new small hydropower plants only..."

Applicability condition (b): *In case of hydropower plants, at least one of the following conditions must apply:*

- *The project activity is implemented in an existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or*
- *The project activity is implemented in an existing single or multiple reservoirs, where the volume of any of reservoirs is increased and the power density of each reservoir, as per definitions given in the project emissions section, is greater than  $4 \text{ W/m}^2$  after the implementation of the project activity; or*
- *The project activity results in new single or multiple reservoirs and the power density of each reservoir, as per definitions given in the Project Emissions section, is greater than  $4 \text{ W/m}^2$  after the implementation of the project activity.*

Document review, in accordance with the first paragraph of item Project Emissions ( $PE_y$ ) of Section E.6.2: "...the power density of each utility considered in the CPAs will be calculated and shall be greater than  $4 \text{ W/m}^2$  as required by ACM0002."

Applicability condition (c): *In case of hydropower plants using multiple reservoirs where the power density of any of the reservoirs is lower than  $4 \text{ W/m}^2$  after the implementation of the project activity all the following conditions must apply:*

- *The power density calculated for the entire project activity using equation 5 of ACM0002 is greater than  $4 \text{ W/m}^2$ ;*



- *All reservoirs and hydropower plants are 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;*
- *The water flow between multiple reservoirs is not used by any other hydropower unit which is not a part of the project activity;*
- *The total installed capacity of the power units, which are driven using water from the reservoirs with power density lower than  $4 \text{ W/m}^2$ , is lower than 15MW;*
- *The total installed capacity of the power units, which are driven using water from reservoirs with power density lower than  $4 \text{ W/m}^2$ , is less than 10% of the total installed capacity of the project activity from multiple reservoirs.*

*Furthermore, the project activity cannot involve:*

- *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;*
- *Hydropower plant that result in new single reservoir or in the increase in existing single reservoir where the power density of the reservoir is less than  $4 \text{ W/m}^2$ ;*
- *Retrofits, replacements, or capacity additions.*

Not applicable. See the applicability condition (b) above.

The eligibility criteria of the applicability of the selected baseline and monitoring methodology is set as:

Conditions that ensure compliance with applicability and other requirements of single or multiple methodologies applied by CPAs.

As presented in section E.1(CDM-PoA-DD), this PoA applies the ACM0002 - "Consolidated baseline methodology for grid-connected electricity generation from renewable sources" (version 12.3.0). Therefore, the CPAs have to be in compliance with applicability conditions of ACM0002.

The DOE hereby confirms that the selected baseline and monitoring methodology ACM0002 version 12.3.0 (Ref 1), "Tool for the demonstration and assessment of additionality" (Ref 2), version 06.0.0 and "Tool to calculate the emission factor for an electricity system", version 02.2.1 (Ref 3) are applicable to CPAs to be included in the PoA, which complies with all the applicability conditions therein.

### **3.8.2 PoA boundary**





Boundary for the PoA in terms of geographical area is defined as Brazil.

The eligibility criteria of the CPA boundary is set as the geographical boundary of the CPA including any time-induced boundary consistent with the geographical boundary set in the PoA.

Bureau Veritas Certification confirms that in establishing the boundary of the PoA, the project participants have taken into consideration all applicable national and/or sectoral policies and regulations within that chosen boundary.

### **3.8.3 Baseline identification (87-88)**

The steps taken to assess the requirement given in paragraph 87 and 88 of the VVM are described below:

According to the PoA-DD, the CPAs to be included in the proposed PoA correspond to the installation of a new grid-connected small hydro power plant. Therefore, according to ACM0002, the baseline scenario for this option is the following:

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

The DOE has verified the baseline identification by cross-checking the PoA-DD, against the Methodology ACM0002, version 12.3.0 (ref/1/).

Based on the above assessment, the validation team hereby confirms that:

- (a) All the assumptions and data used by the project participants are listed in the PoA-DD, including their references and sources;
- (b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PoA-DD;
- (c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;
- (d) Relevant national and/or sectoral policies and circumstances are considered and listed in the PoA-DD;
- (e) The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of PoA.

### **3.8.4 Algorithms and/or formulae used to determine emission reductions (92-93)**

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

In the PoA TUCANO CDM Programme of Activities for the Promotion of Small Hydropower Plants in Brazil, the emissions reductions are calculated according to version 12.3.0 of approved methodology ACM0002 and its recommended tools.

### **Emission reductions ( $ER_y$ )**

According to the selected approved methodology ACM0002, emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y \quad \text{Equation 1}$$

Where:

$ER_y$  = Emission reductions in year  $y$  (tCO<sub>2</sub>e);

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

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

### **Baseline emissions ( $BE_y$ )**

Baseline emissions for a typical CPA are determined following the procedures established by the ACM0002 methodology. From the methodology *“Baseline emissions include only CO<sub>2</sub> emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants”*.

The calculation of the combined margin CO<sub>2</sub> emission factor for grid connected power generation ( $EF_{grid,CM,y}$ ) follows, as recommended by ACM0002, the procedures established in the methodological tool *“Tool to calculate the emission factor for an electricity system”* (version 2.2.1). According to this tool, the Project Participants shall apply six steps in order to calculate the baseline emission factor as further detailed below.

## **I. Calculation of the combined margin CO<sub>2</sub> emission factor for grid connected power generation ( $EF_{grid,CM,y}$ )**

### **STEP 1 - Identify the relevant electricity systems**

According to the tool, *“if the DNA of the host country has published a delineation of the project electricity system and connected electricity systems, these delineations should be used. If such delineations are not available, project participants should define the*





*project electricity system and any connected electricity system and justify and document their assumptions in the CDM-PDD”.*

The Brazilian DNA published Resolution nr. 8, issued on May 26<sup>th</sup>, 2008, which defines the Brazilian Interconnected Grid (SIN) as the “Project Electricity System” for any Clean Development Mechanism (CDM) project activity applying the ACM0002 and AMSI.D Methodologies in Brazil. The SIN is a single system that covers all the five macro-geographical regions of the country (North, Northeast, South, Southeast and Midwest). Hence this figure will be used to calculate the baseline emission factor of the grid.

BVC was able to verify this by crosschecking the above mentioned resolution online at: [http://www.mct.gov.br/upd\\_blob/0024/24719.pdf](http://www.mct.gov.br/upd_blob/0024/24719.pdf) (accessed on 20/03/2012).

**STEP 2** – Choose whether to include off-grid power plants in the project electricity system (optional).

Option I of the tool is chosen, which is to include only grid power plants in the calculation.

**STEP 3** - Select a method to determine the operating margin (OM).

The calculation of the operating margin emission factor ( $EF_{grid,OM,y}$ ) is based on one of the following methods:

- (a) Simple OM, or
- (b) Simple adjusted OM, or
- (c) Dispatch data analysis OM, or
- (d) Average OM.

Dispatch data analysis is not an available option for the calculation of the operating margin since it is only applicable for the *ex-post* vintage. The simple operating margin can only be used where low-cost/must-run resources<sup>5</sup> constitute less than 50% of total grid generation in: 1) average of 5 most recent years, or 2) based on long-term averages for hydroelectricity production. The table below shows the share of hydroelectricity in the total electricity production for the Brazilian interconnected system. The results show the non-applicability of the simple operating margin to the proposed CDM Project Activity.

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<sup>5</sup> Low operating cost and must run resources typically include hydro, geothermal, wind, low-cost biomass, nuclear and solar generation.

**Table 1 - Share of hydroelectricity generation in the Brazilian interconnected system, 2006 to 2011**

Year	Share of hydroelectricity (%)
2006	91.81%
2007	92.79%
2008	88.62%
2009	93.27%
2010	88.77%
2011	91.18%

**Source: ONS (2011)<sup>6</sup>**

The fourth alternative, an average operating margin, is an oversimplification and does not reflect in any way the impact of the project activity on the operating margin. The use of dispatch data analysis method is only applicable to the *ex-post* vintage for determining the emission factor, which is not the vintage chosen by the Project Participants. Therefore, the simple adjusted operating margin will be used to determine the grid emission factor.

For the calculation of the OM emission factor, the Simple adjusted OM was used in this project.

BVC was able to verify the applicability of this calculation method, checking the last five years electricity generation in the national grid. According to the *Tool to calculate the emission factor for an electricity system*, the Simple OM method can only be used if low-cost/must-run resources constitute less than 50% of total grid generation in: 1) average of the five most recent years, or 2) based on long-term averages for hydroelectricity production. The PP demonstrates that this is not the case of the Brazilian National Grid, on which Hydro generation prevailed in the last five years.

#### **STEP 4 - Calculate the operating margin emission factor according to the selected method**

According to the tool “*the simple adjusted OM emission factor ( $EF_{grid,OM-adj,y}$ ) is a variation of the simple OM, where the power plants / units (including imports) are*

<sup>6</sup> Operador Nacional do Sistema: Histórico de Geração. Available at [http://www.ons.org.br/historico/geracao\\_energia.aspx](http://www.ons.org.br/historico/geracao_energia.aspx).

separated in low-cost/must-run power sources ( $k$ ) and other power sources ( $m$ )”.

The simple adjusted OM was calculated based on the net electricity generation and a CO<sub>2</sub> emission factor for each power unit – *i.e.* similarly to **Option A** of the simple OM method – as follows:

$$EF_{grid,OM-adj,y} = (1 - \lambda_y) \cdot \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}} + \lambda_y \cdot \frac{\sum_k EG_{k,y} \times EF_{EL,k,y}}{\sum_k EG_{k,y}} \quad \text{Equation 2}$$

Where,

- $EF_{grid,OM-adj,y}$  = Simple adjusted operating margin CO<sub>2</sub> emission factor in year  $y$  (tCO<sub>2</sub>/MWh)
- $\lambda_y$  = Factor expressing the percentage of time when low-cost/must-run power units are on the margin in year  $y$
- $EG_{m,y}$  = Net quantity of electricity generated and delivered to the grid by power unit  $m$  in year  $y$  (MWh)
- $EG_{k,y}$  = Net quantity of electricity generated and delivered to the grid by power unit  $k$  in year  $y$  (MWh)
- $EF_{EL,m,y}$  = CO<sub>2</sub> emission factor of power unit  $m$  in year  $y$  (tCO<sub>2</sub>/MWh)
- $EF_{EL,k,y}$  = CO<sub>2</sub> emission factor of power unit  $k$  in year  $y$  (tCO<sub>2</sub>/MWh)
- $m$  = All grid power units serving the grid in year  $y$  except low-cost/must-run power units
- $k$  = All low-cost/must run grid power units serving the grid in year  $y$
- $y$  = The relevant year as per the data vintage chosen in Step 3

#### Determination of $EF_{EL,m,y}$

Considering that only data on electricity generation and the fuel types used in each of the power units was available, the emission factor was determined based on the CO<sub>2</sub> emission factor of the fuel type used and the efficiency of the power unit, as per **Option A2** of the Simple OM method. The following formula was used:

$$EF_{EL,m,y} = \frac{EF_{CO2,m,i,y} \cdot 3.6}{\eta_{m,y}} \quad \text{Equation 3}$$

Where,



- $EF_{EL,m,y}$  = CO<sub>2</sub> emission factor of power unit  $m$  in year  $y$  (tCO<sub>2</sub>/MWh)  
 $EF_{CO_2,m,i,y}$  = Average CO<sub>2</sub> emission factor of fuel type  $i$  used in power unit  $m$  in year  $y$  (tCO<sub>2</sub>/GJ)  
 $\eta_{m,y}$  = Average net energy conversion efficiency of power unit  $m$  in year  $y$  (ratio)  
 $m$  = All power units serving the grid in year  $y$  except low-cost/must-run power units  
 $y$  = The relevant year as per the data vintage chosen in Step 3

#### *Determination of $EG_{m,y}$*

Information used to determine this parameter was supplied by ONS, which is an official source, as recommended by the tool. ONS is a private sector, non-profitable entity, founded on August 26<sup>th</sup>, 1998, responsible for coordinating and controlling the operation of generation and transmission facilities in the National Interconnected Grid under supervision and regulation of the Brazilian Power Regulatory Agency (ANEEL, [--])<sup>7</sup>.

The data on electricity generation were obtained from the Electric System National Operator (ONS), for the years 2008, 2009 and 2010. The public information available is only the net energy generation from every Power Plant and the fuel type. As the fuel consumption is not available, the calculation of the CO<sub>2</sub> emission factor is done based in this fuel type and the Power Plant efficiency, following the Option A2 of the Simple OM method. The data source are deemed reasonable and BVC confirms that the calculation is able to be replicated using the data and parameter provided in the PDD.

#### **STEP 5 - Calculate the build margin (BM) emission factor**

The build margin emission factor is the generation-weighted average emission factor (tCO<sub>2</sub>/MWh) of all power units  $m$  during the most recent year  $y$  for which power generation data is available.

The sample group of power units  $m$  used to calculate the build margin shall be determined as per the following procedure, consistent with the data vintage selected above:

- (a) Identify the set of five power units, excluding power units registered as CDM project activities, that started to supply electricity to the grid most recently (SET<sub>5-units</sub>) and determine their annual electricity generation (AEG<sub>SET-5-units</sub>, in MWh).

<sup>7</sup> Information available at: <[http://www.ons.org.br/institucional/modelo\\_setorial.aspx?lang=en](http://www.ons.org.br/institucional/modelo_setorial.aspx?lang=en)>. Accessed on July 15<sup>th</sup>, 2011.



From the most recent consolidated information the  $SET_{5-units}$  are: UTE Linhares, UHE Salto Pilão, UTE Camaçari, UTE Tocantinópolis and UTE Viana. The electricity generated by these set of plants ( $AEG_{SET-5-units}$ ) in 2010 was 662,143 MWh.

- (b) Determine the annual electricity generation of the project electricity system, excluding power units registered as CDM project activities ( $AEG_{total}$ , in MWh). Identify the set of power units, excluding power units registered as CDM project activities, that started to supply electricity to the grid most recently and that comprise 20% of  $AEG_{total}$  (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation) ( $SET_{\geq 20\%}$ ) and determine their annual electricity generation ( $AEG_{SET-\geq 20\%}$ , in MWh).

Not considering the CDM project activities, in 2010, the Brazilian electricity System generated ( $AEG_{total}$ ) 465,919,678 MWh. A large number of plants comprise 20% of  $AEG_{total}$ . This information ( $SET_{\geq 20\%}$ ) can be checked in the calculation spreadsheet (BR EF ex ante 2008 to 2010-def EF tool 2.2-2011.10.06.xls – ref/M/) attached to the PoA-DD. The annual electricity generation of  $SET_{\geq 20\%}$ , corresponding to the parameter  $AEG_{SET-\geq 20\%}$ , is 93,183,936 MWh.

- (c) From  $SET_{5-units}$  and  $SET_{\geq 20\%}$  select the set of power units that comprises the larger annual electricity generation ( $SET_{sample}$ ); Identify the date when the power units in  $SET_{sample}$  started to supply electricity to the grid. If none of the power units in  $SET_{sample}$  started to supply electricity to the grid more than 10 years ago, then use  $SET_{sample}$  to calculate the build margin. Ignore steps (d), (e) and (f).

From data presented in items (a) and (b), it can be observed that  $SET_{\geq 20\%}$  is greater than  $SET_{5-units}$ . Therefore,  $SET_{sample}$  corresponds to  $SET_{\geq 20\%}$ . The oldest plant comprised in  $SET_{sample}$  started to supply electricity to the grid in January 1998. Hence, steps (d), (e) and (f) of the tool are applicable.

- (d) Exclude from  $SET_{sample}$  the power units which started to supply electricity to the grid more than 10 years ago. Include in that set the power units registered as CDM project activity, starting with power units that started to supply electricity to the grid most recently, until the electricity generation of the new set comprises 20% of the annual electricity generation of the project electricity system (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation) to the extent is possible. Determine for the resulting set ( $SET_{sample-CDM}$ ) the annual electricity generation ( $AEG_{SET-sample-CDM}$ , in MWh).

Plants which have started to supply electricity to the grid more than 10 years ago were excluded. Four registered CDM Projects were included in the  $SET_{sample}$ . The electricity generation by resultant set of plants, corresponding to the parameter  $AEG_{SET-sample-CDM}$ , is 74,902,471 MWh.

If the annual electricity generation of that set is comprises at least 20% of the annual electricity generation of the project electricity system (*i.e.*  $AEG_{SET-sample-CDM} \geq 0.2 \times AEG_{total}$ ), then use the sample group  $SET_{sample-CDM}$  to calculate the build margin. Ignore steps (e) and (f).

From the results presented above,  $AEG_{SET-sample-CDM}$  is lower than  $AEG_{total}$ . Then, steps (e) and (f) were applied.

- (e) Include in the sample group  $SET_{sample-CDM}$  the power units that started to supply electricity to the grid more than 10 years ago until the electricity generation of the new set comprises 20% of the annual electricity generation of the project electricity system (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation);
- (f) The sample group of power units  $m$  used to calculate the build margin is the resulting set ( $SET_{sample-CDM->10yrs}$ ).

Five power plants that started to supply electricity to the grid more than 10 years ago were included. The resultant set is  $SET_{sample-CDM->10yrs}$  is identified in the grid emission factor calculation spreadsheet.

The build margin was calculated following the same approach described above in step 4, and considering the set of plants identified above. Please refer to the spreadsheet attached to the PoA-DD for the calculations.

From the result of the sample group of power units  $m$ , the BM is calculated as follows:

$$EF_{grid, BM, y} = \frac{\sum_m EG_{m, y} \times EF_{EL, m, y}}{\sum_m EG_{m, y}} \quad \text{Equation 4}$$

Where:

$EF_{grid, BM, y}$  = Build margin CO<sub>2</sub> emission factor in year  $y$  (tCO<sub>2</sub>/MWh);

$EG_{m, y}$  = Net quantity of electricity generated and delivered to the grid by power unit  $m$  in year  $y$  (MWh);

$EF_{EL, m, y}$  = CO<sub>2</sub> emission factor of power unit  $m$  in year  $y$  (tCO<sub>2</sub>/MWh);

$m$  = Power units included in the build margin;

$y$  = Most recent historical year for which power generation data is available.

The CO<sub>2</sub> emission factor of power unit  $m$  in year  $y$  ( $EF_{EL, m, y}$ ) parameter is calculated as



determined as per the guidance in step 4 (a) for the simple OM, using options A1, A2 or A3. The build margin was calculated following the same approach described above in step 4, *i.e.* Option A2.

In terms of vintage, **option 1** is chosen. In this sense, the build margin was calculated using the most recent information available on units already built for sample group *m* at the time of PoA-DD submission to the DOE, *i.e.* 2010.

The PP adopted, on the first crediting period, in terms of vintage, the Option 1 of the Tool. According to this Option, for the first crediting period, the build margin emission factor is calculated *ex ante* and for the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE (*ex post*).

The calculation is done using the most recent information available on units already built for sample group *m* at the time of CDM-PDD submission to the DOE, *i.e.* 2010.

The sample group of power units *m* used by the PP to calculate the build margin correctly consisted of the set of power capacity additions in the electric system that comprise 20% of the system generation (in MWh) and that have been built most recently, since this set of plants comprises the larger annual generation.

The data source are deemed reasonable and BVC confirms that the calculation is able to be replicated using the data and parameter provided in the PDD.

#### **STEP 6** – Calculate the combined margin emissions factor.

The calculation of the combined margin (CM) emission factor is based on one of the following methods:

- (a) Weighted average CM; or
- (b) Simplified CM.

The weighted average CM method (option A) should be used as the preferred option.

The simplified CM method (option b) can only be used if:

- The project activity is located in a Least Developed Country (LDC) or in a country with less than 10 registered CDM projects at the starting date of validation; and
- The data requirements for the application of step 5 above cannot be met.

#### *(a) Weighted average CM*

The combined margin emissions factor is calculated as follows:



$$EF_{grid,CM,y} = EF_{grid,OM,y} \cdot w_{OM} + EF_{grid,BM,y} \cdot w_{BM}$$

**Equation 5**

Where,

$EF_{grid,BM,y}$  = Build margin CO<sub>2</sub> emission factor in year y (tCO<sub>2</sub>/MWh);

$EF_{grid,OM,y}$  = Operating margin CO<sub>2</sub> emission factor in year y (tCO<sub>2</sub>/MWh);

$w_{OM}$  = Weighting of operating margin emissions factor (%);

$w_{BM}$  = Weighting of build margin emissions factor (%).

The following default values should be used for  $w_{OM}$  and  $w_{BM}$ :

- Wind and solar power generation project activities:  $w_{OM} = 0.75$  and  $w_{BM} = 0.25$  (owing to their intermittent and non-dispatchable nature) for the first crediting period and for subsequent crediting periods;
- All other projects:  $w_{OM} = 0.5$  and  $w_{BM} = 0.5$  for the first crediting period, and  $w_{OM} = 0.25$  and  $w_{BM} = 0.75$  for the second and third crediting period,<sup>6</sup> unless otherwise specified in the approved methodology which refers to this tool.

Since all projects to be considered in this PoA are small hydropower plant projects, the weights used for the operating and build margin, for the first crediting period, are 0.50 for both.

### *(b) Simplified CM*

The combined margin is calculated using equation 4 above with the following conditions:

- $w_{BM} = 0$ ;
- $w_{OM} = 1$ .

Under the simplified CM, the operating margin emission factor ( $EF_{grid,OM,y}$ ) must be calculated using the average OM (option (d) in step 3 of the “Tool to calculate the emission factor for an electricity system”).

As presented in Step 3, the operating margin emission factor was calculated based on the simple adjusted OM and, therefore, this option is not applicable to the proposed PoA.

## ***II. Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity ( $EG_{PJ,y}$ )***



According to ACM0002, the calculation of  $EG_{PJ,y}$  is different depending on the case of the project as follows:

- (a) Greenfield plants (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);
- (b) Retrofits and replacements of an existing renewable energy power plant;
- (c) Capacity addition to an existing renewable energy power plant.

The CPAs to be added to this PoA in the future may consist of new small hydropower plants only and, therefore:

$$EG_{PJ,y} = EG_{facility,y} \quad \text{Equation 6}$$

Where,

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

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

The quantity of net electricity generation supplied by the project' plant to the grid in year  $y$  ( $EG_{facility,y}$ , in MWh/yr) is determined, for the purpose of ex-ante estimative as being equal to the installed capacity of each plant multiplied by the plant load factor and by the number of hours in which the plant is forecasted to be operational during year  $y$ .

### **Project emissions ( $PE_y$ )**

According to ACM0002, *for most renewable power generation project activities,  $PE_y = 0$ . However, some project activities may involve project emissions that can be significant. These emissions shall be accounted for as project emissions by using the following equation:*

$$PE_y = PE_{FF,y} + PE_{GP,y} + PE_{HP,y} \quad \text{Equation 7}$$

Where,

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

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

$PE_{GP,y}$  = 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);

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

*Emissions from fossil fuel combustion ( $PE_{FF,y}$ )*

According to the methodology, only geothermal and solar thermal projects have to account emissions from the consumption of fossil fuels. Therefore, in the case of the proposed CPA,  $PE_{FF,y} = 0$  tCO<sub>2</sub>.

*Emissions from the operation of geothermal power plants due to the release of non-condensable gases ( $PE_{GP,y}$ )*

Considering that the CPA to be considered in the context of the proposed PoA consists of the construction of small hydropower plants, there are no emissions related to non-condensable gases from the operation of geothermal power plants. Therefore,  $PE_{GP,y} = 0$  tCO<sub>2</sub>/year.

*Emissions from water reservoirs of hydro power plants ( $PE_{HP,y}$ )*

According to ACM0002, new hydropower projects that result in new single or multiple reservoirs, shall account for project emissions as follows:

- a)** If the power density of the single or multiple reservoirs ( $PD$ ) is greater than 4 W/m<sup>2</sup> and less than or equal to 10 W/m<sup>2</sup>:

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

**Equation 8**

Where:

$PE_{HP,y}$  = Project emissions from water reservoirs of hydropower plant in year (tCO<sub>2</sub>e);

$EF_{Res}$  = Default emission factor for emissions from reservoirs of hydropower plants, and the default value as per EB23 is 90 Kg CO<sub>2</sub>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 power density ( $PD$ ) of the project is greater than 10W/m<sup>2</sup>,  $PE_{HP,y} = 0$  tCO<sub>2</sub>.

The power density of the project activity is calculated as follows:

$$PD = \frac{Cap_{PJ} - Cap_{BL}}{A_{PJ} - A_{BL}} \quad \text{Equation 9}$$

Where:

$PD$  = Power density of the project activity, in  $W/m^2$ ;

$Cap_{PJ}$  = 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 ( $m^2$ );

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

### ***Leakage calculation ( $LE_y$ )***

According to the methodology, *“no leakage emissions are considered. The main emissions potentially giving rise to leakage in the context of electric sector projects are emissions arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, and transport). These emissions sources are neglected”*. Therefore, leakage emissions related to the implementation of the proposed project activity are 0 tCO<sub>2</sub>.

### ***Emission Reductions ( $ER_y$ )***

As per the explanations provided above emission reductions is equal to the baseline emissions minus project emissions and leakage.

Based on the above assessment, the validation team hereby confirms that:

- (a) All assumptions and data used by the project participants are listed in the PoA-DD, including their references and sources;
- (b) All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PoA-DD;



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

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

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

The DOE has verified the data and parameters used in the equations, including references to any other data sources used, by cross-checking them against the PoA-DD, the Methodology ACM0002, version 12.3.0 (ref/1/), Tool to calculate the emission factor for an electricity system version 2.2.1 (ref/3/), excel file BR EF ex ante 2008 to 2010-def EF tool 2.2-2011.10.06.xls (ref/M/), and the site visit.

### 3.9 Additionality of PoA

#### 3.9.1 Start date of the PoA/CPA

The eligibility criteria of the start date for inclusion of CPA has been set as:

Conditions to check the start date of the CPA through documentary evidence.

Documented evidence of the CPA starting date has to be presented in each CPA. If the starting date of the CPA refers to a future date, documented evidence related to the future date shall be presented during the inclusion process of each CPA.

The start date of the PoA is 22/10/2011, which was the date when CDM-PoA-DD was first published for global stakeholder consultation (GSP), in accordance with the information cross-checked on the UNFCCC website (<http://cdm.unfccc.int/ProgrammeOfActivities/Validation/DB/Z4D5ARUZ7HEL0M70UI2BR31UH3H933/view.html>)

Bureau Veritas Certification confirms that the start date of any CPA is not prior to the commencement of the validation of the PoA, which is the date of the CDM-PoA-DD was first published for global stakeholder consultation.

#### 3.9.2 Demonstration of additionality of the PoA as a whole

Validation team has assessed the additionality of a PoA in accordance with Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities.

The DOE was able to validate the demonstration of additionality of the PoA as a whole by confirming that the PoA is additional as demonstrated in Section A.4.3 of the PoA-DD version 4:

##### (i) The proposed PoA is a voluntary coordinated action

As mentioned in section A.2 of the PoA-DD, the proposed PoA is a voluntary coordinated action of the managing entity EQAO.



**(ii) If the PoA is implementing a voluntary coordinated action, it would not be implemented in the absence of the PoA**

In February 2001, the federal state-owned power utility Eletrobrás (Centrais Elétricas Brasileiras S/A) – with the Brazilian Development Bank support (BNDES from the Portuguese *Banco Nacional de Desenvolvimento Econômico Social*) – launched the “PCH-COM” program for the promotion of electricity generation from small hydropower plant projects (ELETROBRÁS, [–])<sup>8</sup>.

However, the program did not draw the attention from project developers since the tariff offered from Eletrobrás was lower than the market tariff. The price offered from Eletrobrás was BRL 67/MWh – the reference price of the so-called “competitive power source” or the average regular power generation addition cost –, but the reference market price of electricity for small hydropower plants at that time was around BRL 83/MWh. Thus, after four months from the program release, no proposal was received and Eletrobrás extended the deadline (CERPCH, [20--])<sup>9</sup>.

Law nr. 10,438 dated April 2002 created the Program of Incentives to Alternative Energy Sources (in a free translation from the Portuguese *Programa de Incentivo às Fontes Alternativas de Energia Elétrica – PROINFA*). Among others, one of the initiative’s goals was to increase the renewable energy sources share in the Brazilian electricity market, thus contributing to a greater environmental sustainability. In order to achieve such goals, the Brazilian government has designated Eletrobrás to act as the primary off-taker of electric energy generated by entering into long-term Power Purchase Agreements (PPAs) with alternative energy power producers, at a guaranteed price of at least 80% of the average energy supply tariff charged to ultimate consumers.

The creation of PCH-COM and PROINFA programs clearly indicates that, without specific support, the renewable sources and small projects would hardly be implemented.

It is worth mentioning that Brazilian Decree nr. 5,025 dated March 30<sup>th</sup>, 2004, which regulates the Law nr. 10,438/2002, states that PROINFA aims for the reduction of greenhouse gases as established by the United Nations Framework Convention on Climate Change (UNFCCC) under Kyoto Protocol, contributing to sustainable development. Therefore, the program is clearly a “Type E-” policy.

<sup>8</sup> ELETROBRÁS ([–]). Conceituação do Programa PCH-COM. Information available at: <[http://www.eletrobras.gov.br/EM\\_Programas\\_PCH-COM/conceituacao.asp](http://www.eletrobras.gov.br/EM_Programas_PCH-COM/conceituacao.asp)>.

<sup>9</sup> CERPCH ([20--]). Article from the National Centre of Reference in Small Hydropower Plant (Centro Nacional de Referência em Pequenas Centrais Hidrelétricas). Available at: <[http://www.cerpch.unifei.edu.br/Adm/materias\\_1/c6a22e3d8a4492cc067dc370ad1119b6.pdf](http://www.cerpch.unifei.edu.br/Adm/materias_1/c6a22e3d8a4492cc067dc370ad1119b6.pdf)>.



In spite of the government efforts, PROINFA project developers still faced barriers for the projects implementation which caused several delays in the operation starting of power utilities. The main barriers were as follows (MME, 2009)<sup>10</sup>:

- “Nationalization index” (in a free translation from the Portuguese *Índice de nacionalização*): according to the program, project sponsors should guarantee that 60% of the produced equipment and services acquisition involved in the project come from Brazil. However, the criteria and methodology to calculate this index were only published in May 2007 through MME Ordinance nr. 86/2007. Therefore, until the publication of the methodological calculation of this index, there were uncertainties for the equipment purchase and for the signature of EPC contracts (especially for wind power projects).
- Equity capital contribution: although project developers had signed PPAs with Eletrobrás as one of the guarantees for financing obtaining, projects hardly started construction considering the lack of equity capital. In addition, financing was difficulty mainly if no great engineering/constructor companies are involved in the societal composition of the project developer.
- Lack of the local equipment supply: the increase in the demand of the external market and the postponement of the criteria to calculate the nationalization index, cause difficulties for (and prevented in some cases) the equipment purchase.
- Barriers for the power utilities connection to the national grid (mainly in the Midwestern and Northeastern region of Brazil).
- New requirements for obtaining and renewal of the environmental licenses (in the case of small hydropower plants, requirements became extremely strict).

The PROINFA was launched in 2004 through the signature of PPAs considering the operation starting in 2006. In case of non-compliance with the terms of the contract (including the electricity delivery), project sponsors should pay to Eletrobrás all the electricity negotiated for the 20 years plus the readjustment (and contractual penalty for losses and damages depending on the case). However, considering the barriers faced by project developers, the government postponed several times the deadline for operation starting of PROINFA projects without penalties.

Until the preparation of this PoA, many projects are still some with construction ceased, under construction or with PPAs cancelled.

According to Law nr. 10,348, the program would be conducted in 2 (two) phases:

<sup>10</sup> Available at: <<http://www.mme.gov.br/programas/proinfa/galerias/arquivos/apresentacao/PROINFA-ANEXO1-InstitucionalMME.pdf>>.



- a) First phase: PPAs between renewable energy producers and Eletrobrás would be signed until June 30<sup>th</sup>, 2004 for the implementation of 3,300 MW of installed capacity from power utilities with operations starting until December 30<sup>th</sup>, 2008;
- b) Second phase: after achieving 3,300 MW, the goal would be the achieving of 10% of national total consumption by wind, small hydro and biomass projects. This goal would be achieved in 20 years.

The first phase of PROINFA was in fact conducted in 2004, through two public calls for projects selection on April 6<sup>th</sup> and October 5<sup>th</sup>, however, there is no indication when the second phase will be carried out.

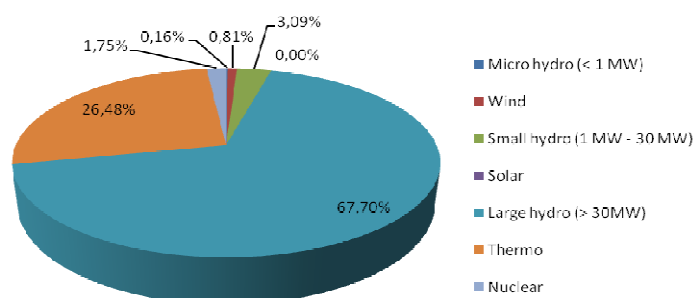
Another initiative from the Brazilian government for the promotion of renewable energy projects was the conduction of the 1<sup>st</sup> Energy Auction for Alternative Sources (from the Portuguese *Leilão para Fontes de Energia Alternativa - LFA*) in 2007. Thus, non-fossil fuel projects participated in this auction and renewable energy projects could compete with each other. However, the results of this auction were not satisfactory since few energy was negotiated. The results of the auction demonstrated the disinterest from project developers and made clear the necessity of strong incentives to promote renewable energy.

The 2<sup>nd</sup> Energy Auction for Alternative Sources was held in August 2010, in which five small hydropower plants totalizing 101 MW installed capacity sold energy in the auction (6% from the total 1685.6 MW installed capacity negotiated). The 3<sup>rd</sup> Reserve Energy Auction (*Leilão de Energia de Reserva – LER*) conducted in August 2010 was also focused on renewable energy projects. In this auction, only two small hydropower plants sold energy (2.5% from the total 1,206.6 MW installed capacity negotiated).

All information (including the results) of the energy auctions conducted by the Brazilian government is publicly available at the Chamber for the Commercialization of Electric Power website (“CCEE” from the Portuguese *Câmara de Comercialização de Energia Elétrica*): <<http://www.ccee.org.br/>>.

In spite of the government initiatives, according to ANEEL (2011)<sup>11</sup>, 67.7% of Brazil's generation is composed by large hydropower plants and 26.5 % of thermal power stations. Only 3 % of Brazil's installed capacity comes from small hydro power sources (3.5 GW out of a total of 114.3 GW).

<sup>11</sup> <sup>11</sup> ANEEL (2011). Energy generation database (from the Portuguese *Banco de Informações de Geração – BIG*). Operational power projects in Brazil. The Brazilian Power Regulatory Agency (in a free translation from the Portuguese *Agência Nacional de Energia Elétrica*). Available at: <<http://www.aneel.gov.br/aplicacoes/capacidadebrasil/capacidadebrasil.asp>>. Accessed in May 2011.



**Figure 2 – Operational power projects in Brazil**

**Source: ANEEL (2011)<sup>12</sup>**

The scenario presented in Figure 3 with small participation of electricity from small hydropower plants tends to continue the same. While observing authorizations/concessions granted to power projects construction during the latest three years of information available, it can be noted the increase tendency of the participation of thermo power plants in the Brazilian electricity matrix in comparison to small hydropower plants.

In 2007, it was authorized the construction of 150 thermo power plants resulting in 5,761 MW (87.3% of the total 6,596 MW installed capacity for 2007). In the case of small hydropower plants, 36 projects only were approved, resulting in approximately 212 MW (3.2% of the total installed capacity authorized)<sup>13</sup>.

In 2008, the scenario was the same what occurred in 2007. 371 thermo power plants received authorization to be constructed (resulting in approximately 63% of the total 18,938 MW) against 105 small hydropower plants authorized (1.55% of the total installed capacity authorized in that year)<sup>14</sup>.

In 2009, thermo power plants participation increased 63% against 13.5% of small hydropower plants. Therefore, thermo power plants contributed to approximately 24% of the electricity matrix and small hydropower plants with approximately 3%<sup>15</sup>.

Considering explanations above, many programs have been created to promote renewable energy projects and, in spite of the government efforts, project developers still face barriers for the implementation of small hydropower plants. These barriers can be evidenced through the results of the energy auctions for alternative sources and the

<sup>12</sup> ANEEL (2011). Energy generation database (from the Portuguese *Banco de Informações de Geração – BIG*). Operational power projects in Brazil. The Brazilian Power Regulatory Agency (in a free translation from the Portuguese *Agência Nacional de Energia Elétrica*). Available at: <http://www.aneel.gov.br/aplicacoes/capacidadebrasil/capacidadebrasil.asp>. Accessed in May 2011.

<sup>13</sup> ANEEL (2008). 2007 ANEEL Report. Agência Nacional de Energia Elétrica (ANEEL). Page 70. Available at: <http://www.aneel.gov.br/>.

<sup>14</sup> ANEEL (2009). 2008 ANEEL Report. Agência Nacional de Energia Elétrica (ANEEL). Page 60. Available at: <http://www.aneel.gov.br/>.





participation of small hydropower plants in the Brazilian electricity matrix. The increase tendency of participation of thermo power plants in the Brazilian electricity matrix is extremely high in comparison to small hydropower plants while observing authorizations and concessions granted for energy projects construction during 2007 to 2009. Therefore, it can be demonstrated that a strong incentive is necessary to promote the renewable energy projects in Brazil, which includes the small hydropower plants. Otherwise, this type of projects would hardly be implemented.

**(iii) If the PoA is implementing a mandatory policy/regulation, this would/is not enforced**

The implementation of the project activities of this PoA is not based on or has not been conducted to ensure a mandatory policy/regulation. The Project Participants state that the proposed PoA is a voluntary action by the managing entity.

**(iv) If mandatory a policy/regulation are enforced, the PoA will lead to a greater level of enforcement of the existing mandatory policy/regulation.**

Not applicable. As mentioned above, the implementation of the project activities of this PoA is not based on or has not been conducted to ensure a mandatory policy/regulation.

The DOE cross checked the information with the following references:

ELETROBRÁS - Conceituação do Programa PCH-COM (Concepts of the PCH-COM program - Information available at: [http://www.elektrobras.gov.br/EM\\_Programas\\_PCH-COM/conceituacao.asp](http://www.elektrobras.gov.br/EM_Programas_PCH-COM/conceituacao.asp)

CERPCH - Article from the National Centre of Reference in Small Hydropower Plant (Centro Nacional de Referência em Pequenas Centrais Hidrelétricas). Available at: [http://www.cerpch.unifei.edu.br/Adm/materias\\_1/c6a22e3d8a4492cc067dc370ad1119b6.pdf](http://www.cerpch.unifei.edu.br/Adm/materias_1/c6a22e3d8a4492cc067dc370ad1119b6.pdf)

Ministry of Mines and Energy 2009 - Available at: <http://www.mme.gov.br/programas/proinfa/galerias/arquivos/apresentacao/PROINFA-ANEXO1-InstitucionalMME.pdf>

Chamber for the Commercialization of Electric Power website (CCEE from the Portuguese *Câmara de Comercialização de Energia Elétrica*): <http://www.ccee.org.br/> ANEEL (2011). Energy generation database (from the Portuguese *Banco de Informações de Geração – BIG*). Operational power projects in Brazil. The Brazilian Power Regulatory Agency (in a free translation from the Portuguese *Agência Nacional de Energia Elétrica*). Available at: <http://www.aneel.gov.br/aplicacoes/capacidadebrasil/capacidadebrasil.asp>.

<sup>15</sup> ANEEL (2010). 2009 ANEEL Report. Agência Nacional de Energia Elétrica (ANEEL). Page 57. Available at: <http://www.aneel.gov.br/>.



ANEEL (2008). 2007 ANEEL Report. Agência Nacional de Energia Elétrica (ANEEL). Page 70. Available at: <<http://www.aneel.gov.br/>>.

ANEEL (2009). 2008 ANEEL Report. Agência Nacional de Energia Elétrica (ANEEL). Page 60. Available at: <<http://www.aneel.gov.br/>>.

ANEEL (2010). 2009 ANEEL Report. Agência Nacional de Energia Elétrica (ANEEL). Page 57. Available at: <<http://www.aneel.gov.br/>>.

For the CPAs to be included in the PoA as per the additionality tool, investment analysis was adopted to demonstrate the additionality.

The eligibility criteria of the additionality were set as:

The conditions that ensure that CPAs meet the requirements pertaining to the demonstration of additionality.

As mentioned in section E.5.1 (CDM-PoA-DD), additionality will be assessed in each CPA and will follow the version of methodological tool “Tool for demonstration and assessment of additionality”, version 06.0.0 (ref/2/). Therefore, all CPAs to be included in this PoA have to present the additionality assessment following the above mentioned tool.

### 3.10 Monitoring plan (124)

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

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

According to the PoA:

The monitoring of the proposed PoA will be conducted following the ACM0002 - “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” version 12.3.0 (ref/1/).

CME opts for a verification method that does not use sampling but verifies each CPA. Verification will occur either separately for each CPA or in groups. The record keeping system that will be implemented by the CME will ensure that no double accounting will occur and that the status of verification can be determined anytime for each CPA. Description of the monitoring plan for a typical CPA is presented in section E.7.2 of the CDM-PoA-DD.

The monitoring of electricity generation by small hydropower plants follows the procedures established by the National Electric System Operator (from the Portuguese *Operador Nacional do Sistema Elétrico – ONS*), Brazilian Power Regulatory Agency



(from the Portuguese Agência Nacional de Energia Elétrica – ANEEL) and CCEE (Chamber of Commerce for Electric Energy<sup>16</sup>).

The CCEE is intended to facilitate the sale of electricity in the National Interconnected System Environments and the Regulated Free Market, and perform the accounting and settlement of transactions in short-term market, which are externally audited, in accordance with ANEEL Resolution No. 109 of October 26, 2004 (Convention of Electric Energy Commercialization). The Rules and Procedures governing the marketing activities in the CCEE are approved by ANEEL.

According to the procedures established by these entities, it will be possible to monitor total electricity exported to the grid. Beyond that, energy information will be controlled in real time by CCEE. Since the measurement points are physically defined and the invoice measurement system and the communication infrastructure will be installed, the measurement points will be registered in the SCDE (System of Energy Data collection) managed by CCEE. Each measurement point of every small hydropower plant is individually recognized by the system. Thus, information taken from these sources ensures that no double accounting occurs.

The DOE has verified the monitoring arrangements by cross-checking them against the PoA-DD and the Methodology ACM0002, version 12.3.0.

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

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

### **3.11 Environmental impacts (133)**

The CME has undertaken an analysis of environmental impacts at CPA level.

### **3.12 Local stakeholder consultation (130)**

The CME has undertaken the local stakeholder consultation at PoA level.

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

The Resolution nr. 9 dated March 20<sup>th</sup>, 2009 issued by the Brazilian Designated National Authority, establishes all the requirements related to the CDM approval process for Programme of Activities. One of the requirements is the invitation for

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<sup>16</sup> <http://www.ccee.org.br>



comments from local stakeholders<sup>17</sup> at least 15 days before the validation starting, i.e. the starting of the Global Stakeholder Process (GSP). The following stakeholders shall be invited:

- *The Executive Secretariat of the Interministerial Commission on Global Climate Change;*
- *Brazilian NGO Forum and Social Movements for the Environment and Development –<http://www.fboms.org.br>;*
- *National entities whose purposes are directly or indirectly related to the Programme of Activities;*
- *Federal Attorney General.*

Considering the requirement above, letters were sent to the following stakeholders on October 3<sup>rd</sup>, 2011:

- *The Executive Secretariat of the Interministerial Commission on Global Climate Change (from the Portuguese Comissão Interministerial de Mudança Global do Clima – CIMGC);*
- *Brazilian NGO Forum and Social Movements for Environment and Development (from the Portuguese Fórum Brasileiro de ONGs e Movimentos Sociais para o Desenvolvimento e Meio Ambiente – FBOMS);*
- *Brazilian National Reference Center of Small Hydropower Plants (from the Portuguese Centro Nacional de Referência em Pequenas Centrais Hidrelétricas – CERPCH);*
- *Federal Attorney General (from the Portuguese Ministério Público Federal).*

The content of the letter to be sent to local stakeholders is presented in Resolution nr. 7 dated March 5<sup>th</sup>, 2008 issued by the Brazilian DNA. Therefore, letters were prepared according to Resolution nr. 7/2008, informing the link where the PoA, related CPAs and the “Anexo III” report were made available in Portuguese for consultation and for comments. “Anexo III” is a report containing information related to the contribution of the proposed PoA to sustainable development. The link of the United Nations Framework Convention on Climate Change (UNFCCC) website where the PoA and related CPAs would be available for GSP and the contact information of the Project Participants were also included in the letter sent to local stakeholders.

BV received copies of the invitation letters that were sent to the stakeholders mentioned above and post office confirmation of receipt communication (ref/N/) and confirm that the invitations for comments from local stakeholders were sent more than 15 days before the validation starting.

<sup>17</sup> Information available at: <[http://www.mct.gov.br/upd\\_blob/0201/201258.pdf](http://www.mct.gov.br/upd_blob/0201/201258.pdf)>.



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

#### **4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS**

The PoA-DD using methodology ACM0002 version 12.3.0 was webhosted on the UNFCCC for global stakeholder's comments as per CDM requirements. The programme was webhosted from 22/10/2011 to 20/11/2011.

No comments were received.



## 5 VALIDATION OPINION

Bureau Veritas Certification has performed a validation of the TUCANO CDM Programme of Activities for the Promotion of Small Hydropower Plants in Brazil, in Brazil. The validation was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

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

By reviewing VVM, Procedures for registration of a programme of activities as a single CDM project activity and issuance of certified emission reductions for a programme of activities, Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities, etc, Bureau Veritas Certification is of the opinion that management system of CME is robust and efficient to ensure eligibility and quality of CPAs. Eligibility criteria are sufficient so that the inclusion of CPAs could fulfill all requirements of EB rules. Emission reductions attributable to the CPA under the PoA are additional to any that would occur in the absence of the PoA, and hence are likely to be achieved.

The review of the PoA-DD version 04 (ref/I/) and generic CPA-DD version 03 (ref/J/) 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 PoA correctly applies and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria. Bureau Veritas Certification concludes that TUCANO CDM Programme of Activities for the Promotion of Small Hydropower Plants in Brazil meets all stated criteria and thus requests registration of TUCANO CDM Programme of Activities for the Promotion of Small Hydropower Plants in Brazil as a PoA.

The project will use a renewable crediting period of 28 years.

The estimation of overall emission reductions for the first crediting period is described in the validation report of the specific CPA.

## 6 REFERENCES

### Category 1 Documents:

Documents provided by Type the name of the company that relate directly to the GHG components of the PoA.

- /A/ CDM-PoA-DD dated 30 September 2011 version 01;
- /B/ CDM-PoA-DD dated 30 December 2011 version 02;
- /C/ CDM-PoA-DD dated 17 February 2012 version 03;
- /D/ CDM-CPA-DD generic dated 30 September 2011 version 01;
- /E/ CDM-CPA-DD generic dated 30 December 2011 version 02;
- /F/ Invitation letters sent to the stakeholders and post office confirmation of receipt communication;
- /G/ Excel file WACC ElectricGen\_2011 01 v.1;
- /H/ Excel file WACC ElectricGen\_2011 01 v.2.
- /I/ CDM-PoA-DD dated 02 April 2012 version 04;
- /J/ CDM-CPA-DD generic dated 02 April 2012 version 03;
- /K/ "CME's record keeping system for the inclusion of CPAs in "TUCANO CDM Programme of Activities for the Promotion of Small Hydropower Plants in Brazil"".
- /L/ CME's database for the registered CDM Project Activities under ACM0002 and under AMSID in Brazil and for Brazilian registered CDM Programme of Activities
- /M/ Calculation spreadsheet containing the emission factor calculation: BR EF ex ante 2008 to 2010-def EF tool 2.2-2011.10.06.xls
- /N/ Copies of the letters and post office confirmation of receipt communication
- /O/ The Netherlands DNA's Letter of Approval, dated March 26<sup>th</sup>, 2012
- /P/ The Brazilian DNA's Letter of Approval, dated August 22<sup>nd</sup>, 2012

### Category 2 Documents:

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

- /1/ Methodology ACM0002, version 12.3.0.
- /2/ Tool for the demonstration and assessment of additionality, version 06.0.0.



- /3/ Tool to calculate the emission factor for an electricity system, version 02.2.1.
- /4/ CDM Programme Activity Design Document Form (CDM-CPA-DD), version 01.
- /5/ Programme of Activities Design Document Form (CDM-PoA-DD), version 01.
- /6/ Procedures for Registration of a Programme of Activities as a Single CDM Project Activity and Issuance of Certified Emission Reductions for a Programme of Activities, version 04.1.
- /7/ Standard for Demonstration of Additionality, Development of Eligibility Criteria and Application of Multiple Methodologies for Programme of Activities, version 01.0.
- /8/ Glossary of CDM Terms (version 06.0) EB 66 ANNEX 63.
- /9/ Clean Development mechanism validation and verification manual (Version 01.2).

**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/ Karen M. Nagai - EQAO

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## 7 CURRICULA VITAE OF THE DOE'S VALIDATION TEAM MEMBERS

### Bureau Veritas Certification - Lead GHG Verifier

Rubens da Silva Ferreira – Is graduated in Chemical Engineering with experience in Quality and Environmental management in glass industries. He is ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007 Lead Auditor and has also experience in the implementation of Quality and Environmental Management Systems. Rubens is qualified as Verifier GHG – Green House Gases.

### Bureau Veritas Certification – Financial Specialist

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

### Bureau Veritas Certification – Financial Specialist

Antonio Vinicius 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.

### Bureau Veritas Certification – Internal Technical Reviewer

Guilherme Lefèvre - He is graduated in Law at the University of Leiden - The Netherlands and has 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. He has an MSc degree in Environmental Science (São Paulo University).



**TABLE 1** Validation requirements based on the Clean Development Mechanism Validation and Verification Manual (Version 01.2)

**TABLE 2** RESOLUTION OF CORRECTIVE ACTION AND CLARIFICATION REQUESTS



VALIDATION PROTOCOL

**Table 1** Validation requirements based on the Clean Development Mechanism Validation and Verification Manual (Version 01.2)

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS		Draft Concl	Final Concl
<b>1. Approval</b>			<b>COUNTRY A</b> (Brazil)	<b>COUNTRY B</b> (The Netherlands)		
a. Have all Parties involved approved the project activity?	VVM	44	The final decision from the DNA will be available only after its first ordinary meeting, after the receiving of all the required documents necessary for evaluation, including this validation report, according to Article 6 of the Resolution nº 1 of CIMGC – Comissão Interministerial de Mudança Global do Clima.	<b>CL01</b> – Please, inform the present situation of the approval by The Netherlands.	CL01	OK
b. Has the DNA of each Party indicated as being involved in the proposed CDM project activity in section A.3 of the PDD provided a written letter of approval? (If yes, provide the reference of the letter of approval, any supporting documentation, and specify if the letter was received from the project participant or directly from the DNA)	VVM	45	Refer to item 1.a.	Refer to CL01	CL01	OK
c. Does the letter of approval from DNA of each Party involved:	VVM	45	Refer to item 1.a.	Refer to CL01	CL01	OK
i. confirm that the Party is a Party of the Kyoto Protocol?	VVM	45.a	Refer to item 1.a.	Refer to CL01	CL01	OK



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS		Draft Concl	Final Concl
ii. confirm that participation is voluntary?	VVM	45.b				
iii. confirm that, in the case of the host Party, the proposed CDM project activity contributes to the sustainable development of the country?	VVM	45.c	Refer to item 1.a.	Refer to CL01	CL01	OK
iv. Refers to the precise proposed CDM project activity title in the PDD being submitted for registration?	VVM	45.d	Refer to item 1.a.	Refer to CL01	CL01	OK
d. Is(are) the letter(s) of approval unconditional with respect to (i) to (iv) above?	VVM	46	Refer to item 1.a.	Refer to CL01	CL01	OK
e. Has(ve) the letter(s) of approval been issued by the respective Party's designated national authority (DNA) and is valid for the CDM project activity under validation?	VVM	47	Refer to item 1.a.	Refer to CL01	CL01	OK
f. Is there doubt with respect to the authenticity of the letter of approval?	VVM	48	Refer to item 1.a.	Refer to CL01	CL01	OK
g. If yes, was verified with the DNA that the letter of approval is authentic?	VVM	48	Refer to item 1.a.	Refer to CL01	CL01	OK
<b>2. Participation</b>			<i>PP1 ( Ecopart Assessoria em Negócios Empresariais Ltda. (EQAQ)(private entity) )</i>	<i>PP2 ( Mabanaft Carbon B.V. (private entity) )</i>		
a. Have all project participants been listed in a consistent manner in the project documentation?	VVM	51	Yes.	Yes.	OK	OK
b. Has the participation of the project participants in the project activity been approved by a Party to the Kyoto Protocol?	VVM	51	Refer to item 1.a.	Refer to CL01	CL01	OK
c. Are the project participants listed in tabular form in section A.3 of the PDD?	VVM	52	Yes.	Yes.	OK	OK



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS		Draft Concl	Final Concl
d. Is the information in section A.3 consistent with the contact details provided in annex 1 of the PDD?	VVM	52	Yes.	Yes.	OK	OK
e. Has the participation of each of the project participants been approved by at least one Party involved, either in a letter of approval or in a separate letter specifically to approve participation? (Provide reference of the approval document for each of the project participants)	VVM	52	Refer to item 1.a.	Refer to CL01	CL01	OK
f. Are any entities other than those approved as project participants included in these sections of the PDD?	VVM	52	No.		OK	OK
g. Has the approval of participation issued from the relevant DNA?	VVM	53	Refer to item 1.a.	Refer to CL01	CL01	OK
h. Is there doubt with respect to (g) above? I	VVM	53	Refer to item 1.a.	Refer to CL01	CL01	OK
i. If yes, was verified with the DNA that the approval of participation is valid for the proposed project participant?	VVM	53	Refer to item 1.a.	Refer to CL01	CL01	OK
<b>3. Project desing document</b>						
a. Is the PDD used as a basis for validation prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website?	VVM	55	Yes.		OK	OK
b. Is the PDD in accordance with the applicable CDM requirements for completing the PDD?	VVM	56	<b>CAR 01:</b> The CDM-CPA-DD – Jambo, version 01, section A.4.1 is blank.  <b>CAR 02:</b> CDM-CPA-DD – Jambo, version 01, Section A.4.3.. is blank.		CAR01 to CAR15 CAR19 CAR24 CL02	OK



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			<p><b>CAR 03:</b> The section B.5.1 from the CDM-CPA-DD - Jambo, version 01 need not be filled.</p> <p><b>CAR 04:</b> The section C.1. from the CDM-CPA-DD - Jambo, version 01 was not filled in accordance with the PoA_form03_v01.pdf. (the same situation is applied to the CDM-CPA-DD - generic, version 1)</p> <p><b>CAR 05:</b> The section D.1. from the CDM-CPA-DD - Jambo, version 01 was not filled in accordance with the PoA_form03_v01.pdf. (the same situation is applied to the CDM-CPA-DD - generic, version 1)</p> <p><b>CAR 06:</b> The phrase “The CPA implementer is not project participants of the PoA.” from the CDM-CPA-DD - generic – Section A.3. was not presented at the same section from the CDM-CPA-DD - Jambo, version 01.</p> <p><b>CAR 07:</b> CDM-CPA-DD - generic, version 1, Section A.4.1. is blank.</p> <p><b>CAR 08:</b> As presented on the CDM-PoA-DD, version 01 (Section A.4.1.2.), the CDM-CPA-DD - Jambo, version 01 and the CDM-CPA-DD - generic, version 1 should present the footnote with the source related to the figure 1.</p> <p><b>CAR 09:</b> CDM-CPA-DD – generic, version 01,</p>	to CL09	





## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			<p>Section A.4.3. is blank.</p> <p><b>CAR 10:</b> The footnote 12 from the CDM-CPA-DD – generic, version 01, SectionB.3. is not presented equal the respective source 15 from the CDM-CPA-DD - Jambo, version 01.</p> <p><b>CAR 11:</b> The section B.5.1 from the CDM-CPA-DD - generic, version 01 need not be filled.</p> <p>Refer to <b>CAR 24</b></p> <p><b>CAR 12:</b> The source presented on the footnote 3 from the CDM-CPA-DD - Jambo, version 01 is not correct, the value of the reservoir area is from the “PCH Jambo – Projeto Básico Otimizado” dated November 2008. (the same situation is applied to the footnote 4 and to the figure 2)).</p> <p><b>CL 02:</b> Please clarify why the project’s geographical coordinates (Section A.4.1.2 from the CDM-CPA-DD - Jambo, version 01) are from the dam and not from the powerhouse.</p> <p><b>CL 03:</b> Please, explain the starting date of the CPA. (Section A.4.2.1. from the CDM-CPA-DD - Jambo, version 01)</p> <p><b>CL 04:</b> Please, provide evidence of the CPA’s</p>		



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			<p>expected 30-year operational lifetime. . (Section A.4.2.2. from the CDM-CPA-DD - Jambo, version 01)</p> <p><b>CL 05:</b> Please, explain the starting date of the crediting period of the CPA. . (Section A.4.3.1. from the CDM-CPA-DD - Jambo, version 01)</p> <p><b>CL 06:</b> Please include the source to the ANEEL website as presented on section B.2. (CDM-CPA-DD - Jambo, version 01) related to the classification of the project as a small hydropower plant (this also applies to the CDM-CPA-DD – generic)</p> <p><b>CAR 13:</b> In accordance with the CDM-PoA-DD, version 01, Section A.4.2.1. – “The technology to be used in the project activities which will be included in this PoA will be detailed in each CPA-DD.” this not happens on the CDM-CPA-DD - Jambo, version 01.</p> <p>Refer to <b>CAR 19</b></p> <p><b>CAR 14:</b> On the “justification/source of information used” presented on the CDM-CPA-DD – Jambo, version 01, related to the Plant Load Factor (PLF), an option should be defined.</p>		



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			<p><b>CAR 15:</b> The reservoir area (Section A.2 ), the project's geographical coordinates (Section A.4.1.2) and the installed capacity (Section B.3), all data from the the CDM-CPA-DD – Jambo, version 01 are not in accordance with the ANEEL dispatch nº 1.370.</p> <p><b>CL 07:</b> Please provide the “Spreadsheet with complete research of the common practice analysis ,,,” as stated on the CDM-CPA-DD version 01 , section B.3.</p> <p><b>CL 08:</b> Please, inform the correct sources of data in CERs Calc spreadsheets v1, BEy, also provide the Questionnaire sent by RBO.</p> <p><b>CL 09:</b> Related to the Preliminary and Construction Licenses clarify the following points:  1. The respective licenses (nº FE0010454 and FE 012319, were issued by FEEMA, and not by INEA as listed on the CDM-CPA-DD version 1;  2. The expiration date of the Construction License was in 02/10;  3. Both licenses were granted to Arcadis Logos Energia S.A. and not to RBO Energia S.A. as stated on the CDM-CPA-DD version 1 (the same</p>		



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			<p>problem appears related to the water resources – in Portuguese “outorgas” ant the ANEEL resolution);</p> <p>4. The value presented on the Construction License related to the installed capacity was 18,000,000 W and in the CDM-CPA-DD version 1 the same parameter appears as 13,000,000 W.</p>		



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c. The completed CDM-POA-DD, the specific CDM-CPA-DD with generic information relevant to all CPAs and the completed CDM-CPA-DD which is to be based on the application of the PoA to one real case are established in mutual accordance?	EB 55	Annex 38	Refer to (3.b.) above.	OK	OK
d. Specific questions for PoA-DD			<a href="http://cdm.unfccc.int/Reference/PDDs_Forms/PoA/index.html">http://cdm.unfccc.int/Reference/PDDs_Forms/PoA/index.html</a>		
i. On the item A.1 from the CDM-PoA-DD is the title of the programme of activities provided?	PoA form	v1	Yes. <i>"TUCANO CDM Programme of Activities for the Promotion of Small Hydropower Plants in Brazil"</i> .	OK	OK
ii. On the item A.2. from the CDM-PoA-DD, are the following information included:	PoA form	v1			
ii.1 General operating and implementing framework of PoA.	PoA form	v1	<b>CL 10:</b> Please, provide a web link address related to footnotes 1 and 2, so that information can be verified.	CL10	OK
ii.2 Policy/mesure or stated goal of the PoA.	PoA form	v1	Yes.	OK	OK
ii.3 Confirmation that the proposed PoA is a voluntary action by the coordinating/managing entity.	PoA form	v1	Yes.	OK	OK
iii. On the item A.3 from the CDM-PoA-DD, are the following information included:	PoA form	v1			
iii.1 Coordinating or managing entity of the PoA as the entity which communicates with the Board.	PoA form	v1	Yes. The Coordinating or managing entity of PoA is <i>Ecopart Assessoria em negócios Empresariais Ltda. (EQA0)</i> .	CAR16	OK
			<b>CAR 16:</b> There is no information related to the fact		

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			that the Coordinating or managing entity of PoA as the entity which communicates with the Board.		





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iii.2 Project participants being registered in relation to the PoA (Project participants may or may not be involved in one of the CPAs related to the PoA).	PoA form	v1	Yes.	OK	OK
iv. On the item A.4.1 from the CDM-PoA-DD is the Location of the programme of activities provided?	PoA form	v1	<b>CAR 17:</b> PoA-DD v01, Section A.4.1, is blank.	CAR17	OK
v. On the item A.4.1.1 from the CDM-PoA-DD is the Host Party(ies) provided?	PoA form	v1	Yes. Brazil.	OK	OK
vi. On the item A.4.1.2. from the CDM-PoA-DD, is the definition of the boundary for the PoA in terms of a geographical area (e.g., municipality, region within a country, country or several countries) within which all CDM programme activities (CPAs) included in the PoA will be implemented, taking into consideration the requirement that all applicable national and/or sectoral policies and regulations of each host country within that chosen boundary included?	PoA form	v1	Yes. The physical / geographical boundary within which all CDM programme activities (CPAs) included in the proposed Programme of Activities will be implemented is Brazil.	OK	OK
vii. On the item A.4.2. from the CDM-PoA-DD is the Description of a typical CDM programme activity (CPA) provided?	PoA form	v1	<b>CAR 18:</b> PoA-DD v01, Section A.4.2, is blank.	CAR18	OK
viii. On the item A.4.2.1. from the CDM-PoA-DD is the Technology or measures to be employed by the CPA provided?	PoA form	v1	Yes.	OK	OK
ix. On the item A.4.2.2. from the CDM-PoA-DD is a description of criteria for enrolling the CPA described?	PoA form	v1	<b>CAR 19:</b> The eligibility criteria for inclusion of a CPA in the PoA (Section A.4.2.2) should be established in accordance with the EB 65 Annex 03 paragraph 14, 15 and 17.	CAR19	OK





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x. On the item A.4.3. from the CDM-PoA-DD are the following informations demonstrated?	PoA form	v1			
x.1 The proposed PoA is a voluntary coordinated action.	PoA form	v1	Yes.	OK	OK
x.2 If the PoA is implementing a voluntary coordinated action, it would not be implemented in the absence of the PoA.	PoA form	v1	<b>CAR20:</b> The two first paragraphs from Section a.4.3, item (ii) are not related with the presented discussion.  <b>CAR 21:</b> On the CDM-PoA-DD version 01, Section A.4.3., first paragraph of page 10, the correct is figure 3, and not figure 6.	CAR20 CAR21	OK
x.3 If the PoA is implementing a mandatory policy/regulation, this would/is not enforced.	PoA form	v1	Yes.	OK	OK
x.4 If mandatory a policy/regulation is enforced, the PoA will lead to a greater level of enforcement of the existing mandatory policy/regulation.	PoA form	v1	N.A.	OK	OK
xi. On the item A.4.4.1. from the CDM-PoA-DD is a description of the operational and management arrangements established by the coordinating/managing entity for the implementation of the PoA, including:	PoA form	v1			
xi.1 A record keeping system for each CPA under the PoA.	PoA form	v1	<b>CL 11 :</b> Please provide a more detailed description about the record keeping system for each CPA under the PoA. The DOE needs to have access to the detailed control system that has been established by the CME.	CL11	OK



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xi.2 A system/procedure to avoid double accounting e.g. to avoid the case of including a new CPA that has been already registered either as a CDM project activity or as a CPA of another PoA.	PoA form	v1	Yes.	OK	OK
xi.3 The provisions to ensure that those operating the CPA are aware of and have agreed that their activity is being subscribed to the PoA.	PoA form	v1	Yes.	OK	OK
xii. On the item A.4.4.2. are the following informations provided.	PoA form	v1			
xii.1 Description of the proposed statistically sound sampling method/procedure to be used by DOEs for verification of the amount of reductions of anthropogenic emissions by sources or removals by sinks of greenhouse gases achieved by CPAs under the PoA.	PoA form	v1	Yes.	OK	OK
xii.2 In case the coordinating/managing entity opts for a verification method that does not use sampling but verifies each CPA (whether in groups or not, with different or identical verification periods) a transparent system is to be defined and described that ensures that no double accounting occurs and that the status of verification can be determined anytime for each CPA.	PoA form	v1	Refer to <b>CL 11</b>	CL11	OK
xiii. On the item A.4.5. from the CDM-PoA-DD are informations about the public funding of the programme of activities (PoA) provided?	PoA form	v1	Yes.	OK	OK
xiv. On the item B.1. from the CDM-PoA-DD was the	PoA	v1	<b>CL 12</b> : Please include the specific date of the	CL12	OK



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starting date of the programme of activities provided?	form		starting date.		



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xv. On the item B.2. from the CDM-PoA-DD was the length of the programme of activities provided?	PoA form	v1	Yes. 28 years.	OK	OK
xvi. On the item C.1. from the CDM-PoA-DD is indicate the level at which environmental analysis as per requirements of the CDM modalities and procedures is undertaken?	PoA form	v1	Yes. The environmental analysis is done at CPA level.	OK	OK
xvi.1 On the item C.1. from the CDM-PoA-DD is the choice of level at which the environmental analysis is undertaken justified?	PoA form	v1	<b>CL 13</b> : Please explain in a better way the choice of level at which the environmental analysis is undertaken. Additionally, please, make it clear what is meant by “local”, in the context of environmental analysis.	CL13	OK
xvi2. If this environmental analysis is not undertaken for the PoA but is to be done at the CPA level, is this described and reflected in the CDM-PoA-DD and the CDM-CPA-DD?	PoA form	v1	Refer to <b>CL 13</b>  <b>CL 14</b> : Please, adjust CONAMA’s name in English. “Resolution” shouldn’t be part of it.	CL13 CL14	OK
xvii. On the item C.2. from the CDM-PoA-DD is the documentation on the analysis of the environmental impacts, including transboundary impacts provided?	PoA form	v1	N.A.	OK	OK
xviii. On the item C.3. from the CDM-PoA-DD is stated wheter in accordance with the host Party laws/regulations, an environmental impact assessment is required for a typical CPA, included in the programme of activities (PoA) provided?	PoA form	v1	Yes.	OK	OK
xix.1 On the item D.1. from the CDM-PoA-DD	PoA	v1	Yes. Local stakeholder consultation is done at PoA	OK	OK



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is indicate the level at which local stakeholder comments are invited?	form		level.		
xix.2 Is the choice of level at which local stakeholder comments are invited justified?	PoA form	v1	Yes.	OK	OK
xx. On the item D.2. from the CDM SSC-PoA-DD is a brief description of how comments by local stakeholders have been invited and compiled provided?	PoA form	v1	<b>CAR 22</b> : The Resolution nr. 9 also establishes that all requirements related to the approval process for CDM Project Activities shall also be applied while seeking approval for Programme of Activities. In this sense, some of the procedures established by Resolution nr. 7, issued on March 5 <sup>th</sup> 2008, are also going to be followed.	CAR22	OK
xxi. On the item D.3. from the CDM-PoA-DD is a summary of the comments received provided?	PoA form	v1	No concerns were raised in the public calls regarding the project neither in the local (demanded by the DNA) nor in the global stakeholders' process (demanded by the CDM modalities and procedures) until the preparation of this PoA.	OK	OK
xxii. On the item D.4. from the CDM-PoA-DD is a report on how due account was taken of any comments received provided?	PoA form	v1	No concerns were raised in the public calls regarding the project neither in the local (demanded by the DNA) nor in the global stakeholders' process (demanded by the CDM modalities and procedures) until the preparation of this PoA.	OK	OK
xxiii. On the item E.1. from the CDM-PoA-DD is the Title and reference of the approved	PoA form	v1	<b>CAR 23</b> : The actual version of the methodology ACM0002 is version 12.2.0.	CAR23	OK



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baseline and monitoring methodology applied to each CPA included in the PoA?					
xxiv. On the item E.2. from the CDM-PoA-DD is the justification of the choice of methodology and why it is applicable to each CPA provided?	PoA form	v1	<b>CAR 24</b> : The justification of applicability should be done taking in account all the conditions related to the applicability of the methodology ACM0002.	CAR24	OK
xxv. On the item E.3. from the CDM-PoA-DD is the description of the sources and gases included in the CPA boundary provided?	PoA form	v1	Yes.	OK	OK
xxvi. On the item E.4. from the CDM-PoA-DD is the description of how the baseline scenario is identified and description of the identified baseline scenario provided?	PoA form	v1	Yes.	OK	OK
xxvii. On the item E.5. from the CDM-PoA-DD is the description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the CPA being included as registered PoA provided?	PoA form	v1	<b>CAR 25</b> : PoA-DD v01, Section E.5, has been left blank.	CAR25	OK
xxvii.1. On the item E.5.1. from the CDM-PoA-DD did the PPs demonstrate, using the procedure provided in the baseline and monitoring methodology applied, additionality of a typical CPA?	PoA form	v1	<b>CAR 26</b> : The actual version to the tool for the demonstration and assessment of additionality is version 6.0.0  <b>CL 15</b> : Please rewrite the first paragraph from section E,5,1 in a way to make it clearer.	CAR26 CL15	OK
xxvii.2. On the item E.5.2. from the CDM-PoA-DD did the PPs provide the key criteria for assessing additionality of a CPA when proposed	PoA form	v1	Yes.	OK	OK



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to be included in the registered PoA?					
xxvii.3. On the item E.5.2. from the CDM-PoA-DD the criteria were based on additionality assessment undertaken in E.5.1.?	PoA form	v1	Yes.		
xxvii.4. On the item E.5.2. from the CDM-PoA-DD the PPs justified the choice of criteria based on analysis provided in E.5.1.?	PoA form	v1	<b>CAR 27</b> : PoA-DD v01, Section E.5.2, does not include a justification of the choice of criteria for assessing additionality of a CPA.	CAR27	OK
xxvii.5. On the item E.5.2. from the CDM-PoA-DD was demonstrated how these criteria would be applied to the additionality of a typical CPA at the time of inclusion?	PoA form	v1	Yes.	OK	OK
xxvii.6. Was the information provided on the item E.5.2. from the CDM-PoA-DD incorporated into the CDM-CPA-DD that has been specified for this PoA?	PoA form	v1	Yes.	OK	OK
xxviii. On the item E.6.1. from the CDM-PoA-DD was the explanation of methodological choices, provided in the approved baseline and monitoring methodology applied, selected for a typical CPA ?	PoA form	v1	<p><b>CL 16</b>: Please include the version related to the “Tool to calculate the emission factor for an electricity system”.</p> <p><b>CL 17</b> : Please, update Table 3 with 2011 data (Section E.6.1 from the CDM-PoA-DD v01).</p> <p><b>CAR 27</b> :PoA-DD v01, Section E.6.1, presents a web link address (<a href="http://www.ons.org.br/historico/geracao_energia.aspx">http://www.ons.org.br/historico/geracao_energia.aspx</a>) which does not lead to the information in Table 3</p> <p><b>CAR 28</b> : PoA-DD v01, Section E.6.1, Step 5, does not provide a chosen option as demanded by the</p>	CAR27 CAR28 CL16 CL17 CL18	OK





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			tool.  <b>CL 18</b> : Please clarify the origin to the parameter $EF_{Res}$ , PoA-DD v01, Section E.6.1, item Project emissions ( $PE_y$ ).		



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xxix. On the item E.6.2. from the CDM-PoA-DD were the equations, including fixed parametric values, to be used for calculation of emission reductions of a CPA provided?	PoA form	v1	<b>CAR 29</b> : The CDM-PoA-DD, version 1 does not Include the equation related to the Emission Reductions on Section E.6.2.	CAR29	OK
xxx. On the item E.6.3. from the CDM-PoA-DD are the data and parameters reported adequately?	PoA form	v1	<b>CL 19</b> : Please use always the same descriptions to the parameters as presented on the methodology ( $A_{BL}$ )  <b>CAR 30</b> : The correct parameter is $EF_{grid,BM,y}$ and not $EF_{bm, 2010}$ .	CAR30 CL19	OK
xxxi. On the item E.7.1. from the CDM-PoA-DD are the data and parameters reported adequately?	PoA form	v1	<b>CL 20</b> : Please use always the same descriptions to the parameters as presented on the methodology ( $EG_{facility,y}$ )	CL20	OK
xxxii. On the item E.7.2. from the CDM-PoA-DD was the description of the monitoring plan for a CPA provided?	PoA form	v1	Yes.	OK	OK
xxxiii. On the item E.8. from the CDM-PoA-DD was the date of completion of the applicarrtion of the baseline study and monitoring methodology and the name of the responsible person(s)/entity(ies) provided?	PoA form	v1	Yes.	OK	OK
<b>4. Project description</b>					
a. Does the PDD contain a clear description of the project activity that provides the reader with a clear understanding of the precise nature of the	VVM	58	Yes.	OK	OK



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project activity and the technical aspects of its implementation?					
b. Is the description of the proposed CDM project activity as contained in the PDD:	VVM	59			
i. sufficiently covering all relevant elements?	VVM	59	Yes.	OK	OK
ii. accurate?	VVM	59	Yes.	OK	OK
iii. providing the reader with a clear understanding of the nature of the proposed CDM project activity?	VVM	59	Yes.	OK	OK
iv. Are there any changes/modifications compared to the webhosted PDD?	VVM	59	No.	OK	OK
c. Is the proposed CDM project activity in existing facilities or or utilizing existing equipments?	VVM	60	No.	OK	OK
d. Is the CDM project activity one of the following types:	VVM	60			
i. Large scale?	VVM	60	No.	OK	OK
ii. Non-bundled small scale projects with emission reductions exceeding 15,000 tonnes per year?	VVM	60	No.	OK	OK
iii. Bundled small scale projects, each with emission reductions not exceeding 15,000 tonnes?	VVM	60	No.	OK	OK
e. If yes to (c) and (d) above, was a physical site inspection conducted to confirm that the description in the PDD reflects the proposed CDM project activity, unless other means are specified in the methodology?	VVM	60	No, because at this point in time (19-20/12/2011, date of visit to RBO Energia S.A. office, for doc review), there is no construction work neither equipments at the physical site.	OK	OK
f. If yes to (d.iii) above, was the number of physical site visits base on sampling?	VVM	60	N.A.	OK	OK
g. If yes is the sampling size appropriately justified	VVM	60	N.A.	OK	OK



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through statistical analysis?					
h. For other individual proposed small scale CDM project activities with emission reductions not exceeding 15,000 tonnes per year, was a physical site inspection conducted?	VVM	61	N.A.	OK	OK
i. For all other proposed CDM project activities not referred to in paragraphs 59 – 61, and for other individual proposed small scale CDM project activities with emission reductions not exceeding 15,000 tonnes per year, was a physical site inspection conducted?	VVM	62	No, because at this point in time (19-20/12/2011, date of visit to RBO Energia S.A. office, for doc review), there is no construction work neither equipments at the physical site.	OK	OK
j. If no, was it appropriately justified?	VVM	62	N.A.	OK	OK
k. Does the proposed CDM project activity involve the alteration of an existing installation or process?	VVM	63	No.	OK	OK
l. If yes, does the project description clearly state the differences resulting from the project activity compared to the pre-project situation?	VVM	63	N.A.	OK	OK
<b>5. Baseline and monitoring methodology</b>					
<b>a. General requirement</b>					
a. Do the the baseline and monitoring methodologies selected by the project participants comply with the methodologies previously approved by the CDM Executive Board?	VVM	65	Refer to <b>CAR 23</b>	CAR23	OK
b. Is the selected methodology applicable to the project activity?	VVM	66	Refer to (5.b.a) below	-	-
c. Had the PP correctly applied the selected methodology?	VVM	66	Refer to (5.b.d) below	-	-



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d. Had the selected methodology been correctly applied with respect to project boundary?	VVM	67	Refer to (5.c) below	-	-
e. Had the selected methodology been correctly applied with respect to baseline identification?	VVM	67	Refer to (5.d) below	-	-
f. Had the selected methodology been correctly applied with respect to Algorithms and/or formulae used to determine emission reductions?	VVM	67	Refer to (5.e) below	-	-
g. Had the selected methodology been correctly applied with respect to additionality?	VVM	67	Please refer to item (6) below: Additionality of a project activity	OK	OK
i. Has the additionality of the project activity been demonstrated and assessed using the latest version of the "Tool for the demonstration and assessment of additionality" agreed by the Board, which is available on the UNFCCC website?	ACM	0002	Refer to <b>CAR 26</b>	CAR26	OK
h. Had the selected methodology been correctly applied with respect to monitoring methodology?	VVM	67	Please refer to item (7) below: Monitoring Plan	OK	OK
<b><i>b. Applicability of the selected methodology to the project activity</i></b>					
a. Is the selected baseline and monitoring methodology, previously approved by the CDM Executive Board, applicable to the project activity including that the used version is valid?	VVM	68	Yes, but Refer to <b>CAR23</b>	CAR23	OK
i. This methodology is applicable to grid-connected renewable power generation project activities that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plants); (b) involve a	ACM	0002	Yes. The project activity is a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant).	OK	OK



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capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).					
b. Has the DOE applied specific guidance provided by the CDM Executive Board in respect to the applicable approved methodology?	VVM	69	N.A.	OK	OK
c. Is the methodology correctly quoted?	VVM	70	Refer to <b>CAR 23</b>	CAR23	OK
d. Are the applicability conditions of the methodology met?	VVM	71			
i. 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	ACM	0002	Yes. The CPAs to be included in the proposed PoA are related to the installation of hydro power plant/unit.	OK	OK
ii. 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 $EG_{PJ,y}$ ): 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.	ACM	0002	N.A.	OK	OK
iii. In case of hydro power plants, one of the following	ACM	0002	Refer to <b>CAR 24</b>	CAR24	OK


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conditions must apply: - The project activity is implemented in an existing reservoir, with no change in the volume of reservoir; or - The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m <sup>2</sup> ; or - The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m <sup>2</sup> .					
iv. The methodology is not applicable to the following conditions. Please confirm - Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity - Biomass fired power plants; - Hydro power plants that result in new reservoirs or in the increase in existing reservoirs where the power density of the power plant is less than 4 W/m <sup>2</sup> .	ACM	0002	N.A.	OK	OK
v. In the case of retrofits, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, i.e. to use the	ACM	0002	N.A.	OK	OK





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power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".					
e. Is the project activity expected to result in emissions other than those allowed by the methodology?	VVM	71	No, the project activity doesn't expect to result in emissions other than those allowed by the methodology.	OK	OK
f. Is the choice of the methodology justified?	VVM	71	Refer to <b>CAR 24</b>	CAR24	OK
g. Have the project participants shown that the project activity meets each of the applicability conditions or the approved methodology?	VVM	71	Refer to <b>CAR 24</b>	CAR24	OK -
h. Have the project participants shown that the project activity meets each of the applicability conditions of any tool or other methodology component referred to the methodology?	VVM	71	Refer to <b>CAR 24</b>	CAR24	OK
i. Is the DOE, based on local and sectoral knowledge, aware that comparable information is available from sources other than that used in the PDD?	VVM	71	Yes, see below:	OK	OK
j. If yes, was the PDD cross checked against the other sources to confirm that the project activity meets the applicability conditions of the methodology? (provide the reference to these choices)	VVM	71	Yes, the PDD was cross checked to other sources as: <ul style="list-style-type: none"> <li>- Basic Project;</li> <li>- Environmental Licenses;</li> <li>- ANEEL licenses</li> </ul>	OK	OK
k. Can a determination regarding the applicability of the selected methodology to the proposed CDM project activity be made?	VVM	72	Yes. The methodology is applicable to this project activity.	OK	OK



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l. If no, clarification of the methodology was requested, in accordance with the guidance provided by the CDM Executive Board?	VVM	72	N.A.	OK	OK
m. If answer to (5.b.d) above is "no", revision or deviation from the methodology was requested, in accordance with the guidance provided by the CDM Executive Board?	VVM	73	N.A.	OK	OK
n. If yes to (5.b.l) and (5.b.m) above, a request for registration was submitted before the CDM Executive Board has approved the proposed deviation or revision?	VVM	74	N.A.	OK	OK
<b>c. Project boundary</b>					
a. Does the PDD correctly describe the project boundary, including the physical delineation of the proposed CDM project activity included within the project boundary for the purpose of calculating project and baseline emissions for the proposed CDM project activity?	VVM	78	See Section 3 above for a discussion regarding project boundary.	OK	OK
i. Does the extent of the project boundary, as described in the PDD, includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to?	ACM	0002	Yes. According to the PDD: "According to ACM0002, the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to."	OK	OK
ii. Are the greenhouse gases and emission sources that are included in or excluded from the project boundary shown in a table format as per applicable methodology?	ACM	0002	Yes.	OK	OK
b. Is the delineation in the PDD of the project	VVM	79	In case of this project, it is included the Small	OK	OK



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boundary correct?			Hydropower Plants, the substation, and the National Grid.		
c. Does the delineation in the PDD of the project boundary meet the requirements of the selected baseline?	VVM	79	Yes.	OK	OK
d. Have changes been made to the project boundary in comparison to the webhosted PDD. If yes please comment on the reason for the changes.	VVM	79	No. There are no changes in comparison with the webhosted PDD.	OK	OK
e. Have all sources and GHGs required by the methodology been included within the project boundary?	VVM	79	Yes. The main sources are the “ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity.” related to the baseline and the “Emissions of CH <sub>4</sub> from the reservoir” related to the project activity.	OK	OK
f. Does the methodology allow project participant to choose whether a source or gas is to be included within the project boundary?	VVM	79	No, the methodology prescribes which gases are to be included in the project boundary.	OK	OK
g. If yes, have the project participants justified that choice?	VVM	79	Not applicable.	OK	OK
h. If yes, is the justification provided reasonable? (provide reference to the supporting documented evidence provided by the project participants)	VVM	79	Not applicable.	OK	OK
i. Were any emission sources that will be affected by the project activity and are not addressed by the selected approved methodology identified?	VVM	80	No.	OK	OK
j. If yest, was clarification of, revision to or deviation from the methodology requested?	VVM	80	Not applicable.	OK	OK
<b>d. Baseline identification</b>					
a. Does the PDD identify the baseline for the	VVM	81	Yes.	OK	OK



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proposed CDM project activity, defined as the scenario that reasonably represents the anthropogenic emissions by sources of GHGs that would occur in the absence of the proposed CDM project activity?					
b. Has any procedure contained in the methodology to identify the most reasonable baseline scenario, been correctly applied?	VVM	82	No	OK	OK
i. If the project activity is the install a new grid-connected renewable power plant/unit (greenfield plant), is the baseline scenario identified appropriately in accordance with the ACM0002 ver.11?	ACM	0002	Yes.	OK	OK
ii. If the project activity is a capacity addition to existing grid-connected renewable power plant/unit, is the baseline scenario identified appropriately in accordance with the ACM0002 ver. 11? And is the point of time at which the generation facility would likely be replaced or retrofitted (DATE Baseline Retrofit) reasonably defined?	ACM	0002	N.A.	OK	OK
iii. If the project activity is the retrofit or replacement of existing grid-connected renewable power plant/unit, is the baseline scenario identified following the step-wise procedure in accordance with the ACM0002 ver.11?	ACM	0002	N.A.	OK	OK
iv. Are the realistic and credible alternative baseline scenarios for power generation	ACM	0002	N.A.	OK	OK



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appropriately identified following the Step 1 of the “Combined tool to identify the baseline scenario and demonstrate additionality”? (Step 1)					
v. Are the realistic and credible alternative baseline scenarios i.e. P1, P2 and P3 appropriately applied <b>Barrier analysis</b> following the Step 2 of the “Combined tool to identify the baseline scenario and demonstrate additionality”? (Step 2)	ACM	0002	N.A.	OK	OK
vi. If more than one alternative is remaining after Step 2, is <b>Investment analysis</b> appropriately applied (apply an Investment Comparison as per step 3 of the “Combined tool to identify the baseline scenario and demonstrate additionality” or a Benchmark Analysis as per step 2b of the “Tool for the demonstration and assessment of additionality”)? (Step 3)	ACM	0002	N.A.	OK	OK
c. Does the selected methodology require use of tools (such as the “Tool for the demonstration and assessment of additionality” and the “Combined tool to identify the baseline scenario and demonstrate additionality”) to establish the baseline scenario?	VVM	82	N.A.	OK	OK
d. If yes, was the methodology consulted on the application of these tools? (In such cases, the guidance in the methodology shall supersede the tool.)	VVM	82	N.A.	OK	OK
e. Does the methodology require several alternative	VVM	83	N.A.	OK	OK



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scenarios to be considered in the identification of the most reasonable baseline scenario?					
f. If yes, are all scenarios that are considered by the project participants and are supplementary to those required by the methodology reasonable in the context of the proposed CDM project activity?	VVM	83	N.A.	OK	OK
g. Has any reasonable alternative scenario been excluded?	VVM	83	N.A.	OK	OK
h. Is the baseline scenario identified reasonably supported by:	VVM	84			
i. Assumptions?	VVM	84	The baseline scenario is provided by the methodology	OK	OK
ii. Calculations?	VVM	84	The baseline scenario is provided by the methodology	OK	OK
iii. Rationales?	VVM	84	The baseline scenario is provided by the methodology	OK	OK
i. Are the documents and sources referred to in the PDD correctly quoted and interpreted?	VVM	84	The baseline scenario is provided by the methodology	OK	OK
j. Was the information provided in the PDD cross checked with other verifiable and credible sources, such as local expert opinion, if available? (identify the sources)	VVM	84	The baseline scenario is provided by the methodology	OK	OK
k. Have all applicable CDM requirements been taken into account in the identification of the baseline scenario for the proposed CDM project activity?	VVM	85	The baseline scenario is provided by the methodology	OK	OK
l. Have all relevant policies and circumstances been identified and correctly considered in the PDD, in accordance with the guidance by the	VVM	85	The baseline scenario is provided by the methodology	OK	OK



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CDM Executive Board?					
m. Does the PDD provide a verifiable description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity?	VVM	86	Yes.	OK	OK
<b>e. Algorithms and/or formulae used to determine emission reductions</b>					
a. Do the steps taken and equations applied to calculate project emissions, baseline emissions, leakage and emission reductions comply with the requirements of the selected baseline and monitoring?	VVM	89	Yes. The steps comply with the requirements of the methodology ACM0002. Please refer to Section 3.	OK	OK
b. Have the equations and parameters in the PDD been correctly applied with respect those in the select approved methodology?	VVM	90	Yes. The equations and parameters were correctly applied, with respect to the methodology ACM0002. Please refer to Section 3.	OK	OK
i. Are the Project emissions appropriately calculated?.	ACM	0002	Yes. Please refer to Section 3.	OK	OK
ii. Are the Baseline emissions appropriately calculated specifically for (a) greenfield plants or (b) retrofit and replacements or (c) capacity additions?	ACM	0002	Yes.	OK	OK
iii. Are the Leakage appropriately calculated?	ACM	0002	No leakage is to be considered according to the methodology ACM0002.	OK	OK
iv. Are the Emission reductions appropriately calculated?	ACM	0002	Yes.	OK	OK
c. Have project participants prepared as part of the	ACM	0002	Yes.	OK	OK



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CDM-PDD an estimate of likely emission reductions for the proposed crediting period? This estimate should, in principle, employ the same methodology as selected for the calculation of emission reductions. Where the grid emission factor (EFCM,grid,y) is determined ex post during monitoring, project participants may use models or other tools to estimate the emission reductions prior to validation.					
d. Does the methodology provide for selection between different options for equations or parameters?	VVM	90	Yes.	OK	OK
e. If yes, has adequate justification been provided (based on the choice of the baseline scenario, context of the proposed CDM project activity and other evidence provided)?	VVM	90	Refer to <b>CAR 28</b>	CAR28	OK
f. If yes, have correct equations and parameters been used, in accordance with the methodology selected?	VVM	90	Refer to (5.e.b) above	-	-
g. Will data and parameters be monitored throughout the crediting period of the proposed CDM project activity?	VVM	91	Yes.	OK	OK
h. If no, and these data and parameters will remain fixed throughout the crediting period, are all data sources and assumptions:	VVM	91	N.A.	OK	OK
i. Appropriate and correct?	VVM	91	N.A.	OK	OK
ii. Applicable to the proposed CDM project activity?	VVM	91	N.A.	OK	OK
iii. Resulting in a conservative estimate of the	VVM	91	N.A.	OK	OK





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emission reductions?					
i. Will data and parameters be monitored on implementation and hence become available only after validation of the project activity?	VVM	91	Yes.	OK	OK
j. If yes, are the estimates provided in the PDD for these data and parameters reasonable?	VVM	91	Yes.	OK	OK
<b>6. Additionality of a project activity</b>					
a. Does the PDD describe how a proposed CDM project activity is additional?	VVM	94	Yes. The CDM-PoA-DD at Section E.5.1. states that In accordance with the procedures provided in the baseline and monitoring methodology ACM0002, the additionality of a typical CPA must be assessed and demonstrated through the application of the “Tool for the demonstration and assessment of additionality”.	OK	OK
b. Does the CDM-PDD state the latest version of the additionality tool being used?	ACM	0002	Refer to <b>CAR 26</b>	CAR26	OK
c. Were the following steps of the tool to assess additionality used:	EB 39	Ann 10			
i. Identification of alternatives to the project activity?	EB 39	Ann 10	Yes.	OK	OK
ii. Investment analysis to determine that the proposed project activity is either: 1) not the most economically or financially attractive, or 2) not economically or financially feasible?	EB 39	Ann 10	Yes.	OK	OK
iii. Barriers analysis?	EB 39	Ann 10	No.	OK	OK
iv. Common practice analysis?	EB 39	Ann 10	Refer to <b>CAR 26</b>	CAR26	OK
d. In step 1 (i) have all the sub-steps as below been	EB	Ann			



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followed?	39	10			
i. Sub-step 1a: Define alternatives to the project activity	EB 39	Ann 10	<b>CAR 31</b> : In accordance with the Tool for the demonstration and assessment of additionality. (Version 06.0.0), the alternative:  Other realistic and credible alternative scenario(s) to the proposed CDM project activity scenario that deliver outputs services (e.g., cement) or services (e.g. electricity, heat) with comparable quality, properties and application areas, taking into account, where relevant, examples of scenarios identified in the underlying methodology; Must be included.	CAR31	OK
ii. Sub-step 1b: Consistency with mandatory laws and regulations	EB 39	Ann 10	Refer to <b>CAR 31</b>	CAR31	OK
e. Have the following alternatives been included while defining alternatives as per sub-step 1a?	EB 39	Ann 10			
i. (a) The proposed project activity undertaken without being registered as a CDM project activity;	EB 39	Ann 10	Yes.	OK	OK
ii. (b) Other realistic and credible alternative scenario(s) to the proposed CDM 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;	EB 39	Ann 10	Refer to <b>CAR 31</b>	CAR31	OK
iii. (c) If applicable, continuation of the current situation (no project activity or other alternatives	EB 39	Ann 10	Yes.	OK	OK



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undertaken).					
f. Has the project participant included the technologies or practices that provide outputs or services with comparable quality, properties and application areas as the proposed CDM project activity and that have been implemented previously or are currently being introduced in the relevant country/region?	EB 39	Ann 10	N.A.	OK	OK
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.	EB 39	Ann 10	Refer to <b>CAR 31</b>	CAR31	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.?	EB 39	Ann 10	Refer to <b>CAR 31</b>	CAR31	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?	EB 39	Ann 10	Refer to <b>CAR 31</b>	CAR31	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	EB 39	Ann 10	Refer to <b>CAR 31</b>	CAR31	OK



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legislation and regulations taking into account the enforcement in the region or country and EB decisions on national and/or sectoral policies and regulations done correctly? Please state the outcome.					
k. Has PP selected Step 2 (Investment analysis) or Step 3 (Barrier analysis) or both Steps 2 and 3?	EB 39	Ann 10	The PP has selected the Step 2 – Investment analysis.	OK	OK
l. In step 2, have all the sub-steps as below been followed?	EB 39	Ann 10			
i. Sub-step 2a: Determine appropriate analysis method;	EB 39	Ann 10	Yes.	OK	OK
ii. Sub-step 2b: Option I. Apply simple cost analysis;	EB 39	Ann 10	No.	OK	OK
iii. Sub-step 2b: Option II. Apply investment comparison analysis;	EB 39	Ann 10	No.	OK	OK
iv. Sub-step 2b: Option III. Apply benchmark analysis;	EB 39	Ann 10	Yes.	OK	OK
v. Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III);	EB 39	Ann 10	Yes.	OK	OK
vi. Sub-step 2d: Sensitivity analysis (only applicable to Options II and III).	EB 39	Ann 10	Yes.	OK	OK
m. In sub-step 2a has the determination of appropriate method of analysis done as per the guidance as below?	EB 39	Ann 10			
i. Simple cost analysis if the CDM project activity and the alternatives identified in Step 1 generate no financial or economic benefits other than CDM related income (Option I).	EB 39	Ann 10	No.	OK	OK


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ii. Otherwise, use the investment comparison analysis (Option II) or the benchmark analysis (Option III). Specify option used with justification.	EB 39	Ann 10	Yes. Please refer to Section Investment Analysis, below.	OK	OK
n. Has the below guideline followed for sub-step 2b Option I. Apply simple cost analysis? Document the costs associated with the CDM 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.	EB 39	Ann 10	N.A.	OK	OK
o. Has the below guideline 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	EB 39	Ann 10	N.A.	OK	OK
p. Has the below guideline followed for Sub-step 2b: Option III. Apply benchmark analysis?	EB 39	Ann 10			
i. Identify the financial/economic indicator, such as IRR, most suitable for the project type and decision context.	EB 39	Ann 10	Yes.	OK	OK
ii. When applying Option II or Option III, the financial/economic analysis shall be based on parameters that are standard in the market, considering the specific characteristics of the project type, but not linked to the subjective profitability expectation or risk profile of a particular project developer. Only in the particular case where the project activity can be	EB 39	Ann 10	Please refer to Section Investment Analysis, below.	OK	OK



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implemented by the project participant, the specific financial/economic situation of the company undertaking the project activity can be considered.					
iii. Discount rates and benchmarks shall be derived from: (a) Government bond rates, increased by a suitable risk premium to reflect private investment and/or the project type, as substantiated by an independent (financial) expert or documented by official publicly available financial data; (b) Estimates of the cost of financing and required return on capital (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	EB 39	Ann 10	Please refer to Section Investment Analysis, below.	OK	OK


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applicable and their indicator is appropriately justified. Please specify benchmark and justify.					
q. Has the below guideline followed for Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III)?	EB 39	Ann 10	Yes.	OK	OK
i. Calculate the suitable financial indicator for the proposed CDM project activity and, in the case of Option II above, for the other alternatives. Include all relevant costs (including, for example, the investment cost, the operations and maintenance costs), and revenues (excluding CER revenues, but possibly including inter alia subsidies/fiscal incentives, ODA, etc, where applicable), and, as appropriate, non-market cost and benefits in the case of public investors if this is standard practice for the selection of public investments in the host country.	EB 39	Ann 10	Please refer to Section Investment Analysis, below.	OK	OK
ii. Present the investment analysis in a transparent manner and provide all the relevant assumptions, preferably in the CDM-PDD, or in separate annexes to the CDM-PDD.	EB 39	Ann 10	Please refer to Section Investment Analysis, below.	OK	OK
iii. Justify and/or cite assumptions.	EB 39	Ann 10	Please refer to Section Investment Analysis, below.	OK	OK
iv. In calculating the financial/economic indicator, the project's risks can be included through the cash flow pattern, subject to project-specific expectations and assumptions.	EB 39	Ann 10	Please refer to Section Investment Analysis, below.	OK	OK
v. Assumptions and input data for the investment	EB	Ann	Please refer to Section Investment Analysis, below.	OK	OK


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analysis shall not differ across the project activity and its alternatives, unless differences can be well substantiated.	39	10			
vi. Present in the CDM-PDD a clear comparison of the financial indicator for the proposed CDM activity. Please specify details for above.	EB 39	Ann 10	Please refer to Section Investment Analysis, below.	OK	OK
r. Has the below guideline followed for Sub-step 2d: Sensitivity analysis (only applicable to Options II and III)? Include a sensitivity analysis that shows whether the conclusion regarding the financial/economic attractiveness is robust to reasonable variations in the critical assumptions.	EB 39	Ann 10	Please refer to Section Investment Analysis, below.	OK	OK
s. Has the outcome of Step 2 clearly mentioned with justification?	EB 39	Ann 10	Yes.	OK	OK
t. In step 3: Barrier analysis have all the sub-steps as below been followed?	EB 39	Ann 10	N.A.	OK	OK
i. Sub-step 3a: Identify barriers that would prevent the implementation of the proposed CDM project activity;	EB 39	Ann 10	N.A.	OK	OK
ii. Sub-step 3 b: Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity).	EB 39	Ann 10	N.A.	OK	OK
u. Has the below guideline followed for Sub-step 3a: Identify barriers that would prevent the implementation of the proposed CDM project?	EB 39	Ann 10	N.A.	OK	OK
i. (a) Investment barriers: For alternatives undertaken and operated by private entities: Similar activities have only been implemented	EB 39	Ann 10	N.A.	OK	OK





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with grants or other non-commercial finance terms. No private capital is available from domestic or international capital markets due to real or perceived risks associated with investment in the country where the proposed CDM project activity is to be implemented, as demonstrated by the credit rating of the country or other country investments reports of reputed origin.					
ii. (b) 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 high risk of equipment disrepair and malfunctioning or other underperformance; Lack of infrastructure for implementation and logistics for maintenance of the technology, Risk of technological failure: the process/technology failure risk in the local circumstances is significantly greater than for other technologies that provide services or outputs comparable to those of the proposed CDM project activity, as demonstrated by relevant scientific literature or technology manufacturer information, The particular technology used in the proposed project activity is not available in the relevant region.	EB 39	Ann 10	N.A.	OK	OK
iii. (c) Barriers due to prevailing practice: The project activity is the “first of its kind”.	EB 39	Ann 10	N.A.	OK	OK



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iv. (d) Other barriers, preferably specified in the underlying methodology as examples.	EB 39	Ann 10	N.A.	OK	OK
v. Has the outcome from Step 3a clearly mentioned in PDD?	EB 39	Ann 10	N.A.	OK	OK
w. Has the below guideline followed for Sub-step 3 b: Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity)?	EB 39	Ann 10	N.A.	OK	OK
i. If the identified barriers also affect other alternatives, explain how they are affected less strongly than they affect the proposed CDM 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.	EB 39	Ann 10	N.A.	OK	OK
ii. Provide transparent and documented evidence, and offer conservative interpretations of this documented evidence, as to how it demonstrates the existence and significance of the identified barriers and whether alternatives are prevented by these barriers.	EB 39	Ann 10	N.A.	OK	OK
iii. The type of evidence to be provided should include at least one of the following: (a) Relevant legislation, regulatory information or industry norms; (b) Relevant (sectoral) studies	EB 39	Ann 10	N.A.	OK	OK


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or surveys (e.g. market surveys, technology studies, etc) undertaken by universities, research institutions, industry associations, companies, bilateral/multilateral institutions, etc; (c) Relevant statistical data from national or international statistics; (d) Documentation of relevant market data (e.g. market prices, tariffs, rules); (e) Written documentation of independent expert judgments from industry, educational institutions (e.g. universities, technical schools, training centres), industry associations and others. Please specify.					
x. Has the outcome from Step 3 clearly mentioned in PDD?	EB 39	Ann 10	Yes.	OK	OK
y. In step 4: Common practise analysis have all the sub-steps as below followed?	EB 39	Ann 10			
i. Sub-step 4a: Analyze other activities similar to the proposed project activity;	EB 39	Ann 10	Yes.	OK	OK
ii. Sub-step 4b: Discuss any similar Options that are occurring.	EB 39	Ann 10			
z. Has the below guideline followed for Sub-step 4a: Analyze other activities similar to the proposed project activity? Provide an analysis of any other activities that are operational and that are similar to the proposed project activity. Other CDM project activities are not to be included in this analysis. Provide documented evidence and, where relevant, quantitative information. On the basis of that analysis, describe whether and to	EB 39	Ann 10	Refer to <b>CAR 26</b>	CAR26	OK



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which extent similar activities have already diffused in the relevant region.					
aa. Has the below guideline followed for Sub-step 4b: Discuss any similar Options that are occurring? If similar activities are identified, then it is necessary to demonstrate why the existence of these activities does not contradict the claim that the proposed project activity is financially/economically unattractive or subject to barriers. This can be done by comparing the proposed project activity to the other similar activities, and pointing out and explaining essential distinctions between them that explain why the similar activities enjoyed certain benefits that rendered it financially/economically attractive (e.g., subsidies or other financial flows) and which the proposed project activity cannot use or did not face the barriers to which the proposed project activity is subject. In case similar projects are not accessible, the PDD should include justification about non-accessibility of data/information.	EB 39	Ann 10	Refer to <b>CAR 26</b>	CAR26	OK
bb. Has the outcome from Step 4 clearly mentioned in PDD?	EB 39	Ann 10	Refer to <b>CAR 26</b>	CAR26	OK
cc. Has it been proved that the project is additional?	EB 39	Ann 10	Refer to <b>CAR 26</b>	CAR26	OK
dd. Has the PP demonstrated additionality by explaining Investment barrier, Access-to-finance barrier, Technological barrier, Barrier due to	EB 35	Ann 34	No.	OK	OK



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prevailing practice or other barriers?					
ee. If Investment barrier has been explained, is it demonstraed that financilly more viable alternative to the project activity would have led to higher emissions? Please explain.	EB 35	Ann 34	N.A.	OK	OK
ff. If Access-to-finance has been explained, is it demonstraed that the project activity could not access appropriate capital without consideration of the CDM revenues? Please explain.	EB 35	Ann 34	N.A.	OK	OK
gg. If Technological barrier has been explained, is it demonstraed that a less technologically advanced alternative to the project activity involves lower risks due to the performance uncertainty or low market share of the new technology adopted for the project activity and so would have led to higher emissions? Please explain.	EB 35	Ann 34	N.A.	OK	OK
hh. If prevailing practise barrier has been explained, is it demonstrated that the prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions? Please explain.	EB 35	Ann 34	N.A.	OK	OK
ii. If other barrier has been explained, is it demonstrated that Other barriers such as institutional barriers or limited information, managerial resources, organizational capacity, or capacity to absorb new technologies would prevent the project activity any way?	EB 35	Ann 34	N.A.	OK	OK
jj. Have the project participants identified the most	EB	Ann	N.A.	OK	OK



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
relevant barrier?	35	34			
kk. Have the project participants provided transparent and documented third party evidence such as national/international statistics, national/provincial policy and legislation, studies/surveys by independent agencies etc. to demonstrate the most relevant barrier? Please explain.	EB 35	Ann 34	N.A.	OK	OK


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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
<b><i>a. Prior consideration of the clean development mechanism</i></b>					
a. Is the project activity start date prior to the date of publication of the PDD for stakeholder comments?	VVM	98	N.A.	OK	OK
b. If yes, were the CDM benefits considered necessary in the decision to undertake the project as a proposed CDM project activity?	VVM	98	N.A.	OK	OK
c. Is the start date of the project activity, reported in the PDD, in accordance with the "Glossary of CDM terms", which states that "The starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins."?	VVM	99	N.A.	OK	OK
d. Does the project activity require construction, retrofit or other modifications?	VVM	99	N.A.	OK	OK
e. If yes, is it ensured that the date of commissioning cannot be considered as the project activity start date?	VVM	99	N.A.	OK	OK
f. Is it a new project activity (a project activity with a start date on or after 02 August 2008) or an existing project activity (a project activity with a start date before 02 August 2008)?	VVM	100	N.A.	OK	OK
g. For a new project, for which PDD has not been published for global stakeholder consultation or a new methodology proposed to the CDM Executive Board before the project activity start date, had the PP informed the Host Party DNA and/or the UNFCCC secretariat in writing of the	VVM	101	N.A.	OK	OK



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
commencement of the project activity and of their intention to seek CDM status? (Provide reference to such confirmation from host Party DNA and/or UNFCCC secretariat).					
h. For an existing project activity, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, are the following evidences provided:	VVM	102	N.A.	OK	OK
i. evidence that must indicate that awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project, including, inter alia:	VVM	102	N.A.	OK	OK
a. minutes and/or notes related to the consideration of the decision by the Board of Directors, or equivalent, of the project participant, to undertake the project as a proposed CDM project activity?	VVM	101	N.A.	OK	OK
ii. reliable evidence from project participants that must indicate that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation, including, inter alia:	VVM	102	N.A.	OK	OK
a. contract with consultants for CDM/PDD/methodology services?	VVM	102	N.A.	OK	OK
b. Emission Reduction Purchase Agreements or other documentation related to the sale of the potential CERs (including correspondence with	VVM	102	N.A.	OK	OK





## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
multilateral financial institutions or carbon funds)?					
c. evidence of agreements or negotiations with a DOE for validation services?	VVM	102	N.A.	OK	OK
d. submission of a new methodology to the CDM Executive Board?	VVM	102	N.A.	OK	OK
e. publication in newspaper?	VVM	102	N.A.	OK	OK
f. interviews with DNA?	VVM	102	N.A.	OK	OK
g. earlier correspondence on the project with the DNA or the UNFCCC secretariat?	VVM	102	N.A.	OK	OK
h. Has the chronology of events including time lines been appropriately captured and explained/detailed in the PDD?	VVM	102	N.A.	OK	OK
<b>b. Identification of alternatives</b>					
a. Does the approved methodology that is selected by the proposed CDM project activity prescribe the baseline scenario and hence no further analysis is required?	VVM	105	Yes.	OK	OK
b. If no, does the PDD identify credible alternatives to the project activity in order to determine the most realistic baseline scenario?	VVM	105	N.A.	OK	OK
c. Does the list of alternatives given in the PDD ensure that:	VVM	106	N.A.	OK	OK
i. the list of alternatives includes as one of the options that the project activity is undertaken without being registered as a proposed CDM project activity?	VVM	106	N.A.	OK	OK
ii. the list contains all plausible alternatives that the DOE, on the basis of its local and	VVM	106	N.A.	OK	OK


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## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
sectoral knowledge, considers to be viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity?					
iii. the alternatives comply with all applicable and enforced legislation?	VVM	106	N.A.	OK	OK
<b>c. Investment analysis</b>					
a. Has investment analysis been used to demonstrate the additionality of the proposed CDM project activity?	VVM	108	Yes. The proposed project activity used the investment analysis to demonstrate the additionality.	OK	OK
b. If yes, does the PDD provide evidence that the proposed CDM project activity would not be:	VVM	108	See Below.	-	-
i. the most economically or financially attractive alternative?	VVM	108	Not Applicable.	NA	NA
ii. economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs)?	VVM	108	Yes. The PDD and the spreadsheet demonstrate that the project is not attractive without the revenue from the sale of certified emission reductions (CERs).	OK	OK
c. Was this shown by one of the following approaches?	VVM	109	See Below.	-	-
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	VVM	109	Not Applicable.		NA



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
economically or financially attractive than at least one other credible and realistic alternative.				NA	
iii. The financial returns of the proposed CDM project activity would be insufficient to justify the required investment.	VVM	109	Yes. The PP demonstrated in the spreadsheet that the financial returns of the proposed CDM project activity are insufficient to justify the required investment.	OK	OK
d. Is the period of assessment limited to the proposed crediting period of the CDM project activity?	EB 51	Ann 58	No.	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 51	Ann 58	<b>CAR BQA 01</b> – According to the Guidelines on the Assessment of Investment Analysis version 5, “The period of assessment should not be limited to the proposed crediting period of the CDM project activity. Both project IRR and equity IRR calculations shall as a preference reflect the period of expected operation of the underlying project activity (technical lifetime), or if a shorter period is chosen, include the fair value of the project activity assets at the end of the assessment period”. Provide evidences to support the period of expected operation used in the investment analysis.	CAR BQA 1	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 51	Ann 58	Yes. The Spreadsheet contains the costs of major maintenance through the O&M costs.	OK	OK
g. Do the project participants justify the appropriateness of the period of assessment in	EB 51	Ann 58	Refer to CAR BQA 1.	CAR BQA 1	OK



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
the context of the underlying project activity, without reference to the proposed CDM crediting period?					
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 51	Ann 58	Refer to CAR BQA 1.	CAR BQA 1	OK
i. Has the fair value been calculated in accordance with local accounting regulations where available, or international best practice?	EB 51	Ann 58	Refer to CAR BQA 1.	CAR BQA 1	OK
j. Does the fair value calculations include both the book value of the asset and the reasonable expectation of the potential profit or loss on the realization of the assets?	EB 51	Ann 58	Refer to CAR BQA 1.	CAR BQA 1	OK
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 51	Ann 58	Not Applicable.	NA	NA
l. Has taxation been included as an expense in the IRR/NPV calculation in cases where the benchmark or other comparator is intended for post-tax comparisons?	EB 51	Ann 58	Yes.	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 51	Ann 58	<b>CL BQA 01</b> – Clarify with evidences the moment of investment decision, in order to guarantee that the input values are the correct ones at this moment in the project chronology.	CL BQA 01	OK
n. Is the timing of the investment decision consistent and appropriate with the input values?	EB 51	Ann 58	Refer to CL BQA 01.	CL BQA 01	OK



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
o. Are all the listed input values been consistently applied in all calculations?	EB 51	Ann 58	Yes.	OK	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 51	Ann 58	Not Applicable.	NA	NA
q. Have project participants supplied the spreadsheet versions of all investment analysis?	EB 51	Ann 58	Yes	OK	OK
r. Are all formulas used in this analysis readable and all relevant cells be viewable and unprotected?	EB 51	Ann 58	Yes.	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 51	Ann 58	Not Applicable.	NA	NA
t. In case the PP wishes to black-out certain elements of the publicly available version, is it justifiable?	EB 51	Ann 58	Not Applicable.	NA	NA
u. Was the cost of financing expenditures (i.e. loan repayments and interest) included in the calculation of project IRR?	EB 51	Ann 58	No.	OK	OK
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 51	Ann 58	Not Applicable.	NA	NA
w. Has the portion of the investment costs which is financed by debt been considered a cash outflow	EB 51	Ann 58	Not Applicable.	NA	NA



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
in the calculation of equity IRR? (this is not allowed)					
x. Was a pre-tax benchmark be applied?	EB 51	Ann 58	No.	OK	OK
y. In cases where a post-tax benchmark is applied, is actual interest payable taken into account in the calculation of income tax?	EB 51	Ann 58	Yes.	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 51	Ann 58	Yes.	OK	OK
aa. In cases where a benchmark approach is used is the applied benchmark appropriate to the type of IRR calculated?	EB 51	Ann 58	Yes. According to the "Guidelines of Investment Assessment- Version 5", weighted average costs of capital (WACC) are appropriate benchmarks for a project IRR.	OK	OK
bb. Has local commercial lending rates or weighted average costs of capital (WACC) selected as appropriate benchmarks for a project IRR?	EB 51	Ann 58	Yes.	OK	OK
cc. Has required/expected returns on equity selected as appropriate benchmark for an equity IRR?	EB 51	Ann 58	Not Applicable.	NA	NA
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 51	Ann 58	Not Applicable.	NA	NA
ee. In the cases of projects which could be developed by an entity other than the project	EB 51	Ann 58	Yes.	OK	OK



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
participant is the benchmark applied based on publicly available data sources which can be clearly validated?					
ff. 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 51	Ann 58	Not Applicable	NA	NA
gg. 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 51	Ann 58	Not Applicable	NA	NA
hh. Has a minimum clear evidence of the resolution by the company's Board and/or shareholders been provided to the effect as above?	EB 51	Ann 58	Not Applicable	NA	NA
ii. 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 51	Ann 58	Not Applicable	NA	NA
jj. Does the risk premiums applied in the determination of required returns on equity reflect the risk profile of the project activity being assessed, established according to national/international accounting principles? (It is not considered reasonable to apply the rate	EB 51	Ann 58	Not Applicable	NA	NA



## VALIDATION REPORT

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general stock market returns as a risk premium for project activities that face a different risk profile than an investment in such indices.)					
kk. 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 51	Ann 58	Not Applicable	NA	NA
ll. Have variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues been subjected to reasonable variation (positive and negative) and the results of this variation been presented in the PDD and be reproducible in the associated spreadsheets?	EB 51	Ann 58	<b>CAR BQA 02</b> – Provide the spreadsheet used for the sensitivity analysis, so the DOE can validate it.	CAR BQA 02	OK
mm. 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 51	Ann 58	Refer to CAR BQA 02	CAR BQA 02	OK
nn. Is the range of variations selected is reasonable in the project context?	EB 51	Ann 58	Refer to CAR BQA 02	CAR BQA 02	OK
oo. 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 51	Ann 58	Refer to CAR BQA 02	CAR BQA 02	OK
pp. In cases where a scenario will result in the project activity passing the benchmark or becoming the most financially attractive alternative, is an	EB 51	Ann 58	Refer to CAR BQA 02	CAR BQA 02	OK





## VALIDATION REPORT

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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?					
qq. Was the plant load factor defined ex-ante in the CDM-PDD according to one of the following options:	EB 51	Ann 58	See Below.	-	-
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 51	Ann 58	<b>CAR BQA 03</b> – Explain how was determined the plant load factor.	CAR BQA 03	OK
ii. The plant load factor determined by a third party contracted by the project participants (e.g. an engineering company)?	EB 51	Ann 58	Refer to CAR BQA 03.	CAR BQA 03	OK
rr. 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	Yes.	OK	OK
ss. Were the parameters cross-checked against third-party or publicly available sources, such as invoices or price indices?	VVM	111	<b>CAR BQA 04</b> – Present all evidences to support the followings input values. Make sure that all information and evidences are based on the relevant information available at the time of the investment decision and not information available	CAR BQA 04	OK



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			<p>at an earlier or later point. Provide the dates of each evidence.</p> <ul style="list-style-type: none"> <li>-Plant Export Capacity: 13.00 MW;</li> <li>-Plant Capacity Factor: 61%;</li> <li>-Power Output: 69,677 MWh;</li> <li>-PPA price: R\$ 125.00/MWh;</li> <li>-Plant Investment: R\$ 66,694.00</li> <li>-O&amp;M: R\$ 12.00/MWh</li> <li>-NOS: 0.10%;</li> <li>-CCEE: 0.10%</li> <li>-Insurance: 0,50% of assets;</li> <li>-TUSD: R\$ 3.50/kW/month;</li> <li>-TUSD: 100%;</li> <li>-ANEEL: 385,7;</li> <li>-Depreciação: 3.33%;</li> <li>-PIS/COFINS: 3,65%;</li> <li>-Income Tax: 3.08%;</li> </ul>		



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
tt. Were feasibility reports, public announcements and annual financial reports related to the proposed CDM project activity and the project participants reviewed?	VVM	111	Refer to CAR BQA 04.	CAR BQA 04	OK
uu. Was the correctness of computations carried out and documented by the project participants assessed?	VVM	111	Refer to CAR BQA 04.	CAR BQA 04	OK
vv. 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	Refer to CAR BQA 02.	CAR BQA 02	OK
ww. Is the type of benchmark applied is suitable for the type of financial indicator presented?	VVM	112	Yes. According to the "Guidelines of Investment Assessment- Version 5", weighted average costs of capital (WACC) are appropriate benchmarks for a project IRR.	OK	OK
xx. Do any risk premiums applied determining the benchmark reflect the risks associated with the project type or activity?	VVM	112	Yes. The WACC was calculated considering a ( $\beta$ ) Sectorial Risk of 1.55%.	OK	OK
yy. To determine this, was it assessed whether it is reasonable to assume that no investment would be made at a rate of return lower than the benchmark by:	VVM	112	See Below.	-	-
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	Not Applicable.	NA	NA
iii. determining if there are verifiable circumstances that have led to a change in	VVM	112	Not Applicable.	NA	NA



## VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
the benchmark?					
zz. 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	<b>CL BQA 02</b> - Did the project participants rely on values from Feasibility Study Reports (FSR) that are approved by national authorities for proposed CDM project activities?	CL BQA 02	OK
xx. If yes:	VVM	113	See Below.	-	-
i. has the FSR been the basis of the decision to proceed with the investment in the project, i.e. that the period of time between the finalization of the FSR and the investment decision is sufficiently short for the DOE to confirm that it is unlikely in the context of the underlying project activity that the input values would have materially changed?	VVM	113	Refer to CL BQA 02.	CL BQA 02	OK
ii. Are the values used in the PDD and associated annexes fully consistent with the FSR?	VVM	113	Refer to CL BQA 02.	CL BQA 02	OK
iii. If not, was the appropriateness of the values validated?	VVM	113	Refer to CL BQA 02.	CL BQA 02	OK
iv. On the basis of its specific local and sectoral expertise, is confirmation provided, by cross-checking or other appropriate manner, that the input values from the FSR are valid and applicable at the time of the investment decision?	VVM	113	Refer to CL BQA 02.	CL BQA 02	OK
<b>d. Barrier analysis</b>					
a. Has barrier analysis been used to demonstrated the additionality of the proposed CDM project	VVM	115	No.	OK	OK



## VALIDATION REPORT

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


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iii. Is existence of a barrier substantiated only by the opinions of the project participants? (If yes, this barrier cannot be considered as adequately substantiated)	VVM	117	N.A.	OK	OK
e. Were the barriers determined as preventing the implementation of the project activity but not the implementation of at least one of the possible alternatives by applying local and sectoral expertise to judge whether a barrier or set of barriers would prevent the implementation of the proposed CDM project activity and would not equally prevent implementation of <i>at least one of</i> the possible alternatives, in particular the identified baseline scenario?	VVM	117	N.A.	OK	OK
<b>e. Common practice analysis</b>					
a. Is this a proposed large-scale, or first-of-its kind small-scale project activity?	VVM	119	It is a large-scale CDM-PoA-DD.  <b>CL 21:</b> Please clarify if the CPA's that will be included on this PoA will be large-scale or small-scale projects.	CL21	OK
b. If yes, was common practice analysis carried out as a credibility check of the other available evidence used by the project participants to demonstrate additionality?	VVM	119	Yes.	OK	OK
c. Was it assessed whether the geographical scope (e.g. defined region) of the common practice analysis is appropriate for the assessment of common practice related to the project activity's technology or industry type? (For	VVM	120	Yes. Only small hydropower plants located in the same state of the project(s) included in the CPA will be considered for the common practice analysis.	OK	OK



## VALIDATION REPORT

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certain technologists the relevant region for assessment will be local and for others it may be transnational/global.					
d. Was a region other than the entire host country chosen?	VVM	120	Yes.	OK	OK
e. If yes, was the explanation why this region is more appropriate assessed?	VVM	120	Yes.  <b>CL 22</b> : Please provide a source related to the second paragraph from the sub item Country/region, presented on sub-step 4a, section E.5.1 from the CDM-PoA-DD v01.	CL22	OK
f. Using official sources and local and industry expertise, was it determined to what extent similar and operational projects (e.g., using similar technology or practice), other than CDM project activities, have been undertaken in the defined region?	VVM	120	Refer to <b>CAR 26</b>	CAR26	OK
g. Are similar and operational projects, other than CDM project activities, already "widely observed and commonly carried out" in the defined region?	VVM	120	Refer to <b>CAR 26</b>	CAR26	OK
h. If yes, was it assessed whether there are essential distinctions between the proposed CDM project activity and the other similar activities?	VVM	120	Refer to <b>CAR 26</b>	CAR26	OK
<b>7. Monitoring plan</b>					
a. Does the PDD include a monitoring plan?	VVM	122	Yes.	OK	OK
b. Is this monitoring plan based on the approved monitoring methodology applied to the proposed CDM project activity?	VVM	122	Refer to (3.d.) and (5.e.) above.	OK	OK
c. Were the list of parameters required by the the	VVM	123	Refer to (3.d.) and (5.e.) above.	OK	OK



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selected methodology identified?					
d. Does the monitoring plan contains all necessary parameters?	VVM	123	Refer to (3.d.) and (5.e.) above.	OK	OK
e. Are the parameters clearly described?	VVM	123	Refer to (3.d.) and (5.e.) above.	OK	OK
f. Does the means of monitoring described in the plan comply with the requirements of the methodology?	VVM	123	Refer to (3.d.) and (5.e.) above.	OK	OK
g. Are all data and parameters monitored as per monitoring methodology?	ACM	0002	Refer to (3.d.) and (5.e.) above.	OK	OK
h. Are all data collected as part of monitoring archived electronically and kept at least for 2 years after the end of the last crediting period?	ACM	0002	Yes.	OK	OK
i. Are 100% of the data monitored, if not indicated otherwise?	ACM	0002	Refer to (3.d.) and (5.e.) above.		
j. Are measurements conducted with calibrated measurement equipment according to relevant industry standards?	ACM	0002	Yes.	OK	OK
k. Are the monitoring provisions in the tools referred to in the methodology correctly applied?	ACM	0002	N.A. since $EF_{GRID, CM, y}$ is determined ex-ante.	OK	OK
l. Are the monitoring arrangements described in the monitoring plan feasible within the project design?	VVM	123	Yes.	OK	OK
m. Does the monitoring plan provide details regarding calibration of monitoring equipments/instruments or does it include zero check as a substitute for calibration? (zero check can not be considered as a substitute for calibration)	EB 24	37	Yes.	OK	OK
n. Are the following means of implementation of the monitoring plan sufficient to ensure that the	VVM	123			





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emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified:					
i. data management procedures?	VVM	123	Yes.	OK	OK
ii. quality assurance procedures?	VVM	123	Yes.	OK	OK
iii. quality control procedures?	VVM	123	Yes.	OK	OK
<b>8. Sustainable development</b>					
a. Does the CDM project activity assists Parties not included in Annex I to the Convention in achieving sustainable development?	VVM	125	Yes.	OK	OK
b. Does the letter of approval by the DNA of the host Party confirm the contribution of the proposed CDM project activity to the sustainable development of the host Party?	VVM	126	The final decision from the DNA will be available only after its first ordinary meeting, after the receiving of all the required documents necessary for evaluation, including this validation report, according to Article 6 of the Resolution nº 1 of CIMGC – Comissão Interministerial de Mudança Global do Clima.	OK	OK
<b>9. Local stakeholder consultation</b>					
a. Were local stakeholders (public, including individuals, groups or communities affected, of likely to be affected, by the proposed CDM project activity or actions leading to the implementation of such an activity) invited by the PPs to comment on the proposed CDM project activity prior to the publication of the PDD on the UNFCCC website?	VVM	128	Yes, however see <b>CAR 22</b>	CAR22	OK
b. Have comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity been invited?	VVM	129	No comments were received.	OK	OK



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CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
c. Is the summary of the comments received as provided in the PDD complete?	VVM	129	No comments were received.	OK	OK
d. Have the project participants taken due account of any comments received and described this process in the PDD?	VVM	129	No comments were received.	OK	OK
<b>10. Environmental impacts</b>					
a. Have the project participants submitted documentation on the analysis of the environmental impacts of the project activity?	VVM	131	Yes.	OK	OK
b. Have the project participants undertaken an analysis of environmental impacts?	VVM	132	Yes.	OK	OK
c. Does the host Party require an environmental impact assessment?	VVM	132	Yes.	OK	OK
d. If yes, have the project participants undertaken an environmental impact assessment?	VVM	132	Yes.	OK	OK

**Table 2** Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1	Summary of project owner response	Validation team conclusion
<b><u>CAR BQA 01</u></b> – According to the Guidelines on the Assessment of Investment Analysis version 5, “The period of assessment should not be limited to the proposed crediting period of the CDM project activity. Both project IRR and equity IRR calculations shall as a preference reflect the period of expected operation of the underlying project activity (technical lifetime), or if a shorter period is chosen, include the fair value of the project activity assets at the end of the assessment period”. Provide evidences to support the period of expected operation used in the investment analysis.	EB 51 Annex 58	<p>The project cash flow was prepared considering the statement of the “Guidelines on the assessment of investment analysis” (paragraph 3):</p> <p><i>“The period of assessment should not be limited to the proposed crediting period of the CDM project activity. Both project IRR and equity IRR calculations shall as a preference reflect the period of expected operation of the underlying project activity (technical lifetime), or - if a shorter period is chosen - include the fair value of the project activity assets at the end of the assessment period. In general a minimum period of 10 years and a maximum of 20 years will be appropriate”.</i></p> <p>Therefore, the cash flow of Jambo project considers 20 years. Therefore, the fair value was considered in the end of the assessment period as can be seen in the project cash flow.</p>	<p>Answer 1 (08/02/2012)</p> <p>The fair value is included at the end of the project activity.</p> <p>CAR BQA 01 is closed.</p>
<b><u>CAR BQA 02</u></b> – Provide the spreadsheet used for	EB 51	The PPs clarify that the sensitivity	Answer 1 (08/02/2012)



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<i>the sensitivity analysis, so the DOE can validate it</i>	Annex 58	analysis was conducted in the project cash flow. Please refer to the cash flow spreadsheet provided to DOE at the time of the validation start of the project.	<p>The project cash flow spreadsheet contains a sensitivity analysis that requires from the operator the change on the percentages of each variable so the outcome can be seen (the related IRR result). The DOE reproduced the same variations and could validate the sensitivity analysis.</p> <p>CAR BQA 02 is closed.</p>
<b>CAR BQA 03</b> – Explain how was determined the plant load factor.	EB 51 Annex 58	<p><u>First response(30/12/2012):</u></p> <p>The plant load factor (PLF) of Jambo was determined based on the assured energy of the project as presented in the Optimized Project Design (“PBO” from the Portuguese <i>Projeto Básico Otimizado</i>). According to tables 9.4 and 9.5 (pages 171 and 174 of the pdf document), the assured energy of the project for 13MW installed capacity is 7.954 MW-ave. This results in 61% of capacity factor (<math>7.954\text{MW-ave} \div 13\text{MW} = 61\%</math>) as confirmed in Table 9.5 of the PBO.</p> <p><u>Second response (17/02/2012):</u></p>	<p>Answer 1 (08/02/2012)</p> <p>Provide the Optimized Project Design (“Projeto Básico Otimizado”) was not provided.</p> <p>CAR BQA 03 is <b>not</b> closed.</p> <p>Answer 2 (18/03/2012)</p> <p>The referred document was provided.</p> <p>CAR BQA 03 is closed</p>



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		The PBO of the project was presented during the audit visit. However, the PPs made available the PBO in the following link, considering the size of the file: < <a href="http://www.4shared.com/office/ipcemt_H/VOLUME_I_-_TEXT0.html">http://www.4shared.com/office/ipcemt_H/VOLUME_I_-_TEXT0.html</a> >.	
<p><b>CAR BQA 04</b> – Present all evidences to support the followings input values. Make sure that all information and evidences are based on the relevant information available at the time of the investment decision and not information available at an earlier or later point. Provide the dates of each evidence.</p> <ul style="list-style-type: none"> <li>-Plant Export Capacity: 13.00 MW;</li> <li>-Plant Capacity Factor: 61%;</li> <li>-Power Output: 69,677 MWh;</li> <li>-PPA price: R\$ 125.00/MWh;</li> <li>-Plant Investment: R\$ 66,694.00</li> <li>-O&amp;M: R\$ 12.00/MWh</li> <li>-NOS: 0.10%;</li> <li>-CCEE: 0.10%</li> <li>-Insurance: 0,50% of assets;</li> <li>-TUSD: R\$ 3.50/kW/month;</li> <li>-TUSD: 100%;</li> <li>-ANEEL: 385,7;</li> <li>-Depreciação: 3.33%;</li> <li>-PIS/COFINS: 3,65%;</li> <li>-Income Tax: 3.08%;</li> </ul>	VVM 111	<p><u>First response(30/12/2012):</u></p> <p>Considering the DOE comments, the PPs clarify that no actions were taken for the project construction which may configure the “project starting date”. Therefore, the investment analysis of the project (IRR and WACC calculation) was based on the most recent data/information available at the time of the submission of the PDD for GSP (Global Stakeholder Process), <i>i.e.</i> the first semester of 2011 year. Please refer to the PPs response in CL BQA 1.</p> <p>Regarding the input data considered in the project cash flow, the PPs revised the cash flow based on documented evidence presented during the audit visit and documents attached to this response:</p> <p>→ Plant export capacity and plant load factor (PLF) are based on the project Optimized Project Design (“PBO” from the Portuguese <i>Projeto Básico Otimizado</i>) dated November</p>	<p>Answer 1 (08/02/2012)</p> <p>1. According to the “GUIDELINES ON THE ASSESSMENT OF INVESTMENT ANALYSIS (Version 05)”: “The use of investment analysis to demonstrate additionality is intended to assess whether or not a reasonable investor would or not decide to proceed with a particular project activity without the benefits of the CDM. This decision will therefore be based on the relevant information available at the time of the investment decision and not information available at an earlier or later point.”</p> <p>2. According to the Glossary of terms: “The starting date of a CDM programme activity is the earliest</p>



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		<p>2008 as checked by DOE during the audit visit.</p> <ul style="list-style-type: none"> <li>→ The energy price was based on market reports from Kunz and Delta Energia (attached to this response).</li> <li>→ The plant investment was based on on quotations and following “Eletrobrás Default Budget” model (“OPE” from the Portuguese <i>Orçamento Padrão da Eléctrobras</i>) (attached to this response).</li> <li>→ O&amp;M costs were considered based on quotations as presented in the spreadsheet attached.</li> <li>→ The ONS tax: documented evidence to be sent to DOE.</li> <li>→ The CCEE tax: documented evidence to be sent to DOE.</li> <li>→ Insurance: documented evidence to be sent to DOE.</li> <li>→ Transmission costs (“TUSD” from the Portuguese <i>Tarifa de Uso do Sistema de Distribuição</i>) are based on the ANEEL Resolution nr. 845 dated June 30th, 2009, available at: <a href="http://www.aneel.gov.br/cedoc/reh2009845.pdf">http://www.aneel.gov.br/cedoc/reh2009845.pdf</a>.</li> <li>→ ANEEL tax (“TFSEE” from the Portuguese <i>Taxa de Fiscalização de Serviços de Energia Elétrica</i>) is</li> </ul>	<p>date at which either the implementation or construction or real action of a programme activity begins.”</p> <p>3. Therefore, the time of investment decision is different concept than the project starting date.</p> <p>The date of the “Eletrobrás Default Budget” model (“OPE” from the Portuguese <i>Orçamento Padrão da Eléctrobras</i>) is dated October 28<sup>th</sup> 2011. Therefore, this is not in accordance with the GUIDELINES ON THE ASSESSMENT OF INVESTMENT ANALYSIS (Version 05) since the date of the investment decision is 25/10/2011 – refer to CL BQA 2 below.</p> <p>The same problem occurs with the Market Report provided, where the date on the first page is December 9<sup>th</sup> 2011 and the price is based on December of 2011.</p> <p>In addition, there is no date reference for the O&amp;M costs</p>
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		<p>based on ANEEL Dispatch nr. 360 dated February 4<sup>th</sup>, 2011. Available at:  <a href="http://www.aneel.gov.br/cedoc/dsp2011360.pdf">http://www.aneel.gov.br/cedoc/dsp2011360.pdf</a>.</p> <p>The PPs included source of information of the input values considered in the cash flow spreadsheet.</p> <p>Furthermore, the PPs revised the US expected inflation parameter from 1.32% to 1.98% in the WACC calculation.</p> <p>For the inflation calculation, it is considered the 10 Year Treasury Note (^TNX), and the TIPS (Treasury Inflation Protected Securities), which are readily quoted in the US market. The ^TNX index carries inflation on their value while the TIPS is an index without inflation. The subtraction from the chosen period average values from the ^TNX and the TIPS results in the estimated inflation. The previous value of 1.32% considered the inflation indexed Bond of 10 years minus a 20 year Bond without inflation. For more consistency, the inflation was calculated as the difference from an indexed Bond of 10 years between a 10 year bond without inflation. The updated value is 1.98%.</p> <p><u>Second response (17/02/2012):</u></p>	<p>spreadsheet presented.</p> <p>The revision of the US expected inflation used in the WACC calculation is not applicable, given that by the time of investment decision the inflation was considered 1.32%.</p> <p>CAR BQA 04 is <b><u>not</u></b> closed.</p> <p>Answer 2 (18/03/2012)</p> <p>The DOE accepted the PP response.</p> <p>CAR BQA 04 is closed.</p>
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	<p>Before responding the DOE's correction request, the PPs clarify that the validation start (GSP start) of 22/10/2011 was considered by the PPs just as a reference date for the financial analysis elaboration since no investment decision was taken for the project implementation yet. Undoubtedly, the project sponsor can sell Jambo project if legal/regulatory aspects are not favorable for the project implementation and the CDM revenues are considered unfeasible at this time. In reality, this is not uncommon and a project is purchased more than once before any expenditure commitment by the project owner. In having this clarification in mind, the PPs clarify the following:</p> <p><i>- Project cash flow</i></p> <p>As mentioned in the first round of the PPs response, the energy price considered in the project cash flow is based on the market reports from Delta Energia (dated December 2011) and Kunz (dated January 2012). In both reports are presented the historical of energy prices, which includes the period before October 2011 (the reference date used for the investment analysis). These reports confirm the energy price considered by the PPs of BRL 125/MWh</p>	
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		<p>for the period before October 2011. Therefore, to the understanding of the PPs, these market reports can be used as documented evidence for the investment analysis. However, the PPs attached to this response the previous market report from Kunz Energia dated October 2011, which confirms the energy price assumption considered in the project cash flow.</p> <p>Regarding the “Eletrobrás Default Budget” model (“OPE” from the Portuguese <i>Orçamento Padrão da Eléctrobras</i>), in fact, it is dated October 28<sup>th</sup> 2011. Therefore, the PPs attached to this response the previous version of OPE, which is attached to this response. This version of the OPE does not have impact in the investment considered by the PPs in the project cash flow.</p> <p>The spreadsheet of O&amp;M costs is dated October 2011. Therefore, the PPs included the reference date in the spreadsheet. Please refer to the documents attached to this response.</p> <p>Furthermore, the PPs revised the figure used in the transmission costs since it wrongly considered the transmission tax based on Light electricity distribution company. The correct company to be considered is Ampla Energia e Serviços S/A. Therefore, the PPs revised the</p>	
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	<p>transmission cost based on ANEEL Resolution nr. 1,118 dated March 1<sup>st</sup>, 2011. This revision can be made in the IRR calculation since, to the understanding of the PPs, if source of information/method of calculation is not correct, it shall be corrected during validation. Please refer to the third version of the spreadsheet.</p> <p>- <i>Benchmark calculation</i></p> <p>First, the 10-year T.Notes and the 10-year TIPS as well as the 20-year TIPS are applicable to the “investment decision” since they are based on data of 2010 year. The revision of the benchmark calculation was only to consistently consider the indexed Bond of 10 years between a 10 year bond without inflation instead of the indexed Bond inflation of 10 years minus a 20 year Bond without inflation. To the understanding of the PPs, it is more consistent to use the same period (10 year) for the inflation calculation. Since the DOE has to consider the correctness of assumptions and methods used in the benchmark calculation, the PPs consider this revision applicable. If calculation is not correct, it shall be corrected during validation. Furthermore, the approach of the PPs is</p>	
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		considered conservative, since without the change of the inflation, the WACC is 9.72% as presented in the first version of the PDD and the WACC with the inflation revised results in 9.38% as presented in the benchmark spreadsheet attached to this response. Considering this explanation, the benchmark calculation was not revised.	
<b>CAR 01:</b> The CDM-CPA-DD – Jambo, version 01, section A.4.1 is blank.	VVM 56	To the understanding of the PPs, section A.4.1 does not need to be filled since sections that need to be filled are A.4.1.1. and A.4.1.2. (sub-items of section A.4.1). The identification of the CPA required by section A.4.1 is possible through the identification of the Host Party and geographical coordinates of the project (sections A.4.1.1 and A.4.1.2). Therefore, no changes were made in the CPA.	First Answer (14/02/2012)  The DOE agrees with the PP explanation.  The CAR 01 is closed.
<b>CAR 02:</b> CDM-CPA-DD – Jambo, version 01, Section A.4.3. is blank.	VVM 56	To the understanding of the PPs, section A.4.3 does not need to be filled since sections that need to be filled are A.4.3.1. and A.4.3.2 (sub-items of section A.4.3). Information related to the choice and period of the crediting period (fixed or renewable) and related information is presented in sections A.4.3.1. and A.4.3.2 (sub-items of section A.4.3). Therefore, no changes were made in the CPA.	First Answer (14/02/2012)  The DOE agrees with the PP explanation.  The CAR 02 is closed.



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<b>CAR 03:</b> The section C.1. from the CDM-CPA-DD - Jambo, version 01 was not filled in accordance with the PoA_form03_v01.pdf. (the same situation is applied to the CDM-CPA-DD - generic, version 1).	VVM 56	Considering the DOE comments, the PPs revised section C.1 of generic CPA and Jambo CPA according to the CDM-CPA-DD form. Please refer to the second version of both documents.	First Answer (14/02/2012)  The CDM-CPA-DD - Jambo, version 02 and the CDM-CPA-DD - generic, version 02 were amended.  The CAR 03 is closed.
<b>CAR 04:</b> The section D.1. from the CDM-CPA-DD - Jambo, version 01 was not filled in accordance with the PoA_form03_v01.pdf. (the same situation is applied to the CDM-CPA-DD - generic, version 1).	VVM 56	Considering the DOE comments, the PPs revised section D.1 of generic CPA and Jambo CPA according to the CDM-CPA-DD form. Please refer to the second version of both documents.	First Answer (14/02/2012)  The CDM-CPA-DD - Jambo, version 02 and the CDM-CPA-DD - generic, version 02 were amended.  The CAR 04 is closed.
<b>CAR 05:</b> The phrase “The CPA implementer is not project participants of the PoA.” from the CDM-CPA-DD - generic – Section A.3. was not presented at the same section from the CDM-CPA-DD - Jambo, version 01.	VVM 56	Considering the DOE comments, the PPs revised the generic CPA to unify notation related to information that shall be changed in the specific CPAs to be included in the PoA. Please refer to the second version of the document.	First Answer (14/02/2012)  The CDM-CPA-DD - generic, version 02 was amended.  The CAR 05 is closed.
<b>CAR 06:</b> CDM-CPA-DD - generic, version 1, Section A.4.1. is blank.	VVM 56	To the understanding of the PPs, section A.4.1 does not need to be filled since sections that need to be filled are A.4.1.1. and A.4.1.2. (sub-items of section A.4.1). Therefore, no changes were made in the CPA. Please also refer to the PPs response in CAR 01.	First Answer (14/02/2012)  The DOE agrees with the PP explanation.  The CAR 06 is closed.
<b>CAR 07:</b> As presented on the CDM-PoA-DD, version 01 (Section A.4.1.2.), the CDM-CPA-DD - Jambo, version 01 and the CDM-CPA-DD -	VVM 56	Detailed reference of figure 1 was included in Jambo CPA as footnote according to PoA. However, detailed	First Answer (14/02/2012)  The CDM-CPA-DD - Jambo, version



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generic, version 1 should present the footnote with the source related to the figure 1.		source of information was not included in the generic CPA since it shall be completed during the CPA validation. Furthermore, the generic CPA also indicates that name and date of source shall be included.	02 and the CDM-CPA-DD - generic, version 02 were amended.  The CAR 07 is closed.
<b>CAR 08:</b> CDM-CPA-DD – generic, version 01, Section A.4.3. is blank.	VVM 56	To the understanding of the PPs, section A.4.3 does not need to be filled since sections that need to be filled are A.4.3.1. and A.4.3.2 (sub-items of section A.4.3). Therefore, no changes were made in the CPA. Please also refer to the PPs response in CAR 02.	First Answer (14/02/2012)  The DOE agrees with the PP explanation.  The CAR 08 is closed.
<b>CAR 09:</b> The footnote 12 from the CDM-CPA-DD – generic, version 01, Section B.3. is not presented equal the respective source 15 from the CDM-CPA-DD - Jambo, version 01.	VVM 56	Considering the DOE comments, the PPs revised the generic CPA. Please refer to the second version of the document.	First Answer (14/02/2012)  The CDM-CPA-DD - generic version 02 was amended.  The CAR 09 is closed.
<b>CAR 10:</b> The source presented on the footnote 3 from the CDM-CPA-DD - Jambo, version 01 is not correct, the value of the reservoir area is from the “PCH Jambo – Projeto Básico Otimizado” dated November 2008. (the same situation is applied to the footnote 4 and to the figure 2).	VVM 56	In fact, the optimized project design (“PBO” from the Portuguese <i>Projeto Básico Otimizado</i> ) is dated November 2008 (and not September 2009). Therefore, reference was properly corrected in Jambo CPA and CER spreadsheet. Please refer to the second version of the document.	First Answer (14/02/2012)  The CDM-CPA-DD - Jambo, version 02 was amended.  The CAR 10 is closed.
<b>CAR 11:</b> In accordance with the CDM-PoA-DD, version 01, Section A.4.2.1. – “The technology to be used in the project activities which will be	VVM 56	The PPs did not include detailed technical information in Jambo CPA in order to avoid conflicts with the	First Answer (14/02/2012)  The DOE agrees with the PP



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included in this PoA will be detailed in each CPA-DD." this not happens on the CDM-CPA-DD - Jambo, version 01.		information presented in the generic CPA. In addition, since the project is in an initial stage (no turbines and generators purchased), the PPs would like to avoid detailed technical information related to the project turbines and generators. However, the PPs revised section A.4.1.2 of the CPAs to include information related to the technical description of the project. Please refer to the second version of the documents.	explanation, also the the CDM-CPA-DD - Jambo, version 02 and the CDM-CPA-DD - generic, version 02 were amended.  The CAR 11 is closed.														
<b>CAR 12:</b> On the “justification/source of information used” presented on the CDM-CPA-DD – Jambo, version 01, related to the Plant Load Fact (PLF), an option should be defined.	VVM 56	Source of the PLF of the project was included in sub-step 2b of section E.5.1 of the PoA and sub-step 2b of section B.3 and B.5.2 of the CPAs. Please refer to the second version of both documents.	First Answer (14/02/2012)  The CDM-CPA-DD - Jambo, version 02 was amended.  The CAR 12 is closed.														
<b>CAR 13:</b> The reservoir area (Section A.2 ), the project’s geographical coordinates (Section A.4.1.2) and the installed capacity (Section B.3), all data from the CDM-CPA-DD – Jambo, version 01 are not in accordance with the ANEEL dispatch nº 1.370.	VVM 56	<p>In fact, ANEEL dispatch nr. 1,370 dated September 28<sup>th</sup>, 2005 presents discrepancies when compared to the CPA as follows:</p> <table><tr><th>Description</th><th>ANEEL dispatch</th><th>Jambo CPA</th></tr><tr><td>Installed capacity (MW)</td><td>17.28</td><td>13</td></tr><tr><td>Reservoir area (km<sup>2</sup>)</td><td>0.52</td><td>0.50</td></tr><tr><td rowspan="2">Geographical coordinates</td><td>21°59’ S</td><td>21° 59’ 37” S</td></tr><tr><td>42°07’ W</td><td>42° 06’ 59” W</td></tr></table>	Description	ANEEL dispatch	Jambo CPA	Installed capacity (MW)	17.28	13	Reservoir area (km <sup>2</sup> )	0.52	0.50	Geographical coordinates	21°59’ S	21° 59’ 37” S	42°07’ W	42° 06’ 59” W	First Answer (14/02/2012)  The Optimized Project Design (PBO) dated November 2008, the “Relatório mensal de acompanhamento” dated November 2011, and the “Relatório de acompanhamento de estudos e projetos de usinas hidrelétricas”, available at: < <a href="http://www.aneel.gov.br/area.cfm?idArea=428">http://www.aneel.gov.br/area.cfm?idArea=428</a> > were cross-checked.
Description	ANEEL dispatch	Jambo CPA															
Installed capacity (MW)	17.28	13															
Reservoir area (km <sup>2</sup> )	0.52	0.50															
Geographical coordinates	21°59’ S	21° 59’ 37” S															
	42°07’ W	42° 06’ 59” W															



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		<p>Considering the table above, the PPs clarify that ANEEL dispatch nr. 1,370 was issued based on the first version of Jambo project design prepared in 2002 and approved by ANEEL in 2005 through the publication of dispatch nr. 1,370/2005.</p> <p>In the revision of the project design ("PBO" from the Portuguese <i>Projeto Básico Otimizado</i>) prepared in 2008, the reservoir area changed from 0.52 km<sup>2</sup> to 0.412 km<sup>2</sup> and the installed capacity changed from 17.28 MW to 13 MW (with a possible increment of 0.6 MW in the installed capacity). The geographical coordinates remained the same; the only changes between ANEEL dispatch and the project CPA/PBO is that ANEEL dispatch presents a GPS coordinates without seconds.</p> <p>Explanations related to the previous design/studies of Jambo are presented in the Optimized Project Design (PBO) dated November 2008 (page 12 of the pdf document).</p> <p>Considering information above, the CPA was prepared based on the most recent design of the project and the only incorrect information presented in the</p>	<p>The CAR 13 is closed.</p>
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		<p>CPA in comparison to the revised study of the project (PBO) is the reservoir area (0.412 km<sup>2</sup> and not 0.50 km<sup>2</sup>), which was corrected in the new version of the CPA (version 2).</p> <p>The PPs clarify that this new layout of the project is under the environmental agency analysis as can be seen in the declaration submitted at the time of the request of the Construction License renewal (available to DOE during the audit visit).</p> <p>Furthermore, a report of the project status shall be monthly presented to ANEEL. Therefore, the new configuration of the project was also presented to ANEEL as can be seen in the report prepared by the project sponsor "Relatório mensal de acompanhamento" dated December 2011 (available to DOE during the audit visit).</p> <p>At ANEEL's website is also possible to see the new configuration of Jambo project in "Relatório de acompanhamento de estudos e projetos de usinas hidrelétricas", available at: <a href="http://www.aneel.gov.br/area.cfm?idArea=428">http://www.aneel.gov.br/area.cfm?idArea=428</a>. This ANEEL report is attached to this response.</p>	
<b>CAR 14:</b> There is no information related to the fact that the Coordinating or managing entity of	PoA form V1	According to the Glossary of CDM Terms, the definition of coordinating and	First Answer (14/02/2012)





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PoA as the entity which communicates with the Board.		<p>management entity (CME) is the one which communicates with the CDM Executive Board:</p> <p><i>“A PoA shall be proposed by the coordinating or managing entity which shall be a project participant authorized by all participating host country DNAs involved and identified in the modalities of communication as the entity which communicates with the Board, including on matters relating to the distribution of CERs.</i></p> <p><i>Project participants of the PoA shall make arrangements with the coordinator or managing entity, relating to communications, distribution of CERs and change of project participants”.</i></p> <p>Therefore, to the understanding of the PPs, there is no need to identify the CME as the entity which communicates with the CDM Executive Board. However, considering the DOE comments, the PPs revised the PoA to include information that CME is the entity which communicates to the CDM Executive Board. Please refer to the second version of the PoA.</p>	<p>The CDM-PoA-DD, version 02 was amended.</p> <p>The CAR 14 is closed.</p>
<b>CAR 15:</b> PoA-DD v01, Section A.4.1, is blank.	PoA form V1	To the understanding of the PPs, section A.4.1 does not need to be filled since	First Answer (14/02/2012)



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		sections that need to be filled are A.4.1.1. and A.4.1.2 (sub-items of section A.4.1). Information related to the location of the project activity is presented in these sections. Therefore, no changes were made in the PoA.	<p>The DOE agrees with the PP explanation.</p> <p>The CAR 15 is closed.</p>
<b>CAR 16:</b> PoA-DD v01, Section A.4.2, is blank.	PoA form V1	To the understanding of the PPs, section A.4.2 does not need to be filled since sections that need to be filled are A.4.2.1. and A.4.2.2 (sub-items of section A.4.2). Information related to the description of a typical CPA is presented in these sections. Therefore, no changes were made in the PoA.	<p>First Answer (14/02/2012)</p> <p>The DOE agrees with the PP explanation.</p> <p>The CAR 16 is closed.</p>
<b>CAR 17:</b> The eligibility criteria for inclusion of a CPA in the PoA (Section A.4.2.2) should be established in accordance with the EB 65 Annex 03 paragraph 14, 15 and 17.	PoA form V1	<p><u>First response(30/12/2012):</u></p> <p>At the time of the validation start of PoA and CPAs (GSP start), the Annex 03 of EB65 was not available. Therefore, the PPs revised the eligibility criteria for the inclusion of CPAs in PoA and related documents. Please refer to the second version of PoA, generic CPA and Jambo CPA. Please also refer to the PPs response CL 11.</p> <p><u>Second response (17/02/2012):</u></p> <p>Please refer to the PPs response in CL 11.</p>	<p>First Answer (15/02/2012)</p> <p>The CDM-CPA-DD - Jambo, version 02 and the CDM-CPA-DD - generic, version 02 were amended.</p> <p>Please refer to CL 11.</p> <p>The CAR 17 is still open.</p> <p>Second Answer (05/03/2012)</p> <p>The CL 11 is closed, then the CAR 17 is also closed.</p>



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<p><b>CAR18:</b> The two first paragraphs from Section a.4.3, item (ii) are not related with the presented discussion.</p>	<p>PoA form V1</p>	<p>To the understanding of PPs, information related to the additionality of the PoA has to be presented in item (ii) of section A.4.3. Therefore, before start the discussion related to the PoA additionality, the PPs considered important to make clear that the assessment of additionality can be conducted at the CPA level or at the PoA level and, in the case of “TUCANO CDM Programme of Activities for the Promotion of Small Hydropower Plants in Brazil”, the additionality is conducted at the CPA level.</p> <p>However, considering the DOE comments, the PPs excluded this information in the PoA. Please refer to the second version of the document.</p>	<p>First Answer (14/02/2012)</p> <p>The CDM-CPA-DD-Jambo, version 02 was amended.</p> <p>The CAR 18 is closed.</p>
<p><b>CAR 19:</b> On the CDM-PoA-DD version 01, Section A.4.3., first paragraph of page 10, the correct is figure 3, and not figure 6.</p>	<p>PoA form V1</p>	<p>Number of figures and tables presented in PoA and CPAs were properly checked and revised. Please refer to the second version of the documents.</p>	<p>First Answer (14/02/2012)</p> <p>The CDM-PoA-DD, version 02 was amended.</p> <p>The CAR 19 is closed.</p>
<p><b>CAR 20 :</b> The Resolution nr. 9 also establishes that all requirements related to the approval process for CDM Project Activities shall also be applied while seeking approval for Programme of Activities. In this sense, some of the procedures established by Resolution nr. 7, issued on March</p>	<p>PoA form V1</p>	<p>Considering the DOE comments, the PPs revised section D.2 of the PoA to include information related to the Resolution nr. 7/2008. Furthermore, the PPs included more detailed information related to the local stakeholder process.</p>	<p>First Answer (14/02/2012)</p> <p>The CDM-PoA-DD, version 02 was amended.</p> <p>The CAR 20 is closed.</p>



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5 <sup>th</sup> 2008, are also going to be followed.		Please refer to the second version of the document.	
<b>CAR 21</b> : The actual version of the methodology ACM0002 is version 12.2.0.	PoA form V1	At the time of the validation start (GSP start) of PoA and CPAs, ACM0002 (version 12.2.0) was not available. Therefore, PoA and CPAs were revised based on the updated version of the methodology. Please refer to the second version of PoA, generic CPA and Jambo CPA.	First Answer (14/02/2012)  The CDM-PoA-DD, version 02 was amended.  The CAR 21 is closed.
<b>CAR 22</b> : The justification of applicability should be done taking in account all the conditions related to the applicability of the methodology ACM0002.	PoA form V1	As mentioned in the PPs response in CAR 17, the PoA, generic CPA and Jambo CPA were revised following Annex 3 of EB65. The §14, item (e), of Annex 3 (EB 65) states that one of the criteria for the inclusion of a CPA under the PoA is the <i>"compliance with applicability and other requirements of single or multiple methodologies applied by CPAs"</i> . Since the PoA applies ACM0002 (version 12.2.0, updated following CAR 23) and referred tools, the applicability conditions of ACM0002 are also included and considered in the eligibility criteria. However, the PPs revised the PoA and related CPAs to include the applicability conditions of ACM0002 in the eligibility criteria for the inclusion of CPAs in the PoA. Please also refer to the PPs response in CAR	First Answer (15/02/2012)  The PoA, generic CPA and Jambo CPA were revised following Annex 3 of EB65. The conditions related to the applicability of the methodology ACM0002 were included.  The CAR 22 is closed.



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		17.	
<b>CAR 23</b> : PoA-DD v01, Section E.5, has been left blank.	PoA form V1	To the understanding of the PPs, section E.5 does not need to be filled since sections that need to be filled are E.5.1. and E.5.2 (sub-items of section E.5). Information related to the assessment and demonstration of additionality is presented in sections E.5.1 and E.5.2.	<p>First Answer (14/02/2012)</p> <p>The DOE agrees with the PP explanation.</p> <p>The CAR 23 is closed.</p>
<b>CAR 24</b> : The actual version to the tool for the demonstration and assessment of additionality is version 6.0.0	PoA form V1	At the time of the validation start (GSP start) of PoA and CPAs, the version 6.0.0 of the Additionality Tool was not available. Therefore, PoA and CPAs were revised based on the updated version of the tool. Please refer to the second version of PoA, generic CPA and Jambo CPA.	<p>First Answer (14/02/2012)</p> <p>The CDM-PoA-DD version 02, CDM-CPA-DD - Jambo version 02 and the CDM-CPA-DD - generic version 02 were amended.</p> <p>The CAR 24 is closed.</p>
<b>CAR 25</b> : PoA-DD v01, Section E.5.2, does not include a justification of the choice of criteria for assessing additionality of a CPA.	PoA form V1	The ACM0002 methodology refers to the “Tool for the demonstration and assessment of additionality” (Additionality Tool) and the “Combined tool to identify the baseline scenario and demonstrate additionality” (Combined Tool). However, the combined tool is not applicable for Greenfield facilities where the output could be provided by other existing facilities or new facilities that could be implemented in parallel with the CDM project activity. Therefore, the Additionality Tool was used as mentioned in section E.5.1: “the	<p>First Answer (15/02/2012)</p> <p>The DOE agrees with the PP explanation.</p> <p>The CAR 25 is closed.</p>

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		<p><i>additionality assessment will be conducted at the CPA level and will follow the steps of the methodological tool 'demonstration and assessment of additionality' as referred in ACM0002 methodology".</i></p> <p>The explanations above justify the choice of the criteria for assessing the additionality of the CPA.</p>	
<b>CAR 26</b> : PoA-DD v01, Section E.6.1, Step 5, does not provide a chosen option as demanded by the tool.	PoA form V1	Considering the DOE comments, step 5 of section E.6.1. was revised to include explanation of the methodological choice for the determination of the sample group of power units <i>m</i> . Please refer to the second version of the PoA.	<p>First Answer (14/02/2012)</p> <p>The CDM-PoA-DD, version 02 was amended.</p> <p>The CAR 26 is closed.</p>
<b>CAR 27</b> : The CDM-PoA-DD, version 1 does not include the equation related to the Emission Reductions on Section E.6.2.	PoA form V1	Considering the DOE comments, the PPs revised sections E.6.1 and E.6.2 of the PoA to include the equation of emission reduction calculation. The CPAs were revised accordingly. Please refer to the second version of the documents.	<p>First Answer (14/02/2012)</p> <p>The CDM-PoA-DD, version 02 was amended.</p> <p>The CAR 27 is closed.</p>
<b>CAR 28</b> : The correct parameter is $EF_{grid,BM,y}$ and not $EF_{bm, 2010}$ .	PoA form V1	$EF_{grid,BM,y}$ parameter was revised in section E.6.3 of the PoA. The CPAs were revised accordingly. Please refer to the second version of the documents.	<p>First Answer (14/02/2012)</p> <p>The CDM-PoA-DD version 02, CDM-CPA-DD - Jambo version 02 and the CDM-CPA-DD - generic version 02 were amended.</p>



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			The CAR 28 is closed.
<p><b>CAR 29</b> : In accordance with the Tool for the demonstration and assessment of additionality. (Version 06.0.0), the alternative:</p> <p>Other realistic and credible alternative scenario(s) to the proposed CDM project activity scenario that deliver outputs services (e.g., cement) or services (e.g. electricity, heat) with comparable quality, properties and application areas, taking into account, where relevant, examples of scenarios identified in the underlying methodology;</p> <p>Must be included.</p>	EB 39 Annex 10	<p>As presented in sub-step 1a, there are two alternatives to the proposed project activity: (i) the electricity generated by the grid-connected power plants (current scenario) and (ii) the proposed project activity without the CDM incentives. Therefore, the options available to the project sponsor are to invest or not invest in the proposed project activity. These options are reflected in the investment analysis of the project; the investment analysis is based on the “benchmark analysis” and not in the “comparison analysis” (alternative scenarios in the case of other types of infrastructural investment).</p> <p>Furthermore, other types of renewable energy generation project – as biomass and/or wind –, are no potential alternatives at the site where the project is planned.</p>	<p>First Answer (15/02/2012)</p> <p>The DOE agrees with the PP explanation.</p> <p>The CAR 29 is closed.</p>
<p><b>CAR 30:</b> In Section A.4.1.2 of CPA-DD Jambo and of the CPA-DD Generic, the information Name/contact details of the entity/individual responsible for the CPA was not given, also, in the same section of the PoA the information related to the fact that “...taking into consideration the requirement that all applicable national and/or sectoral policies and regulations of each host country within that chosen boundary”</p>		<p>Considering the DOE comments, the PPs revised sections A.4.1.2 of the CPA-DD Jambo, the CPA-DD Generic and the PoA.</p>	<p>First Answer (15/02/2012)</p> <p>The CDM-CPA-DD - Jambo version 02, the CDM-CPA-DD - generic version 02 and the CDM-PoA-DD version 02 were amended.</p> <p>The CAR 30 is closed.</p>





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was not provided.			
<p><b>CAR 31: Related to the PoA:</b></p> <p>a. Regarding the PoA-DD version 3, in section A.4.2.2, in eligibility criteria (c), the PoA should include information regarding <u>what the eligibility criteria are</u> concerning the specification of technology/measure. Moreover, it should be defined in this item (c) what these criteria for the inclusion of CPAs are (i.e. only small hydro power plants as defined by ANEEL, etc.).</p> <p>b. In the entire PoA-DD version 3, reference to the Additionality tool needs to be as following: the methodological tool "Tool for the demonstration and assessment of additionality (version 6.0.0)". And not: the methodological tool "Demonstration and assessment of additionality" (version 6.0.0). (This request also applies for the Generic CPA-DD).</p> <p>c. Regarding the PoA-DD version 3, in section A.4.3, the number "1,55" should be "1.55".</p> <p>d. Regarding the PoA-DD version 3, in section D.2, the names (in English) of the local stakeholders prescribed by the Brazilian DNA are not in accordance with the names provided by the English version of Resolution number 9 of the DNA, available on the DNA web site.</p> <p>e. In Section E.5.1 of the PoA-DD, in the first paragraph of Sub-step 2b, the CME states that: "The IRR will be compared to the appropriate benchmark of the electric sector (...), which is the Weighted Average Cost of Capital (WACC)".</p>	ITR	<p>Considering the DOE comments, the PPs took the following actions:</p> <p>a. Section A.4.2.2 of the PoA and section B.2 of the CPAs were revised. Although item (i) of the eligibility criteria already presents the criteria to include only small hydropower plants as defined by ANEEL, the PPs revised the above mentioned sections.</p> <p>b. Considering the DOE comments, the reference for the methodological tool "Tool for the demonstration and assessment of additionality" presented in the PoA and CPAs were revised.</p> <p>c. Information was corrected in section A.4.3 of the PoA (version 4).</p> <p>d. Names in English of local stakeholders as presented in the Brazilian DNA Resolution nr. 9 dated March 20<sup>th</sup>, 2009 were revised in the PoA (version 4). Please refer to the fourth version of the document.</p> <p>e. In reality, where is written: "<i>as the Equity IRR with the Return on Equity (Ke)</i>" shall be read "<i>as the Equity IRR with the Cost of Equity (Ke)</i>". Therefore, step 2b of section E.5.1 of the PoA and section B.3 of the CPAs</p>	<p>First Answer (05/04/2012)</p> <p>The CDM-CPA-DD - Jambo version 04, the CDM-CPA-DD - generic version 03 and the CDM-PoA-DD version 04 were amended. The DOE agrees with the PP explanation.</p> <p>The CAR 31 is closed.</p>



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<p>However, in this same sub-step 2b, the CME states that: “The Project IRR can be compared with the WACC <u>as the Equity IRR with the Return on Equity (Ke)</u>.” This request also applies for the Generic CPA-DD).</p> <p>f. In Section E.5.1 of the PoA-DD, in table 4 of the Sub-step 2b, please also include “operation costs”, as this parameter is also included in the sensitive analysis. (This request also applies for the Generic CPA-DD).</p> <p>g. In E.5.1 of the PoA-DD version 3, regarding common practice, all descriptions included regarding the 4.a and 4.b common practice analysis needs to be removed. According to the Additionality Tool version 6, the analysis needs to be done only in accordance to paragraph 47 of the Tool. (This request also applies for the Generic CPA-DD).</p> <p>h. Regarding Step 2 of Section E.5.2 of the PoA-DD, please note that there is another possible benchmark besides WACC: the <u>Return on Equity (Ke)</u>, according to Section E.5.1.</p> <p>i. In Sections E.6.1 and E.6.2 of the PoA-DD version 3, the names of the steps 1 and 6 to calculate the emission factor are not in accordance with the names provided by the Tool to calculate the emission factor for an electricity system version 02.2.1. (This request also applies for the Generic CPA-DD).</p> <p>j. In Section E.6.1 of the PoA-DD version 3, the phrase: “as per Option A2 of the tool” should be</p>		<p>were revised.</p> <p>f. Operation costs parameter was included in the PoA and CPAs.</p> <p>g. Considering the DOE comments, the PPs revised the common practice analysis. Please refer to step 4 of section E.5.1 of the PoA and section B.3 of the CPAs.</p> <p>h. Please refer to the PPs response in item e. Where is written: “as the Equity IRR with the Return on Equity (Ke)” shall be read “as the Equity IRR with the Cost of Equity (Ke)”. Ke calculation is already presented in section E.5.2 of the PoA.</p> <p>i. Steps for the CO<sub>2</sub> emission factor of the grid presented in sections E.6.1 and E.6.2 of the PoA and section B.5.2 of the CPA were revised.</p> <p>j. The PPs revised information as required by DOE.</p> <p>k. The PPs included information as required by DOE.</p> <p>l. Information was corrected in section E.6.2. of the PoA and section B.5.2 of the CPAs. Please refer to the fourth version of the PoA.</p> <p>m. Considering the DOE comments, the PPs revised <math>EG_{facility,y}</math> table presented in section E.7.1 of the PoA and section B.6.1 of the CPAs.</p> <p>Furthermore, the PoA-DD, generic</p>	
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<p>“as per Option A2 of the of the simple OM method”.</p> <p>k. In Section E.6.1 of the PoA-DD version 3, regarding the calculation of BM EF (step 5), please inform in the PoA-DD which option has been chosen for data vintage: option 1 or option 2.</p> <p>l. In Section E.6.2 of the PoA-DD version 3, in step 6, the phrase: “Applying the results presented above in STEPS 4 and 6 above” should be: “Applying the results presented above in STEPS 4 and 5 above”. (This request also applies for the Generic CPA-DD).</p> <p>m. In Section E.7.1, regarding <math>EG_{facility,y}</math>, the following statement is not in accordance with ACM0002: “Cross check with internal control (if available)”. Moreover, crosscheck should be done with: “records of sold energy” (i.e. CCEE reports). (This request also applies for the Generic CPA-DD).</p> <p>n. In Section B.2 of the generic CPA-DD, under item (d), the definition of “starting date” is not in accordance with the definition provided in the latest version of the Glossary of CDM terms (version 06.0.0).</p> <p>o. In Section B.3 of the generic CPA-DD, in step 3 of the common practice analysis, please change the phrase “As mentioned in section A.4.3, PROINFA is (...)” into “As mentioned in section A.4.3 of the PoA-DD, PROINFA is (...)”.</p> <p>p. In Section B.5.2 of the generic CPA-DD,</p>		<p>CPA and Jambo CPA were revised to consider the latest version of ACM0002 (version 12.3.0). Please refer to the fourth version of the documents.</p> <p>n. The Glossary of CDM Terms (version 6.0.0) was revised in the last EB meeting (EB 66) and, therefore, it was not considered in the proposed PoA. However, the PPs revised the definition of “starting date” presented in the CPAs.</p> <p>o. Information was revised in the CPAs as required by DOE.</p> <p>p. Information was revised in section B.5.2 of the CPAs.</p>	
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<p>please change "Please refer to section E.6.1. for the proper justification." into "Please refer to section E.6.1. in the PoA-DD for the proper justification."</p>			
<p><b>CAR 32: Related to the CPA:</b></p> <p>a. In the entire CPA-DD of Jambo version 3, reference to the Additionality tool needs to be as following: the methodological tool "Tool for the demonstration and assessment of additionality (version 6.0.0)". And not: the methodological tool "Demonstration and assessment of additionality" (version 6.0.0).</p> <p>b. In Section B.3 of the CPA-DD, in the first paragraph of Sub-step 2b, the CME states that: "The IRR will be compared to the appropriate benchmark of the electric sector (...), which is the Weighted Average Cost of Capital (WACC)". However, in this same sub-step 2b, the CME states that: "The Project IRR can be compared with the WACC <u>as the Equity IRR with the Return on Equity (Ke).</u>"</p> <p>c. In Section B.3 of the CPA-DD Jambo version 3, regarding step 1.b of the additionality assessment, the following sentence is provided twice: "Both alternatives, the CPA and the alternative scenario, shall be in compliance with all regulations according the following entities:"</p> <p>d. In the CPA-DD Jambo, the entities ONS and ANEEL are mentioned several times. However, the CME does not clarify what "ONS" and</p>	<p>ITR</p>	<p>Considering the DOE comments, the PPs took the following actions:</p> <ul style="list-style-type: none"> <li>a. Please refer to the PPs response in item (b) of CAR 31.</li> <li>b. Please refer to the PPs response in item (e) of CAR 31.</li> <li>c. Sentence was withdrawal from the CPAs. Please refer to section B.3 of the CPAs.</li> <li>d. The PPs clarify that clarification related to "ONS" and "ANEEL" is presented in the PoA. However, considering the DOE comments, the PPs included information related to "ONS" and "ANEEL" in the CPAs. The PPs also included clarifications regarding "assured energy" in the CPAs. Please refer to the revised version of the documents.</li> <li>e. Please refer to the PPs response in item (f) of CAR 31.</li> <li>f. Please refer to the PPs response in item (g) of CAR 31.</li> <li>g. Please refer to the PPs response in item (o) of CAR 31.</li> <li>h. Information was corrected in step 4 of the common practice analysis</li> </ul>	<p>First Answer (05/04/2012)</p> <p>The CDM-CPA-DD - Jambo version 04, the CDM-CPA-DD - generic version 03 and the CDM-PoA-DD version 04 were amended. The DOE agrees with the PP explanation.</p> <p>The CAR 32 is closed.</p>



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<p>“ANEEL” mean and what these organizations do. Please also provide a clarification in the CPA-DD regarding what “energy assured/assured energy” means.</p> <p>e. In Section B.3 of the CPA-DD Jambo version 3, in the table containing the input values, please also include “operation costs”, as this parameter is also included in the sensitive analysis.</p> <p>f. In B.3 of the CPA-DD Jambo version 3, regarding common practice, all descriptions included regarding the 4.a and 4.b common practice analysis needs to be removed. According to the Additionality Tool version 6, the analysis needs to be done only in accordance to paragraph 47 of the Tool.</p> <p>g. In Section B.3 of the CPA-DD Jambo version 3, in step 3 of the common practice analysis, please change the phrase “As mentioned in section A.4.3, PROINFA is (...)” into “As mentioned in section A.4.3 of the PoA-DD, PROINFA is (...)”.</p> <p>h. In Section B.3 of the CPA-DD Jambo version 3, in step 4 of the common practice analysis, please correct: “0.2 &lt; 0.2”.</p> <p>i. In Sections B.5.2 of the CPA-DD Jambo version 3, the names of the steps 1 and 6 to calculate the emission factor are not in accordance with the names provided by the Tool to calculate the emission factor for an electricity system version 02.2.1.</p> <p>j. In Sections B.5.2 of the CPA-DD Jambo version</p>		<p>presented in Jambo CPA.</p> <p>i. Please refer to the PPs response in item (i) of CAR 31.</p> <p>j. Please refer to the PPs response in item (l) of CAR 31.</p> <p>k. Value of the CO<sub>2</sub> build margin emission factor presented in step 6 of the CPAs was revised according to the value provided in the PoA, CER spreadsheet and CO<sub>2</sub> emission factor of the grid calculation.</p> <p>l. Please refer to the PPs response in item (m) of CAR 31.</p> <p>m. Data unit was included in cell B16 of the project cash flow. The PPs also included Law nr. 9,427, December 12<sup>th</sup>, 1996 as reference for the ANEEL fee calculation. Please refer to the revised spreadsheet (version 3.1).</p> <p>PLF of Jambo was revised to include decimal places. Please refer to the revised CPA.</p>	
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<p>3, regarding step 6, the phrase: “Applying the results presented above in STEPS 4 and 6 above” should be: ““Applying the results presented above in STEPS 4 and 5 above”.</p> <p>k. In Sections B.5.2 of the CPA-DD Jambo version 3, regarding step 6, the EF BM provided in this step 6 is not the same as provided elsewhere in the CPA-DD and in the CERs calculation spreadsheet.</p> <p>l. In Section B.6.1 of the CPA-DD Jambo version 3, regarding <math>EG_{\text{facility},y}</math>, the following statements are not in accordance with ACM0002: “Double checked by internal control” and “Cross check with internal control (if available).” Moreover, crosscheck should be done with: “records of sold energy” (which can be CCEE reports).</p> <p>m. Regarding “FCF_REAL_Jambo v.3”, &lt;FCF&gt; Cell C16 (ANEEL) does not indicate the unit of this value.</p> <p>n. In the CPA-DD, please change the PLF value from 61% to 61.18%, seeing that 61.18% is the value used in the calculation spreadsheet.</p>			
<p><b><u>CL BQA 01</u></b> – Clarify with evidences the moment of investment decision, in order to guarantee that the input values are the correct ones at this moment in the project chronology.</p>	<p>EB 51 Annex 58</p>	<p>As discussed during the audit visit, no activities/measures have been implemented in the project site for the project construction (only environmental diagnosis and social/environmental programs). Currently, the project sponsor is waiting for the Construction License renewal by the environmental agency,</p>	<p>Answer 1 (08/02/2012)</p> <p>1. According to the “GUIDELINES ON THE ASSESSMENT OF INVESTMENT ANALYSIS (Version 05)” : “The use of investment analysis to demonstrate</p>



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		<p>which was requested on September 30<sup>th</sup>, 2009. In parallel, the project sponsor is analyzing quotations received for the equipment purchase and is negotiating the EPC contract. Until the renewal of the Construction License is issued and EPC contract is signed, the project construction cannot start.</p> <p>Considering explanations above, no actions were taken for the project construction which may configure the "project starting date". Therefore, the investment analysis of the project (IRR and WACC calculation) was based on the most recent data/ information available at the time of the submission of the PDD for GSP (Global Stakeholder Process), <i>i.e.</i> data of the first semester of 2011 year.</p> <p>Please also refer to the PPs response in CL 03.</p>	<p>additionality is intended to assess whether or not a reasonable investor would or not decide to proceed with a particular project activity without the benefits of the CDM. This decision will therefore be based on the relevant information available at the time of the investment decision and not information available at an earlier or later point."</p> <p>2. According to the Glossary of terms: "The starting date of a CDM programme activity is the earliest date at which either the implementation or construction or real action of a programme activity begins."</p> <p>3. In the absence of available and validity evidence, the investment decision can be considered the date of upload of the project activity to the UNFCCC database (15/10/2012).</p>
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			CL BQA 01 is closed.
<b>CL BQA 02</b> - 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	The project participants clarify that there are no Feasibility Study Reports (FSR) approved by national authorities since the financial/investment decision is from the project developer (Brazil is not a centrally planned economy).	Answer 1 (09/02/2012)  The project participants clarify that there are no Feasibility Study Reports (FSR).  CL BQA 02 is closed.
<b>CL01</b> – Please, inform the present situation of the approval by The Netherlands.	VVM 44	Mabanaft Carbon B. V. is one of the Project Participants of “TUCANO CDM Programme of Activities for the Promotion of Small Hydropower Plants in Brazil”. Therefore, the PPs of the PoA requested the Letter of Approval on November 2 <sup>nd</sup> , 2011. However, the LoA from Netherlands Party has not been issued yet. As soon as the PPs receive the LoA from Netherland Party, the PPs will send to DOE.	First Answer (14/02/2012)  The DOE agrees with the PP explanation.  The CL 01 is closed.
<b>CL 02:</b> Please clarify why the project's geographical coordinates (Section A.4.1.2 from the CDM-CPA-DD - Jambo, version 01) are from the dam and not from the powerhouse.	VVM 56	The PPs clarify that there was no specific reason for the choice of the geographical coordinates of the project presented in the CPA. Considering the DOE comments, the PPs included both geographical coordinates (dam and power house) in Jambo CPA. However, the generic CPA was not revised since the PPs do not know if geographical coordinates of the dam and power house	First Answer (15/02/2012)  The CDM-CPA-DD Jambo and the CDM-CPA-DD generic were amended.  The CL 02 is closed.





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		<p>will be available for the other projects to be included in the PoA.</p> <p>Please also refer to the PPs response in CAR 15.</p>	
<p><b>CL 03:</b> Please, explain the starting date of the CPA. (Section A.4.2.1. from the CDM-CPA-DD - Jambo, version 01)</p>	VVM 56	<p>According to the “Glossary of CDM terms”:</p> <p><i>“The starting date of a CDM programme activity is the earliest date at which either the implementation or construction or real action of a programme activity begins. The starting date of the CPA cannot be prior to the commencement of validation of the programme of activities, i.e. the date on which the CDM-POADD is first published for global stakeholder consultation”.</i></p> <p>The definition of starting date for CDM project activities is the same to the one presented for the CDM programme activity. However, it includes more detailed clarification about what means “real action of a project activity begins”:</p> <p><i>“...the start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity.</i></p>	<p>First Answer (14/02/2012)</p> <p>The DOE agrees with the PP explanation.</p> <p>The CL 03 is closed.</p>





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		<p><i>This, for example, can be the date on which contracts have been signed for equipment or construction/operation services required for the project activity. Minor pre-project expenses, e.g. the contracting of services /payment of fees for feasibility studies or preliminary surveys, should not be considered in the determination of the start date as they do not necessarily indicate the commencement of implementation of the project”.</i></p> <p>As discussed during the audit visit, although the project has a Construction License issued, there is no EPC contract signed or equipment purchased. Therefore, there are no major expenditures related to the construction of Jambo project. For this reason, the starting date of the CPA is based on the estimated date when the EPC contract of Jambo project will be signed, <i>i.e.</i> 01/06/2012. This date is based on the project schedule of events prepared by the project sponsor and presented to ANEEL. The estimated schedule of events of Jambo can be seen in ANEEL Resolution nr. 3,006/2011.</p>	
<b>CL 04:</b> Please, provide evidence of the CPA's expected 30-year operational lifetime. (Section A.4.2.2. from the CDM-CPA-DD - Jambo, version	VVM 56	ANEEL Resolution nr. 609 dated June 13 <sup>th</sup> , 2006 authorizes the exploration of the hydropower potential of Jambo	First Answer (15/02/2012)



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01)	<p>project. As presented in page 5 of this resolution, the authorization to explore Jambo project is valid for 30 years from the publication of the resolution. Therefore, this figure was used in the CPA of the project.</p> <p>However, according to ANEEL Resolution nr. 3,006 dated July 12<sup>th</sup>, 2011, the project is expected to start operation of the first generating unit in May 2014 and the second one in June 2014. Therefore, in reality, the operational lifetime of the project is 21 years and 8 months (from the expected date to start operation to the last date when the resolution is valid). Considering information above, the PPs revised section A.4.2.2 of Jambo CPA.</p> <p>ANEEL Resolutions were made available during the audit visit and can be seen at ANEEL's website:</p> <p>ANEEL Resolution nr. 609 dated June 13<sup>th</sup>, 2006:  <a href="http://www.aneel.gov.br/cedoc/rea2006609.pdf">http://www.aneel.gov.br/cedoc/rea2006609.pdf</a></p> <p>ANEEL Resolution nr. 3,006 dated July 12<sup>th</sup>, 2011:  <a href="http://www.aneel.gov.br/cedoc/rea20113006.pdf">http://www.aneel.gov.br/cedoc/rea20113006.pdf</a></p>	<p>The ANEEL Resolution nr. 609 dated June 13<sup>th</sup>, 2006:  <a href="http://www.aneel.gov.br/cedoc/rea2006609.pdf">http://www.aneel.gov.br/cedoc/rea2006609.pdf</a> and the ANEEL Resolution nr. 3,006 dated July 12<sup>th</sup>, 2011:  <a href="http://www.aneel.gov.br/cedoc/rea20113006.pdf">http://www.aneel.gov.br/cedoc/rea20113006.pdf</a> were cross-checked.</p> <p>The CL 04 is closed.</p>
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		Furthermore, the PPs clarify that ANEEL Resolution nr. 609/2006 was issued for the former project owners of Jambo: Arcadis Logos Energia S.A., Pires Administração, Planejamento e Participações S.A. and Planave S.A. Estudos e Projetos de Engenharia. However, the authorization to explore Jambo project was already transferred for RBO Energia S.A. (the current project sponsor). This alteration of the ownership of the project can be seen in ANEEL Resolution nr. 3,006/2011.	
<b>CL 05:</b> Please, explain the starting date of the crediting period of the CPA. . (Section A.4.3.1. from the CDM-CPA-DD - Jambo, version 01)	VVM 56	<p>According to the “Glossary of CDM terms”:</p> <p><i>“...the starting date of a crediting period of the CPA shall be the date of its inclusion in the registered PoA or any date thereafter and that the duration of the crediting period shall not exceed the end date of the PoA”.</i></p> <p>Considering that Jambo CPA is expected to be included in PoA before the project become operational, the starting date of the crediting period of Jambo project considered in the CPA is based on the estimated date when the project will become fully operational, i.e. 01/06/2014.</p>	<p>First Answer (15/02/2012)</p> <p>The DOE agrees with the PP explanation.</p> <p>The CL 05 is closed.</p>

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		<p>The most recent scheduled of the events of the project is presented in ANEEL Resolution nr. 3,006 dated July 12<sup>th</sup>, 2011 (<a href="http://www.aneel.gov.br/cedoc/rea20113006.pdf">http://www.aneel.gov.br/cedoc/rea20113006.pdf</a>).</p> <p>Considering information above, the CPA was not revised. Please also refer to the PPs response in CL 04.</p>	
<b>CL 06:</b> Please include the source to the ANEEL website as presented on section B.2. (CDM-CPA-DD - Jambo, version 01) related to the classification of the project as a small hydropower plant (this also applies to the CDM-CPA-DD – generic)	VVM 56	<p>The ANEEL's website was included in section B.2. The eligibility for the inclusion of CPAs in the PoA was revised. Please refer to the PPs response in CAR 24.</p>	<p>First Answer (15/02/2012)</p> <p>The CDM-CPA-DD - Jambo version 02 and the CDM-CPA-DD - generic version 02 were amended.</p> <p>The CL 06 is closed.</p>
<b>CL 07:</b> Please provide the "Spreadsheet with complete research of the common practice analysis ,,,," as stated on the CDM-CPA-DD version 01 , section B.3.	VVM 56	<p>Spreadsheet containing information related to the common practice was made available during the audit visit. However, considering the revision of the additionality tool (version 6.0.0) and the publication of the "guidelines on common practice analysis" (version 1.0), the PPs revised the common practice analysis approach presented in PoA, generic CPA and Jambo CPA. Please refer to the second version of the word files and spreadsheet attached to this response.</p>	<p>First Answer (15/02/2012)</p> <p>The spreadsheet "Jambo_Common practice v.2" was cross checked.</p> <p>The CL 07 is closed.</p>



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<p><b>CL 08:</b> Please, inform the correct sources of data in CERs Calc spreadsheets v1, BEy, also provide the Questionnaire sent by RBO.</p>	VVM 56	<p>The questionnaire mentioned in the CER spreadsheet was related to the questionnaire sent by the CDM project advisor for the preparation of Jambo CPA. Then, the PPs revised the CER spreadsheet to include source of information of the assured energy according to the PBO of the project. Please refer to the revised CER spreadsheet.</p>	<p>First Answer (15/02/2012)</p> <p>The spreadsheet Jambo_Estimated CERs_v.2_2011.12.30 was cross-checked.</p> <p>The CL 08 is closed.</p>
<p><b>CL 09:</b> Related to the Preliminary and Construction Licenses clarify the following points:</p> <ol style="list-style-type: none"> <li>1. The respective licenses (nº FE0010454 and FE 012319, were issued by FEEMA, and not by INEA as listed on the CDM-CPA-DD version 1;</li> <li>2. The expiration date of the Construction License was in 02/10;</li> <li>3. Both licenses were granted to Arcadis Logos Energia S.A. and not to RBO Energia S.A. as stated on the CDM-CPA-DD version 1 (the same problem appears related to the water resources – in Portuguese “outorgas” and the ANEEL resolution);</li> <li>4. The value presented on the Construction License related to the installed capacity was 18,000,000 W and in the CDM-CPA-DD version 1 the same parameter appears as 13,000,000 W.</li> </ol>	VVM 56	<p>Considering the DOE comments, the PPs clarify the following:</p> <ol style="list-style-type: none"> <li>1. INEA is an entity created through Law nr. 5,101 dated October 4<sup>th</sup>, 2007. INEA was created aiming the unification of three other entities: <ul style="list-style-type: none"> <li>(i) Environment and Engineering Foundation of Rio de Janeiro State (“FEEMA” from the Portuguese <i>Fundação Estadual de Engenharia e Meio Ambiente</i>);</li> <li>(ii) Lakes and Rivers Superintendency of Rio de Janeiro State (“SERLA” from the Portuguese <i>Superintendência Estadual de Rios e Lagoas</i>) and</li> <li>(iii) Forest Institute of Rio de Janeiro State (“IEF” from the Portuguese <i>Instituto Estadual de Florestas</i>).</li> </ul> </li> </ol> <p>More information is available at: <a href="http://www.inea.rj.gov.br/inea/sobre.asp">http://www.inea.rj.gov.br/inea/sobre.asp</a></p>	<p>First Answer (15/02/2012)</p> <p>The DOE verify the Law nr. 5,101 dated October 4<sup>th</sup>, 2007; the application related to the license renewal; the ANEEL Resolution nr. 3,006 dated July 12<sup>th</sup>, 2011; the ANEEL Dispatch nr. 1,370 dated September 28<sup>th</sup>, 2005, available at: <a href="http://www.aneel.gov.br/cedoc/dsp20051370.pdf">http://www.aneel.gov.br/cedoc/dsp20051370.pdf</a>; the Optimized Project Design (“PBO” from the Portuguese <i>Projeto Básico Otimizado</i>) dated November 2008 ; the “Relatório de acompanhamento de estudos e projetos de usinas hidrelétricas”, available at: <a href="http://www.aneel.gov.br/area.cfm?idAra=428">http://www.aneel.gov.br/area.cfm?idAra=428</a>, and agrees with the PPs explanation.</p>



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	<p>&gt;. Considering explanation above, it can be said that FEEMA is the former name of INEA. Since the Preliminary and Construction Licenses of Jambo project were issued before the creation of INEA, the licenses were issued by FEEMA.</p> <p>Since the next licenses of Jambo project will be issued by INEA, the project participants considered this entity in the project CPA.</p> <p>However, considering the DOE comments, the PPs revised section C.2 of Jambo CPA to include the correct entity which issued the project licenses. Please refer to the second version of the document.</p> <p>2. In fact, the Construction License of Jambo project was valid until February 9<sup>th</sup>, 2010. As discussed during the audit visit, the project sponsor requested the renewal of the Construction License on September 30<sup>th</sup> 2009, <i>i.e.</i> before the expiration of the license validity. However, the license renewal was not issued by the environmental agency yet. All documents of the licensing process submitted to the environmental agency for the renewal of the Construction License were made available to the DOE during the audit visit.</p>	The CL 09 is closed.
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		<p>3. In fact, the project licenses and the ANEEL authorizations issued for Jambo project are in the name of Arcadis Logos Energia S/A. As discussed during the audit visit, some licenses and authorizations issued for Jambo project are still in the name of the former project owner; the ownership transfer process in all entities involved is taking more time than expected. However, the ownership transfer of Jambo small hydropower plant is in process to gradually change the name.</p> <p>It is important to mention that the authorization to explore Jambo project was already transferred for RBO Energia S.A. (the current project sponsor). This alteration of the ownership of the project can be seen in ANEEL Resolution nr. 3,006 dated July 12<sup>th</sup>, 2011.</p> <p>Please also refer to the PPs response in CL 04.</p> <p>4. As mentioned in the PPs response in CAR 15, Jambo project was firstly designed with 17.28–18 MW installed capacity. This layout is presented in the first version of the project design (from the Portuguese <i>Projeto Básico</i>) and it was approved by ANEEL as can be seen</p>	
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	<p>in ANEEL Dispatch nr. 1,370 dated September 28<sup>th</sup>, 2005, available at: <a href="http://www.aneel.gov.br/cedoc/dsp20051370.pdf">http://www.aneel.gov.br/cedoc/dsp20051370.pdf</a>.</p> <p>However, during the revision of the project design, the project sponsor realized that, in fact, the project should be performed with 13 MW installed capacity for reaching the 'optimum size'. Please refer to page 174 of the PBO (page of the pdf and not the page of the document).</p> <p>This new layout is presented in the Optimized Project Design ("PBO" from the Portuguese <i>Projeto Básico Otimizado</i>) dated November 2008 and it is under ANEEL analysis as can be seen in "Relatório de acompanhamento de estudos e projetos de usinas hidrelétricas", available at: <a href="http://www.aneel.gov.br/area.cfm?idArea=428">http://www.aneel.gov.br/area.cfm?idArea=428</a>. This report is attached to this response.</p> <p>This new layout of the project is also under the environmental agency analysis as can be seen in the declaration submitted at the time of the request of the Construction License renewal (available to DOE during the audit visit). Therefore, at the time of the Construction License issuance (09/02/2007), the revision of the project design was not</p>	
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		made available (11/2008). Please also refer to the PPs response in CAR 15.	
<b>CL 10:</b> Please, provide a web link address related to footnotes 1 and 2, so that information can be verified.	PoA form V1	Considering the DOE comments, the PPs included source of information related to the commitment of the countries in the Latin America and the Caribbean region (a target of 10% renewable energy of total energy use) and web link address of the WSSD Plan of Implementation. Source of information related to the preliminary meeting conducted by the Ministers of the Environment in 2002 is the same as the one presented in the first footnote. Please refer to the second version of the PoA.	First Answer (14/02/2012)  The CDM-PoA-DD, version 02 was amended.  The CL 10 is closed.
<b>CL 11:</b> Please provide a more detailed description about the record keeping system for each CPA under the PoA. The DOE needs to have access to the detailed control system that has been established by the CME.	PoA form V1	<u>First response(30/12/2012):</u> The PoA was revised considering the publication of the “Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities”. The §17 of the Annex 3 (EB65) states: “...The CME shall develop and implement a management system that includes the following made available to the DOE at the time of validation of the PoA: (a) A clear definition of roles and	First Answer (15/02/2012)  As stated on the first phrase of paragraph 17 of the Annex 3 of EB65: The CME shall have the competencies to check the features of potential CPAs and ensure that each CPA meets all requirements and eligibility criteria before inclusion in the registered PoA. The items (a) to (g) are related to the fact that “...each CPA meets all requirements and eligibility criteria



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		<p><i>responsibilities of personnel involved in the process of inclusion of CPAs, including a review of their competencies;</i></p> <p><i>(b) Records of arrangements for training and capacity development for personnel;</i></p> <p><i>(c) Procedures for technical review of inclusion of CPAs;</i></p> <p><i>(d) A procedure to avoid double counting (e.g. to avoid the case of including a new CPA that has already been registered either as a CDM project activity or as a CPA of another PoA);</i></p> <p><i>(e) Records and documentation control process for each CPA under the PoA;</i></p> <p><i>(f) Measures for continuous improvements of the PoA management system;</i></p> <p><i>(g) Any other relevant information".</i></p> <p>Considering information above, the PPs presented the following clarifications:</p> <p>(a) Responsibilities related to the inclusion of CPAs are shared between CME and CPA implementers;</p> <p>(b) The system/procedure for the</p>	<p>before inclusion in the registered PoA".</p> <p>Based on that, the sub items (a), (b), (c) and (e) shall be better developed.</p> <p>The CL 11 is still open.</p> <p>Second Answer (05/03/2012)</p> <p>The Operational Procedures for the CME of "Tucano CDM Programme of Activities for the Promotion of Small Hydropower Plants in Brazil" was verified. The PP explanations were accepted.</p> <p>The CL 11 is closed.</p>
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		<p>inclusion of CPAs will be conducted by the CME, which in the case of the proposed PoA is Ecopart Assessoria em Negócios Empresariais Ltda. (formerly known as Ecoinvest and Ecoinv Global). Ecopart is a CDM project advisor created in 2000 and involved in the CDM market since 2002. Therefore, the system/procedure for the inclusion of CPAs will be easily conducted by the Ecopart since its technical team has knowledge and competence to properly proceed according to the system/procedure established for the inclusion of CPAs;</p> <p>(c) The system/procedure for the inclusion of CPAs will be peer-reviewed;</p> <p>(d) The CME is implementing a system/procedure to avoid double accounting;</p> <p>(e) The CME is implementing a record keeping system (of its own CPAs) and a database (of registered CDM Project Activities and CDM Programme of Activities) for the inclusion of CPAs in the proposed PoA.</p>	
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		<p>Furthermore, the CPA implementer is responsible for the operation and monitoring of the CPA. Therefore, Ecopart - as the CME of the proposed PoA - will ensure that each CPA implementer will maintain records of operation and monitoring documentation;</p> <p>(f) The CME's recording keeping system will be updated every time a CPA is included in the PoA and the CME's database will be updated every time a new CPA is submitted for analysis of its inclusion in the PoA. During these updates, proposals for improvements in the PoA management system can be proposed.</p> <p>Considering information above, the PoA management system follows the requirements established by §17 (Annex 3, EB 65). All information presented above was included in the PoA. Please refer to the second version of the document.</p> <p>Considering the PoA management system that has been implemented by the CME, declarations of voluntary participation and conformity (as</p>	
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		<p>described in the PoA) from RBO Energia S.A. (CPA implementer of Jambo project) are attached to this response. The CME's record keeping system and database are attached to this response consolidated in only one spreadsheet. Please also refer to the PPs response in CAR 24.</p> <p><u>Second response (17/02/2012):</u>  The PPs created the <i>Operational Procedures for the CME of "Tucano CDM Programme of Activities for the Promotion of Small Hydropower Plants in Brazil"</i>, which covers all the requirements established in the §17 of the Annex 3 (EB65). Therefore, considering the DOE comments, the PPs clarify the following:</p> <p>(a) <i>A clear definition of roles and responsibilities of personnel involved in the process of inclusion of CPAs, including a review of their competencies.</i></p> <p>As mentioned in the PPs response of the first round, responsibilities related to the inclusion of CPAs are shared between CME and CPA implementers. In general, the CME – EQAO – is responsible for the CDM related matters (development and management of CPAs,</p>	
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		<p>validation, approval, verification) and the CPA implementers are responsible for the operation, maintenance and monitoring of the project(s) included in the CPA.</p> <p>The responsibilities for the inclusion of a CPA under the proposed PoA are divided among the CME's departments as described in the Procedure mentioned above.</p> <p><i>(b) Records of arrangements for training and capacity development for personnel.</i></p> <p>Under the proposed PoA, trainings will be carried out for the operation, maintenance and monitoring of the CPAs, which is the CPA implementers' responsibility. However, there will be also internal trainings for the CME's personnel. In case of trainings, the administrative department of the CME will ensure records of arrangements for training and capacity development for personnel.</p> <p>Trainings carried out under the operation and maintenance of the project(s) included in the CPA is the CPA implementers' responsibility. Therefore, the CPA implementer will ensure that the</p>	
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		<p>CPA follows the Host Country legislation and the CDM requirements for the operation, maintenance and monitoring of the CPA.</p> <p>All documents related to the trainings will be available in the CME's data server, which will be presented during the audit of the inclusion or verification of CPAs.</p> <p><i>(c) Procedures for technical review of inclusion of CPAs.</i></p> <p>As presented in the Procedure created by the CME, while analyzing if a CPA will be included in the proposed PoA, the system/procedure for the inclusion of the CPA will be peer-reviewed between the commercial and technical department. Furthermore, the CPA will be prepared by the technical team and will be reviewed by the technical supervisor.</p> <p><i>(e) Records and documentation control process for each CPA under the PoA.</i></p> <p>The CME will manage and control the CPAs under "TUCANO CDM Programme of Activities for the Promotion of Small Hydropower Plants in</p>	
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		<p><i>Brazil</i>". The CME is implementing a record keeping system (of its own CPAs) and a database (of registered CDM Project Activities and CDM Programme of Activities) for the inclusion of CPAs in the proposed PoA.</p> <p>All data and information related to the CPAs will be available with the CPA implementers and the CME. All data provided by the CPA implementers to the CME will be recorded in the CME's data server, which backup is made at least in a daily basis.</p> <p>All information presented above is presented and documented in the <i>Operational Procedures for the CME of "Tucano CDM Programme of Activities for the Promotion of Small Hydropower Plants in Brazil"</i>, which is attached to this response. The PoA was also revised to include the information presented above. Please refer to the third version of the document.</p>	
<b>CL 12</b> : Please include the specific date of the starting date.	PoA form V1	<p>Considering the DOE comments, the PPs clarify that at the time of the preparation of the first version of the PoA, the PPs did not know when the PoA would be published for GSP. Therefore, the PPs revised the starting date of the PoA as the date which the</p>	<p>First Answer (15/02/2012)</p> <p>The Doe cross-checked the UNFCCC website: <a href="http://cdm.unfccc.int/ProgrammeOfActivities/Validation/DB/Z4D5AR">http://cdm.unfccc.int/ProgrammeOfActivities/Validation/DB/Z4D5AR</a></p>





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		PoA started GSP as can be seen at the UNFCCC website. Please refer to the second version of the PoA.	<a href="http://UZ7HEL0M70UI2BR31UH3H933/view.html">UZ7HEL0M70UI2BR31UH3H933/view.html</a> . The starting date was amended on the CDM-PoA-DD version 02: 22/10/2011.  The CL 12 is closed.
<b>CL 13 :</b> Please explain in a better way the choice of level at which the environmental analysis is undertaken. Additionally, please, make it clear what is meant by “local”, in the context of environmental analysis.	PoA form V1	Considering the DOE comments, the PPs included more detailed information related to the choice of the environmental analysis at CPA level. Furthermore, the PPs exclude “local” in “local environmental agency”, since licenses can be issued by the national or state environmental agency depending on the case. This information is presented in section C.1. Please refer to the second version of the document.	First Answer (15/02/2012)  The CDM-PoA-DD, version 02 was amended.  The CL 13 is closed.
<b>CL 14 :</b> Please, adjust CONAMA’s name in English. “Resolution” shouldn’t be part of it.	PoA form V1	Section C.2 of PoA was revised. Please refer to the second version of the document.	First Answer (14/02/2012)  The CDM-PoA-DD, version 02 was amended.  The CL 14 is closed.
<b>CL 15 :</b> Please rewrite the first paragraph from section E,5,1 in a way to make it clearer.	PoA form V1	Section E.5.1 of the PoA was revised. Please refer to the second version of the document.	First Answer (14/02/2012)  The CDM-PoA-DD, version 02 was amended.  The CL 15 is closed.



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<b>CL 16:</b> Please include the version related to the “Tool to calculate the emission factor for an electricity system”.	PoA form V1	Version of the Emission Factor Tool was included in the PoA. In addition, the PPs revised the CO <sub>2</sub> emission factor of the build margin considering the corrected value as presented in the CO <sub>2</sub> emission factor spreadsheet attached to this response. Step 6 “Calculate the combined margin (CM) emissions factor” was also revised according to the options of the CO <sub>2</sub> emission factor tool. Please refer to section E.6.1 of the second version of the PoA and CPAs as well as the CER spreadsheet of Jambo project.	<p>First Answer (16/02/2012)</p> <p>The CDM-PoA-DD version 02, the CDM-CPA-DD Jambo version 02 and the CDM-CPA-DD generic were amended.</p> <p>The CL 16 is closed.</p>
<b>CL 17 :</b> Please, update Table 3 with 2011 data (Section E.6.1 from the CDM-PoA-DD v01).	PoA form V1	To the understanding of the PPs, table 5 does not need to be updated since the CO <sub>2</sub> emission factor of the grid applied in the PoA is based on 2008 to 2010 data (OM emission factor calculation). However, considering the DOE comments, the PPs revised table 3 of the PoA to include 2011 data. Please refer to the second version of the document. Spreadsheet with the share of hydroelectricity generation from 2006 to 2011 is attached to this response. As presented in the PoA, the source of this information is the ONS.	<p>First Answer (15/02/2012)</p> <p>The CDM-PoA-DD, version 02 was amended.</p> <p>The CL 17 is closed.</p>
<b>CL 18 :</b> Please clarify the origin to the parameter EF <sub>Res</sub> , PoA-DD v01, Section E.6.1, item Project emissions (PE <sub>y</sub> ).	PoA form V1	As mentioned in section E.6.1, EF <sub>Res</sub> parameter is a “default value as perEB23” (90 Kg CO <sub>2</sub> e/MWh). The same	<p>First Answer (15/02/2012)</p> <p>The CDM-PoA-DD version 02 and</p>



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		information is presented in ACM0002 (page 14). Considering the DOE comments, $EF_{Res}$ parameter was included in section E.6.3. Please refer to the second version of the PoA and related CPAs.	the the CDM-CPA-DD generic were amended.  The CL 18 is closed.
<b>CL 19</b> : Please use always the same descriptions to the parameters as presented on the methodology ( $A_{BL}$ )	PoA form V1	Description of the parameters and related information presented in sections E.6.3 and E.7.1 were revised according to ACM0002. $TEG_y$ parameter was also included in section E.7.1 (applicable for hydropower projects with power density greater than $4 \text{ W/m}^2$ and less than or equal to $10 \text{ W/m}^2$ only). In addition, table 4 "Greenhouse gases and emission sources included or excluded in the project boundary" was revised according to ACM0002. Please refer to the second version of the PoA and CPAs.	First Answer (15/02/2012)  The CDM-PoA-DD version 02 and the the CDM-CPA-DD generic were amended.  The CL 19 is closed.
<b>CL 20</b> : Please use always the same descriptions to the parameters as presented on the methodology ( $EG_{facility,y}$ )	PoA form V1	Please refer to the PPs response in CL 19.	First Answer (15/02/2012)  The CDM-PoA-DD version 02, CDM-CPA-DD - Jambo version 02 and the CDM-CPA-DD - generic version 02 were amended.  The CL 20 is closed.
<b>CL 21</b> : Please clarify if the CPA's that will be included on this PoA will be large-scale or small-	VVM 119	ACM0002 is applied in the "TUCANO CDM Programme of Activities for the	First Answer (14/02/2012)



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scale projects.		<p>Promotion of Small Hydropower Plants in Brazil". Therefore, large scale projects are considered in the PoA, however, there is no restriction to include small scale projects.</p> <p>As presented in the eligibility criteria for inclusion of CPAs in the PoA, only small hydropower plants as defined by ANEEL will be considered. According to the current ANEEL classification (Resolution nr. 394 issued on December 4<sup>th</sup>, 1998), small hydropower plants are utilities that have installed capacity between 1MW and 30MW, and reservoir areas smaller than 3km<sup>2</sup>. In some cases, reservoir area can be greater than 3km<sup>2</sup> (Resolution nr. 652 issued on December 9<sup>th</sup>, 2003), but ANEEL's approval is necessary. Therefore, CPAs to be included in the PoA are of small and/or large scale according to the CDM EB definition (installed capacities lower or greater than 15MW).</p>	<p>The DOE agrees with the PP explanation.</p> <p>The CL 21 is closed.</p>
<b>CL 22 :</b> Please provide a source related to the second paragraph from the sub item Country/region, presented on sub-step 4a, section E.5.1 from the CDM-PoA-DD v01.	VVM 120	<p>Considering the revision of the methodological tool "Demonstration and assessment of additionality", sub-step 4a was revised. Please refer to the second version of the PoA and CPAs. Please also refer to the PPs response in CAR 26 and CL 07.</p>	<p>First Answer (15/02/2012)</p> <p>The CDM-PoA-DD version 02 was amended.</p> <p>The CL 22 is closed.</p>
<b>CL 23: Related to the PoA:</b>		<p>Considering the DOE comments, the</p>	<p>First Answer (05/04/2012)</p>



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<p>a. Regarding the PoA-DD version 3, please clarify the use of version 12.2.0 of ACM0002, seeing that the latest version of ACM0002 is version 12.3.0. (This request also applies for the Generic CPA-DD).</p> <p>b. Regarding the PoA-DD version 3, in Section A.3 (table 1), please describe clearly in this table if Mabanft Carbon B.V. is a “Coordinating or managing entity” or a “Project participants being registered in relation to the PoA”.</p> <p>c. Regarding the PoA-DD version 3, in section A.4.2.2, in eligibility criteria (e), if CME chooses to apply version 12.3.0 of ACM0002, please note that the applicability conditions included in eligibility criteria (e) also need to be updated. (This request also applies for the Generic CPA-DD).</p> <p>d. Regarding the PoA-DD version 3, in section D.2, the names (in Portuguese) of the local stakeholders that were contacted by the CME should be accompanied by the English translation of those names.</p> <p>e. In Section D.2 of the PoA-DD version 3, please clarify the following phrase: “The link of the United Nations Framework Convention on Climate Change (UNFCCC) website where the PoA and related CPAs were available for GSP (...) were also included in the letter sent to local stakeholders.” Moreover, the letters were sent to local stakeholders <u>before</u> the PoA-DD and the CPA-DD were made available for GSP.</p>		<p>PPs took the following actions:</p> <p>a. The PoA-DD, generic CPA and Jambo CPA were revised to consider the latest version of ACM0002 (version 12.3.0). Please refer to the revised documents attached to this response.</p> <p>b. As presented in section A.3, Mabanft Carbon B.V. is the Project Participant of the proposed PoA. Considering the DOE comments, the PPs revised title of table 1 to make it clear that the referred table presents the Project Participants of the PoA. Furthermore, the PPs clarify that, as described in the PoA, the CME of Tucano PoA is EQAO and Mabanft Carbon B.V. is the Project Participant. Mabanft Carbon B.V. is the company that is bearing the CDM expenses (validation, approval and registration) related to the proposed PoA. In fact, the CDM validation contract was signed between the Bureau Veritas Certification and Mabanft.</p> <p>c. As mentioned in the PPs response in item (a), the PPs revised the PoA and related CPAs to the updated version of ACM0002 (version 12.3.0). Therefore, the eligibility</p>	<p>The CDM-CPA-DD - Jambo version 04, the CDM-CPA-DD - generic version 03 and the CDM-PoA-DD version 04 were amended. The DOE agrees with the PP explanation.</p> <p>The CL 23 is closed.</p>
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<p>f. Please provide in the PoA-DD version 3 a short explanation of the term used: “assured energy” or “energy assured”. (This request also applies for the Generic CPA-DD).</p> <p>g. In the Poa-DD version 3, please change “PDD” to “CPA-DD” or to “PoA-DD”, where applicable. (This request also applies for the Generic CPA-DD).</p> <p>h. Please clarify why in Section B.3 of the generic CPA-DD version 3, the WACC calculation description is not as complete as the description provided in the PoA-DD version 3.</p>		<p>criteria were also revised.</p> <p>d. As mentioned in the PPs response in item (d) of CAR 31, the English name of the stakeholders presented in the PoA were revised based on Resolution nr. 9/2009 of the Brazilian DNA.</p> <p>e. As mentioned in section D.2 of the PoA, invitation for comments from local stakeholders was sent at least 15 days before the PoA/CPA validation starting, <i>i.e.</i> the starting of the Global Stakeholder Process (GSP). This requirement is established by the Brazilian DNA in order to issue the Letter of Approval for Programme of Activities under CDM. Please refer to Brazilian DNA Resolution nr. 9 dated March 20th, 2009, available at: <a href="http://www.mct.gov.br/upd_blob/0201/201258.pdf">http://www.mct.gov.br/upd_blob/0201/201258.pdf</a>.</p> <p>Therefore, letters were sent to local stakeholders before the GSP starting of the PoA/CPA as required by the Brazilian DNA and, the link where the stakeholders could consult the project documents in Portuguese as well as the link where the project was going to be available at UNFCCC's website were included in the letter. Then, stakeholders had</p>	
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		<p>the opportunity to make comments at the website available by the PPs (containing documents in Portuguese) or at the UNFCCC's website (presenting information in English only). Furthermore, the contact information of the PPs was also included in the letter if stakeholders preferred make comments or consult/contact the PPs directly.</p> <p>f. The term "assured energy" is well known among the participants of the Brazilian electric sector. Considering the DOE comments, the PPs included in the definition of "assured energy" in the PoA and CPAs. Please also refer to the PPs response in Item (d) of CAR 32.</p> <p>g. The PoA and CPAs were revised. Please refer to the revised version attached to this response.</p> <p>Detailed description of the WACC calculation and the considered assumptions are presented in the PoA. Therefore, to the understanding of the PPs, the "standard" is defined and there is no need to repeat it in the CPAs. Therefore, no alterations were made in the CPAs.</p>	
<b>CL 24: Related to the CPA:</b>		Considering the DOE comments, the PPs took the following actions:	First Answer (05/04/2012)





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<p>a. Regarding the CPA-DD Jambo version 3, please clarify the use of version 12.2.0 of ACM0002, seeing that the latest version of ACM0002 is version 12.3.0.</p> <p>b. Link to ANEEL Resolutions 3066/2011 and 606/2006. Which are mentioned throughout the document CPA-DD Jambo version 3, describe the SHP Jambo as having 17.3 MW of installed capacity.</p> <p>c. Please clarify why in Section B.3 of the CPA-DD of Jambo version 3, the WACC calculation description is not as complete as the description provided in the PoA-DD version 3.</p> <p>d. ) In B.3 of the CPA-DD Jambo version 3, regarding common practice:  ** On table 8, SHP Areal is described as "hydro power plant". Please describe this Plant as "large hydro power plant" or as "small hydro power plant".  ** Please explain why SHP Areal was excluded from table 9, since it has an installed capacity below 30 MW. In other words, please provide a clarification in the CPA-DD explaining why SHP Areal shall be considered as a "large hydro power plant".</p> <p>e. In Section B.5.2, in Step 3 to calculate EF, please change: "Please refer to section E.6.1. for the proper justification." into: "Please refer to section E.6.1. of the PoA-DD for the proper justification."</p>		<p>a. Please refer to the PPs response in items (a) and (c) of CL 23.</p> <p>b. As mentioned in the PPs response of CAR 13, the Jambo project was firstly designed considering 17.28 MW installed capacity as can be seen in ANEEL Resolution nr. 609 (and not 606) dated June 13<sup>th</sup>, 2006 and ANEEL Resolution nr. 3,006 (and not 3,066) dated July 12<sup>th</sup>, 2011. However, the project design was revised and the installed capacity of 13MW was considered as can be seen in the Optimized Project Design (PBO) dated November 2008. Explanations related to the previous design/studies of Jambo are presented in the (page 12 of the pdf document). This new layout was presented to ANEEL as can be seen in the report prepared by the project sponsor "Relatório mensal de acompanhamento" dated December 2011 (available to DOE during the audit visit).  At ANEEL's website is also possible to see the new configuration of Jambo project in "Relatório de acompanhamento de estudos e projetos de usinas hidrelétricas",</p>	<p>The CDM-CPA-DD - Jambo version 04, the CDM-CPA-DD - generic version 03 and the CDM-PoA-DD version 04 were amended. The DOE agrees with the PP explanation.</p> <p>The CL 24 is closed.</p>
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		<p>available at: &lt;<a href="http://www.aneel.gov.br/area.cfm?idArea=428">http://www.aneel.gov.br/area.cfm?idArea=428</a>&gt;. The above mentioned documents were already provided to DOE. Please also refer to the PPs response in CAR 13.</p> <p>c. Please refer to the PPs response in item (h) of CL 23.</p> <p>d. The PPs revised CPA Jambo and common practice spreadsheet. Please refer to the revised versions attached to this response.</p> <p>Regarding Areal project, please refer to the ANEEL's website: &lt;<a href="http://www.aneel.gov.br/aplicacoes/capacidadebrasil/GeracaoTipoFase.asp?tipo=1&amp;fase=3">http://www.aneel.gov.br/aplicacoes/capacidadebrasil/GeracaoTipoFase.asp?tipo=1&amp;fase=3</a>&gt;. As can be seen at ANEEL website, Areal is considered as a large hydropower plant. Although this project has installed capacity lower than 30 MW, it is considered as a large hydropower plant by ANEEL. In fact, the PPs have no additional information why this project is considered by ANEEL as a large hydropower plant. However, in making an in-depth analysis, the PPs discovered that this project started operation in 1953. This information is available at the project owner's website:</p>	
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		<p>&lt;<a href="http://www.quantageracao.com.br/m1.php">http://www.quantageracao.com.br/m1.php</a>&gt;. Considering information above, Areal project cannot be compared to the proposed CPA, since this project is considered by ANEEL as a large hydropower plant and started operations in 1953, i.e. before the new regulatory framework of the electricity sector.</p> <p>Please refer to the PPs response in item (p) of CAR 31.</p>	
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