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Validation Report

Empresa de Generación Eléctrica Fortuna S.A.

VALIDATION OF THE CDM-PROJECT:
INCREASE OF POWER GENERATION OF THE HY-
DROELECTRIC POWER STATION FORTUNA IN PA-
NAMA (IPGFP)

REPORT NO. 413320

2007, January 12

TÜV SÜD Industrie Service GmbH
Carbon Management Service
Westendstr. 199 - 80686 Munich – GERMANY

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Subject: Validation of a CDM Project			
Accredited TÜV SÜD Unit: TÜV SÜD Industrie Service GmbH Certification Body "climate and energy" Westendstr. 199 - 80686 Munich Federal Republic of Germany		TÜV SÜD Contract Partner: TÜV SÜD Industrie Service GmbH Carbon Management Service Westendstr. 199 - 80686 Munich Federal Republic of Germany	
Client: Empresa de Generación Eléctrica Fortuna, S.A. Avenida Samuel Lewis, Urbanización Obarrio P.O. Box 0831- 02438 Paitilla Panamá Rep. de Panamá		Project Site(s): Fortuna Hydropower Plant Counties of Hornitos and Caldera District of Boquete and Gualaca Panama	
Project Title: Increase of Power Generation of the hydroelectric power station Fortuna in Panama (IPGFP)			
Applied Methodology / Version: ACM0002 version 6		Scope(s): 1	
First PDD Version: Date of issuance: 2006-09-16 Version No.: 2 Starting Date of GSP 2006-09-20		Final PDD version: Date of issuance: 2006-12-06 Version No.: 3	
Estimated Annual Emission Reduction:		26,530 tons CO _{2e}	
Assessment Team Leader: Werner Betzenbichler		Further Assessment Team Members: Ivan Hernandez Frieder Heess	
Summary of the Validation Opinion:			
<input checked="" type="checkbox"/> The review of the project design documentation and the subsequent follow-up interviews have provided TÜV SÜD with sufficient evidence to determine the fulfilment of all stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM. Hence TÜV SÜD will recommend the project for registration by the CDM Executive Board in case letters of approval of all Parties involved will be available before the expiring date of the applied methodology(ies) or the applied methodology version respectively.			
<input type="checkbox"/> The review of the project design documentation and the subsequent follow-up interviews have not provided TÜV SÜD with sufficient evidence to determine the fulfilment of all stated criteria. Hence TÜV SÜD will not recommend the project for registration by the CDM Executive Board and will inform the project participants and the CDM Executive Board on this decision.			

Abbreviations

ACM	Approved Consolidated Methodology
AM	Approved Methodology
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CR	Clarification Request
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EIA / EA	Environmental Impact Assessment / Environmental Assessment
ER	Emission reduction
GHG	Greenhouse gas(es)
KP	Kyoto Protocol
MP	Monitoring Plan
NGO	Non Governmental Organisation
PDD	Project Design Document
PP	Project Participant
TÜV SÜD	TÜV SÜD Industrie Service GmbH
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual

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1 INTRODUCTION

1.1 Objective

The validation objective is an independent assessment by a Third Party (Designated Operational Entity = DOE) of a proposed project activity against all defined criteria set for the registration under the Clean Development Mechanism (CDM). Validation is part of the CDM project cycle and will finally result in a conclusion by the executing DOE whether a project activity is valid and should be submitted for registration to the CDM-EB. The ultimate decision on the registration of a proposed project activity rests at the CDM Executive Board and the Parties involved.

The project activity discussed by this validation report has been submitted under the project title:
Increase of Power Generation of the hydroelectric power station Fortuna in Panama (IPGFP).

1.2 Scope

The scope of any assessment is defined by the underlying legislation, regulation and guidance given by relevant entities or authorities. In the case of CDM project activities the scope is set by:

- The Kyoto Protocol, in particular § 12
- Decision 2/CMP1 and Decision 3/CMP.1 (Marrakech Accords)
- Further COP/MOP decisions with reference to the CDM (e.g. decisions 4 – 8/CMP.1)
- Decisions by the EB published under <http://cdm.unfccc.int>
- Specific guidance by the EB published under <http://cdm.unfccc.int>
- Guidelines for Completing the Project Design Document (CDM-PDD), and the Proposed New Baseline and Monitoring Methodology (CDM-NM)
- The applied approved methodology
- The technical environment of the project (technical scope)
- Internal and national standards on monitoring and QA/QC
- Technical guideline and information on best practice

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

Once TÜV SÜD receives a first PDD version, it is made publicly available on the internet at TÜV SÜD's webpage as well as on the UNFCCC CDM-webpages for starting a 30 day global stakeholder consultation process (GSP). In case of any request a PDD might be revised (under certain conditions the GSP will be repeated) and the final PDD will form the basis for the final evaluation as presented by this report. Information on the first and on the final PDD version is presented at page 1.

The only purpose of a validation is its use during the registration process as part of the CDM project cycle. Hence, TÜV SÜD can not be held liable by any party for decisions made or not made based on the validation opinion, which will go beyond that purpose.

2 METHODOLOGY

The project assessment aims at being a risk based approach and is based on the methodology developed in the Validation and Verification Manual (for further information see www.vvmanual.info), an initiative of Designated and Applicant Entities, which aims to harmonize the approach and quality of all such assessments.

In order to ensure transparency, a validation protocol was customised for the project. TÜV SÜD developed a “cook-book” for methodology-specific checklists and protocol based on the templates presented by the Validation and Verification Manual. The protocol shows, in a transparent manner, criteria (requirements), the discussion of each criterion by the assessment team and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

The validation protocol consists of three tables. The different columns in these tables are described in the figure below.

The completed validation protocol is enclosed in Annex 1 to this report.

Validation Protocol Table 1: Conformity of Project Activity and PDD				
Checklist Topic / Question	Reference	Comments	PDD in GSP	Final PDD
<i>The checklist is organised in sections following the arrangement of the applied PDD version. Each section is then further subdivided. The lowest level constitutes a checklist question / criterion.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found in case the comment refers to documents other than the PDD or the applied methodology.</i>	<i>The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached. In some cases sub-checklist are applied indicating yes/no decisions on the compliance with the stated criterion. Any Request has to be substantiated within this column</i>	<i>Conclusions are presented based on the assessment of the first PDD version. This is either acceptable based on evidence provided (<input checked="" type="checkbox"/>) , or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). Clarification Request (CR) is used when the validation team has identified a need for further clarification.</i>	<i>Conclusions are presented in the same manner based on the assessment of the final PDD version.</i>

Validation Protocol Table 2: Resolution of Corrective Action and Clarification Requests			
Clarifications and corrective action requests	Ref. to table 1	Summary of project owner response	Validation team conclusion
<i>If the conclusions from table 1 are either a Corrective Action Request or a Clarification Request, these should be listed in this section.</i>	<i>Reference to the checklist question number in Table 1 where the Corrective Action Request or Clarification Request is explained.</i>	<i>The responses given by the client or other project participants during the communications with the validation team should be summarised in this section.</i>	<i>This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 1, under "Final PDD".</i>

In case of a denial of the project activity more detailed information on this decision will be presented in table 3.

Validation Protocol Table 3: Unresolved Corrective Action and Clarification Requests		
Clarifications and corrective action requests	Id. of CAR/CR 1	Explanation of the Conclusion for Denial
<i>If the final conclusions from table 2 results in a denial the referenced request should be listed in this section.</i>	<i>Identifier of the Request.</i>	<i>This section should present a detail explanation, why the project is finally considered not to be in compliance with a criterion.</i>

2.1 Appointment of the Assessment Team

According to the technical scopes and experiences in the sectoral or national business environment TÜV SÜD has composed a project team in accordance with the appointment rules of the TÜV SÜD certification body "climate and energy". The composition of an assessment team has to be approved by the Certification Body ensuring that the required skills are covered by the team. The Certification Body TÜV SÜD operates four qualification levels for team members that are assigned by formal appointment rules:

- Assessment Team Leader (ATL)
- Greenhouse Gas Auditor (GHG-A)
- Greenhouse Gas Auditor Trainee (T)
- Experts (E)

It is required that the sectoral scope linked to the methodology has to be covered by the assessment team.

The validation team was consisting of the following experts (the responsible Assessment Team Leader in written in bold letters):

Name	Qualification	Coverage of technical scope	Coverage of sectoral expertise	Host country experience
Werner Betzenbichler	ATL	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Ivan Hernandez	GHG-A	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Frieder Heess	T		<input checked="" type="checkbox"/>	

Werner Betzenbichler is head of the department Carbon Management Service of TÜV SÜD and head of the "Certification Body for Climate and Energy" and expert for conventional energy generation, renewable energy, energy expansion planning and familiar with the recent version of CDM and JI criteria as necessary for the implementation of Art. 6 and Art. 12 of the KP. Since 2000 he has been working in the international climate change and emission trading business as a verifier.

Ivan Hernandez is appointed as GHG-Auditor by the certification body "climate and energy". He is mechanical engineer. Ivan has received extensive training in the CDM validation processes and participated already in some ten validations in Mexico and Central America.

Frieder Heess is mechanical engineer and working on the assessment of energy efficiency of power plants since almost 30 years within the energy services unit of TÜV SÜD Industrie Service GmbH. Among others he is responsible for life cycle analysis of power plant or power plant components (e.g. generators or boilers). He performed the on-site inspection of the existing Fortuna hydro-power station.

2.2 Review of Documents

The first PDD version submitted by the client and additional background documents related to the project design and baseline were reviewed as initial step of the validation process. A complete list of all documents and proofs reviewed is attached as annex 2 to this report.

2.3 Follow-up Interviews

In the period of August 06 to 08, 2002 TÜV SÜD performed interviews on-site with project stakeholders to confirm selected information in the context of a pre-validation performed in August 2002 when the project was applying to the Dutch CERUPT program. The table below provides a list of all persons interviewed in the context of this on-site visit.

Name	Organisation
Rafael Matas	Fortuna S.A.
Julio C. Ho W.	CND (National Dispatch Center)
Emilio Doens	GTD

At that time the project was completely a “Greenfield Filed” project, and assessment took place on-site only in the context of the baseline, i.e. assessment of grid data and the evaluation of the existing hydropower plant.

After submitting the revised PDD which has been made publicly available interviews were made by phone, whenever specific questions arose, and by a personal interview on Oct 17, 2006 in Sao Paulo with the project developer Econergy Brazil, Mr. David Freire da Costa,.

2.4 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is to resolve the requests for corrective actions and clarifications and any other outstanding issues which needed to be clarified for TÜV SÜD's positive conclusion on the project design. The Corrective Action Requests and Clarification Requests raised by TÜV SÜD were resolved during communication between the client and TÜV SÜD. To guarantee the transparency of the validation process, the concerns raised and responses that have been given are summarised in chapter 3 below and documented in more detail in the validation protocol in annex 1.

2.5 Internal Quality Control

As final step of a validation the validation report and the protocol have to undergo an internal quality control procedure by the Certification Body "climate and energy", i.e. each report has to be approved either by the head of the certification body or his deputy. In case one of these two persons is part of the assessment team approval can only be given by the other one.

It rests at the decision of TÜV SÜD's Certification Body whether a project will be submitted for requesting registration by the EB or not.

3 SUMMARY OF FINDINGS

As informed above all finding are summarized in table 2 of the attached validation protocol. In total the assessment team expressed 11 Clarification Requests and 18 Corrective Action Requests.

Although the amount of requests is comparatively high, this fact is more related to the aspect that for the project developer this has been the first time of applying this methodology with the new PDD format.

The key findings in the first PDD version were related to the provision of information on the intended monitoring approach and the correct allocation of those parameters to be fixed ex-ante.

Information / additional documents have been requested explicitly where the submitted documents did not allow a judgement on statements given by the first PDD version. In particular this addresses the use of ODA, the fixation of the lifetime of existing equipment and the justification of the chosen options within ACM0002.

Within the original documents and spreadsheets there have been some inconsistencies on figures and calculations delivering the result on the emission reduction estimation. These inconsistencies have been resolved in the final versions of the submitted documents. The given estimation is reproducible and substantiated by verified data and assumptions.

Baseline determination and additionality are correctly discussed by the final PDD. For evidencing data as used in the barrier test the project participants submitted a certificate issued by an independent accountant (PwC) confirming the correctness of used financial figures.

There is no concern on the discussion on the continuation of the current situation as no technical retrofit of the generation unit has to be expected throughout the project's crediting period.

The project is deemed to qualify for retroactive registration. Therefore no change of the indicated starting date of the crediting period (01 Jan 2007) has been requested. The project participants requested several times from 2003 to 2005 clarifications and revision for AMS-I.D. which was originally envisioned to be applied, but which did not foresee an application in the context of capacity additions that time. But finally the recent version of ACM0006 enabled to meet the applicability criteria by this unusual project activity.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

TÜV SÜD published the project documents on UNFCCC website by installing a link to TÜV SÜD's own website and invited comments by Parties, stakeholders and non-governmental organisations during a period of 30 days.

The following table presents all key information on this process:

webpage: http://www.netinform.de/KE/Wegweiser/Guide2.aspx?ID=2107&Ebene1_ID=26&Ebene2_ID=630&mode=1	
Starting date of the global stakeholder consultation process: 2006-09-20	
Comment submitted by: -	Issues raised: -
Response by TÜV SÜD: -	

5 VALIDATION OPINION

TÜV SÜD has performed a validation of the following proposed CDM project activity:

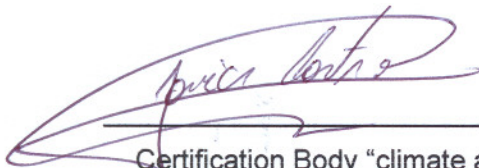
Increase of Power Generation of the hydroelectric power station Fortuna in Panama (IPGFP).

The review of the project design documentation and the subsequent follow-up interviews have provided TÜV SÜD with sufficient evidence to determine the fulfilment of stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM. Hence TÜV SÜD will recommend the project for registration by the CDM Executive Board.

An analysis as provided by the applied methodology demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented as designed, the project is likely to achieve the estimated amount of emission reductions as specified within the final PDD version.

The validation is based on the information made available to us and the engagement conditions detailed in this report. The validation has been performed using a risk based approach as described above. The only purpose of this report is its use during the registration process as part of the CDM project cycle. Hence, TÜV SÜD can not be held liable by any party for decisions made or not made based on the validation opinion, which will go beyond that purpose.

Munich, 2007-01-17



Certification Body "climate and energy"
TÜV SÜD Industrie Service GmbH

Munich, 2006-12-22



Assessment Team Leader

Validation of the CDM Project:
Increase of Power Generation of the hydroelectric power station
Fortuna in Panama (IPGFP)



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Annex 1: Validation Protocol

Validation Protocol

Project Title: Increase of Power Generation of the hydroelectric power station Fortuna in Panama (IPGFP)

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Table 1 Conformity of Project Activity and PDD

CHECKLIST TOPIC / QUESTION		Ref.	COMMENTS	PDD in GSP	Final PDD
A. General description of project activity					
A.1. Title of the project activity					
A.1.1.	Does the used project title clearly enable to identify the unique CDM activity?		The project title enables a clear identification of the project activity.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.1.2.	Are there an indication of a revision number and the date of the revision?		The revision number and date of the revision are correctly indicated.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.1.3.	Is this in consistency with the time line of the project's history?		The indicated revision date is in line with the project's history.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.2. Description of the project activity					
A.2.1.	Is the description delivering a transparent overview of the project activities?		<u>Clarification Request #1:</u> In principle the project delivers a transparent overview of the envisioned activity. But information is missing whether the five creeks will be completely diverted to the reservoir or a minimum will be maintained in the original riverbeds.	CR 1	<input checked="" type="checkbox"/>
A.2.2.	What proofs are available evidencing that information provided in the description is in compliance with actual situation or planning?		During the on-site visit the run of the creeks has been inspected before starting any activities on diverting the creeks. Furthermore the detail planning and engineering documents have been submitted to the assessment team. Plant data on historic generation as well as the hydrological situation has been submitted and scrutinized.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.2.3.	Is the information provided by these proofs consistent with the information provided by the PDD?		The information on the project activity as checked is consistent with the data presented by the PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
A.2.4. Is all information provided in consistency with details provided by further chapters of the PDD?		<u>Clarification Request #2:</u> While in chapter A.2 an estimated figure for the increase of the annual electricity generation of approximately 36,900 MWh is given, in later sections and in the calculation for the estimated emission reductions a value of 47,435 MWh is applied. It is necessary to clarify this inconsistency.	CR 2	<input checked="" type="checkbox"/>
A.3. Project participants				
A.3.1. Is the form required for the indication of project participants correctly applied?		<u>Clarification Request #3:</u> It is indicated that The Netherlands is only indirectly involved and SenterNovem is considered as private project participant. Due to our experience the CERUPT program acquires directly certified emission reduction for the Dutch account. Hence a proof should be provided that The Netherlands are not considered as project participant or the PDD should be revised accordingly.	CR 3	<input checked="" type="checkbox"/>
A.3.2. Is the participation of all listed entities or Parties confirmed by each of them?		<u>Clarification Request #4:</u> Since pre-validation, which was performed for proofing the compliance with the CERUPT program, TÜV SÜD never received any confirmation that the project was finally contracted by SenterNovem. It is necessary to receive a written confirmation by SenterNovem, that they should be considered as project participant.	CR 4	<input checked="" type="checkbox"/>
A.3.3. Is all information provided in consistency with details provided by further chapters of the PDD (in particular annex 1)?		The PDD as submitted for the global stakeholder process shows consistency with regard to the information as provided by section A.3 and annex 1.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.3.4. Did the Parties involved (directly and indirectly) ratify the Kyoto Protocol and do they have a DNA in place?		Panama and The Netherlands ratified the Kyoto Protocol and do have a DNA in place.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
A.4. Technical description of the project activity				
<i>A.4.1. Location of the project activity</i>				
A.4.1.1. Does the information provided on the location of the project activity allow for a clear identification of the site(s)?		The information on the location and its spatial extent is correctly given and allows a clear identification.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.1.2. How is it ensured, that the project proponents can implement the project at this site (ownership, licenses, contracts etc.)?		EGE Fortuna holds the required titles to implemented and to operate the project activity.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>A.4.2. Category(ies) of project activity</i>				
A.4.2.1. To which category(ies) is the project activity belonging to? Is it correctly identified and indicated?		It is correctly indicated that the project is belonging to scope 1, energy industries.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>A.4.3. Technology to be employed by the project activity</i>				
A.4.3.1. Does the project design engineering reflect current good practices?		The diversion of creeks into an existing reservoir does more or less not require any additional technology to be installed, besides the creation of channels. Compared to the creation of new reservoirs or a run-of-the-river power plant this activity should lead to less impacts on the environment and could hence considered as good practice.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.3.2. Does the description of the technology to be applied provide sufficient and transparent input to evaluate its impact on the greenhouse gas balance?		The description is sufficient to evaluate the impact on greenhouse gas emissions.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.3.3. Is there any technology transfer from annex-I-countries to the host country(ies) required by the implementation of the project activity?		No technology transfer is required.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
A.4.3.4. Is the technology implemented by the project activity environmentally safe?		See comment in A.4.3.1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.3.5. Is all information provided in compliance with actual situation or planning as available by the project participants?		The information provided is in compliance with the actual situation and the approved planning.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.3.6. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?		Not applicable for this kind of activity		
A.4.3.7. Is the project technology likely to be substituted by other or more efficient technologies within the project period?		Not applicable for this kind of activity		
A.4.3.8. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?		No further training and maintenance efforts are required.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.3.9. Does the project make provisions for meeting training and maintenance needs?		See above	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.3.10. Is a schedule available on the implementation of the project and are there any risks for delays?		A schedule is available. The project will start operation soon. Hence almost no risks for delays exist.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.4. Estimated amount of emission reductions over the chosen crediting period				
A.4.4.1. Is the form required for the indication of projected emission reductions correctly applied?		The form is correctly applied.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
A.4.4.2. Are the figures provided consistent with other data presented by the PDD?		Besides the inconsistency as identified under CR2 (A.2.4.).	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD
A.4.5. Public funding of the project activity				
A.4.5.1. Is all information on public funding provided in compliance with actual situation or planning as available by the project participants?		<u>Clarification Request #5:</u> The information available for TÜV SÜD on financing (business plan) is referring to the time of pre-validation, i.e. is already several years old. Since that time changes might have occurred. It is necessary to provide updated evidence that no official development assistance is included in the financing of the project.	CR 5	<input checked="" type="checkbox"/>
A.4.5.2. Is all information provided in consistency with details provided by further chapters of the PDD (in particular annex 2)?		The PDD as submitted for the global stakeholder process shows consistency with regard to the information as provided by section A.4.5 and annex 1.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B. Application of a baseline and monitoring methodology				
B.1. Title and reference of the approved baseline and monitoring methodology				
B.1.1. Are reference number, version number, and title of the baseline and monitoring methodology clearly indicated?		All three items are clearly indicated.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.1.2. Is the applied version the most recent one or still applicable?		The applied version is the most recent one.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.2. Justification of the choice of the methodology and why it is applicable to the project activity				
B.2.1. Is the applied methodology considered being the most appropriate one?		The applied methodology is considered as the only applicable only, as no other methodology is applicable to capacity additions by modifications of existing facilities.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Fill in the required amount of sub checklists for applicability criteria as given by the methodology applied and comment at least every line answered with "No"				

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CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS	PDD in GSP	Final PDD										
B.2.2. Criterion 1: Type of capacity addition by renewable energy		<table><tr><th>Applicability checklist</th><th>Yes / No</th></tr><tr><td>Criterion discussed by the PDD?</td><td>Yes</td></tr><tr><td>Compliance provable?</td><td>Yes</td></tr><tr><td>Evidences provided by the PDD?</td><td>Yes</td></tr><tr><td>Compliance verified?</td><td>Yes</td></tr></table> <p>The activity consists of consists of an electricity capacity addition from a hydro power project with existing reservoir where the volume of the reservoir is not increased. This type of activity is included in the list of applicable scenarios for renewable energy generation.</p>	Applicability checklist	Yes / No	Criterion discussed by the PDD?	Yes	Compliance provable?	Yes	Evidences provided by the PDD?	Yes	Compliance verified?	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Applicability checklist	Yes / No													
Criterion discussed by the PDD?	Yes													
Compliance provable?	Yes													
Evidences provided by the PDD?	Yes													
Compliance verified?	Yes													
B.2.3. Criterion 2: Exclusion of fuel switching activities		<table><tr><th>Applicability checklist</th><th>Yes / No</th></tr><tr><td>Criterion discussed by the PDD?</td><td>Yes</td></tr><tr><td>Compliance provable?</td><td>Yes</td></tr><tr><td>Evidences provided by the PDD?</td><td>Yes</td></tr><tr><td>Compliance verified?</td><td>Yes</td></tr></table>	Applicability checklist	Yes / No	Criterion discussed by the PDD?	Yes	Compliance provable?	Yes	Evidences provided by the PDD?	Yes	Compliance verified?	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Applicability checklist	Yes / No													
Criterion discussed by the PDD?	Yes													
Compliance provable?	Yes													
Evidences provided by the PDD?	Yes													
Compliance verified?	Yes													
B.2.4. Criterion 3: Defined electricity grid boundaries		<table><tr><th>Applicability checklist</th><th>Yes / No</th></tr><tr><td>Criterion discussed by the PDD?</td><td>Yes</td></tr><tr><td>Compliance provable?</td><td>Yes</td></tr><tr><td>Evidences provided by the PDD?</td><td>Yes</td></tr><tr><td>Compliance verified?</td><td>Yes</td></tr></table>	Applicability checklist	Yes / No	Criterion discussed by the PDD?	Yes	Compliance provable?	Yes	Evidences provided by the PDD?	Yes	Compliance verified?	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Applicability checklist	Yes / No													
Criterion discussed by the PDD?	Yes													
Compliance provable?	Yes													
Evidences provided by the PDD?	Yes													
Compliance verified?	Yes													
B.2.5. Criterion 4: Approved inclusion in other methodologies (if applied only)		Not applicable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										

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B.3. Description of the sources and gases included in the project boundary															
Fill in the required amount of sub checklists for sources and gases as given by the methodology applied and comment at least every line answered with “No”															
B.3.1.	Source: Fugitive Emissions from non-condensable gases (geothermal activities only) Gas(es): CO ₂ , CH ₄ Type: Project Emissions		Not applicable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
B.3.2.	Source: Emissions from combustion of fossil fuels (geothermal activities only) Gas(es): CO ₂ Type: Project Emissions		Not applicable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
B.3.3.	Source: Emissions from the reservoir (new hydroelectric activities only) Gas(es): CO ₂ , CH ₄ Type: Project Emissions		Not applicable, as the reservoir is not increased.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
B.3.4.	Source: Emissions from electricity generation in fossil fuel fired power plants of the project electricity system Gas(es): CO ₂ Type: Baseline Emissions		<table><tr><td>Boundary checklist</td><td>Yes / No</td></tr><tr><td>Source and gas(es) discussed by the PDD?</td><td>Yes</td></tr><tr><td>Inclusion / exclusion justified?</td><td>Yes</td></tr><tr><td>Explanation / Justification sufficient?</td><td>Yes</td></tr><tr><td>Consistency with monitoring plan?</td><td>Yes</td></tr></table>	Boundary checklist	Yes / No	Source and gas(es) discussed by the PDD?	Yes	Inclusion / exclusion justified?	Yes	Explanation / Justification sufficient?	Yes	Consistency with monitoring plan?	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Boundary checklist	Yes / No														
Source and gas(es) discussed by the PDD?	Yes														
Inclusion / exclusion justified?	Yes														
Explanation / Justification sufficient?	Yes														
Consistency with monitoring plan?	Yes														
B.3.5.	Source: Emissions from electricity generation in fossil fuel fired power plants of any con-		<table><tr><td>Boundary checklist</td><td>Yes / No</td></tr><tr><td>Source and gas(es) discussed by the PDD?</td><td>No</td></tr></table>	Boundary checklist	Yes / No	Source and gas(es) discussed by the PDD?	No	CAR 1	<input checked="" type="checkbox"/>						
Boundary checklist	Yes / No														
Source and gas(es) discussed by the PDD?	No														

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nected electricity system Gas(es): CO ₂ Type: Baseline Emissions			<table><tr><td>Inclusion / exclusion justified?</td><td>No</td></tr><tr><td>Explanation / Justification sufficient?</td><td>No</td></tr><tr><td>Consistency with monitoring plan?</td><td>No</td></tr></table> <u>Corrective Action Request #1:</u> There is no discussion on the extent of the project electricity grid, any connection to other systems or the necessity of the consideration of import within the boundary discussion of the PDD.		Inclusion / exclusion justified?	No	Explanation / Justification sufficient?	No	Consistency with monitoring plan?	No						
Inclusion / exclusion justified?	No															
Explanation / Justification sufficient?	No															
Consistency with monitoring plan?	No															
B.3.6.	Source: Emissions from electricity generation in fossil fuel fired power plants of imported electricity Gas(es): CO ₂ Type: Baseline Emissions		<table><tr><td>Boundary checklist</td><td>Yes / No</td></tr><tr><td>Source and gas(es) discussed by the PDD?</td><td>No</td></tr><tr><td>Inclusion / exclusion justified?</td><td>No</td></tr><tr><td>Explanation / Justification sufficient?</td><td>No</td></tr><tr><td>Consistency with monitoring plan?</td><td>No</td></tr></table> See CAR1		Boundary checklist	Yes / No	Source and gas(es) discussed by the PDD?	No	Inclusion / exclusion justified?	No	Explanation / Justification sufficient?	No	Consistency with monitoring plan?	No	See CAR 1	<input checked="" type="checkbox"/>
Boundary checklist	Yes / No															
Source and gas(es) discussed by the PDD?	No															
Inclusion / exclusion justified?	No															
Explanation / Justification sufficient?	No															
Consistency with monitoring plan?	No															
B.3.7.	Do the spatial and technological boundaries as verified on-site comply with the discussion provided by the PDD?		The indented boundaries do comply with the situation as discussed. But this is not correctly presented under this section. See CAR 1		See CAR 1	<input checked="" type="checkbox"/>										
B.4. Description of how the baseline scenario is identified and description of the identified baseline scenario																
B.4.1.	Is it clearly described that the baseline is represented by the combined margin of the grid the activity will be connected to?		It is clearly indicted by the PDD that the baseline is represented by the Combined Margin. Furthermore a discussion is presented on the impact of additional flow that might result in spill-over. The conclusion that the average period of having spill-over conditions is less than 1 % of the generation period, and any shift in that, will not lead to an overestimation of emission reduction is suitable. When having spill-over any additional water-flow cannot be used		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										

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			for electricity generation, hence this situation will rather lead to a decrease of the emission reduction potential of the project activity.		
B.4.2.	In case of any modification or retrofit of existing facilities: Is data available to determine the historic production level?		Data on the historic production level of the existing installation is available.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.4.3.	In case of any modification or retrofit of existing facilities: Have conservative assumptions been applied in order to estimate the point in time when the existing equipment needs to be replaced?		<u>Corrective Action Request #2:</u> There is no indication how the project participants estimated the remaining lifetime of the existing installation or the point in time when the existing equipment would be replaced or retrofitted. Transparent information on age of equipment and assumptions concerning future developments should be provided.	CAR 2	<input checked="" type="checkbox"/>
B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity (assessment and demonstration of additionality):					
B.5.1.	In case of applying step 0 of the additionality tool: Is evidence provided, that the project's starting date is after Jan 01, 2000 and before Nov 18, 2005?		Not applicable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.2.	In case of applying step 0 of the additionality tool: Is evidence provided, that CDM has been considered seriously in the decision to proceed with the project activity?		Not applicable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.3.	Have realistic and credible alternatives been identified providing comparable outputs or services? (step 1a)		The PDD only refers to the continuation of the existing situation and the project activity without CDM. <u>Clarification Request #6:</u> It should be explained why no other technical applications have been considered that would improve the efficiency of power generation of Fortuna hydropower plant by a similar amount without	CR 6	<input checked="" type="checkbox"/>

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			adding water flow to the reservoir.		
B.5.4.	Is the project activity without CDM included in these alternatives? (step 1a)		The project activity is correctly included.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.5.	Is a discussion provided for all identified alternatives concerning the compliance with applicable laws and regulations? (step 1b)		It is clearly stated that both alternatives comply with applicable laws and regulations. This statement can be confirmed.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.6.	In case the PDD argues that specific laws are not enforced in the country or region: Is evidence available concerning that statement? (step 1b)		Not applicable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.7.	In case of applying step 2 of the additionality tool: Is the analysis method appropriately identified (step 2a)?		Not applicable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.8.	In case of Option I (simple cost analysis): Is demonstrated that the activity produces no economic benefits other than CDM income?		Not applicable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.9.	In case of Option II (investment comparison analysis): Is the most suitable financial indicator clearly identified?		Not applicable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.10.	In case of Option III (benchmark analysis): Is the most suitable financial indicator clearly identified?		Not applicable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.11.	In case of Option II or Option III: Is the calculation of financial figures for this indicator correctly done for all alternatives and the project activity?		Not applicable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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B.5.12. In case of Option II or Option III: Is the analysis presented in a transparent manner providing public available proofs for data?		Not applicable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.13. In case of applying step 3 (barrier analysis): Is a complete list of barriers developed that prevent alternatives to occur?		The project refers to a transaction cost barrier and an investment cost barrier. These two barriers are discussed under step 3. From the perspective of the project participants this list is considered as complete.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.14. In case of applying step 3 (barrier analysis): Is transparent and documented evidence provided on the existence and significance of these barriers?		<u>Corrective Action Request #3:</u> TÜV SÜD has not received the revised business plan referred in the PDD. Furthermore it is necessary to provide any proof on the indicated price for capacity addition of approximately 500 US\$/kW for fossil fuel based projects. Both evidences should be considered to be uploaded with the request for registration following the recent EB guidance.	CAR 3	<input checked="" type="checkbox"/>
B.5.15. In case of applying step 3 (barrier analysis): Is it transparently shown that at least one of the alternatives is not prevented by the identified barriers?		It is shown that the continuation of the recent situation would not face these barriers.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.16. Have other activities in the host country / region similar to the project activity been identified and are these activities appropriately analyzed by the PDD (step 4a)?		No other similar activities have been identified in the host country.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.17. If similar activities are occurring: Is it demonstrated that in spite these similarities the project activity would not be implemented without the CDM (step 4b)?		Not applicable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.5.18. Is it appropriately explained how the approval of the project activity will alleviate		This section provides three arguments, but the third one does not address the barriers as indicated above. Nonetheless the first two	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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the economic and financial hurdles or other identified barriers (step 5)?		arguments do sufficiently explain why the approval will help to overcome the two indicated barriers.		
B.6. Emissions reductions				
<i>B.6.1. Explanation of methodological choices</i>				
B.6.1.1. Is it explained how the procedures provided by the methodology are applied by the proposed project activity?		<p>The PDD clearly describes which options offered by ACM0002, version 6, have been selected for determining the emission reductions. For the first crediting period the Operating Margin (OM) is calculated ex-ante by method (d), average OM. Evidence has been provided that this option is applicable because low cost/must run resources constitute to more than 50 % of the electricity grid generation.</p> <p>The Build Margin (BM) is also calculated ex-ante on the basis of the most recent five power plants that have been built.</p> <p>In result a Combined Margin (CM) is determined using the default weights of 0.5.</p> <p><u>Clarification Request #7:</u></p> <p>The calculations for OM and BM do not use the fuel consumption of each power plant but a conservative figure for the efficiency of power plants. These figures were derived in compliance with a decision by EB-22 on a request for deviation concerning the application of AM0015 (similar approach for CM as in ACM0002. As a decision by the EB on requests for deviations is not transferable automatically - and in this special context is even provided for another host country's environment – it is either required to request for the acceptance of the deviation specifically for this case or to acquire the necessary data in accordance with the applied methodology. The project proponents should provide information whether these data might be available or not.</p>	CR 7	<input checked="" type="checkbox"/>

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B.6.1.2. Is every selection of options offered by the methodology correctly justified and this justification in line with the situation verified on-site?		The selection of options is sufficiently justified.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.1.3. Are formulae required for the determination of project emissions correctly presented, enabling a complete identification of parameter to be used and / or monitored?		<u>Corrective Action Request #4:</u> The PDD does not provide formulae or equations for baseline emissions, project emissions or leakage emissions under section B.6.1 as required by the guidance for completing the CDM-PDD. Instead of that the equations are presented under section B.6.3, only. It is necessary to include the equations applied under this section. By section B.6.3 it should be demonstrated how these equations are applied leading to the presented results.	CAR 4	<input checked="" type="checkbox"/>
B.6.1.4. Are formulae required for the determination of baseline emissions correctly presented, enabling a complete identification of parameter to be used and / or monitored?		See CAR4	See CAR 4	<input checked="" type="checkbox"/>
B.6.1.5. Is the choice of options to determine the emissions factor (OM, BM) justified in a suitable and transparent manner?		The selection of options is sufficiently justified.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.1.6. In case of alternative weighing factors for the Combined Margin: Is the quantification of the alternative weighing factor justified in a suitable and transparent manner?		The Combined Margin (CM) is determined using the default weights of 0.5.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.6.1.7. In case of alternative weighing factors for the Combined Margin: Is the guidance for the PDD concerning the acceptability of alternative weights considered in the discussion?		Not applicable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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B.6.1.8. Are formulae required for the determination of leakage emissions correctly presented, enabling a complete identification of parameter to be used and / or monitored?		Not applicable, as no leakage emissions have to be considered by this project activity.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								
B.6.1.9. Are formulae required for the determination of emission reductions correctly presented?		See CAR4	See CAR 4	<input checked="" type="checkbox"/>								
B.6.2. Data and parameters that are available at validation												
B.6.2.1. Is the list of parameters presented by chapter B.6.2 considered to be complete with regard to the requirements of the applied methodology?		<p>The list of data presented by section B.6.2 is not complete as most data claimed to be calculated ex-ante are not presented. Additionally information is provided on parameter used within the estimation of the emission reductions (flow of existing water resources and of additions). These tables are useful but not necessarily required under this section (more within the discussion of emission reduction estimations). Nonetheless it should be acceptable to remain these tables within this section.</p> <p><u>Corrective Action Request #5:</u></p> <p>It is necessary to provide information on all data that is determined ex-ante under within section B.6.2.</p>	CAR 5	<input checked="" type="checkbox"/>								
B.6.2.2. Is the choice of ex-ante or ex-post vintage of OM and BM factors clearly specified within the PDD?		The choice of ex-ante vintage is clearly specified.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								
Fill in the required amount of sub checklists for monitoring parameter and comment any line answered with “No”												
B.6.2.3. Parameter Title: Annual electricity supplied to the grid prior to retrofit (applicable only for retrofit and modification activities)		<table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description?</td><td>Yes</td></tr></table>	Data Checklist	Yes / No	Title in line with methodology?	Yes	Data unit correctly expressed?	Yes	Appropriate description?	Yes	CAR 6	<input checked="" type="checkbox"/>
Data Checklist	Yes / No											
Title in line with methodology?	Yes											
Data unit correctly expressed?	Yes											
Appropriate description?	Yes											

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		<table><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided?</td><td>Yes</td></tr><tr><td>Has this value been verified?</td><td>Yes</td></tr><tr><td>Choice of data correctly justified?</td><td>No</td></tr><tr><td>Measurement method correctly described?</td><td>No</td></tr></table> <p>The PDD is using 6 years (2000 – 2005) for averaging the annual electricity generation by Fortuna Power Plant. Although there is no explanation, why this period has been chosen, this is deemed to be acceptable as firstly it exceeds the required minimum period of 5 years and secondly the eldest generation data is delivering the highest value. Hence the inclusion of 2000 data is delivering a conservative approach.</p> <p><u>Corrective Action Request #6:</u></p> <p>It is necessary to provide information on the electricity generation measurement (net or gross production, metering equipment) within the PDD.</p>	Source clearly referenced?	Yes	Correct value provided?	Yes	Has this value been verified?	Yes	Choice of data correctly justified?	No	Measurement method correctly described?	No											
Source clearly referenced?	Yes																						
Correct value provided?	Yes																						
Has this value been verified?	Yes																						
Choice of data correctly justified?	No																						
Measurement method correctly described?	No																						
B.6.2.4. Parameter Title: Point in time at which generation equipment will be replaced or retrofitted (applicable only for retrofit and modification activities)		<table><tr><td>Data Checklist</td><td>Yes / No</td></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided?</td><td>?</td></tr><tr><td>Has this value been verified?</td><td>No</td></tr><tr><td>Choice of data correctly justified?</td><td>No</td></tr><tr><td>Measurement method correctly described?</td><td>No</td></tr></table> <p><u>Corrective Action Request #7:</u></p> <p>It is not described at all how the plant operator comes to the conclusion that the recent situation will continue without the project</p>	Data Checklist	Yes / No	Title in line with methodology?	Yes	Data unit correctly expressed?	Yes	Appropriate description?	Yes	Source clearly referenced?	Yes	Correct value provided?	?	Has this value been verified?	No	Choice of data correctly justified?	No	Measurement method correctly described?	No		CAR 7	<input checked="" type="checkbox"/>
Data Checklist	Yes / No																						
Title in line with methodology?	Yes																						
Data unit correctly expressed?	Yes																						
Appropriate description?	Yes																						
Source clearly referenced?	Yes																						
Correct value provided?	?																						
Has this value been verified?	No																						
Choice of data correctly justified?	No																						
Measurement method correctly described?	No																						

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		activity for further 30 years. Such information should be provided by the PDD in a transparent manner.																				
B.6.2.5. Parameter Title: Emission factor of the grid (CM)		<p>Although this parameter is determined ex-ante it is presented within the PDD by section B.7.1. Hence the following checklist is applied for the information presented there, while it is included in this discussion of this validation protocol.</p> <table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided?</td><td>See CR7</td></tr><tr><td>Has this value been verified?</td><td>See CR7</td></tr><tr><td>Choice of data correctly justified?</td><td>See CR7</td></tr><tr><td>Measurement method correctly described?</td><td>See CR7</td></tr></table> <p><u>Corrective Action Request #8:</u></p> <p>This parameter has to be included in the discussion of section B.6.2 instead of B.7.1 as it is fixed ex-ante.</p> <p><u>Clarification Request #8:</u></p> <p>The presented calculation of the emission factor is based on date of the year 2002 to 2004. It should be discussed whether more recent data is available or not.</p>	Data Checklist	Yes / No	Title in line with methodology?	Yes	Data unit correctly expressed?	Yes	Appropriate description?	Yes	Source clearly referenced?	Yes	Correct value provided?	See CR7	Has this value been verified?	See CR7	Choice of data correctly justified?	See CR7	Measurement method correctly described?	See CR7	CAR 8 CR 8 See CR7	<input checked="" type="checkbox"/>
Data Checklist	Yes / No																					
Title in line with methodology?	Yes																					
Data unit correctly expressed?	Yes																					
Appropriate description?	Yes																					
Source clearly referenced?	Yes																					
Correct value provided?	See CR7																					
Has this value been verified?	See CR7																					
Choice of data correctly justified?	See CR7																					
Measurement method correctly described?	See CR7																					
B.6.2.6. Parameter Title: Operating margin (OM) emission factor of the grid		Although this parameter is determined ex-ante it is presented within the PDD by section B.7.1. Hence the following checklist is applied for the information presented there, while it is included in	CAR 9 See	<input checked="" type="checkbox"/>																		

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		<p>this discussion of this validation protocol.</p> <table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided?</td><td>See CR7</td></tr><tr><td>Has this value been verified?</td><td>See CR7</td></tr><tr><td>Choice of data correctly justified?</td><td>See CR7</td></tr><tr><td>Measurement method correctly described?</td><td>See CR7</td></tr></table> <p><u>Corrective Action Request #9:</u></p> <p>This parameter has to be included in the discussion of section B.6.2 instead of B.7.1 as it is fixed ex-ante.</p>	Data Checklist	Yes / No	Title in line with methodology?	Yes	Data unit correctly expressed?	Yes	Appropriate description?	Yes	Source clearly referenced?	Yes	Correct value provided?	See CR7	Has this value been verified?	See CR7	Choice of data correctly justified?	See CR7	Measurement method correctly described?	See CR7	CR7 See CR8	
Data Checklist	Yes / No																					
Title in line with methodology?	Yes																					
Data unit correctly expressed?	Yes																					
Appropriate description?	Yes																					
Source clearly referenced?	Yes																					
Correct value provided?	See CR7																					
Has this value been verified?	See CR7																					
Choice of data correctly justified?	See CR7																					
Measurement method correctly described?	See CR7																					
B.6.2.7. Parameter Title: Build margin (BM) emission factor of the grid		<p>Although this parameter is determined ex-ante it is presented within the PDD by section B.7.1. Hence the following checklist is applied for the information presented there, while it is included in this discussion of this validation protocol.</p> <table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided?</td><td>See CR7</td></tr><tr><td>Has this value been verified?</td><td>See CR7</td></tr><tr><td>Choice of data correctly justified?</td><td>See CR7</td></tr><tr><td>Measurement method correctly described?</td><td>See CR7</td></tr></table>	Data Checklist	Yes / No	Title in line with methodology?	Yes	Data unit correctly expressed?	Yes	Appropriate description?	Yes	Source clearly referenced?	Yes	Correct value provided?	See CR7	Has this value been verified?	See CR7	Choice of data correctly justified?	See CR7	Measurement method correctly described?	See CR7	CAR 10 See CR7 See CR8	<input checked="" type="checkbox"/>
Data Checklist	Yes / No																					
Title in line with methodology?	Yes																					
Data unit correctly expressed?	Yes																					
Appropriate description?	Yes																					
Source clearly referenced?	Yes																					
Correct value provided?	See CR7																					
Has this value been verified?	See CR7																					
Choice of data correctly justified?	See CR7																					
Measurement method correctly described?	See CR7																					

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		<p><u>Corrective Action Request #10:</u></p> <p>This parameter has to be included in the discussion of section B.6.2 instead of B.7.1 as it is fixed ex-ante.</p>																				
B.6.2.8. Parameter Title: fuel consumption of each power source		<table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>No</td></tr><tr><td>Data unit correctly expressed?</td><td>No</td></tr><tr><td>Appropriate description?</td><td>No</td></tr><tr><td>Source clearly referenced?</td><td>No</td></tr><tr><td>Correct value provided?</td><td>See CR7</td></tr><tr><td>Has this value been verified?</td><td>See CR7</td></tr><tr><td>Choice of data correctly justified?</td><td>See CR7</td></tr><tr><td>Measurement method correctly described?</td><td>See CR7</td></tr></table> <p><u>Corrective Action Request #11:</u></p> <p>This parameter is neither discussed in this section nor in section B.7.2. Especially the treatment as described by CR7 should lead to an extensive discussion under this section. As the grid factor is calculated ex-ante it is necessary including this discussion in section B.6.2.</p>	Data Checklist	Yes / No	Title in line with methodology?	No	Data unit correctly expressed?	No	Appropriate description?	No	Source clearly referenced?	No	Correct value provided?	See CR7	Has this value been verified?	See CR7	Choice of data correctly justified?	See CR7	Measurement method correctly described?	See CR7	CAR 11 See CR7	☑
Data Checklist	Yes / No																					
Title in line with methodology?	No																					
Data unit correctly expressed?	No																					
Appropriate description?	No																					
Source clearly referenced?	No																					
Correct value provided?	See CR7																					
Has this value been verified?	See CR7																					
Choice of data correctly justified?	See CR7																					
Measurement method correctly described?	See CR7																					
B.6.2.9. Parameter Title: emission coefficient of each fuel		<table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>No</td></tr><tr><td>Data unit correctly expressed?</td><td>No</td></tr><tr><td>Appropriate description?</td><td>No</td></tr><tr><td>Source clearly referenced?</td><td>No</td></tr><tr><td>Correct value provided?</td><td>tbd</td></tr></table>	Data Checklist	Yes / No	Title in line with methodology?	No	Data unit correctly expressed?	No	Appropriate description?	No	Source clearly referenced?	No	Correct value provided?	tbd	CAR 12	☑						
Data Checklist	Yes / No																					
Title in line with methodology?	No																					
Data unit correctly expressed?	No																					
Appropriate description?	No																					
Source clearly referenced?	No																					
Correct value provided?	tbd																					

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		<table><tr><td>Has this value been verified?</td><td>tbd</td></tr><tr><td>Choice of data correctly justified?</td><td>tbd</td></tr><tr><td>Measurement method correctly described?</td><td>tbd</td></tr></table> <p><u>Corrective Action Request #12:</u></p> <p>This parameter is not discussed at all besides the information provided in the emission reduction estimations. It is necessary to include this parameter under this section.</p>		Has this value been verified?	tbd	Choice of data correctly justified?	tbd	Measurement method correctly described?	tbd														
Has this value been verified?	tbd																						
Choice of data correctly justified?	tbd																						
Measurement method correctly described?	tbd																						
B.6.2.10. Parameter Title: electricity generation of each power source		<table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>No</td></tr><tr><td>Data unit correctly expressed?</td><td>No</td></tr><tr><td>Appropriate description?</td><td>No</td></tr><tr><td>Source clearly referenced?</td><td>No</td></tr><tr><td>Correct value provided?</td><td>Yes</td></tr><tr><td>Has this value been verified?</td><td>Yes</td></tr><tr><td>Choice of data correctly justified?</td><td>tbd</td></tr><tr><td>Measurement method correctly described?</td><td>tbd</td></tr></table> <p><u>Corrective Action Request #13:</u></p> <p>This parameter is not discussed at all besides the information provided in the emission reduction estimations. It is necessary to include this parameter under this section.</p>		Data Checklist	Yes / No	Title in line with methodology?	No	Data unit correctly expressed?	No	Appropriate description?	No	Source clearly referenced?	No	Correct value provided?	Yes	Has this value been verified?	Yes	Choice of data correctly justified?	tbd	Measurement method correctly described?	tbd	CAR 13	☑
Data Checklist	Yes / No																						
Title in line with methodology?	No																						
Data unit correctly expressed?	No																						
Appropriate description?	No																						
Source clearly referenced?	No																						
Correct value provided?	Yes																						
Has this value been verified?	Yes																						
Choice of data correctly justified?	tbd																						
Measurement method correctly described?	tbd																						
B.6.2.11. Parameter Title: surface area of full reservoir level (for new hydroelectric activities only)		Not applicable, as this is not requiring any change in the existing reservoir.		☑	☑																		

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B.6.2.12. Parameter Title: fraction of time with low costs /must run plant at the margin (for simple adjusted OM only)		Not applicable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>																		
B.6.2.13. Parameter Title: electricity imports		<table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>No</td></tr><tr><td>Data unit correctly expressed?</td><td>No</td></tr><tr><td>Appropriate description?</td><td>No</td></tr><tr><td>Source clearly referenced?</td><td>No</td></tr><tr><td>Correct value provided?</td><td>No</td></tr><tr><td>Has this value been verified?</td><td>No</td></tr><tr><td>Choice of data correctly justified?</td><td>No</td></tr><tr><td>Measurement method correctly described?</td><td>No</td></tr></table> <p><u>Corrective Action Request #14:</u></p> <p>This parameter is not discussed at all besides the information provided in the emission reduction estimations. It is necessary to include this parameter under this section.</p>	Data Checklist	Yes / No	Title in line with methodology?	No	Data unit correctly expressed?	No	Appropriate description?	No	Source clearly referenced?	No	Correct value provided?	No	Has this value been verified?	No	Choice of data correctly justified?	No	Measurement method correctly described?	No	CAR 14	<input checked="" type="checkbox"/>
Data Checklist	Yes / No																					
Title in line with methodology?	No																					
Data unit correctly expressed?	No																					
Appropriate description?	No																					
Source clearly referenced?	No																					
Correct value provided?	No																					
Has this value been verified?	No																					
Choice of data correctly justified?	No																					
Measurement method correctly described?	No																					
B.6.2.14. Parameter Title: CO ₂ emission coefficient of fuels used in connected grids		<table><tr><th>Data Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>No</td></tr><tr><td>Data unit correctly expressed?</td><td>No</td></tr><tr><td>Appropriate description?</td><td>No</td></tr><tr><td>Source clearly referenced?</td><td>No</td></tr><tr><td>Correct value provided?</td><td>No</td></tr><tr><td>Has this value been verified?</td><td>No</td></tr></table>	Data Checklist	Yes / No	Title in line with methodology?	No	Data unit correctly expressed?	No	Appropriate description?	No	Source clearly referenced?	No	Correct value provided?	No	Has this value been verified?	No	CAR 15	<input checked="" type="checkbox"/>				
Data Checklist	Yes / No																					
Title in line with methodology?	No																					
Data unit correctly expressed?	No																					
Appropriate description?	No																					
Source clearly referenced?	No																					
Correct value provided?	No																					
Has this value been verified?	No																					

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CHECKLIST TOPIC / QUESTION	Ref.	COMMENTS		PDD in GSP	Final PDD				
		<table><tr><td>Choice of data correctly justified?</td><td>No</td></tr><tr><td>Measurement method correctly described?</td><td>No</td></tr></table>	Choice of data correctly justified?	No	Measurement method correctly described?	No			
Choice of data correctly justified?	No								
Measurement method correctly described?	No								
		<u>Corrective Action Request #15:</u> This parameter is not discussed at all besides the information provided in the emission reduction estimations. It is necessary to include this parameter under this section.							
B.6.3. Ex-ante calculation of emission reductions									
B.6.3.1. Is the projection based on the same procedures as used for later monitoring?		The projection is based on the same algorithms that will be used in later monitoring.		☑	☑				
B.6.3.2. Are the GHG calculations documented in a complete and transparent manner?		Besides the fact on using conservative capacities instead of real fuel consumption (see CR7), the calculations are provided in a transparent manner.		☑	☑				
B.6.3.3. Is the data provided under this section in consistency with data as presented by other chapters of the PDD?		All data as presented is in consistency with other parts of the PDD and submitted input data. <u>Corrective Action Request #16:</u> In figures in table 2 are resulting from an incorrect transfer of generation data provided by the annual reports. The figure for the year 2000 belongs to 2005, the one for 2001 to 2004 and so on. Nonetheless this has no impact on the final result as only the average value is required.		CAR 16	☑				
B.6.4. Summary of the ex-ante estimation of emission reductions									
B.6.4.1. Will the project result in fewer GHG emissions than the baseline scenario?		<u>Clarification Request #9:</u> The project will result in reduced greenhouse gas emissions. Nonetheless the way the emission reductions are calculated there might be some years with low level of rainfall where the equations		CR 9	☑				

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		applied may result in less energy generation than the historic average and therefore in negative emission reductions. It should be clarified how such situations will be dealt in compliance with existing EB guidance on negative emission reductions.														
B.6.4.2. Is the form/table required for the indication of projected emission reductions correctly applied?		The form is applied in a correct manner.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>												
B.6.4.3. Is the projection in line with the envisioned time schedule for the project's implementation and the indicated crediting period?		The projection is in line with the envisioned time schedule.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>												
B.6.4.4. Is the data provided under this section in consistency with data as presented by other chapters of the PDD?		Regardless of corrective action requests and clarification requests issued data provided is in consistency throughout the document.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>												
B.7. Application of the monitoring methodology and description of the monitoring plan																
B.7.1. Data and parameters monitored																
B.7.1.1. Is the list of parameters presented by chapter B.7.1 considered to be complete with regard to the requirements of the applied methodology?		<u>Corrective Action Request #17:</u> As stated in the sections above this section present many parameter which are determined ex-ante and therefore should be transferred to section B.6.2.	CAR 17	<input checked="" type="checkbox"/>												
Fill in the required amount of sub checklists for monitoring parameter and comment any line answered with "No"																
B.7.1.2. Parameter Title: Electricity supplied to the grid		<table><tr><th>Monitoring Checklist</th><th>Yes / No</th></tr><tr><td>Title in line with methodology?</td><td>Yes</td></tr><tr><td>Data unit correctly expressed?</td><td>Yes</td></tr><tr><td>Appropriate description?</td><td>Yes</td></tr><tr><td>Source clearly referenced?</td><td>Yes</td></tr><tr><td>Correct value provided for estimation?</td><td>Yes</td></tr></table>	Monitoring Checklist	Yes / No	Title in line with methodology?	Yes	Data unit correctly expressed?	Yes	Appropriate description?	Yes	Source clearly referenced?	Yes	Correct value provided for estimation?	Yes	CAR 18	<input checked="" type="checkbox"/>
Monitoring Checklist	Yes / No															
Title in line with methodology?	Yes															
Data unit correctly expressed?	Yes															
Appropriate description?	Yes															
Source clearly referenced?	Yes															
Correct value provided for estimation?	Yes															

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		Has this value been verified?		Yes		
		Measurement method correctly described?		No		
		Correct reference to standards?		No		
		Indication of accuracy provided?		No		
		QA/QC procedures described?		Partly		
		QA/QC procedures appropriate?		No		
		<u>Corrective Action Request #18:</u> There is no description provided at which point and by which kind and class of equipment the amount of electricity supplied to the grid will be metered. Furthermore information should be provided (either in this table or by annex 4) ensuring that only net electricity generation will be counted for. It is also necessary including more detailed discussions on the frequency of calibrations, the standards applied and data accuracy.				
B.7.1.3. Parameter Title: Quantity of steam produced (for geothermal projects only)		Not applicable			☑	☑
B.7.1.4. Parameter Title: Fraction of CO ₂ in steam produced (for geothermal projects only)		Not applicable			☑	☑
B.7.1.5. Parameter Title: Fraction of CH ₄ in steam produced (for geothermal projects only)		Not applicable			☑	☑
B.7.1.6. Parameter Title: Quantity of steam generated during well testing (for geothermal projects only)		Not applicable			☑	☑

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B.7.1.7. Parameter Title: Fraction of CO ₂ in steam during well testing (for geothermal projects only)		Not applicable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.7.1.8. Parameter Title: Fraction of CH ₄ in steam during well testing (for geothermal projects only)		Not applicable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.7.1.9. Parameter Title: CO ₂ emission coefficient of fuel used by the geothermal plant (for geothermal projects only)		Not applicable	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.7.2. Description of the monitoring plan				
B.7.2.1. Is the operational and management structure clearly described and in compliance with the envisioned situation?		<u>Clarification Request #10:</u> The project does not provide information in the management structure and responsibilities and how this structure will ensure the delivery of high quality data. This situation should be clarified.	CR 10	<input checked="" type="checkbox"/>
B.7.2.2. Are responsibilities and institutional arrangements for data collection and archiving clearly provided?		See CR10	See CR 10	<input checked="" type="checkbox"/>
B.7.2.3. Does the monitoring plan provide current good monitoring practice?		See CR10	See CR 10	<input checked="" type="checkbox"/>
B.7.2.4. If applicable: Does annex 4 provide useful information enabling a better understanding of the envisioned monitoring provisions?		Not applied		<input checked="" type="checkbox"/>

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B.8. Date of completion of the application of the baseline study and monitoring methodology an the name of the responsible person(s)/entity(ies)					
B.8.1.	Is there any indication of a date when determine the baseline?		A date of determining the baseline is correctly indicated	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.8.2.	Is this in consistency with the time line of the PDD history?		This date is in consistency with the time line of the project development.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.8.3.	Is information of the person(s) / entity(ies) responsible for the application of the baseline and monitoring methodology provided in consistency with the actual situation?		The required information is provided.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B.8.4.	Is information provided whether this person / entity is also a project participant?		<u>Clarification Request #11:</u> The entity indicated is not a project participant. It should be clarified why this fact is not clearly expressed in the PDD.	CR 11	<input checked="" type="checkbox"/>
C. Duration of the project activity / crediting period					
C.1. Duration of the project activity					
C.1.1.	Are the project's starting date and operational lifetime clearly defined and reasonable?		Starting date and operational lifetime are clearly defined and reasonable the way they are stated.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
C.2. Choice of the crediting period and related information					
C.2.1.	Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max 7 years with potential for 2 renewals or fixed crediting period of max.		Crediting period for a renewable crediting period will be 7 years.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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10 years)?				
D. Environmental impacts				
D.1. Documentation on the analysis of the environmental impacts, including transboundary impacts				
D.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?		It is clearly expressed that an EIA has been performed due to the national legislation of the host country. The EIA will be provided as annex to the PDD when requesting registration.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?		The EIA is approved by the National Environmental Authority (ANAM).	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.1.3. Will the project create any adverse environmental effects?		Negative impacts are expected only during the construction period. This is correctly presented.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.1.4. Are transboundary environmental impacts considered in the analysis?		No transboundary impacts will occur.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party				
D.2.1. Have identified environmental impacts been addressed in the project design?		Negative impacts are expected only during the construction period. This is correctly presented.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D.2.2. Does the project comply with environmental legislation in the host country?		The project complies with national legislation.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E. Stakeholders' comments				
E.1. Brief description how comments by local stakeholders have been invited and compiled				
E.1.1. Have relevant stakeholders been con-		Stakeholders have been consulted in several meetings.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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sulted?					
E.1.2.	Have appropriate media been used to invite comments by local stakeholders?		Appropriate media have been used.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.1.3.	If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?		The process has been carried out in accordance with national legislation.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.1.4.	Is the undertaken stakeholder process described in a complete and transparent manner?		The process is described in brief, but still in a transparent manner.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.2. Summary of the comments received					
E.2.1.	Is a summary of the stakeholder comments received provided?		A summary of positions, questions and responses is provided.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E.3. Report on how due account was taken of any comments received					
E.3.1.	Has due account been taken of any stakeholder comments received?		A brief list of steps that are planned as response to concerns is provided.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F. Annexes 1 - 4					
Annex 1: Contact Information					
F.1.1.	Is the information provided in consistency with the one given under section A.3?		Under the aspect that The Netherlands are not considered to be directly involved the information is complete. But this has to be clarified due to CR3	See CR 3	<input checked="" type="checkbox"/>
F.1.2.	Is information on all private participants and directly involved Parties presented?		See CR3	See CR 3	<input checked="" type="checkbox"/>

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Annex 2: Information regarding public funding					
F.1.3.	Is the information provided on the inclusion (if any) in consistency with the actual situation proofed by the project participants?		See CR5	See CR 5	<input checked="" type="checkbox"/>
F.1.4.	If necessary: Is an affirmation available that any such funding from Annex-I-countries does not result in a diversion of ODA?		See CR5	See CR 5	<input checked="" type="checkbox"/>
Annex 3: Baseline information					
F.1.5.	If additional background information on baseline data is provided: Is this information in consistency with data presented by other sections of the PDD?		The additional information is in consistency with data presented in earlier sections of the PDD.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F.1.6.	Is the data provided verifiable? Has sufficient evidence been provided to the validation team?		All data presented is verifiable and has been assessed during the validation process.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F.1.7.	Does the additional information substantiate statements given in other sections of the PDD?		Additional information on the Panamanian electricity grid and on the determination of the grid factor is provided.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Annex 4: Monitoring information					
F.1.8.	If additional background information on monitoring is provided: Is this information in consistency with data presented by other sections of the PDD?		Not applied The revised PDD used this section to provide additional information in an appropriate manner		<input checked="" type="checkbox"/>

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F.1.9. Is the information provided verifiable? Has sufficient evidence been provided to the validation team?		Not applied The revised PDD used this section to provide additional information in an appropriate manner		<input checked="" type="checkbox"/>
F.1.10. Do the additional information / procedures substantiate statements given in other sections of the PDD?		Not applied The revised PDD used this section to provide additional information in an appropriate manner		<input checked="" type="checkbox"/>

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Table 2 Resolution of Corrective Action and Clarification Requests

Clarifications and corrective action requests by validation team	Ref. to table 1	Summary of project owner response	Validation team conclusion
<p><u>Clarification Request #1:</u></p> <p>In principle the project delivers a transparent overview of the envisioned activity. But information is missing whether the five creeks will be completely diverted to the reservoir or a minimum will be maintained in the original riverbeds.</p>	A.2.1	<p>The clarification was included in the revised PDD, section A.2: 'A reduction of 10 % for "ecological flow" will be maintained in order to guarantee a minimum level of the original riverbeds of the five additional creeks'. The value was defined by the Panamanian National Environment Authority (ANAM – <i>Autoridad Nacional del Ambiente</i>), as per its resolution "<i>Resolución AG N° - 0127-2006 (De 3 de marzo de 2006)</i>", attached to this document ("<i>Caudal Ecologico</i>").</p>	<p>This issue is considered being resolved</p> <p>☑</p>
<p><u>Clarification Request #2:</u></p> <p>While in chapter A.2 an estimated figure for the increase of the annual electricity generation of approximately 36,900 MWh is given, in later sections and in the calculation for the estimated emission reductions a value of 47,435 MWh is applied. It is necessary to clarify this inconsistency.</p>	A. 2.4	<p>The 36,900 MWh estimative was a glimmer from a previous version of the PDD. Thus, correction was made to 47.435 MWh, based on more recent data, as presented in section <i>B.6.3 Ex-ante calculation of emission reductions</i>.</p>	<p>This issue is considered being resolved</p> <p>☑</p>
<p><u>Clarification Request #3:</u></p> <p>It is indicated that The Netherlands is only indirectly involved and SenterNovem is considered as private project participant. Due to our experience the CERUPT program acquires directly certified emission reduction for the Dutch account. Hence a proof should be provided that The Netherlands are not considered as project participant or the PDD should be revised accordingly.</p>	A.3.1	<p>Delay on registering the project has impacted the negotiations. SenterNovem was accordingly excluded from the project participants' list in the PDD, section A.3. and Annex 1.</p> <p>* Panama is the only involved party.</p>	<p>This issue is considered being resolved</p> <p>☑</p>

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<p><u>Clarification Request #4:</u></p> <p>Since pre-validation, which was performed for proofing the compliance with the CERUPT program, TÜV SÜD never received any confirmation that the project was finally contracted by SenterNovem. It is necessary to receive a written confirmation by SenterNovem, that they should be considered as project participant.</p>	A.3.2	<p>Delay on registering the project has impacted the negotiations. SenterNovem was accordingly excluded from the project participants' list in the PDD, section A.3. and Annex 1.</p> <p>* Panama is the only involved party.</p>	<p>This issue is considered being resolved</p> <p>☑</p>
<p><u>Clarification Request #5:</u></p> <p>The information available for TÜV SÜD on financing (business plan) is referring to the time of pre-validation, i.e. is already several years old. Since that time changes might have occurred. It is necessary to provide updated evidence that no official development assistance is included in the financing of the project.</p>	A.4.5.1	<p>Evidence that no official development assistance has occurred in financing the project is attached to this document ("Certification"), which is considered being confidential (submission only to DOE and EB).</p>	<p>This issue is considered being resolved</p> <p>☑</p>
<p><u>Corrective Action Request #1:</u></p> <p>There is no discussion on the extent of the project electricity grid, any connection to other systems or the necessity of the consideration of import within the boundary discussion of the PDD.</p>	B.3.5	<p>Discussion on the extent of the project electricity grid, connection to other systems and the necessity of importing was added in section B.4. of the PDD.</p>	<p>This issue is considered being resolved</p> <p>☑</p>
<p><u>Corrective Action Request #2:</u></p> <p>There is no indication how the project participants estimated the remaining lifetime of the</p>	B.5.1	<p>Information on age of equipment was included in sections B.4. (Baseline lifetime) and B.6.2. of the PDD. Currently there is no project of further expansion.</p>	<p>This issue is considered being resolved</p>

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existing installation or the point in time when the existing equipment would be replaced or retrofitted. Transparent information on age of equipment and assumptions concerning future developments should be provided.			<input checked="" type="checkbox"/>
<p>The PDD only refers to the continuation of the existing situation and the project activity without CDM.</p> <p><u>Clarification Request #6:</u></p> <p>It should be explained why no other technical applications have been considered that would improve the efficiency of power generation of Fortuna hydropower plant by a similar amount without adding water flow to the reservoir.</p>	B.5.3	The turbines and generators in EGE Fortuna are designed for more than 91 % and more than 98% efficiency, respectively. Accordingly, electricity generation was limited, in the pre-project configuration, mainly by the level of the reservoir. An alternative for improving production would be refurbishing the turbines to increase capacity. Nevertheless, this alternative has not been studied and it would imply high costs of modifying transformers, turbines and even generators. For these reasons, technical applications to improve the efficiency in power generation by a similar amount without adding water flow to the reservoir, such as adding new turbines, have not been considered.	<p>This issue is considered being resolved</p> <input checked="" type="checkbox"/>
<p><u>Corrective Action Request #3:</u></p> <p>TÜV SÜD has not received the revised business plan referred in the PDD. Furthermore it is necessary to provide any proof on the indicated price for capacity addition of approximately 500 US\$/kW for fossil fuel based projects. Both evidences should be considered to be uploaded with the request for registration following the recent EB guidance.</p>	B.5.14	The most recent business plan is attached to this document (" <i>bonos_carbono</i> "). The PDD was updated to include reference to an official source (Panamanian Ministry of Economy and Finance – Energy Policy Committee) to which the indicated price agrees.	<p>In conjunction with the existing certificate on the actual project costs provided by an authorized accountant this issue is considered being resolved</p> <input checked="" type="checkbox"/>
<p><u>Clarification Request #7:</u></p> <p>The calculations for OM and BM do not use the fuel consumption of each power plant but</p>	B.6.1.1	Further data was obtained during the GSP so that the emission factor calculation was updated: the ex-ante period was shifted from 2002-2004 to 2003-2005, in-	<p>The new information has been assessed and can be confirmed. This issue is con-</p>

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a conservative figure for the efficiency of power plants. These figures were derived in compliance with a decision by EB-22 on a request for deviation concerning the application of AM0015 (similar approach for CM as in ACM0002. As a decision by the EB on requests for deviations is not transferable automatically - and in this special context is even provided for another host country's environment – it is either required to request for the acceptance of the deviation specifically for this case or to acquire the necessary data in accordance with the applied methodology. The project proponents should provide information whether these data might be available or not.		formation on fuel consumption was included and plotting of load-duration curves has enabled the adoption of method (b) <i>Simple Adjusted OM</i> .	sidered being resolved <input checked="" type="checkbox"/>
<u>Corrective Action Request #4:</u> The PDD does not provide formulae or equations for baseline emissions, project emissions or leakage emissions under section B.6.1 as required by the guidance for completing the CDM-PDD. Instead of that the equations are presented under section B.6.3, only. It is necessary to include the equations applied under this section. By section B.6.3 it should be demonstrated how these equations are applied leading to the presented results.	B.6.1.3	Sections B.6.1 and B.6.3. of the PDD were updated in order to correctly allocate the data.	This issue is considered being resolved <input checked="" type="checkbox"/>
The list of data presented by section B.6.2 is not complete as most data claimed to be calculated ex-ante are not presented. Addition-	B.6.2.1	Sections B.6.2 and B.7.1. of the PDD were updated in order to correctly allocate the data.	This issue is considered being resolved

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<p>ally information is provided on parameter used within the estimation of the emission reductions (flow of existing water resources and of additions). These tables are useful but not necessarily required under this section (more within the discussion of emission reduction estimations). Nonetheless it should be acceptable to remain these tables within this section.</p> <p><u>Corrective Action Request #5:</u></p> <p>It is necessary to provide information on all data that is determined ex-ante under within section B.6.2.</p>			<input checked="" type="checkbox"/>
<p><u>Corrective Action Request #6:</u></p> <p>It is necessary to provide information on the electricity generation measurement (net or gross production, metering equipment) within the PDD.</p>	B.6.2.3	Information on electricity generation measurement was included in the PDD, Annex 4.	<p>This issue is considered being resolved</p> <input checked="" type="checkbox"/>
<p><u>Corrective Action Request #7:</u></p> <p>It is not described at all how the plant operator comes to the conclusion that the recent situation will continue without the project activity for further 30 years. Such information should be provided by the PDD in a transparent manner.</p>	B.6.2.4	Information on age of equipment was included in sections B.4. (Baseline lifetime) and B.6.2. of the PDD.	<p>This issue is considered being resolved</p> <input checked="" type="checkbox"/>
<p><u>Corrective Action Request #8:</u></p> <p>This parameter (CM) has to be included in the discussion of section B.6.2 instead of</p>	B.6.2.5	Sections B.6.2 and B.7.1. of the PDD were updated in order to correctly allocate the data.	<p>This issue is considered being resolved</p>

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B.7.1 as it is fixed ex-ante.			<input checked="" type="checkbox"/>
<u>Clarification Request #8:</u> The presented calculation of the emission factor is based on date of the year 2002 to 2004. It should be discussed whether more recent data is available or not.	B.6.2.5	Further data was obtained during the GSP so that the emission factor calculation was updated: the ex-ante period was shifted from 2002-2004 to 2003-2005.	This issue is considered being resolved <input checked="" type="checkbox"/>
<u>Corrective Action Request #9:</u> This parameter (OM) has to be included in the discussion of section B.6.2 instead of B.7.1 as it is fixed ex-ante.	B.6.2.6	Sections B.6.2 and B.7.1. of the PDD were updated in order to correctly allocate the data.	This issue is considered being resolved <input checked="" type="checkbox"/>
<u>Corrective Action Request #10:</u> This parameter (BM) has to be included in the discussion of section B.6.2 instead of B.7.1 as it is fixed ex-ante.	B.6.2.7	Sections B.6.2 and B.7.1. of the PDD were updated in order to correctly allocate the data.	This issue is considered being resolved <input checked="" type="checkbox"/>
<u>Corrective Action Request #11:</u> This parameter (fuel consumption of each power source) is neither discussed in this section (B.6.2) nor in section B.7.2. Especially the treatment as described by CR7 should lead to an extensive discussion under this section. As the grid factor is calculated ex-ante it is necessary including this discussion in section B.6.2.	B.6.2.8	Sections B.6.2 and B.7.1. of the PDD were updated in order to correctly allocate the data. Information on fuel consumption of each power source was included in section B.6.2.	This issue is considered being resolved <input checked="" type="checkbox"/>
<u>Corrective Action Request #12:</u> This parameter is not discussed at all besides the information provided in the emission re-	B.6.2.9	Information on the emission coefficient of each fuel was included in section B.6.2.	This issue is considered being resolved <input checked="" type="checkbox"/>

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duction estimations. It is necessary to include this parameter under this section.			
<u>Corrective Action Request #13:</u> This parameter (electricity generation of each power source) is not discussed at all besides the information provided in the emission reduction estimations. It is necessary to include this parameter under this section.	B.6.2.10	Information on the electricity generation of each power source was included in section B.6.2.	This issue is considered being resolved <input checked="" type="checkbox"/>
<u>Corrective Action Request #14:</u> This parameter (electricity imports) is not discussed at all besides the information provided in the emission reduction estimations. It is necessary to include this parameter under this section.	B.6.2.13	Information on the electricity generation of each power source was included in section B.6.2.	Although not explicitly included in chapter B.6.2. as stated in the response of the PPs import is correctly reflected in the calculation of the grid emission factors in accordance with ACM0002. This issue is considered being resolved <input checked="" type="checkbox"/>
<u>Corrective Action Request #15:</u> This parameter (emission coefficient of fuels) is not discussed at all besides the information provided in the emission reduction estimations. It is necessary to include this parameter under this section.	B.6.2.14	Information on the emission coefficient of each fuel was included in section B.6.2.	Although not explicitly included in chapter B.6.2. as stated in the response of the PPs the emission coefficient of each fuel is correctly reflected in the calculation of the grid emission factors in accordance with ACM0002. This issue is considered being resolved

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			<input checked="" type="checkbox"/>
<p><u>Corrective Action Request #16:</u></p> <p>In figures in table 2 are resulting from an incorrect transfer of generation data provided by the annual reports. The figure for the year 2000 belongs to 2005, the one for 2001 to 2004 and so on. Nonetheless this has no impact on the final result as only the average value is required.</p>	B.6.3.3	The table ("Net electricity generation in Fortuna – historical data") was corrected.	<p>This issue is considered being resolved</p> <p><input checked="" type="checkbox"/></p>
<p><u>Clarification Request #9:</u></p> <p>The project will result in reduced greenhouse gas emissions. Nonetheless the way the emission reductions are calculated there might be some years with low level of rainfall where the equations applied may result in less energy generation than the historic average and therefore in negative emission reductions. It should be clarified how such situations will be dealt in compliance with existing EB guidance on negative emission reductions.</p>	B.6.4.1	Information on dealing with negative emission reductions was included in the revised PDD, section B.6.1.	<p>This issue is considered being resolved</p> <p><input checked="" type="checkbox"/></p>
<p><u>Corrective Action Request #17:</u></p> <p>As stated in the sections above this section present many parameter which are determined ex-ante and therefore should be transferred to section B.6.2.</p>	B.7.1.1	Sections B.6.2 and B.7.1. of the PDD were updated in order to correctly allocate the data.	<p>This issue is considered being resolved</p> <p><input checked="" type="checkbox"/></p>
<u>Corrective Action Request #18:</u>	B.7.1.2	The PDD was accordingly updated to include information on points of measurement, kind and class of the	The calibration records are not considered relevant in the

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There is no description provided at which point and by which kind and class of equipment the amount of electricity supplied to the grid will be metered. Furthermore information should be provided (either in this table or by annex 4) ensuring that only net electricity generation will be counted for. It is also necessary including more detailed discussions on the frequency of calibrations, the standards applied and data accuracy.		equipment to measure electricity supplied to the grid, as well as the frequency of calibrations, the standards applied and data accuracy in Annex 4. Insurance that only net electricity generation will be counted for is also included in Annex 4. Documents from 27 th March 2006 on auditing, tests and calibration of the main and back-up meters in each transmission line are attached (" <i>Línea 230-7 pag1</i> ", " <i>Línea 230-7 pag2</i> ", " <i>Línea 230-8 pag1</i> ", " <i>Línea 230-8 pag2</i> ", " <i>Línea 230-18 pag1</i> ", " <i>Línea 230-18 pag2</i> ").	context of validation and will not be uploaded when submitting for registration. This issue is considered being resolved <input checked="" type="checkbox"/>
<u>Clarification Request #10:</u> The project does not provide information in the management structure and responsibilities and how this structure will ensure the delivery of high quality data. This situation should be clarified.	B.7.2.1	Section B.7.2. of the PDD was updated to include information on the monitoring management structure and responsibilities and how this structure will ensure the delivery of high quality data.	This issue is considered being resolved <input checked="" type="checkbox"/>
<u>Clarification Request #11:</u> The entity indicated is not a project participant. It should be clarified why this fact is not clearly expressed in the PDD.	B.8.4	Section B.8. of the PDD was updated to clearly express that Econergy is not a project participant.	This issue is considered being resolved <input checked="" type="checkbox"/>

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Table 3 Unresolved Corrective Action and Clarification Requests (in case of denials)

Clarifications and / or corrective action requests by validation team	Id. of CAR/CR	Explanation of Conclusion for Denial
-	-	-

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Annex 2: Information Reference List

Information Reference List

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Reference No.	Document or Type of Information
1	On-site interviews and inspection at Fortuna, Panama, by auditing team of TÜV SÜD performed on Aug. 06 - 07, 2002 Interviewed persons: Mr. Rafael Matas (Fortuna) Mr. Emilio Doens (GTD)
2	On-site interview at office of CND in Panama, by auditing team of TÜV SÜD performed on Aug.08, 2002 Interviewed person: Mr. Julio C. Ho W. (CND) Mr. Emilio Doens (GTD)
3	Personal interview in Sao Paulo, Brazil by auditing team of TÜV SÜD performed on Oct 17, 2006 Interviewed person: Mr. David Freire da Costa (Econergy)
4	Certificate of Accounting Company, PriceWaterhouseCoopers, on the Investment Scheme of Fortuna project, Nov. 2006
5	EF Panama 2003-2005 2006.11.16 IC.xls (Calculation sheet on the grid factor in Panama)
6	Environmental Approval by Environmental National Authority (ANAM), Aug 20, 2004
7	Bonos_carbono.pdf (presentation of investment costs)