



VALIDATION REPORT RENEWAL OF THE CREDITING PERIOD

INTERNATIONAL BANK FOR RECONSTRUCTION
AND DEVELOPMENT (IBRD) AS TRUSTEE OF
THE PROTOTYPE CARBON FUND (PCF)

CHACABUQUITO HYDROELECTRIC POWER
PROJECT

Report No: 6369/09 – 09/82

Date: 2011-08-22

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|--|---|
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| Client: International Bank for Reconstruction and Development (IBRD) as Trustee of the Prototype Carbon Fund (PCF) | Client ref.: Ms. Joelle Chassard |
| Summary: | <input type="checkbox"/> positive validation opinion <input type="checkbox"/> negative validation opinion |
| <p>The International Bank for Reconstruction and Development (IBRD) as Trustee of the Prototype Carbon Fund (PCF) commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project: "Chacabuquito Hydroelectric Power Project" with regard to the relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria include article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakech Accords) and the relevant decisions by COP/MOP and CDM Executive Board (including EB 46, Annex 11).</p> <p>In the course of the pre-validation 1 Corrective Action Request (CAR) and 9 Clarification Requests (CLs) were raised and successfully closed.</p> <p>The review of the project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.</p> <p>In detail the conclusions can be summarised as follows:</p> <ul style="list-style-type: none"> - The renewal of the crediting period is in line with all relevant UNFCCC requirements for CDM. - The monitoring plan is transparent and adequate. - The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 579,221 tCO₂e are most likely to be achieved within the 7 year renewable crediting period. <p>The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the renewal of the crediting period.</p> | |

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Indexing terms

Climate protection
Kyoto Protocol
CDM
Validation- renewal of crediting period

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Abbreviations

| | |
|------------------------|---|
| BAU | Business as usual |
| CA | Corrective Action / Clarification Action |
| CAR | Corrective Action Request |
| CDEC-SIC | Center for Economic Load Dispatch – SIC (it is the operator of the SIC) (free translation from the Spanish: <i>Centro de Despacho Económico de Carga</i>) |
| CDM | Clean Development Mechanism |
| CER | Certified Emission Reduction |
| CL | Clarification Request |
| CO₂ | Carbon dioxide |
| CO_{2e} | Carbon dioxide equivalent |
| CP | Certification Program |
| DNA | Designated National Authority |
| EB | CDM Executive Board |
| EIA | Environmental Impact Assessment |
| FAR | Forward Action Request |
| GHG | Greenhouse gas(es) |
| IPCC | Intergovernmental Panel on Climate Change |
| PDD | Project Design Document |
| QC/QA | Quality control/Quality assurance |
| SIC | Interconnected Central Grid |
| SEC | Direction of Electricity and Fuels (free translation from Spanish: <i>Superintendencia de Electricidad y Combustibles</i>) |
| UNFCCC | United Nations Framework Convention on Climate Change |
| VVM | Validation and Verification Manual |

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1 OBJECTIVE / SCOPE

The purpose of this validation is to have an independent third party assess the updated project design for the renewal of the crediting period. In particular the project's baseline, the monitoring plan (MP), and the project's compliance with

- the requirements of Article 12 of the Kyoto Protocol;
- the CDM modalities and procedures as agreed in the Marrakech Accords under decision 3/CMP.1
- the annex to the decision;
- subsequent decisions made by COP/MOP & CDM Executive Board (including EB 46, Annex 11); and

are validated in order to confirm that the updated project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders on the quality of the project and its intended generation of certified emission reductions (CERs) for the renewed crediting period.

The validation scope is given as a thorough independent and objective assessment of the project design including especially: the correct application of the methodology and the project's baseline study, which are included in the PDD and other relevant supporting documents, to ensure that the proposed CDM project activity meets all relevant and applicable CDM criteria.

The information included in the PDD and the supporting documents were reviewed against the requirements as set out by the UNFCCC. The validation team has, based on the requirements in the Validation and Verification Manual^{VVM}, carried out a full assessment of all evidences to assess the compliance of the project with the key areas as outlined in section V.E. and V.F. of the VVM (version 01.2, EB 55 Annex 1).

The validation is based on the information made available to TÜV NORD JI/CDM CP and on the contract conditions.

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

2 GHG PROJECT DESCRIPTION

2.1 Project Characteristics

Essential data of the project is presented in the following Table 2-1.

Table 2-1: Project Characteristics

| Item | Data |
|---|--|
| Project title | Chacabuquito Hydroelectric Power Project |
| Project size | <input checked="" type="checkbox"/> Large Scale <input type="checkbox"/> Small Scale |
| Project Scope (according to UNFCCC sectoral scope numbers for CDM) | <input checked="" type="checkbox"/> 1 Energy Industries (renewable- /non-renewable sources) |
| | <input type="checkbox"/> 2 Energy distribution |
| | <input type="checkbox"/> 3 Energy demand |
| | <input type="checkbox"/> 4 Manufacturing industries |
| | <input type="checkbox"/> 5 Chemical industry |
| | <input type="checkbox"/> 6 Construction |
| | <input type="checkbox"/> 7 Transport |
| | <input type="checkbox"/> 8 Mining/Mineral production |
| | <input type="checkbox"/> 9 Metal production |
| | <input type="checkbox"/> 10 Fugitive emissions from fuels (solid, oil and gas) |
| | <input type="checkbox"/> 11 Fugitive emissions from production and consumption of halocarbons and hexafluoride |
| | <input type="checkbox"/> 12 Solvents use |
| | <input type="checkbox"/> 13 Waste handling and disposal |
| | <input type="checkbox"/> 14 Afforestation and Reforestation |
| | <input type="checkbox"/> 15 Agriculture |
| Applied Methodology | AM 0026 |
| Crediting period | <input checked="" type="checkbox"/> Renewable Crediting Period (7 y) <input type="checkbox"/> Fixed Crediting Period (10 y) |
| No. of crediting period | 2 |
| Start of 2 nd crediting period | 2009-07-01 |
| CDM registration No. | 1052 |
| Date of registration | 2007-07-07 |

2.2 Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity (Table 2-2).

Table 2-2: Project Parties and project participants

| Characteristic | Party | Project Participant |
|------------------------|--------|--|
| Host party | Chile | Hidroeléctrica Guardia Vieja S.A. |
| Other involved parties | Sweden | Government of Sweden - Swedish Energy Agency |
| | France | GDF Suez |

| Characteristic | Party | Project Participant |
|----------------------------------|--------------------------------|---|
| | Netherlands | Electrabel S.A. |
| | | Netherlands' Ministry of Infrastructure and the Environment (IenM) |
| | | Netherlands' Ministry of Economic Affairs, Agriculture and Innovation (EL&I) |
| | | Deutsche Bank AG |
| | Norway | Government of Norway - Ministry of Foreign Affairs |
| | | Norsk Hydro ASA |
| | | Statoil ASA |
| | Canada | Government of Canada - Ministry of Foreign Affairs and International Trade |
| | Finland | Government of Finland - Ministry of Foreign Affairs |
| | | Fortum Corporation |
| | Japan | Chubu Electric Power Co., Inc. |
| | Japan | The Chugoku Electric Power Co., Inc. |
| | Japan | Japan International Cooperation Agency (JICA) |
| | Japan | Kyushu Electric Power Co., Inc. |
| | Japan | MIT Carbon Fund Co., Ltd. (MIT) |
| | Japan | Mitsubishi Corporation |
| | Japan | Shikoku Electric Power Co., Inc. |
| | Japan | Tohoku Electric Power Co. Inc. |
| | Japan | The Tokyo Electric Power Co., Inc |
| Bilateral and Multilateral Funds | Sweden, Canada and Netherlands | International Bank for Reconstruction and Development (IBRD) as trustee of the World Bank Prototype Carbon Fund (PCF) |

2.3 Project Location

The details of the project location are given in table 2-3:

Table 2-3: Project Location

| No. | Project Location |
|---------------------------|---|
| Host Country | Chile |
| Region: | 5 th Region |
| Project location address: | Los Andes (100km from the capital Santiago) |
| Latitude: | 32° 51' 12.35" S |
| Longitude: | 70° 30' 22.21" W |

2.4 Technical Project Description

The technical key data are provided in tables 2-4a and 2-4b below

Table 2-4a: Technical data of the project activity

| Parameter | Unit | Value |
|-------------------|------|------------------------------|
| Turbines | | |
| Type | - | Vertical Francis Horizontal |
| Manufacturer | - | VA TECH HYDRO |
| Number | - | 4 |
| Capacity (each) | MW | 7.5 |
| Speed | rpm | 600 |
| Generators | | |
| Type | - | Synchronous |
| Manufacturer | - | AVK Deutschland GmbH & Co KG |
| Model | - | DIG171M/10 |
| Number | - | 4 |
| Cos | | 0,9 |
| Frequency | Hz | 50 |
| Capacity (each) | kVA | 8020 |
| Voltage | V | 6600 |
| | A | 702 |
| Speed | rpm | 600 |

3 METHODOLOGY AND VALIDATION SEQUENCE

3.1 Validation Steps

The validation of the project consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- A desk review of the updated PDD^{/PDD/} submitted by the client and additional supporting documents with the use of customised validation protocol ^{/CPM/} according to the Validation and Verification Manual ^{/VVM/},
- Validation planning,
- On-Site assessment,
- Background investigation and follow-up interviews with personnel of the project developer and its contractors,
- Draft validation reporting
- Resolution of corrective actions (if any)
- Final validation reporting
- Technical review
- Final approval of the validation.

The sequence of the validation is given in the table 3.1 below:

Table 3.1: Validation sequence

| Topic | Time |
|---|-------------------|
| Assignment of validation | 2009-03-05 |
| On-site visit | 2009-05-11 and 12 |
| Draft reporting finalised | 2009-08-05 |
| Technical review on draft reporting finalised | 2009-08-18 |
| Final reporting finalised | 2011-06-23 |
| Technical review on final reporting finalised | 2011-08-22 |

3.2 Contract review

To assure that

- the project falls within the scopes for which accreditation is held,
- the necessary competences to carry out the verification can be provided,

- Impartiality issues are clear and in line with the CDM accreditation requirements

a contract review was carried out before the contract was signed.

3.3 Appointment of team members and technical reviewers

On the basis of a competence analysis and individual availabilities a verification team, consistent of one team leader and one additional team member, were appointed. Furthermore also the personnel for the technical review and the final approval were determined.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the table 3-2 below.

Table 3-2: Involved Personnel

| | Name | Company | Function ¹⁾ | Qualification Status ²⁾ | Scheme competence | Technical competence ⁴⁾ | Host country Competence | Team Leading competence |
|---|------------------|------------------------------------|------------------------|------------------------------------|-------------------------------------|------------------------------------|-------------------------------------|-------------------------------------|
| <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms. | Ricardo Lopes | BRTUV (TUV NORD Brazil), Sao Paulo | TL | LA | <input checked="" type="checkbox"/> | - | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms. | Gilberto Andrade | BRTUV (TUV NORD Brazil), Sao Paulo | TM | A | <input checked="" type="checkbox"/> | 1.2 | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms. | Alexandra Nebel | TÜV NORD CERT, Germany | TR ³⁾ | LA | <input checked="" type="checkbox"/> | - | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms. | Emilio Martin | TÜV NORD CERT, Germany | TR ³⁾ | LA | <input checked="" type="checkbox"/> | 1.2 | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms. | Eric Krupp | TÜV NORD CERT, Germany | FA | SA | <input checked="" type="checkbox"/> | - | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

¹⁾ TL: Team Leader; TM: Team Member, TR: Technical review; OT: Observer-Team, OR: Observer-TR, FA: Final approval

²⁾ GHG Auditor Status: A: Assessor; E: Expert; SA: Senior Assessor; T: Trainee; TE: Technical Expert

³⁾ No team member

⁴⁾ As per S01-MU03 or S01-VA070 A2

Certificates of appointment for the above mentioned team members are enclosed in annex 6 of this report.

3.4 Validation Protocol

In order to ensure consideration of all relevant assessment criteria, a validation protocol is used. The protocol shows, in a transparent manner, criteria and requirements, means of validation and the results from pre-validating the identified criteria. The validation protocol reflects the generic CDM requirements each CDM project has to meet as well as project specific issues as applicable. The validation protocol serves the following purposes:

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

The validation protocol as described in Figure 1.

| Validation Protocol Table A-1: Requirement checklist | | | | |
|--|---|--|--|--|
| Checklist Item | Validation Team Comment | Reference | Draft Conclusion | Final Conclusion |
| <i>The checklist items in Table A-1 are linked to the various requirements the project should meet. The checklist is organised in various sections. Each section is then further sub-divided as per the requirements of the topic and the individual project activity.</i> | <i>The section is used to elaborate and discuss the checklist item in detail. It includes the assessment of the validation team and how the assessment was carried out. The reporting requirements of the VVM shall be covered in this section.</i> | <i>Gives reference to the information source on which the assessment is based on</i> | <i>Assessment based on evidence provided if the criterion is fulfilled (OK), or a CAR, CR or FAR (see below) is raised. The assessment refers to the draft validation stage.</i> | <i>In case a corrective action or a clarification the final assessment at the final validation stage is given.</i> |

Figure 1: Validation protocol tables

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

3.5 Review of Documents

The updated PDD and supporting background documents related to the project design and baseline were reviewed.

Furthermore, the validation team used additional documentation by third parties like host party legislation technical reports referring to the project design or to the basic conditions and technical data.

3.6 Follow-up Interviews

The validation team has carried out interviews in order to assess the information included in the project documentation and to gain additional information regarding the compliance of the project with the relevant criteria applicable for CDM.

During validation the validation team has performed interviews to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews are summarized in table 3-3.

Table 3-3: Interviewed persons and interview topics

| Interviewed Persons / Entities | Interview topics |
|---|---|
| Project proponent representatives Project consultant | <ul style="list-style-type: none">- Chronological description of the project activity with documents of key steps of the implementation.- Current status of plant design- Technical details of the project designing, operational life time, monitoring of the project- Monitoring and measurement equipment and system.- Crediting period starting date- CER allocation / ownership- Baseline study assumptions- Monitoring- Roles & responsibilities of the project participants w.r.t. project management, monitoring and reporting- National Legislation- Editorial issues of the updated PDD |

A comprehensive list of all interviewed persons is part of section 7 'References'.

3.7 Project comparison

The validation team has compared the CDM project activity with similar projects or technology that have similar or comparable characteristics and with similar projects in the host country in order to achieve additional information esp. regarding:

- Project technology

- Reasons for reviews, requests for reviews and rejections within the CDM renewal process.

3.8 Resolution of Clarification and Corrective Action Requests

3.8.1 Definition

A **Corrective Action Request (CAR)** will be established where:

- mistakes have been made in assumptions, application of the methodology or the project documentation which will have a direct influence the project results,
- the requirements deemed relevant for validation of the project with certain characteristics have not been met or
- there is a risk that the renewal of the crediting period would not be accepted by the UNFCCC or that emission reductions would not be able to be verified and certified.

A **Clarification Request (CL)** will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A **Forward Action Request (FAR)** will be issued when certain issues related to project implementation should be reviewed during the first verification of the second crediting period.

3.8.2 Draft Validation

After reviewing all relevant documents and taken all other relevant information into account, the validation team issues all findings in the course of a draft validation report and hands this report over to the project proponent in order to respond on the issues raised and to revise the project documentation accordingly.

3.8.3 Final Validation

The final validation starts after issuance of the proposed corrective action (CA) of the CARs, CLs and FARs by the project proponent. The project proponent has to reply on those and the requests are “closed out” by the validation team in case the response is assessed as sufficient. In case of raised FARs the project proponent has to respond on this, identifying the necessary actions to ensure that the topics raised in this finding are likely to be resolved at the latest during the first verification of the second crediting period. The validation team has to assess whether the proposed action is adequate or not.

In case the findings from CARs and CLs cannot be resolved by the project proponent or the proposed action related to the FARs raised cannot be assessed as adequate, no positive validation opinion can be issued by the validation team.

The CAR(s) / CL(s) / FAR(s) are documented in chapter 4.

3.9 Technical review

Before submission of the final validation report a technical review of the whole validation procedure is carried out. The technical reviewer is a competent GHG auditor being appointed for the scope this project falls under. The technical reviewer is not considered to be part of the verification team and thus not involved in the decision making process up to the technical review.

As a result of the technical review process the validation opinion and the topic specific assessments as prepared by the validation team leader may be confirmed or revised. Furthermore reporting improvements might be achieved.

3.10 Final approval

After successful technical review of the final report an overall (esp. procedural) assessment of the complete validation will be carried out by a senior assessor located in the accredited premises of TÜV NORD.

Only after this step the request for renewal of the crediting period can be started (in case of a positive validation opinion).

4 VALIDATION FINDINGS

In the following table the findings from the desk review of the published PDD, visits, interviews and supporting documents are summarised:

Table 4-1: Summary of CARs, CLs and FARs issued

| Validation topic ¹⁾ | No. of CAR | No. of CL | No. of FAR |
|---|------------|-----------|------------|
| General description of project activity (A) - Project specification - Technical project description - Participation - PDD editorial aspects - Technology to be employed | - | 2 | - |
| Project Baseline and Monitoring Plan (B) - Application of the Methodology - Baseline identification - Calculation of GHG emission reductions Project emissions Baseline emissions Leakage - Monitoring Methodology - Monitoring Plan - Project management planning | 1 | 6 | - |
| Duration of the Project / Crediting Period (C) | - | 1 | - |
| SUM | 1 | 9 | - |

¹⁾ The letters in brackets refer to the validation protocol

The following tables include all raised CARs, CLs and FARs. For an in depth evaluation of all validation items it should be referred to the validation protocols (see Annex 1).

The findings of validation process are summarized in the tables below.

| General | Finding CL A1 | | |
|---|---|--|------------------------------|
| Classification | <input type="checkbox"/> CAR | <input checked="" type="checkbox"/> CL | <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | The names of project participants in section A.3 and in Annex 1 shall be consistent (identical) to each other and to the LoA issued prior to registration of the project. | | |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | The PDD was revised. | | |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | Sections A.3 and Annex 1 of the PDD are now consistent with one another and to the LoA. <u>CL is closed</u> | | |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements | | |

| General | Finding CL A2 | | |
|---|---|--|------------------------------|
| Classification | <input type="checkbox"/> CAR | <input checked="" type="checkbox"/> CL | <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | The stated installed capacity in section A.2 (maximum capacity of 29MW) differs from the capacity evidenced on the name plates of the turbine-generator kits (30MW) and also with the capacity of the registered PDD (nominal capacity of 26MW). Clarification and revision of such numbers in section A.2 is necessary. | | |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | During the on-site visit it was verified that the nameplate capacity of each of the four units is 7.5MW, therefore, total nameplate capacity is 30MW. The PDD was updated. | | |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | Section A.2 was correctly accordingly and now is consistent with the name plate capacities evidenced during site visit (30MW). However, please explain the difference between the installed capacity in the actual name plates (30MW) and the capacity in the registered PDD (26MW nominal). <u>CL remains open</u> | | |
| Corrective Action # 2 | As was stated above, the nominal installed capacity of the turbines is 30 MW (turbines name plates). However, and since the real capacity of the power plant is physically constrained by the water intake civil works, which allow a maximum inflow of 21.5 m3/s (nominal flow of the power plant), the resulting effective power plant capacity is 26 MW. | | |

| General | Finding CL A2 |
|---|--|
| DOE Assessment # 2 | The statement is according to revised PDD after the Notification of Changes submitted by TUVSUD during verification. The revised PDD is in line with PDD approved by UNFCCC and with name plates of equipment installed. <u>CL is closed</u> |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements |

| General | Finding CL B1 |
|---|---|
| Classification | <input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | Section B.5 differs from the registered PDD. As the additionality of the project does not need to be assessed during the renewal of the crediting period, please keep the original text of the registered PDD. |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | This finding was updated in PDD. |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | Section B.5 was revised and it now contains the validated text in the registered PDD. <u>CL is closed</u> |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements |

| General | Finding CL B2 |
|-----------------------|--|
| Classification | <input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR |

| General | Finding CL B2 |
|---|--|
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | <p>In section B.6.1:</p> <ol style="list-style-type: none"> equation 10 of AM 0026 is missing. Please include it. please provide precise reference for the <u>national standard of 0.2% error margin</u>, for the <u>semi-annual node price</u> and for the <u>IPCC Good Practice Guidance</u>; in the calculation of the build margin, please indicate all methodological choices (<u>option (i)</u> of AM0026; <u>option 2-page 12</u> and <u>applied options of step 3 (a)</u> of the <u>simple OM method</u> of the “tool for calculating the emission factor for an electricity system”; in addition, please revise the text in order to make it more clear; Furthermore, please provide precise reference for all data sources in the tables in Annex 3; it needs to be substantiated that the annual generation of the chosen set of power capacity that comprises 20% of the system generation and built most recently is larger than the annual generation of the set of five power units that have been built most recently. in the last paragraph, please correct the name of the parameter as it is EF_{BM} (not BM_{EF}) |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | <p>PDD has been updated.</p> |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | <ol style="list-style-type: none"> equation was included in page 18 as (f3); the required reference to Chilean Norm NCH 2542 was correctly given as footnote 8 on page 19; the methodological choices were dully indicated in page 20; correct explanation was given on page 20, referencing the Table 13 in Annex 3; the name of the parameter was corrected accordingly; <p>CL is closed</p> |
| Conclusion <i>Tick the appropriate checkbox</i> | <p> <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements </p> |

| General | Finding CAR B3 | | |
|-----------------------|---|-----------------------------|------------------------------|
| Classification | <input checked="" type="checkbox"/> CAR | <input type="checkbox"/> CL | <input type="checkbox"/> FAR |

| General | Finding CAR B3 |
|---|--|
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | <p>In section B.6.3/Annex 3:</p> <ul style="list-style-type: none"> - as described in table 8, the average of the yearly values of operating margin emission factor for the first crediting period was used in the ex-ante estimate of operating margin emission factor. However, as the credits were not issued yet for any of the years of the first crediting period, and therefore were not approved yet by the EB, it is requested to present an estimate of the EF_{OM}, using the latest available data at time of submission of the PDD to the DOE, which is year 2007. As a result, please revise all corresponding ex-ante values in sections B.6.3, B.6.4 and B.7.1 accordingly. - The calculation of the build margin emission factor as well as the result obtained in the spreadsheet differ from the information provided in section B.6.3. Clarification and revision of build margin emission factor calculation (if applicable) is required. - The calculated emission reductions in the spreadsheet differ from the value provided in section B.6.3 and B.6.4 respectively. Revision is required. |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | <p>New OM, BM and CM calculation was sent to auditors. The PDD was updated.</p> |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | <ul style="list-style-type: none"> - An ex-ante estimate of EF_{OM}, using year 2007 data (the latest available at time submission of the PDD to the DOE) was provided and it is accurate and the relevant sections were updated accordingly; - The calculation of BM is now accurate and consistent in the PDD, the mathematical tool in MS Access format and excel spreadsheet; - The calculated ERs were checked and are now correct and consistent throughout the project documentation; <p>CL is closed</p> |
| Conclusion <i>Tick the appropriate checkbox</i> | <p> <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements </p> |

| General | Finding CL B4 |
|--|--|
| Classification | <input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | <p>In section B.6.3, please revise the presentation of the equations, in order to make a transparent and reproducible calculation.</p> |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | <p>The PDD was revised.</p> |

| General | Finding CL B4 |
|---|---|
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | <p>Section B.6.3 was revised and the equations now can be transparently followed.</p> <p>CL is closed</p> |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements |

| General | Finding CL B5 |
|---|--|
| Classification | <input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | <p>In section B.7.1, please:</p> <ol style="list-style-type: none"> 1. Include the values applied in the ex-ante calculation for all parameters (when possible and applicable) and respective reference/justification; 2. Provide precise references for all data sources indicated; 3. For the parameter Generation_h, please detail in the PDD the number, type, location, function and uni or bi-directional nature of the meters and include also the frequency of the verification of the meters by a third party accredited by the SEC. 4. Correct the number of formula used to calculate EF_y. |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | <ol style="list-style-type: none"> 1. PDD was updated; 2. The PDD was updated (see table 19). This issue was also included in the spreadsheet "Chacabuquito Audit Assistant.xls" on sheet "Sources" (The updated file was submitted to DOE); 3. PDD was updated; 4. PDD was updated |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | <ol style="list-style-type: none"> 1. The values were indicated or referred correctly; 2. Precise references were given, especially in Table 19, Annex 3; 3. Section B.7 was updated accordingly; 4. The PDD was revised accordingly; <p>CL is closed</p> |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements |

| General | Finding CL B6 |
|---------|---------------|
|---------|---------------|

| General | Finding CL B6 | | |
|---|--|--|------------------------------|
| Classification | <input type="checkbox"/> CAR | <input checked="" type="checkbox"/> CL | <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | <p>In section B.7.2, please:</p> <ol style="list-style-type: none"> 1. As the <u>build margin emission factor</u> for the second crediting period is determined ex-ante and fixed, and thus not monitored, please remove all comments about the build margin and/or include them in section B.6.1; 2. Provide detailed referenced of the sources to be used for data used in the ex-post calculation of <u>operating margin emission factor</u>; 3. Include a wiring diagram showing the location of the meters for further transparency; 4. Include a brief description of maintenance measures; 5. Include a brief description of training measures (including the Annual Maintenance Needs Detection); 6. Include a brief explanation about the verification procedure for the sealed electricity meters carried out by an accredited third party (according to procedure MVP-PMED-02 and Chilean Norm 2542. Of 2001); 7. Include a detailed description of the energy data capture, archiving and transmission to CDEC-SIC (according to procedure MVP-PMED-01) and also data substitution procedures in case of failure of main meter; 8. Include a more detailed description of the responsibilities and institutional arrangements for data collection and archiving. | | |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | <p>The PDD was revised to address all points. Concerning point #2, the PDD was updated (see table 19). This issue was also included in the spreadsheet "Chacabuquito Audit Assistant.xls" on sheet "Sources" (The updated file was submitted to DOE in a CD);</p> | | |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | <ol style="list-style-type: none"> 1. Section B.7.2 was revised and part of the information was relocated in section B.6.1; 2. Detailed referenced of the sources to be used for data used in the ex-post calculation of <u>operating margin emission factor</u> were given (especially at Table 19); 3. A wiring diagram was included; 4. A brief description of maintenance measures was included; 5. A brief description of training measures was given; 6. The required explanation was correctly provided; 7. The required description was included in section B.7.2; 8. Section B.7.2 was revised accordingly; <p>However, a new reference for a Management and Operation System Manual was introduced. Please provide such document to the validation team.</p> <p>CL remains open</p> | | |
| Corrective Action # 2 | <p>The "Management and Operation System Manual" was provided to the validation team.</p> | | |

| General | Finding CL B6 |
|---|---|
| DOE Assessment # 2 | The version 2 of the Manual (MGI.01 rev 2) has been submitted to and reviewed by the validation. CL is closed |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements |

| General | Finding CL B7 |
|---|---|
| Classification | <input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR |
| Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i> | In section B.6.2, please: <ul style="list-style-type: none"> - Provide precise references for all data sources indicated; - Provide precise reference to IPCC 2006 assumption for calculation of net calorific values. |
| Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i> | The PDD was revised. |
| DOE Assessment #1 <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i> | Section B.6.2 was revised accordingly. The sources and the IPCC assumption were referenced. CL is closed |
| Conclusion <i>Tick the appropriate checkbox</i> | <input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements |

Minor changes

1. In section A.1, please correct the date. OK
2. The correct name of the party is section A.3 shall be The Netherlands (not *Government of Netherlands*); OK
3. In section A.4.2, please revise the name of the Scope on page 6; OK
4. In section B.1, please remove the word “baseline” from the name of the AM026; OK
5. In section B.6.1, there are “Steps 1, 2 and 3” included. Please remove such subtitles, as they are not present in AM 0026; OK
6. In section B.6.1, there are minor mistakes in the names and descriptions of the parameters, as indicated during the on site visit. Please correct them; OK

7. In sections C.1.2 and C.2.1.2, please put the date in the format x years and 0 month, in line with the /GCP/; OK
8. In sections C.1.1 put the date in the format DD/MM/YYYY, in line with the /GCP/; OK

5 VALIDATION ASSESSMENT SUMMARY

5.1 General Description of the Project Activity

5.1.1 Approval

For an assessment of LoAs for PPs **Hidroeléctrica Guardia Vieja S.A.** and **International Bank for Reconstruction and Development (IBRD) as trustee of the World Bank Prototype Carbon Fund (PCF)** please refer to approved Validation Report available in UNFCCC website.

For all other parties and PPs involved please refer to respective LoAs available at the UNFCCC website. All parties involved have submitted a LoA /UNFCCC/

All information provided in section A.3 and Annex 1 of the PDD is consistent.

5.1.2 PDD editorial Aspects

Version 3.2 of the CDM -PDD template has been correctly applied. The PDD has in general been filled in accordance with the PDD Guidelines. Nevertheless several editorial changes were discussed with the PP in order to improve the PDD

5.1.3 Technology employed.

The description of the project in the PDD is complete and accurate. The project consists of a hydro power plant. The technology employed is environmentally safe and sound and contributes to climate change mitigation.

5.1.4 Small Scale Projects

Not applicable, as it is a large scale project.

5.2 Application of Methodology, Baseline Update, Ex-Ante Calculation of Emission Reductions and Project Monitoring

5.2.1 Application of the Methodology

The project applies the currently valid version 3 of AM0026, and also the *"Tool to calculate the emission factor for an electricity system"*, version 02.2, and also the *"Tool to assess the validity of the original/current baseline and to update the baseline at the renewal of the crediting period"*, version 1 (EB46 Annex 11). The methodology and tools applied are currently valid and approved according to the UNFCCC CDM website. All applicability conditions are met, as described in section B.2 of the PDD,

version 5 and assessed in detail in check list question B.1.3 of the Annex 1 below. The project is in line with all requirements and stipulations mentioned in all sections of the applied meth (see also check list question B.1.4 below in the Annex).

The project activity is not expected to result in significant emissions, related both to project and leakage, other than those listed in the methodology. See also section B.1 of the protocol below.

5.2.2 Validity and Update of the Baseline

The update of the baseline in the PDD is transparent and verifiable. The step-wise approach of the *“Tool to asses the validity of the original/current baseline and to update the baseline at renewal of the crediting period”* has been applied by the validation team.

A detailed assessment according to the step-wise approach of the tool is given in section B.2 of Annex 1 below.

5.2.3 Ex-Ante Calculation of GHG Emission Reductions

The calculation of ERs is done as per applied meth. All data not to be monitored were correctly applied and values were cross-checked with public available data or supporting documents and are thus deemed precise and conservative. The values for the monitoring parameters are plausible. The estimation of emission reductions is deemed plausible and conservative, as described in detail in section B.3 of Annex 1 below.

5.2.4 Monitoring of Emission Reductions

The monitoring plan in the PDD is in compliance with the applied monitoring methodology AM0026 version 3 and it is assessed by the validation team as adequate and feasible. For details see section B.4 of the Annex below and the resolutions of findings above.

5.2.5 Monitoring Plan

The monitoring plan in the PDD covers all parameters which have to be monitored w.r.t. the project boundary in line with monitoring methodology AM0026 version 3, and the monitoring arrangements are assessed by the validation team as adequate and feasible. For details see section B.4 of the Annex below.

5.2.6 Project Management Planning

The project management planning is appropriate for the purpose of the project monitoring, as described in section B.7.2 of the PDD.

5.3 Crediting Period

5.3.1 Crediting Period

The choice of the seven years renewable crediting period was unambiguously given in the PDD and corresponding calculation spreadsheet. The crediting period starting date is 01 July 2009, first day after end of the first CP.

The PP has not informed the secretariat six month prior to the date of expiration of the first crediting period. Therefore no issuance is possible until CP is deemed renewed.

6 VALIDATION OPINION

The International Bank for Reconstruction and Development (IBRD) as Trustee of the Prototype Carbon Fund (PCF) commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project: “**Chacabuquito Hydroelectric Power Project**” with regard to the relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria include article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakech Accords) and the relevant decisions by COP/MOP and CDM Executive Board (including EB 46, Annex 11).

In the course of the pre-validation 1 Corrective Action Request (CAR) and 9 Clarification Requests (CLs) were raised and successfully closed.

The review of the project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.

In detail the conclusions can be summarised as follows:

- The renewal of the crediting period is in line with all relevant relevant UNFCCC requirements for CDM.
- The monitoring plan is transparent and adequate.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 579,221 tCO₂e are most likely to be achieved within the 7 year renewable crediting period.

The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the renewal of the crediting period.

Sao Paulo, 2011-08-22



Ricardo Lopes
TÜV NORD JI/CDM CP
Validation Team Leader

Essen, 2011-08-22



Eric Krupp
TÜV NORD JI/CDM CP
Final Approval

7 REFERENCES

Table 7-1: Documents provided by the project participant

| Reference | Document |
|---------------|--|
| /AR/ | Annual Report CDEC-SIC with grid operation statistics – 1998 to 2007 |
| /BNE/ | National Energy Balance 2007, issued by the National Energy Commission |
| /DNC/ | Detection of Training Needs for 2009 |
| /IPN/ | Nude Price Reports (free translation from the Spanish: <i>Informe the Precios de Nudo</i>) – provides de specific fuel consumption of power plants connected to the SIC, |
| /IOD/ | Daily Operation Reports CDEC-SIC for year 2007 |
| /OL/ | Official letter #38762 from the General Controlling Department of the Republic, issued on 2000/10/10, stating that it was not required for the project to undertake an EIA (evidence of legal conformity) |
| /MANUAL/ | MGI.01 – Manual of Integrated Managment System, version 2- Out/2010 |
| /MVP-PMED 01/ | "Procedure for Capture of Data from Meters and Transmisison to CDEC-SIC", version 2.0, from 2008/06/11 |
| /MVP-PMED 02/ | "Procedure for Verification of Electricity Meters", version 2.0, 2008/06/09– it follows Chilean Norm NCh 2542.Of2001 - "static meters of active energy for alternate current (class 0,2 and 0,5S)" |
| /OMH/ | Hourly Merit Order for all sources connected to the SIC for year 2007 |
| /PDD-U/ | Draft Updated Project Design Document – "Chacabuquito Hydroelectric Power Project", Version 01, 2009-03-12 (submitted to UNFCCC prior to beginning of revalidation) Updated Project Design Document – "Chacabuquito Hydroelectric Power Project", Version 4, 2009-08-28 Updated Project Design Document – "Chacabuquito Hydroelectric Power Project", Version 5, 2011-04-21 Note: even though PP submitted updated PDD to UNFCCC and later to DOE (2009-03-12) indicating version 1, as the registered PDD is version 3, the subsequent versions submitted to DOE were 4 and then 5 (there was no version 2 or 3). |
| /RCA/ | Resolution of Environmental Qualification (equivalent to an operating license) |

| Reference | Document |
|-----------|---|
| /SS/ | Screen shots of the Access tool developed by the project owner for the calculation of the emission factors |
| /WR/ | Water Rights Documents issued by the <u>National Directorate of Waters</u> on 1982/05/12; 1993/07/08; 1993/07/15 and 1999/08/27 |
| /XLS/ | Emission reduction calculation spreadsheet |

Table 7-2: Background investigation and assessment documents

| Reference | Document |
|-----------|--|
| /AM 0026/ | AM 0026: Methodology for zero-emissions grid-connected electricity generation from renewable sources in Chile or countries with merit order based dispatch grid (Version 03) |
| /CPM/ | TÜV NORD JI / CDM CP Manual (incl. CP procedures and forms) |
| /EB46/ | Procedures for Renewal of the crediting period of a registered CDM project activity, Annex 11, EB46 |
| /GCP/ | UNFCCC: Guidelines for completing CDM-PDD and CDM-NM |
| /IPCC-GP/ | IPCC Good Practice Guidance & Uncertainty Management in National Greenhouse Gas Inventories, 2000 |
| /IPPC-RM/ | Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual |
| /KP/ | Kyoto Protocol (1997) |
| /LAWS/ | Chilean Law 20257, of 2007/08/01 Chilean Law 19300, of 1997 |
| /MA/ | Decision 3/CMP. 1 (Marrakesh – Accords & Annex to decision (17/CP.7)) |
| /PDD-R/ | Registered Project Design Document, “Chacabuquito Hydroelectric Power Project”, version 3.1, 2007-02-28 (UNFCCC reference # 1052) |
| /TEF/ | Tool to calculate the emission factor for an electricity system, version 2.2 |
| /TD/ | Technical data (name plates of turbines and generators) |

| Reference | Document |
|-----------|--|
| /TRCP/ | Tool to assess the validity of the original/current baseline and to update the baseline at the renewal of the crediting period (EB 46, Annex 11) |
| /VVM/ | Validation and Verification Manual (Version 01.2, Annex 1; EB 55) |

Table 7-3: Websites used

| Reference | Link | Organisation |
|-----------|--|---|
| /cne/ | www.cne.cl/tarificacion/eletricidad/preciosde_nudo/ | National Energy Commission |
| /colbun/ | www.colbun.cl | Colbun (company which controls Hidroelectrica Guardia Vieja S.A.) |
| /ipcc/ | www.ipcc-nggip.iges.or.jp | IPCC publications |
| /unfccc/ | http://cdm.unfccc.int | UNFCCC |

Table 7-4: List of interviewed persons

| Reference | Mol ¹ | | Name | Organisation / Function |
|-----------|------------------|--|------------------------|--------------------------------------|
| /IM01/ | V | <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms | Nelson Saieg | Colbun/ Senior Engineer |
| /IM01/ | V | <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms | Eduardo Aguilera Lopez | Colbun/ Supervisor of Operations |
| /IM01/ | V | <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms | Cesar Herrera Lemos | Colbun/ Chief of Operations |
| /IM01/ | V | <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms | Cesar Guerrero C. | Colbun/ Chief of Complex |
| /IM01/ | V | <input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms | Freddy Celedon G. | Colbun/ Power Plant Operator |
| /IM02/ | V | <input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms | Andrea Rudnick G. | POCH (Consultant) / Project Manager |
| /IM02/ | V | <input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms | Maria Luz Farah G. | POCH (Consultant) / Project Engineer |

¹⁾ Means of Interview: (Telephone, E-Mail, Visit)

ANNEX

- A1:** Validation Protocol
- A2:** Appointment certificates of the team members

ANNEX 1: VALIDATION PROTOCOL

Table A-1: Requirements Checklist

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (Means and results of assessment) | Ref. | Draft Concl. | Final Concl. |
|--|---|-------------------|-----------------|-----------------|
| A. General Description of Project Activity | | | | |
| A.1. PDD editorial aspects <i>The PDD used as a basis for validation shall be prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website.</i> | | | | |
| A.1.1. Has the latest version of the PDD form been applied? | The latest version of the CDM- PDD (version 03) has been applied. No deviations thereof have been observed. | /PDD/ /unfccc/ | | OK |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (Means and results of assessment) | Ref. | Draft Concl. | Final Concl. |
|--|---|-------------|-------------------------|-------------------------|
| A.1.2. Has the PDD been duly filled in accordance with the latest guidance(s)? | <p>In general, the PDD was updated in accordance with the latest guidance. Minor editorial aspects were discussed with the representatives of the PP during site visit.</p> <p>Nevertheless, CL B1 was raised:</p> <p>Section B.5 differs from the registered PDD. As the additionality of the project does not need to be assessed during the renewal of the crediting period, please keep the original text of the registered PDD</p> | | CL B1 | OK |
| A.1.3. Is the information regarding the project participants listed in section A3 and in Annex 1 of the PDD internally consistent to each other? | <p>The names of project participants in section A.3 and in Annex 1 shall be consistent (identical) to each other and to the LoA issued prior to registration of the project.</p> | /PDD-U/ | CLA1 | OK |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (Means and results of assessment) | Ref. | Draft Concl. | Final Concl. |
|--|---|-----------------|------------------|-----------------|
| A.2. Technology to be employed <i>Validation of project technology focuses on the project engineering, choice of technology and competence/maintenance needs. The DOE should ensure that environmentally safe and sound technology and know-how is used.</i> | | | | |
| <p>A.2.1. Does the PDD contain a clear, accurate and complete project description?</p> <p><i>The PDD shall contain a clear description of the project activity which provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation.</i></p> <p><i>Pl. consider esp. chapters A.2, A.4.2 and A.4.3 (in case of LSC PDD) for assessment.</i></p> <p><i>Describe the process undertaken to validate the accuracy and completeness of the project description.</i></p> <p><i>Contain the DOE's opinion on the accuracy and completeness of the project description.</i></p> | The stated installed capacity in section A.2 differs from the capacity evidenced on the name plates of the turbine-generator kits and also with the capacity of the registered PDD. Clarification and revision of such numbers in section A.2 is necessary. | /PDD-U/ /TD/ | CL A2 | OK |
| <p>A.2.2. Is this description in accordance with the real situation or (in case of greenfield projects) is it most likely that the project will be implemented acc to the project description</p> | Please see comment above. | | CL A2 | OK |
| <p>A.2.3. In case the project involves alteration of the</p> | N/A | | | N/A |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (Means and results of assessment) | Ref. | Draft Concl. | Final Concl. |
|---|---|------------------|------------------|-----------------|
| existing installation or process, is a clear description available regarding the differences between the project and the pre-project situation? <i>Describe the steps taken to validate this issue.</i> | | | | |
| A.2.4. Does the project design engineering reflect current good practices? <i>Consider the equipment specifications, literature (e.g. EU BREF papers) and professional experiences. Describe the process undertaken to assess the engineering.</i> | Yes, according to technical expertise of validation team the project design reflect current good practices. | /IM01/ /PDD/ | | OK |
| A.2.5. Does the project make provisions for meeting training and maintenance needs? <i>Describe the process undertaken to assess the maintenance and training needs.</i> | Yes, it does. There is procedure for annual detection of training needs carried out by the company. Once identified the needs, internal or external training is carried out. Regarding maintenance, according to the PP, twice a year, usually in March and October, major electrical and mechanic maintenance is carried out for works which require more than 24hs to be concluded. In the preceding year, these dates have to be formally informed to the CEDEC. In addition, when the river flow is reduced, minor repairs and maintenance works are carried out following the manufacturer's manuals. However, more information has to be included in the updated PDD. Please refer to CL B6. | /DNC/ /PDD-U/ | CL B6 | OK |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (Means and results of assessment) | Ref. | Draft Concl. | Final Concl. |
|--|--|------|-----------------|-----------------|
| | The document Detection of Training Needs for year 2009 was submitted to the validation team and operational, technical and managerial staff of the power plant were interviewed. During the site visit, it could also be evidenced that the equipment is well maintained and that competent employees operate the power plant. | | | |
| A.3. Small scale project activity <i>It is assessed whether the project qualifies as small-scale CDM project activity</i> | | | | |
| A.3.1. Does the project qualify as a small scale CDM project activity as defined in decision 4 / CMP.1 annex II? <i>Describe the steps taken to validate this issue.</i> | N/A | | | N/A |
| A.3.2. Does the project apply one of the approved small scale categories and any methodology and tool referred therein? <i>Describe the steps taken to validate this issue. Check, if applicable the expiry dates of the applied methodology.</i> | N/A | | | N/A |
| A.3.3. Is the small scale project activity not a debundled component of a larger project activity? <i>Describe the steps taken to validate this issue. Pl refer to the Compendium of guidance on debundling (EB 36, Annex 27).</i> | N/A | | | N/A |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (Means and results of assessment) | Ref. | Draft Concl. | Final Concl. |
|---|--|--|-----------------|-----------------|
| B. Applicability of Methodology, Project Baseline and Monitoring Plan | | | | |
| B.1. Application of the Methodology | | | | |
| <p>B.1.1. Does the project apply an approved and applicable CDM methodology and a valid version thereof? <i>Describe the steps taken to validate this issue.</i></p> | <p>Yes, the project activity applies the approved methodology AM 0026. At the time of submission of the PDD for TÜV, version 03 of the applied methodology was valid and applicable.</p> <p>To ensure that the applied methodology is approved by the executive board and the PP has chosen the latest version, the methodologies section of UNFCCC CDM website (http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html) was visited.</p> | <p>/PDD/ /AM 026/ /unfccc/</p> | | OK |
| <p>B.1.2. Is the applied CDM methodology identical with the version available on the UNFCCC website? <i>Describe the steps taken to validate this issue.</i></p> | <p>The methodology applied by the PPs is identical with the version available on UNFCCC website. This has been checked during validation.</p> | <p>/PDD/ /AM 026/ /unfccc/</p> | | OK |
| <p>B.1.3. Are all applicability criteria in the methodology, the applied tools or any other methodology component referred to therein fulfilled? <i>Describe for each applicability criterion listed in the selected approved methodology the steps taken to assess the information contained in the PDD.</i></p> | <p>In order to assess the applicability of the project, the PDD was reviewed and the applicability determination of the PDD was counterchecked against the criteria given in the applicability section of the methodology. The information in the PDD was checked during on-site visit to proof that such information is valid and reflects the reality of the project.</p> | <p>/PDD/ /AM026/ /IM01/ /IM02/</p> | | OK |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (Means and results of assessment) | Ref. | Draft Concl. | Final Concl. |
|--|--|------------------------|-----------------|-----------------|
| | <p>The methodology <u>is applicable</u> to:</p> <ul style="list-style-type: none"> • <i>“Projects that are renewable electricity generation projects of the following types: (a) Run-of-river hydro power plants and hydro electric power plants with existing reservoir– where the volume of the reservoir is not increased”</i> - The project is a run-of-river power plant, as it could be evidenced during the visit to the site. • <i>“Projects that are connected to the interconnected grids of the Republic of Chile and Projects that fulfills all legal obligations under the Chilean Electricity Regulation”</i>- The project activity is connected to the Central Interconnected Grid of Chile and fulfills its legal obligation related to the electricity regulations, and that could be evidenced through the review of several documents, such as Water Rights and Resolution of Environmental Qualification. Furthermore, the fact that the project is dispatching to the grid since 2002^{/IOD/} is also strong evidence that it complies with the electricity regulations, otherwise it would not be able to operate and dispatch to the grid. <p>The methodology <u>is NOT applicable</u> to:</p> <ul style="list-style-type: none"> • <i>“Proposed CDM activities that involve switching from fossil fuels to renewable energy at the site of the project activity and if the baseline is the</i> | /RCA/ /WR/ /IOD/ | | |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (Means and results of assessment) | Ref. | Draft Concl. | Final Concl. |
|--|--|--------------------|-----------------|-----------------|
| | continued use of fossil fuels at the site ”- The project consisted as a new run-of-river power plant where no fossil fuel is used and therefore this condition is not applicable. | | | |
| <p>B.1.4. Is the project in accordance to every other stipulation or requirement mentioned in all sections of the methodology?</p> <p><i>Describe the steps taken to check whether the proposed project activity meets <u>all the other possible stipulations and/or limitations</u> mentioned in all sections of the approved methodology selected.</i></p> | Yes, the project is in line with all requirements of the methodology. This was concluded by the validation team after a detailed revision if the PDD against the requirements of the methodology and interviews with technical and managerial personnel and site inspection. | /PDD-U/ /AM026/ | | OK |
| <p>B.2. Validity and update of the baseline</p> <p><i>The assessment of the continued validity and update of the baseline at the renewal of the crediting period is carried out according to the stepwise approach given in the “tool to assess the validity of the original/current baseline and to update the baseline at the renewal of the crediting period”, EB46/Annex11.</i></p> | | | | |
| <p>B.2.1. Step 1: Assess the validity of the current baseline for next crediting period</p> <p><i>The validity of the current baseline is assessed using the following Sub-steps:</i></p> | | | | |
| <p>B.2.1.1. What has been identified as original/current baseline scenario</p> | The original/current baseline is the electricity delivered to the grid by the project that would otherwise been generated by the operation of grid-connected power plants and by the | /PDD-R/ | | OK |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (Means and results of assessment) | Ref. | Draft Concl. | Final Concl. |
|--|---|---|-----------------|-----------------|
| <i>Describe the chosen BL scenario.</i> | addition of new generation sources, as reflected in the Combined Margin (CM). | | | |
| <p>B.2.1.2. <i>Step 1.1: Assess compliance of the current baseline with relevant mandatory and/or sectoral policies</i></p> <p>Does the current baseline comply with all relevant mandatory national and/or sectoral policies which came into effect after the submission of the project activity for validation or the submission of the previous request for renewal of the crediting period and are applicable at the time of requesting renewal of the crediting period?</p> <p><i>If yes go to step 1.2, otherwise the baseline needs to be updated.</i></p> <p><i>Describe how this issue was validated.</i></p> | <p>Yes, the current baseline, as described in the updated PDD, is in line with version 3 of AM 0026 and complies with all relevant mandatory national and/or sectoral policies of Chile.</p> <p>There was no change in national regulations or sectoral policies which came into effect since registration of the project activity.</p> <p>This was validated by means of interviews with representatives of the PP, review of relevant legislation, such as Law 20257 and considering the local experience of the validation team.</p> | <p>/IM01/ /IM02/ /IPN/ /BNE/ /LAWS/</p> | | OK |
| <p>B.2.1.3. <i>Step 1.2: Assess the impact of circumstances</i></p> <p>Do new circumstances existing at the time of requesting renewal of the crediting period make the continued validity of the baseline not plausible?</p> <p><i>Assess the impact of circumstances existing at the time of requesting renewal of the crediting period on the current baseline emissions, without reassessing the baseline</i></p> | <p>There were no new circumstances which impact the project activity in a way which makes the baseline not plausible.</p> <p>This was validated by means of interviews with representatives of the PP, review of relevant legislation and considering the local experience of the validation team.</p> | <p>/IM01/ /IM02/ /IPN/ /BNE/ /LAWS/</p> | | OK |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (Means and results of assessment) | Ref. | Draft Concl. | Final Concl. |
|--|---|-----------------------------------|-----------------|-----------------|
| <p><i>scenario. If new circumstances make the continued validity not plausible, then the current baseline needs to be updated for the subsequent crediting period.</i></p> <p><i>Describe how this issue was validated.</i></p> | | | | |
| <p>B.2.1.4. Step 1.3: Assess whether the continuation of the use of current baseline equipment(s) is technically possible –</p> <p>Does the remaining lifetime of the current equipment that would continue to be used exceeds the crediting period for which renewal is requested (more 7 years)?</p> <p><i>The step should only be applied if the identified baseline in the previous crediting period was the continuation of the current practice.</i></p> <p><i>Describe the steps taken to validate the remaining lifetime.</i></p> | <p>Yes, the date of construction of the turbines and generators installed at the project plant evidenced at the name plates of the equipment during the site visit is 2001.</p> <p>This kind of equipment certainly has an operational life time superior to 20 years of continuous operation if well maintained, so it will exceed the crediting period for which renewal is requested.</p> <p>As the baseline is the generation of electricity supplied to the grid it can be confirmed that this baseline is still valid and will be valid over the crediting period. Only the applied emission factor for the grid will be updated to reflect current baseline.</p> | <p>/TD/ /IM01/</p> | | OK |
| <p>B.2.1.5. Step 1.4: Assessment of the validity of the data and parameters –</p> <p>Are all data and parameters that were only determined at the start of the (previous) crediting period and not monitored during the (previous) crediting period still valid or should they be updated?</p> <p><i>Updates should be undertaken:</i></p> <ul style="list-style-type: none"> Where IPCC default values are use, the values should be updated if any default values have been | <p>The default values of the IPCC for emission factor and net calorific values of fossil fuels needed to be updated using published 2006 values.</p> <p>In addition, for the second crediting period, the /TEF/ requires that the build margin is calculated ex-ante and fixed for the second crediting period and thus the corresponding parameters necessary for the ex-ante build margin calculation need to be included section B.6.2.</p> <p>Please refer also to B.2.2.2.</p> | <p>/PDD-U/ /XLS/ /SS/</p> | | OK |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (Means and results of assessment) | Ref. | Draft Concl. | Final Concl. |
|---|--|--------------------------|-------------------------|-------------------------|
| <p><i>adopted and published by the IPCC;</i></p> <ul style="list-style-type: none"> <i>Where emission factors, values or emission benchmarks are used and determined only once for the crediting period, they should be updated, except if the emission factors, values or emission benchmarks are based on the historical situation at the site of the project activity prior to the implementation of the project and cannot be updated because the historical emission does not exist anymore as a result of the CDM project activity</i> <p><i>If any of the data and parameters that were only determined at the start of the crediting period and not monitored are not valid anymore, the current baseline needs to be updated for the subsequent crediting period.</i></p> <p><i>If the application of steps 1.1, 1.2, 1.3 and 1.4 confirm that the current baseline as well as data and parameters are still valid for the subsequent crediting period, then this baseline, data and parameters can be used for the renewed crediting period. Otherwise, proceed to Step 2.</i></p> | | | | |
| <p>B.2.2. Step 2: Update of the current baseline and the data and parameters</p> <p><i>This step is only applicable if any of the Steps 1.1, 1.2, 1.3 and/or 1.4 showed that the current baseline needs to be updated.</i></p> | | | | |
| <p>B.2.2.1. Step 2.1: Update the current baseline – Have the baseline been updated according</p> | <p>The baseline emission factor needed to be updated applying latest available data. Requirements of the latest version of AM 0026 and of the “Tool to calculate the emission factor for</p> | <p>/PDD-U/ /XLS/</p> | <p>CL-B2 GAR</p> | <p>OK</p> |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (Means and results of assessment) | Ref. | Draft Concl. | Final Concl. |
|--|--|--------------------------|--------------------------------------|-----------------|
| to the latest approved version of the methodology? <i>The procedure shall be applied in the context of the sectoral policies and circumstances that are applicable at the time of request for renewal of the crediting period. .</i> | an electricity system has been considered. Nevertheless some mistakes have been identified. Please refer to B.3 | /AM 0026/ /TEF/ | B3 CL-B4 | |
| B.2.2.2. Step 2.2: Update the data and parameters Have all data and parameters that were identified in Step 1.4 above as not valid anymore been updated ? <i>Guidance in Step 1.4 shall be followed.</i> | Yes, IPCC defaults values for EF and NCV have been updated; The data and parameters necessary to calculate the build margin (according to the tool it has to be calculated ex-ante for the second crediting period) have been included in section B.6.2, as described below in B.3.4; Weighting factors changed for 75% for build margin and 25% for operating margin for the second crediting period. | /PDD-U/ /XLS/ /SS/ | | OK |
| B.3. Ex-Ante Calculation of GHG Emission Reductions <i>It is assessed whether the ex-ante calculations of project emissions, baseline emissions, leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified. Furthermore calculation of emission reductions shall be assessed.</i> | | | | |
| B.3.1. Are the equations applied correctly according to the applied approved methodology? <i>Describe clearly the steps taken to assess whether The</i> | <input type="checkbox"/> The equations applied for calculation are correctly applied according to the approved methodology. <input checked="" type="checkbox"/> The following mistakes have been identified in this | /PDD-U/ /AM026/ | CL-B2 CL-B4 | OK |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (Means and results of assessment) | Ref. | Draft Concl. | Final Concl. |
|--|---|-------------|-------------------------|-------------------------|
| <i>methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions.</i> | <p>context:</p> <p>(CL B2) In section B.6.1:</p> <ol style="list-style-type: none"> equation 10 of AM 0026 is missing. Please include it. please provide precise reference for the <u>national standard of 0.2% error margin</u>, for the <u>semi-annual node price</u> and for the <u>IPCC Good Practice Guidance</u>; in the calculation of the build margin, please indicate all methodological choices (<u>option (i) of AM0026</u>; <u>option 2-page 12 and applied options of step 3 (a) of the simple OM method</u> of the “tool for calculating the emission factor for an electricity system”; in addition, please revise the text in order to make it more clear; Furthermore, please provide precise reference for all data sources in the tables in Annex 3; it needs to be substantiated that the annual generation of the chosen set of power capacity that comprises 20% of the system generation and built most recently is larger than the annual generation of the set of five power units that have been built most recently. in the last paragraph, please correct the name of the parameter as it is EF_{BM} (not BM_{EF}) <hr/> <p>(CL B4) In section B.6.3, please revise the presentation of the equations, in order to make a transparent and reproducible calculation.</p> | /TEF/ | | |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (Means and results of assessment) | Ref. | Draft Concl. | Final Concl. |
|--|---|---|-----------------|-----------------|
| <p>B.3.2. In case the methodology allows for different methodological choices, are the equations applied properly justified and have they been used reflecting the other methodological choices (i.e. baseline identification)?</p> <p><i>Describe whether proper justification has been provided (based on the choice of the baseline scenario, context of the project activity and other evidence provided) and whether the correct equations have been used reflecting the relevant methodological choices.</i></p> | Please refer to the comment above (CL B2) | | CL B2 | OK |
| <p>B.3.3. Have conservative assumptions been used when calculating the project emissions?</p> <p><i>Describe clearly the steps taken to assess whether all the assumptions and data used by the PP are listed in the PDD including references and sources and are conservatively interpreted in the PDD.</i></p> | In the calculation of the emission factor, for some power plants for which no information was available about either the total fuel consumption or specific fuel consumption, the value zero was assumed for their emission factor in a conservative way. | /XLS/ /SS/ | | OK |
| <p>B.3.4. Are all data and parameters which remain fixed throughout the crediting period correct, applicable to the project and will lead to a conservative estimation of emission reductions?</p> <p><i>Describe clearly the steps taken to assess whether the values used for the fixed parameters are considered reasonable, correct and applicable in the context of the project activity. Check esp. chapter 6.2 of the PDD.</i></p> | <p>The sources for such parameters are official sources, supporting evidences have been presented and their application is deemed conservative by the validation team as follows:</p> <ul style="list-style-type: none"> - emission factor of fossil fuels: IPCC 2006 default values - net calorific values: IPCC 2006 default values and the Annual Energy Balance (National Energy Commission); - fuel consumption and energy generation: The Annual Operation Report of the CEDEC-SIC; - energy conversion efficiency: Nucle Price Reports; | /PDD-U/ /ipcc/ /AR/ /BNE/ /IPN/ | | OK |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (Means and results of assessment) | Ref. | Draft Concl. | Final Concl. |
|---|---|--|---------------------------------------|-----------------|
| | (National Energy Commission) | | | |
| <p>B.3.5. Are all ex-ante calculation values for monitoring parameters (as defined as per chapter B.7.1) reasonable?</p> <p><i>Describe clearly the steps taken to assess whether the values used for the monitoring parameters are considered reasonable, applicable and conservative in the context of the project activity</i></p> | <p><input type="checkbox"/> All “Values of data to be applied for the purpose of calculating expected emissions reductions” are considered to be reasonable, applicable and conservative.</p> <p><input checked="" type="checkbox"/> The following mistakes have been identified in this context:</p> <p>(CAR B3) In section B.6.3/Annex</p> <ul style="list-style-type: none"> - as described in table 8, the average of the yearly values of operating margin emission factor for the first crediting period was used in the ex-ante estimate of operating margin emission factor. However, as the credits were not issued yet for any of the years of the first crediting period, and therefore were not approved yet by the EB, it is requested to present an estimate of the EFOM, using the latest available data at time of submission of the PDD to the DOE, which is year 2007. As a result, please revise the all corresponding ex-ante values in sections B.6.3, B.6.4 and B.7.1 accordingly. - The calculation of the build margin emission factor itself as well as the result obtained in the spreadsheet sheet differ from the information provided in section B.6.3. Clarification and revision of build margin emission factor calculation (if applicable) is required. - The calculated emission reductions in the spreadsheet differ from the value provided in section B.6.3 and B.6.4 respectively. Revision is required. | <p>/PDD-U/ /ipcc/ /AR/ /BNE/ /IPN/</p> | <p>CAR B3 CL-B7 CL-B5</p> | OK |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (Means and results of assessment) | Ref. | Draft Concl. | Final Concl. |
|--|---|------------------------------|-----------------|-----------------|
| | <p>(CL B7) In section B.6.2, please:</p> <ul style="list-style-type: none"> - Provide precise references for all data sources indicated; - Provide precise reference to IPCC 2006 assumption for calculation of net calorific values. <p>Please refer also to B.4.2</p> | | | |
| <p>B.3.6. Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.</p> <p><i>Describe the steps taken to validate this issue.</i></p> | CAR and CLs have been raised and need to be closed out before forming an opinion | | Not yet OK | OK |
| <p>B.4. Monitoring of Emission Reductions</p> <p><i>It is assessed whether the monitoring plan is appropriate for the project activity and in line with the applied methodology.</i></p> | | | | |
| <p>B.4.1. Are all monitoring parameters required by the applied methodology contained in the monitoring plan?</p> <p><i>Assess whether all applicable parameters listed in the methodology are included in the monitoring plan.</i></p> <p><i>Pl. check further whether the selection of parameters not to be monitored (section B.6.2) is appropriate and in line with the applied methodology.</i></p> <p><i>In case of different approaches can be chosen acc. to the</i></p> | Yes, all applicable parameters required by AM 0026 and the tool to calculate the emission factor for an electricity system are listed in B.7.1 and deemed appropriate. | /AM0026/ /TEF/ /PDD-U/ | | OK |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (Means and results of assessment) | Ref. | Draft Concl. | Final Concl. |
|--|--|-------------|-------------------------|-------------------------|
| <i>methodology assess whether the selection of parameters is justified and correct.</i> | | | | |
| <p>B.4.2. Are the means of monitoring of all parameters contained in the monitoring plan in accordance with the requirements of the applied methodology?</p> <p><i>Assess whether the provided information for all parameters w.r.t.</i></p> <ul style="list-style-type: none"> a) <i>Label (name of the data / parameter)</i> b) <i>data unit</i> c) <i>description</i> d) <i>source of data</i> e) <i>measurement equipment / method / procedure</i> f) <i>monitoring frequency</i> g) <i>QA/QC procedures</i> <p><i>are appropriately described and in compliance with the requirements of the methodology..</i></p> | <p>(CL B5) In section B.7.1, please:</p> <ol style="list-style-type: none"> 1. Include the values applied in the ex-ante calculation for all parameters (when possible and applicable) and respective reference/justification; 2. Provide precise references for all data sources indicated; 3. For the parameter Generation_h, please detail in the PDD the number, type, location, function and uni or bi-directional nature of the meters and include also the frequency of the verification of the meters by a third party accredited by the SEC. 4. Correct the number of formula used to calculate EF_y. | | CL-B5 | OK |
| <p>B.4.3. Have all equations necessary for ex-post emission reduction calculation been described clearly and in line with the methodology?</p> <p><i>Check whether all necessary equations have been provided in the PDD. Pl. consider that ex-post and ex-ante calculations might be different.</i></p> <p><i>Please consider that additional equations might be</i></p> | Please refer to CL B2. | | CL-B2 | OK |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (Means and results of assessment) | Ref. | Draft Concl. | Final Concl. |
|--|--|---|-----------------|-----------------|
| <i>necessary to calculate auxiliary parameters.</i> | | | | |
| <p>B.4.4. Is it likely that the monitoring arrangements described in the PDD can properly be implemented in the context of the project activity?</p> <p><i>Assess whether the described monitoring arrangements are sufficient and realistic to enable a thorough monitoring. Pl. consider also special monitoring conditions, e.g. downtimes of monitoring equipment etc.</i></p> | <p>(CL B6) In section B.7.2, please:</p> <ol style="list-style-type: none"> 1. As the <u>build margin emission factor</u> for the second crediting period is determined ex-ante and fixed, and thus not monitored, please remove all comments about the build margin and/or include them in section B.6.1; 2. Provide detailed referenced of the sources to be used for data used in the ex-post calculation of <u>operating margin emission factor</u>; 3. Include a wiring diagram showing the location of the meters for further transparency; 4. Include a brief description of maintenance measures; 5. Include a brief description of training measures (including the Annual Maintenance Needs Detection); 6. Include a brief explanation about the verification procedure for the sealed electricity meters carried out by an accredited third party (according to procedure MVP-PMED-02 and Chilean Norm 2542. Of 2001); 7. Include a detailed description of the energy data capture, archiving and transmission to CDEC-SIC (according to procedure MVP-PMED-01) and also data substitution procedures in case of failure of main meter; 8. Include a more detailed description of the responsibilities and institutional arrangements for data collection and archiving. | <p>/PDD-U/ /AM0026/ /MVP-PMED-01/ /MVP-PMED-02/</p> | CL-B6 | OK |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (Means and results of assessment) | Ref. | Draft Concl. | Final Concl. |
|--|--|------------------------------------|--------------------------------------|-------------------------|
| <p>B.4.5. Are the QA/QC procedures appropriate sufficient to ensure the emission reductions achieved from the project activit can be reported ex-post and verified?</p> <p><i>Please consider the description given in section B.7.2. Describe which QA/QC provisions are considered. Address Quality Management System provisions, calibration and maintenance of equipment. Address further any review procedures.</i></p> | <p>CL B5 and CL B6 were raised above. Please refer to them.</p> | | CL-B5 CL-B6 | OK |
| <p>B.4.6. Are procedures identified for data management?</p> <p><i>Check whether appropriate provisions are considered for data management including responsibilities, what records to keep, storage area of records and how to process performance documentation</i></p> <p><i>Check further the data archiving provisions for the project activity and ensure that provisions are made to archive data for the whole crediting period + 2 years.</i></p> | <p>Although there is a procedure^{/MVP-PMED-01/} defining data collection, archiving, transmission, back up, etc, a detailed description shall be included in the PDD. See CL B6</p> | /MVP-PMED-01/ /PDD-U/ /IM01/ | CL-B6 | OK |
| <p>C. Duration of the Project/ Crediting Period</p> <p><i>It is assessed whether the temporary boundaries of the project are clearly defined.</i></p> | | | | |

| Checklist Item (incl. guidance for the validation team) | Validation Team Comments (Means and results of assessment) | Ref. | Draft Concl. | Final Concl. |
|--|---|-------------------------------------|-------------------------|-------------------------|
| <p>C.1. Is the start of the crediting period clearly defined and reasonable?</p> <p><i>Check whether the envisaged starting date of the crediting period is realistic, taking into consideration the times needed for validation and registration.</i></p> | <p>As per EB 46 Annex 11 paragraph 13 the start date of the second crediting period is the first day after end of the first crediting period. This day is fixed with 01/07/2009.</p> <p>As the notification of renewal of CP has not been send in time to UNFCCC, first issuance is only possible from the date when renewal is approved.</p> | <p>/PDD-U/ /EB46/ /GCP/</p> | <p>OK</p> | |

ANNEX 2: APPOINTMENT CERTIFICATES OF TEAM MEMBERS**Statement of Competence**Appointment and authorization according to the procedures
of the TÜV NORD JI/CDM Certification Program**Mr. Ricardo Lopes**

| SCHEME | STATUS | VALID UNTIL |
|--------|---------------|-------------|
| CDM | Lead Assessor | 2013-11-04 |
| VCS | Lead Assessor | 2013-11-04 |

077 – Rev. 0, Date: 2011-03-17

077_S01-F003_2011-03-17_rev0

S01-F003 rev0 / 2010-04-19

**Statement of Competence**Appointment and authorization according to the procedures
of the TÜV NORD JI/CDM Certification Program**Mr. Gilberto Gomes Andrade**

| SCHEME | STATUS | VALID UNTIL |
|---------------------------------|----------|-------------|
| CDM Validation, Verification | Assessor | 2013-02-02 |
| VCS | Assessor | 2013-02-02 |

Authorization status for technical areas within sectoral scopes:

| CODE | TECHNICAL AREA |
|------|-----------------------------|
| 1.1 | Thermal Energy Generation |
| 1.2 | Renewable Energies |
| 2.1 | Electricity Distribution |
| 5.1 | Chemical Process Industries |
| 11.1 | Chemical Process Industries |
| 12.1 | Chemical Process Industries |

016 – Rev. 0, Date: 2011-05-14

016_S01-F003_2011-05-14_rev0

S01-F003 rev0 / 2010-04-19

**Statement of Competence**Appointment and authorization according to the procedures
of the TÜV NORD JI/CDM Certification Program**Mr. Emilio Martin**

| SCHEME | STATUS | VALID UNTIL |
|---------------------------------|---------------|-------------|
| CDM Validation, Verification | Lead Assessor | 2013-11-30 |
| VCS | Lead Assessor | 2013-11-30 |

Authorization status for technical areas within sectoral scopes:

| CODE | TECHNICAL AREA |
|------|--------------------|
| 1.2 | Renewable Energies |

157 – Rev. 0, Date: 2011-03-21

157_S01-F003_2011-03-21_rev0

S01-F003 rev0 / 2010-04-19



Statement of Competence

Appointment and authorization according to the procedures
of the TÜV NORD JI/CDM Certification Program

Ms. Alexandra Nebel

| SCHEME | STATUS | VALID UNTIL |
|--|---------------|-------------|
| CDM (Validation, Verification) | Lead Assessor | 2012-11-19 |
| Ji | Lead Assessor | 2012-11-19 |
| VCS | Lead Assessor | 2012-11-19 |

Authorization status for technical areas within sectoral scopes:

| CODE | TECHNICAL AREA |
|-------------|----------------|
| 14.1 | Forestry |

095 – Rev. 1, Date: 2011-05-10

095_S01-F003_rev1_2011-05-10

S01-F003 rev0 / 2010-04-19



Statement of Competence

Appointment and authorization according to the procedures
of the TÜV NORD JI/CDM Certification Program

Mr. Eric Krupp

| SCHEME | STATUS | VALID UNTIL |
|--|-----------------|-------------|
| CDM Validation, Verification | Senior Assessor | 2013-07-05 |
| Ji | Senior Assessor | 2013-07-05 |
| VCS | Senior Assessor | 2013-07-05 |

Authorization status for technical areas within sectoral scopes:

| CODE | TECHNICAL AREA |
|------------|---------------------------|
| 1.1 | Thermal Energy Generation |
| 7.1 | Transport |
| 9.1 | Metal Production |

017 – Rev. 1, Date: 2011-04-11

017_S01-F003_2011-04-11_rev1

S01-F003 rev0 / 2010-04-19