Industrie Service

Choose certainty.
Add value.

Validation Report

BERTIN LTDA.

Validation of the Brasil Central Energia S.A. – Sacre 2 Small Hydro Power Plant Project

Report No. 893664, rev. 4.a

August 21, 2008

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

Industrie Service

Report No.	Date of first issue	Revision No.	Date of this revision	Certificate No.
893664	16.12.2006	4.a	21.08.2008	-

Subject:	Validation of a CDM Project
Executing Operational Unit:	TÜV SÜD Industrie Service GmbH Carbon Management Service Westendstr. 199 - 80686 Munich Federal Republic of Germany
Contact:	www.tuev-sued.de
Client:	Bertin Ltda. Parque Industrial Cx. Postal 211 Lins, Sao Paulo ZIP code: 16404-110 Brazil.
Contract approved by:	Werner Betzenbichler
Report Title:	Brasil Central Energia S.A. – Sacre 2 Small Hydro Power Plant Project
Number of pages	18 (excluding annexes and cover page)

Summary:

The Certification Body ”Climate and Energy” has been ordered by Bertin Ltda. and Ecoinvest Carbon Brasil Ltda. to perform a validation of the above mentioned project.

In summary, it is TÜV SÜD´s opinion that the project “Brasil Central Energia S.A. – Sacre 2 Small Hydro Power Plant Project”, as described in the revised project design document of May 28, 2007, meets all relevant UNFCCC requirements for the CDM, set by the Kyoto Protocol, the Marrakech Accords and relevant guidance by the CDM Executive Board and that the project furthermore meets all relevant host country criteria and correctly applies the baseline and monitoring methodology ACM0002 - “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (Version 6, May 19th,2006).

Hence, TÜV SÜD will recommend the project for registration as CDM project activity by the CDM Executive Board.

Additionally the assessment team reviewed the estimation of the projected emission reductions. We can confirm that the indicated amount of emission reductions of 445 961 tonnes CO_{2e} over a crediting period of seven years, resulting in a calculated annual average of 63 709 tonnes CO_{2e} represents a reasonable estimation using the assumptions given by the project documents.

Work carried out by:	Markus Knödlseder (first ATL) Javier Castro (final ATL) Johann Thaler (GHG-A) Sergio Degener (GHG-A)	Internal Quality Control by:	Abhishek Goyal

Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CR	Clarification Request
DNA	Designated National Authority
DOE	Designated Operational Entity
EIA / EA	Environmental Impact Assessment / Environmental Assessment
ER	Emission reduction
GHG	Greenhouse gas(es)
KP	Kyoto Protocol
MP	Monitoring Plan
ONS	Operador Nacional do Sistema Eletrico
PDD	Project Design Document
SHP	Small Hydroelectric Power Plant
TÜV SÜD	TÜV SÜD Industrie Service GmbH
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual

Table of Contents

1 INTRODUCTION

1.1 Objective

Ecoinvest Carbon Brasil Ltda. has commissioned TÜV SÜD Industrie Service GmbH (TÜV SÜD) to validate the Brasil Central Energia S.A. – Sacre 2 Small Hydro Power Plant Project. The validation serves as design verification and is a requirement of all CDM projects. The purpose of a validation is to have an independent third party assess of the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

UNFCCC criteria refer to the Kyoto Protocol criteria and the CDM rules and modalities as agreed in the Bonn Agreement and the Marrakech Accords.

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. TÜV SÜD has, based on the recommendations in the Validation and Verification Manual employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

The audit team has been provided with the first PDD-version in September 2006. Based on this documentation a document review and a fact finding mission in form of an on site audit has taken place. The demanded additional information is addressed in annex 1. Requested information was given and the PDD was updated accordingly. That final PDD version 9 was submitted on May 28, 2007 and serves as the basis for the final assessment presented herewith. In the final PDD some information has been added and changed. However, the changes were not significant, thus it was not necessary to repeat the global stakeholder process.

Studying the existing project documentation, it was obvious that the competence and capability of the validation team has to cover at least the following aspects:

- Knowledge of Kyoto Protocol and the Marrakech Accords
- Environmental and Social Impact Assessment
- Skills in environmental auditing (ISO 14000, EMAS)
- Quality assurance
- Operations in SHPs including knowledge about technology used in small hydropower plants.
- Monitoring concepts
- Political, economical and technical random conditions in host country

According to these requirements TÜV SÜD has assembled a project team in accordance with the appointment rules of the TÜV certification body "climate and energy":

Markus Knödlseder is an auditor for climate change projects and GHG emission inventories at the department "Carbon Management Service" in the head office of TÜV SÜD Industrie Service GmbH, Munich. He has been involved in the topic of environmental auditing, baselining, monitoring and verification due to the requirements of the Kyoto Protocol since Oct. 2001. His main focus lies on renewable energies.

Johann Thaler graduated as Master of environmental Economy at the University of Augsburg. During his study he got first experiences in environmental management systems. His master thesis was about a fuel switch program in Brazil as a CDM project. Based in Brazil he has been working for TÜV SÜD as a GHG auditor on freelance basis since March 2005.

Sergio Degener is a GHG auditor at the "Carbon Management Service" in the head office of TÜV SÜD Industrie Service GmbH, Germany. Mr. Degener studied environmental engineer at the University of Applied Science in Bingen, Germany. Beside his main focus in studies of environmental economics and law, he dealt with environmental management and environmental controlling issues.

The assessment team has been expanded as the ATL Mr. Knödlseder left the company before this revision of the validation report. Mr. Castro has been included as ATL in the team to finalise this revision. Furthermore Mr. Goyal made the internal Quality control as Mr. Betzenbichler left also the Company.

Javier Castro is head of the certification body "Climate and Energy" at TÜV SÜD Industrie Service GmbH. He has an academic background in chemical engineering and energy systems. In his position he participates as project manager the validation, verification and certifications processes for GHG mitigation projects. He has received extensive training in the CDM and JI validation processes, and participated in some validation and verification of CDM projects.

The audit team covers following requirements:

- Knowledge of Kyoto Protocol and the Marrakech Accords (All)
- Environmental and Social Impact Assessment (All)
- Skills in environmental auditing (ISO 14000, EMAS) (All)
- Quality assurance (Knödlseder)
- Operations in SHPs including knowledge about technology used in small hydropower plants (All)
- Monitoring concepts (All)
- Political, economical and technical random conditions in host country (Thaler)

In order to have an internal quality control of the project, a team of the following persons has been composed by the certification body "climate and energy":

Abhishek Goyal (Deputy head of certification body)

1.3 GHG Project Description

The project consists of a small hydroelectric power plant (SHP) called Sacre 2 with 30 MW of installed capacity. The plant is located in Brasnorte on the Sacre River, in the state of Mato Grosso, Midwest region of Brazil. The power plant became operational in September, 2006.

The main objective of “Sacre 2 Small Hydro Power Plant Project” is to supply the grid with clean, renewable hydroelectric power while contributing to the regional/local economic development.

Brasil Central Energia S.A., the owner of Sacre 2 Project, is a company from Bertin Group. Bertin Group is a holding 100% national and has 28 productive units with divisions in: farming, food, biodiesel, cosmetic, leather, dog toy, individual protection equipments, industrial hygiene and cleaning, energy, transport, sanitation and construction.

The estimated amount of GHG emission reductions from the project is 445 961 tonnes of CO_{2e} during the first crediting period (7 years) resulting in estimated average annual emission reductions of 63 709 tonnes of CO_{2e}.

Project participants are Brasil Central Energia S.A. and Ecoinvest Carbon Brasil Ltda. Host Party of the project activity is Brazil and it consists of a unilateral project.

The sectoral category of the project activity is Sectoral Scope: 1 – Energy industries (renewable - / non-renewable sources). “Sacre 2 Small Hydro Power Plant Project” generates renewable electricity for the Brazilian South-Southeast-Midwest interconnected grid.

The approved and applied baseline and monitoring methodology is ACM0002 - “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (Version 6, May 19th,2006).

According to the PDD and involved parties the starting date of the project activity is September 14, 2006. The crediting period is committed as a 7 years renewable crediting period and it starts on July 1, 2008.

2 METHODOLOGY

The validation of the project consists of the following three phases:

- Desk review
- Follow-up interviews
- Resolution of clarification and corrective action requests

In order to ensure transparency, a validation protocol was customized for the project, according to the Validation and Verification Manual. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

The validation protocol consists of three tables. The different columns in these tables are described in Figure 1.

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

Validation Protocol Table 1: Mandatory Requirements			
Requirement	**Reference**	**Conclusion**	**Cross reference**
The requirements the project must meet.	Gives reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the Validation report.	Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent Validation process.

Validation Protocol Table 2: Requirement checklist				
Checklist Question	**Reference**	**Means of verification (MoV)**	**Comment**	**Draft and/or Final Conclusion**
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in seven different sections. Each section is then further subdivided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). Clarification is used when the validation team has identified a need for further clarification.

Validation Protocol Table 3: Resolution of Corrective Action and Clarification Requests			
Draft report clarifications and corrective action requests	**Ref. to checklist question in table 2**	**Summary of project owner response**	**Validation conclusion**
If the conclusions from the draft Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	Reference to the checklist question number in Table 2 where the Corrective Action Request or Clarification Request is explained.	The responses given by the Client or other project participants during the communications with the validation team should be summarized in this section.	This section should summarize the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".

Figure 1 Validation Protocol Tables

2.1 Review of Documents

The project design document submitted by the client and additional background documents related to the project design and baseline were reviewed. The audit team has been provided with the first PDD-version issued on September 15, 2006 which had been made public on www.netinform.de. The project design document was assessed by a revision due to a corrective action request and clarification requests issued by TÜV SÜD. The final updated PDD version 9 issued on May 28, 2007 serves as the basis for the assessment presented herewith.

2.2 Follow-up Interviews

In October 2006 TÜV SÜD performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Brasil Central Energia S.A. and Ecoinvest Carbon Brasil Ltda. were interviewed. The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
Representatives of Brasil Central Energia S.A.	• Project design • Technical equipment • Sustainable development issues • Additionality • Crediting period • Monitoring plan • Management system • Environmental impacts • Stakeholder process
Ecoinvest Carbon Brasil Ltda.	• Project design • Technical equipment

	• Sustainable development issues • Baseline determination • Additionality • Crediting period • Monitoring plan • Environmental impacts • Stakeholder process • Approval by the host country

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation was to resolve the requests for corrective actions and clarification and any other outstanding issues which needed to be clarified for TÜV SÜD's positive conclusion on the project design. The Corrective Action Requests (CAR) and Clarification Requests (CR) raised by TÜV SÜD were resolved during communications between the Client and TÜV SÜD. To guarantee the transparency of the validation process, the concerns raised and responses that have been given are summarized in chapter 3 below and documented in more detail in the validation protocol in Annex 1.

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

3 VALIDATION FINDINGS

In the following sections the findings of the validation are stated. The validation findings for each validation subject are presented as follows:

1) The findings from the desk review of the project design documents and the findings from interviews during the follow up visit are summarized. A more detailed record of these findings can be found in the Validation Protocol in Annex 1.

2) Where TÜV SÜD had identified issues that needed clarification or that represented a risk to fulfil project objectives, a Clarification Request or Corrective Action Request, respectively, have been issued. The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Annex 1. The validation of the project resulted in two Corrective Action Requests and six Clarification Requests.

3) Where Clarification or Corrective Action Requests have been issued, the exchanges between the Client and TÜV SÜD to resolve these Clarification or Corrective Action Requests is summarized.

4) The final conclusions for validation subject are presented.

The validation findings relate to the project design as documented and described in the final project design documentation.

3.1 General Description of Project Activity

3.1.1 Discussion

The project participants are Brasil Central Energia S.A. and Ecoinvest Carbon Brasil Ltda. The project is developed by Ecoinvest Carbon Brasil Ltda. Brazil as the host Party meets all relevant participation requirements. The project has been approved by the national DNA and the Letter of Approval has been issued.

The objective of the project ”Brasil Central Energia S.A. – Sacre 2 Small Hydro Power Plant Project” is to avoid greenhouse gas emissions by Sacre 2 Small Hydro Power Plant through supplying clean, renewable electricity to the Brazilian South-Southeast-Midwest interconnected grid system and thus avoiding the use of fossil fuel fired thermal plants. Besides, the project contributes to environmental, social and economic sustainability by increasing the renewable energy’s share of the total Brazilian electricity consumption. The project design does reflect current good practice. The design has been professionally developed. A validation of the compatibility of the single components carried out by the project developer resulted in a positive conclusion. The project does moreover apply state of the art equipment.

The project boundaries are clearly defined. The South-Southeast-Midwest interconnected subsystem of the Brazilian grid where the project activity is located is considered as the spatial boundary. Considering that Sacre 2 has no reservoir, there are no emissions from the project activity neither a spatial boundary for project activity emissions.

The project equipment can be expected to run for the whole project period and it can not be expected that it will be replaced by more efficient technologies. Initial training and maintenance efforts are required. In the PDD and during the visit on site the project developer confirmed that such training has taken place and/or is envisaged.

The project is currently in line with the relevant legislation and plans in the host country. The required environmental licenses are valid and have been submitted to the validation team.

The project is fulfilling the requirements made by the Brazilian DNA and is considered to be in line with the sustainable development policies of Brazil as destruction of GHG emissions in order to combate global climate change and increase the share of renewable energies are relevant issues in the national Brazilian policy.

The environmental impacts of the project are considered small by the host country definition of small-hydro plants, principally as well because the project consists of a run-of-river hydro plant. Thus, no water reservoir is necessary for the project, what avoids possible environmental impacts.

The funding for the project does not lead to a diversion of official development assistance, as according to the information obtained by the audit team, ODA does not contribute to the financing of the project.

The project starting date and the operational lifetime are clearly defined. The crediting period is clearly defined.

3.1.2 Findings

Corrective Action Request 1:

Page 3 (line 3), page 4 (line 6), page 6 (A.4.2.), page 9 (B.3.), page 21 (Step 5), page 36 and page 38 of the PDD are mentioning Sacre II as hydro-power plant with reservoir. Ecoinvest should correct the type of power plant to run-of-river as it has been identified on-site by the validation team.

Answer:

Information has been amended in the last submitted PDD.

Corrective Action Request 2:

Ecoinvest has to update the PDD with the new project start of April 1st, 2007 and thus change the emission reduction calculation.

Answer:

Information has been updated in the last submitted PDD. The project start is determined for September 14, 2006.

Clarification Request 1:

The description of the project activity should include the emission projection, i.e. how many tonnes CO2 the project will reduce.

Answer:

The emission projection is presented in A.4.4. It shows estimated amount of emission reductions over the chosen crediting period.

Clarification Request 2:

The sectoral category 01 should be mentioned in the PDD under A.4.2.

Answer:

Information has been updated in the last submitted PDD.

3.1.3 Conclusion

The corrective action and clarification requests have been resolved and the project does comply with the requirements.

Further details to that conclusion are documented in annex 1 of that validation report.

3.2 Baseline Methodology

3.2.1 Discussion

The project is based on the approved methodology: ACM0002 - "Consolidated baseline methodology for grid-connected electricity generation from renewable sources". The most updated version 6 of the methodology has been approved by the CDM Executive Board on May 19th, 2006. The selected methodology has been designed for this project and hence the project is part of the methodology on which it is build upon. Therefore the respective baseline methodology is deemed to be the most applicable one for this project. The PDD responds convincingly to each of the applicability criteria which are outlined in the baseline methodology.

The application of the methodology and the discussion and determination of the baseline are transparent. The application follows exactly each of the steps outlined in the methodology and answers the corresponding sections in a proper manner.

The baseline is been determined using reliable assumptions. The parameter "Electricity generation of the project delivered to the grid" as one of the decisive parameters for the quantitative prognosis is determined by flow-meters. The energy meters (two) are specified by the energy distribution company and approved by ONS. Sacre 2 utilizes an ION 8600, SM 3050/3 type, manufactured by Schlumberger. These meters are calibrated by CEMAT - Centrais Elétricas Matogrosses S.A at every 2 years, according NBR 14521 (Brazilian Norms – Proceedings for accepting a portion of electric energy electronic meters, from the Portuguese *Procedimentos de Aceitação de lotes de medidores eletrônicos de energia elétrica*). The equipments and meters used in Sacre 2 SHP have been successfully applied to similar projects in Brazil and around the world and have by legal requirements extremely low level of uncertainty. Measurements are controlled in real time by the SHP Digital System and compared between the two meters at the substation, so that any problems can be detected (like water shortage, materials inside the turbines, meter inaccuracy, etc). In case of any problem, plant personnel will be put in action.

During the visit on site this measurement approach has been confirmed by the owner of the project.

Regarding the emissions factor, as a decisive parameter for the calculation of the baseline, the project participants decided at the end of the validation process to switch from the ex-post approach to the ex-ante approach.

The validation team has been informed the project participants that data of 2006 are already available to calculate the emissions factor for 2006. However, as Brazil has a large number of power plants and the system is very complex, the calculation of the Operating Margin emission factor (EF_{OM}) demands a long time for analyzing the data, calculation and revision. At the time of concluding the validation for the purpose of submitting the validation report to the DNA, no further current data than here presented was available. Due to that the emissions factor calculation of 2005 (0.2611 tCO2/MWh) is based on data from the National Dispatch Center ONS from 2003, 2004 and 2005.

In order to determine if the project activity is additional, the additionality tool approved by the Executive Board is applied, with the following steps:

Additionality of the project activity according to PDD	**Evaluation by Validation Team**
Step 0: Not applicable.	The validation team agrees that Step 0 of additionality tool is not applicable.
Step 1. Identification of alternatives to the project activity consistent with current laws and regulations Sub-step 1a. Define alternatives to the project activity Sub-step 1b. Enforcement of applicable laws and regulations:	The validation team agrees that the continuation of the baseline situation is the most likely scenario. At the moment of validation both the baseline scenario and the project scenario are in compliance with all regulations.
Step 2. Investment analysis	The investment analysis has not been applied.
Step 3. Barrier analysis	The investment and institutional barriers mentioned in the PDD are plausible and the validation team agrees that they are obstacles for the implementation of the project. The cash-flow calculation including the calculation of the IRR (Internal Rate of Return) without and with CER credits (see Annex 3) made by Ecoinvest shows how the CER revenues help to overcome the investment barrier.
Step 4. Common Practice Analysis Sub-step 4a: Analyse other activities similar to the proposed project activity Sub-step 4b: Discuss any similar options that are occurring	According to local experience the validation team agrees that similar projects being developed in the country are participating in the PROINFA Program, and those which are not part of the PROINFA program are realised as CDM projects.
Step 5. Impact of CDM registration	The validation team is convinced that the project will not be implemented in the foreseeable future without CDM

Concluding it can be stated that it has been made plausible that the chosen baseline scenario is the one deemed most realistic under the given frame conditions.

References have been made to all data sources used.

3.2.2 Findings

None

3.2.3 Conclusion

The project does comply with the requirements. The calculation of the South-Southeast-Midwest grid factor according to the ACM0002 is based on the years 2003, 2004 and 2005. More recent data are not available so far. The validation team, however, agrees to that calculation and data basis only on the assumption that during the issuance of the Letter of Approval by the Brazilian

Designated National Authority the available data basis can not be updated. In case of updated available data the appropriate grid factor has to be updated.

Further details to that conclusion are documented in annex 1 of that validation report.

3.3 Duration of the Project / Crediting Period

3.3.1 Discussion

According to the PDD and involved parties the starting date of the project activity is on September 14, 2006. The crediting period is committed as a 7 years renewable crediting period and it starts on July 1st, 2008.

3.3.2 Findings

None

3.3.3 Conclusion

The project does comply with the requirements. Further details to that conclusion are documented in annex 1 of that validation report.

3.4 Monitoring Plan

3.4.1 Discussion

The project is based on an approved monitoring methodology ACM0002 - “Consolidated monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources”. The most updated version 6 of the methodology has been approved by the CDM Executive Board on May 19th, 2006.

The selected methodology has been designed for this project and hence the project is part of the methodology it is build upon. Therefore the respective monitoring methodology is deemed to be the most applicable one for this project. The PDD responds convincingly to each of the applicability criteria which are outlined in the monitoring methodology.

Details of the methodology as parameters to be obtained, recording frequency and archiving methods are considered being reasonable and appropriate.

The monitoring plan does include all relevant parameters to determine baseline emissions and it is possible to monitor and/or measure the currently specified GHG indicators. The indicators which are not measured can be obtained from IPCC documents. The parameters defined allow calculating the baseline emissions in a proper manner.

The project is considered to have no negative environmental, social and economic effects and a monitoring of such data is also not required by the applied monitoring methodology. This approach is deemed sufficient.

It is clearly determined who will be responsible for registration, monitoring, measurement, reporting, maintenance and operation and who will be responsible for calibration of the flowmeters.

3.4.2 Findings

Clarification Request 4:

Table B.7.1. of the PDD should mention the uncertainty levels for the parameters EF_y, EG_y and m^2.

Answer:

Information regarding uncertainty level of the variables was included in the last submitted PDD.

Clarification Request 5:

There were no documented procedures to cover those situations. The operation, maintenance and emergency manual which are mentioned in Annex 4 (Monitoring Plan) should be provided to the validation team.

Answer:

Annex 4 (Monitoring Plan) has been changed. The operation maintenance and emergency manual is not mentioned anymore.

Contract between Rede Comercializadora de Energia S/A who will be responsible for the operation and maintenance of Sacre 2 SHP and Sacre 2 has been submitted to the validation team.

Clarification Request 6:

Information dealing with possible monitoring data adjustments and uncertainties, for review of reported results/data, for internal audits of GHG project compliance with operational requirements and for corrective actions should be submitted to the validation team.

Answer:

All the information regards to possible monitoring data adjustments and uncertainties, related to GHG Project, are in compliance with all operational requirements and they were submitted to the validation team.

3.4.3 Conclusion

The validation team can not identify any risks due to inadequate management structure or quality assurance. The above mentioned requests are answered sufficiently for validation purposes. Further details to that conclusion are documented in annex 1 of that validation report.

3.5 Calculation of GHG Emissions by Source

3.5.1 Discussion

The project spatial boundary is clearly described and limited to the South-Southeast-Midwest interconnected grid subsystem. An exact and correct description of the project boundary is included in chapter B.3 of the PDD.

Details of direct and indirect emissions are discussed in the PDD in an appropriate manner. All aspects are covered by the current approach.

The calculations resulting in the final numbers have been submitted. The formulae used are correctly applied.

The calculation of the emission grid factor is based on plants´ daily dispatch information provided by ONS (National System Operator). The data used are from the years 2003, 2004 and 2005. The validation team agrees to that calculation and data basis only on the assumption that during the issuance of the Letter of Approval by the Brazilian Designated National Authority the available data basis can not be updated. In case of updated available data the appropriate emission grid factor has to be updated.

Some estimates are derived from accepted international sources, it seems reasonable to assume that they are accurate. The approach is deemed sufficient.

In the given project leakage emissions are expected not to occur.

Concluding it can be stated that the project emissions will be reduced compared to the baseline scenario by 445 961 tonnes CO2e over a crediting period of seven years, resulting in a calculated annual average of 63 709 tonnes CO2 over a crediting period of seven years.

3.5.2 Findings

Clarification Request 3:

The relevant grid, namely South-Southeast-Midwest grid should be mentioned and described as spatial boundary in Chapter B.3. as well as the spatial boundary for project activity emissions (emissions from reservoir).

Answer:

Information has been updated in the last submitted PDD.

3.5.3 Conclusion

The clarification request has been resolved and the project does comply with the requirements. Further details to that conclusion are documented in annex 1 of that validation report.

3.6 Environmental Impacts

3.6.1 Discussion

The plant has obtained preliminary, construction and operation licenses. The operation license was issued by the State Environmental Secretary SEMA (Mato Grosso). According to information given to the validation team on-site an EIA is not necessary.

Negative environmental effects are not expected to be created by the project. Given the nature of the project design this seems to be reasonable.

Transboundary effects are not expected as the project site is far from the national boundary.

As no significant environmental impacts are expected, such impacts have not influenced the project design.

3.6.2 Findings

None

3.6.3 Conclusion

The project does comply with the environmental requirements.

3.7 Comments by Local Stakeholders

3.7.1 Discussion

Local stakeholders were invited to comment on the project in accordance with the requirements of Resolution 1 of the Brazilian Interministerial Commission on Global Climate Change, the Brazilian DNA. The City Hall, the City Council, the state and municipal environmental agencies, the Brazilian forum of NGOs, the local community association and the state public attorney were invited to comment on the project. The letters sent to these local stakeholders were verified during the on-site visit. One comment of the Brazilian forum of NGOs has been received. The comment has been taken into account and answered respectively.

3.7.2 Findings

None

3.7.3 Conclusion

The project complies with the requirements. Further details to that conclusion are documented in annex 1 of that validation report

3.8 Corrections requested by the CDM Executive Board

(i) Further substantiation of the serious prior consideration of the CDM;

Taking in account the information presented in the PDD section B.5 and the information submitted as response to the under review, it can be confirmed that the start of the construction was not 3 years prior to validation start. The project started construction in December 2004. In the reference presented in the official web site mentioned in the response from the PPs it is clear that this project has been delayed which confirms the statement of the PPs. Additionally it is clear that the project participants have a portfolio of projects and work according to priorities. Due to the fact that this project was not priority at the early stage they have been able to submit for validation only in October 2006. Base on this information it is possible to confirm with a reasonable level of assurance that the CDM was seriously considered for this project.

(ii) Provide confirmation of the validity of the Host Party letter of approval for the project activity; and

The Host Country will submit a new LoA for this project taking into account the final result of the validation process as presented in this report.

(iii) Provides further validation of the investment analysis, in particular the suitability of the benchmark.

The audit team considers it appropriate to use the SELIC rate as benchmark, which is based on 12 month average before decision to implement the project with CDM consideration was made. Further, this benchmark can be considered to be conservative since the cost of equity considering the country risks is higher than SELIC rate. Since project has an equity component it would have been reasonable to consider the cost of equity in arriving at the benchmark which would have made it higher than 21.8%. Although the decision to implement the project considering CDM was made by Grupo Dias in March 2003, it was transferred to Bertin Group in April 2004. According to the long term interest rate available to Bertin Group, the applicable bank spread and reasonable premium it can be seen that benchmark for investment by this group in similar projects is also in the same range. The information presented in the PDD regarding the justification of the benchmark has been validated base on revision of the sources and documents presented. It can be concluded that the benchmark it is appropriate for the project activity.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

TÜV SÜD published the project documents on its website from October 11 until November 09, 2006 and invited comments within 30 days, by Parties, stakeholders and non-governmental organizations.

Published on:

http://www.netinform.de/KE/Wegweiser/Guide2.aspx?ID=2168&Ebene1_ID=26&Ebene2_ID=647&mode=1

During the commenting period there have been no comments received.

5 VALIDATION OPINION

The Certification Body ”Climate and Energy” has been ordered by Bertin Ltda. and Ecoinvest Carbon Brasil Ltda. to validate the project “Brasil Central Energia S.A. – Sacre 2 Small Hydro Power Plant Project”.

Through generation of renewable electricity from a small hydropower plant and its supply into the Brazilian South-Southeast-Midwest interconnected grid subsystem, the project results in reductions of GHG emissions that are real, measurable and give long-term benefits to the mitigation of climate change. By applying the additionality tool it is demonstrated that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented as designed, the project is likely to achieve the estimated amount of emission reductions.

Additionally the assessment team reviewed the estimation of the projected emission reductions. TÜV SÜD can confirm that the indicated amount of emission reductions of 445 961 tonnes CO_{2e} over a crediting period of seven years, resulting in a calculated annual average of 63 709 tonnes CO_{2e} represents a reasonable estimation using the assumptions given by the project documents.

It is opinion of TÜV SÜD that the project as described in the final project design document issued on May 28, 2007 meets all relevant UNFCCC requirements for the CDM, set by the Kyoto Protocol, the Marrakech Accords and relevant guidance by the CDM Executive Board; furthermore that the project meets all relevant host country criteria and correctly applies the baseline and monitoring methodology ACM0002 - “Consolidated baseline methodology for grid-connected electricity generation from renewable sources” (Version 6, May 19th,2006).

Hence, TÜV SÜD will recommend the project for registration as CDM project activity by the CDM Executive Board.

Prior to the submission of this validation report to the CDM Executive Board, TÜV SÜD will have to receive the written approval of the DNA of involved parties, including confirmation by the DNA of Brazil that the project assists in achieving sustainable development. The validation is based on the information made available to TÜV SÜD and the engagement conditions detailed in this report. The validation has been performed using a risk based approach as described above. The only purpose of this report is its use during the registration process as part of the CDM project cycle. Hence, TÜV SÜD can not be held liable by any party for decisions made or not made based on the validation opinion, which will go beyond that purpose.

Munich, 2008/08/21

Abhishek Goyal

Deputy Head certification body
“climate and energy“

Munich, 2008/08/21

Javier Castro

Project Manager

Annex 1: Validation Protocol

Annex 2: Information Reference List