Industrie Service

Validation Report

USINA VALE DO ROSÁRIO
FAZENDA INVERNADA MORRO AGUDO

VALIDATION OF THE
VALE DO ROSÁRIO
BAGASSE COGENERATION
(VRBC)

REPORT NO. 324115098

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TÜV Industrie Service GmbH TÜV SÜD Group
Carbon Management Service
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Subject:	Validation of a CDM Project
Executing Operational Unit:	TÜV Industrie Service GmbH TÜV SÜD Group Carbon Management Service Westendstr. 199 - 80686 Munich Federal Republic of Germany
Client:	Companhia Açucareira Vale do Rosário Usina Vale do Rosário Fazenda Invernada Morro Agudo – SP, Brazil
Contract approved by:	Bernhard Grimm
Report Title:	Validation of the Vale do Rosário Bagasse Cogeneration (VRBC)
Number of pages	17 (including cover page and without annexes)

Summary:

The Certification Body ”Climate and Energy” has been ordered by Usina Vale do Rosario to perform a validation of the above mentioned project.

Using a risk based approach; the validation of this project has been performed by document reviews and on-site inspection, audits at the locations of the project and interviews at the offices of the project developer and the project owner.

In summary, it is TÜV SÜD´s opinion that the “Vale do Rosário Bagasse Cogeneration” (VRBC), as described in the revised project design document of August 2005, 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 AM0015.

Hence, TÜV SÜD will recommend the VRBC 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.

Additionally the assessment team reviewed the estimation of the projected emission reductions. We can confirm that the indicated amount of emission reductions of **164.577** tonnes CO_{2e} over a crediting period of seven years, resulting in a calculated annual average of 23.511 tonnes CO_{2e}, represent a reasonable estimation using the assumptions given by the project documents.

Work carried out by:	Werner Betzenbichler (project manager) Wilson Tomao (ghg auditor) Markus Knödlseder (ghg auditor)	Internal Quality Control by: Michael Rumberg

Abbreviations

AE	Applicant Operational Entity
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CR	Clarification Request
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EIA / EA	Environmental Impact Assessment / Environmental Assessment
ER	Emission reduction
GHG	Greenhouse gas(es)
KP	Kyoto Protocol
MP	Monitoring Plan
NGO	Non Governmental Organisation
PDD	Project Design Document
PPA	Power purchase agreement
TÜV SÜD	TÜV Industrie Service GmbH TÜV SÜD Group
UNFCCC	United Nations Framework Convention on Climate Change
VR	Companhia Açucareira Vale do Rosário
VRBCP	Vale do Rosário Bagasse Cogeneration Project
VVM	Validation and Verification Manual

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1 INTRODUCTION

1.1 Objective

Usina Vale do Rosario has commissioned TÜV Industrie Service GmbH TÜV SÜD Group (TÜV SÜD) to validate the Vale do Rosário Bagasse Cogeneration (VRBC). The validation serves as a design verification and is a requirement of all CDM projects. The purpose of a validation is to have an independent third party assess 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 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.

The audit team has been provided with an early draft PDD in 2001. Based on this documentation a document review and a fact finding mission in form of an on-site audit has taken place. Afterwards the client decided to revise the PDD several times according to established regulations an approved methodology the CARs and CRs indicated in the first audit process also has been taking into account new developments on the regulatory side (as for example the new PDD format); the changes are documented in the reference list, see bullet point 18), 19), and 21). The final PDD version was submitted for publishing in the global stakeholder process in December 2004. It serves as the basis for the assessment presented herewith. In August 2005 a revised final PDD has been submitted in which all open issues and clarification requests have been solved by the project developer by submitting additional or corrected information. That changes are not considered to be significant with respect to the qualification of the project as a CDM project based on the two main objectives of the CDM to achieve a reduction of anthropogenic GHG emissions by sources and to contribute to sustainable development. Hence no repetition of the public stakeholder process has taken place.

Studying the existing documentation belonging to this project, 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

- Technical aspects of cogeneration and the use of biomass
- Monitoring concepts
- Political, economical and technical random conditions in host country

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

The validation team was consisting of the following three experts:

Mr. Werner Betzenbichler	(project manager, GhG auditor)	TÜV SÜD
Mr. Markus Knödlseder	(GHG auditor)	TÜV SÜD
Mr. Wilson Tomao	(local expert, ISO1400 auditor)	TÜV Bayern Brazil

Mr. Werner Betzenbichler is head of the "Certification Body for Climate and Energy" and expert for conventional energy generation, renewable energy, energy expansion planning and familiar with the recent version of CDM and JI criteria as necessary for the implementation of Art. 6 and Art. 12 of the KP. Since 2000 he has been working in the international climate change and emission trading business as a verifier. He was strong involved in the development of the Validation and Verification Manuals (VVM).

Markus Knödlseder: After his professional training as chemical assistance Mr. Knödlseder studied environmental engineer at the University of Applied Science in Bingen, Germany. Beside his main focus in studies of environmental technologies, he dealt with environmental management and environmental controlling issues. He has been a staff at the department "Carbon Management Service" located in the head office of TÜV Industrie Service GmbH, TÜV SÜD Group in Munich since Oct. 2001. He has been involved in the topic of environmental auditing, baselining, monitoring and verification due to the requirements of the Kyoto Protocol with special focus on renewable energies. Mr. Knödlseder is also an auditor for environmental management systems (ISO 14.000).

Mr. Wilson Tomao is lead auditor and former manager of TÜV Bayern Brazil. He is familiar with local laws and regulations and the assessment of technical installations. He assisted Mr. Betzenbichler during the on-site inspections and by evaluating documents submitting in Portuguese language. Meanwhile he can refer to the participation in the validation process of more than 15 CDM-projects in Brazil.

The audit team covers the above mentioned requirements as follows:

- Knowledge of Kyoto Protocol and the Marrakech Accords (Betzenbichler/Knödlseder)
- Environmental and Social Impact Assessment (Betzenbichler/ Tomao)
- Skills in environmental auditing (Betzenbichler/ Tomao)
- Quality assurance (Betzenbichler/ Tomao)
- Technical aspects (Betzenbichler/Knödlseder)
- Monitoring concepts (Betzenbichler/Knödlseder)
- Political, economical and technical random conditions in host country (Tomao)

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":

- Michael Rumberg (deputy head of certification body "climate and energy")

1.3 GHG Project Description

This project activity consists of increasing efficiency in the bagasse (a renewable fuel source, residue from sugarcane processing) cogeneration facility at **Companhia Açucareira Vale do Rosário** (VR), a Brazilian sugar mill. With the implementation of this project, the mill has been able to sell electricity to the national grid, avoiding that fossil-fuelled thermal plants dispatch the same amount of energy to that grid. By that, the initiative avoids CO_2 emissions, also contributing to the regional and national sustainable development.

By investing to increase steam efficiency in the sugar and alcohol production and also increasing the efficiency in the steam production with more efficient boilers, VR generates surplus steam for using it exclusively on electricity production in its power-house, which also required buying turbo-generators.

The municipality where the project is located is Morro Agudo; it is in the northeast of the State of São Paulo, about 340 kilometers (km) far from the state capital, São Paulo, in the agricultural region of Orlândia. The region holds an ample availability of manpower, and communication and transport infrastructures, and can be accessed through a direct highway from São Paulo, "Rodovia Anhangüera" (SP-330).

The technology in in that project for generating megawatt (MW) levels of electricity from biomass is the steam-Rankine cycle, which consists of direct combustion of biomass in a boiler to raise steam, which is then expanded through a turbine. Such combined heat and power (CHP), or cogeneration, systems provide greater levels of energy services per unit of biomass consumed than systems that generate power only.

Using steam-rankine cycle as the basic technology of its cogeneration system, for achieving an increasing amount of surplus electricity to be generated, VR began its energy improvements in four phases, which are:

- **Phase 1 (1990-1994)**: involved installation of higher-efficiency steam turbines and a ten-year contract with then state-owned utility, *Companhia Paulista de Força e Luz* (CPFL), to sell 4 MW to the utility's grid.

- **Phase 2 (1995- 1997)**: involved acquisition of two new boilers and a 12 MW turbo-generator. Another ten-year contract with CPFL was signed then, in order to sell 15 MW of installed capacity to the utility's grid.

- **Phase 3 (2001)**: involves acquisition of a 15 MW turbo-generator and another stand-by one 4 MW turbo-generator in order to increase the surplus electricity available for sale to the grid by 15 MW;

- **Phase 4 (2003)**: as an expansion of the Phase 3 and operational in June 2003, it is based on increasing the pressure in the boiler, which increases the total surplus electric power generation capacity, allowing VR to sell an additional 35 MW energy to CPFL. This phase includes acquisition of one 65-bar boiler and two 25 MW turbo-generators, standing-by two 4 MW turbo-generators, and the enhancement of the energy hub from 138 kV to 42 MVA.

The technology related assets involved in both phases of the VR's project activity system are indicated in following table 1. In spite of being unilaterally funded, technology transfer was applied in VRBC project activity, as the steam turbines are Swedish, manufactured by ABB. The boiler technology is domestic (Brazilian), as is much of the small equipment installed to work with the turbine. Further technical assistance has been incorporated into this CDM project by the Swedish Energy Agency.

Table 1: Detailed description of VRBC project activity

Component of the cogeneration system	Equipments		
	Before VRBC project activity implementation	VRBC project activity	
		Phase 3 (2001)	Phase 4 (2003)
	Total capacity = 36MW	Total capacity = 51MW	Total capacity = 101MW
OPERATION	6 turbo-generators: 3 of 4MW; 2 of 6MW 1 of 12MW	6 turbo-generators: 2 of 4MW 2 of 6MW 1 of 12MW 1 of 15MW (cond.-type)	6 turbo-generators: 2 of 6MW 1 of 12MW 1 of 15MW (cond.-type) 2 of 25MW (cond.-type)
STAND BY	-	1 generator of 4MW	3 generators of 4MW

It is worthy to note that the investments to increase efficiency in phases 3 and 4 are not intended to enhance the sugar production process. It is an entirely new project focused on better exploiting the biomass resource to increase renewable energy production through a closed cycle condensing type steam turbine.

Sectorial Scope of the project is 1 - Energy industries (renewable - / non-renewable sources).

2 METHODOLOGY

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

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

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

The completed validation protocol is enclosed in Appendix A 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 sub-divided. 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 summarised in this section.*	*This section should summarise 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. A complete list of all documents reviewed is attached as Appendix B to this report.

2.2 Follow-up Interviews

In the period of November 27th – 29th, 2001, TÜV SÜD performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the first document review. Representatives of

- Head quarters of CPFL in Campinas, State of Sao Paulo, Brazil, on November 27th, 2001;
- CPFL's Carioba power plant in Americana, State of Sao Paulo, Brazil, on November 27th, 2001;
- Vale do Rosário Sugar Mill in Morro Agudo, State of Sao Paulo, Brazil, on November 28th, 2001 and
- Econergy International Corporation in Sao Paulo, State of Sao Paulo, Brazil, on November 29th 2001
- Operacão Nacional do Sistema (ONS), the national dispatcher of Brazilian grid in Brasilia, State of Brasilia, Brazil, on 30th May 2005

were interviewed. The main topics of the interviews are summarised in Table 2.

Table 2 Interview topics

Interviewed organisation	Interview topics
Vale do Rosário Sugar Mill in Morro Agudo	▪ Project design ▪ Technical equipment ▪ Sustainable development issues ▪ Additionality ▪ Crediting period ▪ Monitoring plan ▪ Management system ▪ Environmental impacts ▪ Stakeholder process ▪ Approval by the host country
Econergy International Corporation	▪ Project design ▪ Technical equipment ▪ Sustainable development issues ▪ Baseline determination ▪ Additionality

	▪ Crediting period ▪ Monitoring plan ▪ Environmental impacts ▪ Stakeholder process
CPFL's Carioba power plant in Americana	▪ Metering system, calibration, power supply
Head quarters of CPFL	▪ Metering system, contracts, bills, responsibilities, sectoral policy
Operacão Nacional do Sistema (ONS)	▪ Operation of Brazilian grid ▪ Objectives and responsibility of ONS ▪ Availability of data and their reliability

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 and Clarification Requests raised by TÜV SÜD were resolved during communication between the client and TÜV SÜD. To guarantee the transparency of the validation process, the concerns raised and responses that have been given are summarised in chapter 3 below and documented in more detail in the validation protocol in Appendix A.

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 final project design document and the findings from interviews during the follow up visit are summarised. A more detailed record of these findings can be found in the Validation Protocol in Appendix A.

2) Where TÜV SÜD had identified issues that needed clarification or that represented a risk to the fulfilment of the project objectives, a Clarification 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 Appendix A. The validation of the project resulted in two Corrective Action Request and one Clarification Request.

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 are summarised.

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 01/08/2005.

3.1 Project Design

3.1.1 Discussion

As mentioned above the purpose of the project is to avoid CO2 emissions from fossil power plants by increasing the efficiency of the existing renewable energy generation. The surplus of electricity being generated by an installed CHP plant is fed into the grid. The whole energy generation is based on renewable biomass, here bagasse from the sugar cane process. Hence, the project contributes to the sustainable development in Brazil, reducing GHG emissions, substituting electricity generated by gas-fired plants through electricity generated from biomass (renewable energy).

The project also contributes to the sustainable development by saving jobs and generating new jobs.

The design engineering does reflect current good practices. The design has been professionally developed. Subsequently the project got approval by the relevant authorities. The project itself does apply state of the art equipment. Regarding the employed technology, there is no requirement to change the existing technology as a result of running out of life-time of the existing technical equipment. There are no significant indications that the technology used to implement the project could be substituted during the envisaged operational lifetime of the project activity (25 years) and in particular in the first crediting period until 2007.

The first crediting period is 2001 – 2007, with the intention for renewal. The operational lifetime of the project is 25 years.

The project is in line with relevant legislation of the Brazil. According to the public available document renewable energy projects belong to the favoured options under the CDM. Hence, the project can currently be seen as being in line with the host country specific requirements for CDM.

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 starting date as well as the operational lifetime are clearly defined and also handled in a reasonable manner. The first crediting period is with 7 years clearly defined.

Moreover its is assured that as the start of the crediting period is before the registration of the project that the project activities starting date falls in the period between 1 January 2000 and the registration of the first clean development mechanism project. The start of project activities has been before the registration date of the first clean development mechanism project.

3.1.2 Findings

Outstanding issue:

The project has not obtained a Letter of Approval/ Letter of Authorization from the Brazilian government so far. No documentation has been submitted to the validation team. The issuance of these documents will also demonstrate whether the project is in line with sustainable development policies of the host country

Response:

The response will be given by the issuance of the Letter of Approval. This has not happened so far as the approval of the project depends on the review of the validation report which has to be submitted in advance.

3.1.3 Conclusion

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.

3.2 Baseline and Additionality

3.2.1 Discussion

By dispatching renewable electricity to a grid, electricity that would otherwise be produced using fossil fuel is displaced. This electricity displacement will occur in the system's margin, i.e. this CDM project will displace electricity that is produced by marginal sources - fossil fueled thermal plants - , which have higher electricity dispatching costs and are solicited only over the hours that base load sources (low-cost or must-run sources) cannot supply the grid.

According to the applied and approved methodology AM0015 the project activity follows the steps provided by the methodology taking into account the (b) Simple Adjusted OM calculation for the STEP 1, since there would be no available data for applying to the preferred option – *(c) Dispatch Data Analysis OM.* For STEP 2, the option 1 was chosen.

The physical boundary is the Brazilian grid south-southeast-midwest, controlled by ONS.

The application of the Additionality Tool the project can be confirmed as additional. The economic unattractiveness of enhancing the already existing cogeneration process is indicating the additionality of this project; because the improved operation of the energy processes is not considered as necessary for the operation of Vale do Rosario Sugar Mill. The project baseline is clearly, retraceable and plausibly displayed in the project BLS. Possible project alternatives are discussed.

3.2.2 Findings

Corrective Action Request No 1:

The application of the methodology and the discussion and determination of the chosen baseline is transparent, but not correct. Used data for calculating the emission factors from the OECD study are not are not eligible, as they are too old. Updated data should be applied. If data from ONS will be used for calculation of new emission factor, the special circumstances and weakness of that approach shall be pointed out.

Response:

Revised PDD and revised baseline calculations were submitted.

Corrective Action Request No. 2:

The baseline boundaries are not clearly defined and do not sufficiently cover sources and sinks for baseline emissions as old data from the OECD does not reflect the imports and exports. Imports and export of electricity has to be considered.

Response:

Revised PDD and revised baseline calculations were submitted.

3.2.3 Conclusion

The revised baseline calculation is based on latest available data and in line with calculation method of applied and approved Methodology AM0015. Delivered information can be confirmed. However the baseline calculations have according to available data some weaknesses:

i. The ONS grid includes only 76% of installed capacity and 20% of installed power plants,
ii. ONS dispatch only power plant bigger than 30 MWel,
iii. ONS has no control over sub grids below 138 kV.

In spite of those weaknesses the validation team confirms that the chosen baseline determination is transparent and according to approved methodology against the background of available data. Those special circumstances of the project boundary are also described in the final PDD version, which is the base for that conclusion.

The projects baseline and additionality is in line with appropriate requirements.

3.3 Monitoring Plan

3.3.1 Discussion

The monitoring plan is appropriate, traceable and transparent. The generated electricity that is fed into the grid in order to estimate emissions within the project boundary can be measured simply and with an appropriate accuracy. According to the interview with ONS needed data for calculating the combined margin will be made available to the project developer.

As the project is already in operation it can be confirmed that monthly and annual reporting of the collected data at the several monitoring points is working, the responsibilities for registration, monitoring, measurement and reporting are established.

Uncertainty and possibility of monitoring errors are addressed and discussed plausible in the project documents.

3.3.2 Findings

None

3.3.3 Conclusion

The projects monitoring plan is line with approved methodology AM0015.

3.4 Calculation of GHG Emissions

3.4.1 Discussion

The calculation follows the approach of the approved methodology AM0015, using the simple adjusted operational margin in order to calculate the combined margin as a fifty-fifty mix of operational and build margin.

The amount of prospective generated electricity is multiplied with this combined margin in order to calculate the emission reduction in the grid.

The data sources are reliable and the approach of calculating the operational and the build margin is traceable and correct against the background of available data and chosen project boundary.

3.4.2 Findings

Clarification Request No. 1:

The last PDD version (VALE PDD 08.01.05 HG.pdf) mentioned a change in the PPA since time of on-site visits. It is necessary to provide the most recent version of the PPA in order to assess the emission reduction estimation.

Response:

Updated PPA was submitted.

3.4.3 Conclusion

The project will result in a reduction of GHGs. The calculated estimation of prospective emission reductions, stated with **164.577** tonnes CO2 totally within the crediting period of seven years seems to be realistic.

3.5 Environmental Impacts

3.5.1 Discussion

An Environmental Impact assessment has to be submitted to the responsible national authorities.

A RAP (“Preliminary Environmental Report”) was submitted to the relevant authority (SMA - State Secretary of Environment and CETESB). The RAP was approved by CETESB and an Installation License has been awarded to Vale do Rosario (VR) sugar mill in 2001.

3.5.2 Findings

None

3.5.3 Conclusion

The project is in line with national and regional law. No negative environmental effects are to be expected, environmental impacts are sufficiently documented. The project fulfils the requirements of the UNFCCC.

3.6 Comments by Local Stakeholders

3.6.1 Discussion

A local stakeholder process was performed in order to inform about project activity. According to the requirements of the Brazilian DNA the stakeholder were invited to comment the project.

3.6.2 Findings

None

3.6.3 Conclusion

VR did not receive any comments on the project. Since no comments were received, VRBCP fulfils relevant requirements.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

TÜV SÜD published the project documents on UNFCCC website and on its own website from **27th of December 2004** for 30 days and invited comments by Parties, stakeholders and non-governmental organisations. No comments were received.

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5 VALIDATION OPINION

TÜV SÜD has performed a validation of the Validation of the Vale do Rosário Bagasse Cogeneration Project, Brazil. The validation was performed on the basis of UNFCCC criteria and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and subsequent decisions by the CDM Executive Board.

The review of the project design documentation and the subsequent follow-up interviews have provided TÜV SÜD with sufficient evidence to determine the fulfilment of stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM under the condition that a written Letter of Approval will be issued by involved parties. By the time we will receive the LoA TÜV SÜD will recommend the project for registration by the CDM Executive Board.

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

By displacing fossil fuel-based electricity in principal with electricity generated from a renewable source, the project results in reductions of CO_2 emissions that are real, measurable and give long-term benefits to the mitigation of climate change. An analysis of the investment and technological barriers demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented as designed, the project is likely to achieve the estimated amount of emission reductions.

Additionally the assessment team reviewed the estimation of the projected emission reductions. We can confirm that the indicated amount of emission reductions of **164.577** tonnes CO_{2e} over a crediting period of seven years, resulting in a calculated annual average of 23,511 tonnes CO_{2e}, represent a reasonable estimation using the assumptions given by the project documents.

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

Munich, 2005-08-25

Michael Rumberg

Deputy of certification body "climate and energy"

Munich, 2005-08-25

Werner Betzenbichler

Project Manager

Industrie Service

Appendix A: Validation Protocol

Appendix B: Information Reference List