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Validation Report

SANTECH - SANEAMENTO & TECNOLOGIA AMBIENTAL LTDA.

Validation of the SANTECH – Saneamento & Tecnologia Ambiental Ltda. – SANTEC Resíduos landfill gas emission reduction Project Activity

Report No. 857948, rev. 1

16.12.2006

TÜV SÜD Industrie Service GmbH
Carbon Management Service
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Industrie Service

Report No.	Date of first issue	Revision No.	Date of this revision	Certificate No.
857948	24.11.2006	01	16.12.2006	-
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:		Santech - Saneamento & Tecnologia Ambiental Ltda. Rua Afonso Brás , 900/conj.71 - Vila Nova Conceição São Paulo, CEP 04511-001 Brazil		
Contract approved by:		Werner Betzenbichler		
Report Title:		SANTECH – Saneamento & Tecnologia Ambiental Ltda. – SANTEC Resíduos landfill gas emission reduction Project Activity		
Number of pages		20 (excluding annexes and cover page)		

Summary:

The Certification Body ”Climate and Energy” has been ordered by SANTECH – Saneamento & Tecnologia Ambiental Ltda. and Ecoinvest Carbon Ltda. to perform a validation of the above mentioned project.

In summary, it is TÜV SÜD´s opinion that the project “SANTECH – Saneamento & Tecnologia Ambiental Ltda. – SANTEC Resíduos landfill gas emission reduction Project Activity”, as described in the revised project design document of December, 15, 2006, 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 ACM0001 “Consolidated baseline methodology for landfill gas project activities” (version 4, 28 July 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 205,112 tonnes CO_{2e} over a crediting period of seven years, resulting in a calculated annual average of 29,302 tonnes CO_{2e} represents a reasonable estimation using the assumptions given by the project documents.

Work carried out by:	Markus Knödlseder Johann Thaler	Internal Quality Control by:	Werner Betzenbichler

Abbreviations

Ecoinvest Brasil	Ecoinvest Carbon Assessoria Ltda.
Santech Ltda.	Santech - Saneamento & Tecnologia Ambiental Ltda.
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CR	Clarification Request
DOE	Designated Operational Entity
EIA / EA	Environmental Impact Assessment / Environmental Assessment
ER	Emission reduction
GHG	Greenhouse gas(es)
KP	Kyoto Protocol
LFG	Landfill Gas
MP	Monitoring Plan
PDD	Project Design Document
TÜV SÜD	TÜV SÜD Industrie Service GmbH
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual

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1 INTRODUCTION

1.1 Objective

Ecoinvest Carbon Ltda. and Santech have commissioned TÜV SÜD Industrie Service GmbH (TÜV SÜD) to validate the SANTECH – Saneamento & Tecnologia Ambiental Ltda. – SANTEC Resíduos landfill gas emission reduction Project Activity. 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 July 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 12 was submitted on December 15, 2006 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.

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 Industrie Service GmbH, TÜV Süd Group in 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.

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 (All)

- Environmental and Social Impact Assessment (All)
- Skills in environmental auditing (ISO 14000, EMAS) (Knoedlseder)
- Quality assurance (Knödlseder)
- Landfill operations including knowledge about LFG collection technology (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”:

Werner Betzenbichler (project manager, GHG lead auditor)

1.3 GHG Project Description

SANTECH – Saneamento & Tecnologia Ambiental Ltda. is a waste management services holding which was founded in 2005. It was created to develop new technologies in the complete process of waste management, from pick-up to final disposal at sites strategically designed for waste treatment. Santec Residuos, belonging to the holding and site of the landfill, is located in Içara, state of Santa Catarina, south region of Brazil. The landfill receives 240 tonnes of deposit waste each day (80 % of domestic and 20 % industrial waste) and prediction until the previsioned closing date in 2025 is 2 million tonnes approximately. There is a passive venting system for biogas installed since the day it started to operate in September 2005.

The project activity involves the installation of methane collection and destruction equipment, which increases the LFG destruction efficiency from between 5 % and 20 % before to about 70 %. Through landfill gas capture and flaring greenhouse gas emissions are avoided.

The estimated amount of GHG emission reductions from the project is 205,112 tonnes of CO_{2e} during the first crediting period (7 years) resulting in estimated average annual emission reductions of 29,302 tonnes of CO_{2e}.

Project participants are SANTECH – Saneamento & Tecnologia Ambiental Ltda.and Ecoinvest Carbon Assessoria Ltda. Host Party of the project activity is Brazil and it consists of a unilateral project.

The sectoral category of the project activity is 13 “Waste Handling and Disposal”.

The approved and applied baseline and monitoring methodology is ACM0001 “Consolidated baseline methodology for landfill gas project activities” (version 4, 28 July 2006)

According to the PDD and involved parties the starting date of the project activity is March 31, 2005. The crediting period is committed as a 7 years renewable crediting period and it starts on April, 01, 2007.

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 July 26, 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 12 issued on December 15, 2006 serves as the basis for the assessment presented herewith.

2.2 Follow-up Interviews

In August 2006 TÜV SÜD performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Santech Ltda. and Ecoinvest Brazil Ltda. were interviewed. The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
Representatives of Santech Ltda.	• Project design • Technical equipment • Sustainable development issues • Additionality • Crediting period • Monitoring plan • Management system • Environmental impacts • Stakeholder process
Ecoinvest Brazil 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 one Corrective Action Requests and eleven 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 Santech Ltda and Ecoinvest Brazil Ltda. The project is developed by Ecoinvest Brazil Ltda. Brazil as the host Party meets all relevant participation requirements. But the project has not been approved by the national DNA yet and no Letter of Authorization has been issued.

The objective of the project ”SANTECH – Saneamento & Tecnologia Ambiental Ltda. – SANTEC Resíduos landfill gas emission reduction Project Activity” is to avoid greenhouse gas emissions by the SANTEC Resíduos landfill through landfill gas capture and flaring, while contributing to the environmental, social and economic sustainability by minimizing global climate changes and local air pollution.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 in the PDD. The GPS coordinates of four corner points of the landfill define and limit the area of the landfill site. Regarding the electricity consumption it is the interconnected grid South-Southeast-Midwest which defines the spatial boundary.

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.

It is not clear whether Brazil requires any specific CDM requirements to be fulfilled. But the project 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 improvements in waste management practices are relevant issues in the national Brazilian policy. The question can finally be answered after the issuance of the Letter of Approval by the Brazilian DNA.

It can be expected that the project will create additional environmental benefits by reducing emissions of Volatile Organics Compounds (VOCs). The project may also have significant health and safety benefits at the local level.

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:

However, it is not mentioned in the description of the project activity that the project only consists of flaring of the captured gas and hence only claims CER credits for methane destruction, and not also for the generation of renewable energy. The project developer should add the information in the description of the project activity.

Answer:

The PDD was amended and the most current version was sent to the validation team.

Clarification Request 1:

Participants Declaration shall be signed by Ecoinvest Carbon and Santech before submitting to the Brazilian DNA.

Answer:

Appropriate information has been sent to the validation team.

Clarification Request 2:

It should be added the GPS information of the project site and indicated the exact address:

Rodovia BR 101, km 389, Içara;

Besides, the validation team recommends to use a more detailed map in the PDD.

Answer:

The PDD was amended and the most current version was sent to the validation team.

Clarification Request 3:

1. The collection efficiency is indicated with 75 % in the PDD compared with 80 % used in the calculations. Ecoinvest should explain this difference, use one unique number and explain why this number was used.

2. The description of the technology in the PDD mentions PVC or another impermeable material used to prevent the biogas to come out through the landfill surface. However, during the on-site

visit it was told by Santech to the validation team that the Brazilian legislation does not permit the use of PVC for such purposes. It will be used a polyetylene of high density (PHDB) for the project. Ecoinvest should adjust these informations in the PDD.

Answer:

1. The collection efficiency was modified to 70 % for reasons of conservativeness, as shown in the last submitted PDD, Annex 3.

2. The landfill will be recovered by clay. HDPE (High-density polyethylene) is the material utilized in the base of the landfill for preventing groundwater contaminations by the leachate.

Clarification Request 4:

However it has not been presented neither a financial nor a business plan to the validation team showing that the financing of the project will be realised by own equity capital and private credits. The validation team may accept the statements made by Santech during the on-site visit only if the necessary documents will be provided within 8-10 weeks to the validation team as promised by Santech Ltda. during the on-site visit.

Answer:

Appropriate information has been sent to the validation team.

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 this validation report.

3.2 Baseline Methodology

3.2.1 Discussion

The project is based on the approved methodology: ACM0001 “Consolidated baseline methodology for landfill gas project activities”.

The most updated version 4 of the methodology has been approved by the CDM Executive Board on July 28, 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 “landfill gas (methane) flared by the project as one of the decisive parameters for the quantitative prognosis is determined by a flow-meter and a gas analyzer installed at the facility and monitored electronically through a programmable logic control system. Using data of the temperature and pressure, the flow is converted to Nm³ (methane in the normal conditions – 0°C and 1,013 bar) and multiplied by the methane percentage into the landfill gas (measured for continuous gas analyzer) to result Nm³ methane. Discounting such number by 20% (Effectiveness Adjustment Factor), the emission reductions from the project are determined. The flow-meter will be calibrated periodically by an officially accredited entity.

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

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 according to current law the continuation of the actual business as usual situation is the most likely scenario. At the moment of validation no concrete activities regarding enforcing regulations about landfill gas collection can be identified by the validation team.
Step 2. Investment analysis Sub-step 2b. – Option I. Apply simple cost analysis	A brief simple cost analysis demonstrates that continuation of current baseline situation is more economical than the project activity without CER revenues.

Step 3. Barrier analysis	The barrier analysis has not been applied. However, since there is no other plausibly alternative than the continuation the Barrier Analysis is not eligible.
Step 4. Common Practice Analysis Sub-step 4a: Analyze 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 it is not common to use forced methane extraction and flaring of gas. Some few projects which are mentioned in the PDD are all, according to the knowledge of the validation team, collection and flaring systems, which are implemented 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, as no others than the revenues of CDM would be expected from that kind of projects.

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.

Concluding, the validation team may confirm, that there does not exist any federal nor state legislation, demanding the capturing and flaring of methane emissions for the project. According to Brazilian environmental authorities it is only possible to issue relevant documents if there exists a legislation. The operational licence, with all its conditions for the implementation of the landfill project, would mention the necessity to collect and flare methane emissions. Thus, the operational licence of the project is attached as Annex 3 of this document as strongest argument for the additionality of the project.

3.2.2 Findings

Clarification Request 5:

1. Equation 6 of chapter B.6.1. describes $MD_{reg,y}$ as" the quantity of methane destroyed for the generation of thermal energy". However, equation 1 of chapter B.6.1. describes it as "the amount of methane that would have been destroyed/combusted during the year in the absence of the project, in tonnes of methane (tCH4)". Equation 6 of chapter B.6.1. has to use the same explaination of the parameter $MD_{reg,y}$ as the equation 1 which is the definition given in the methodology.
2. It should be indicated the literature used for the Adjustment Factor of 20 %, the rate of biogas collection of 80 % and the flare efficiency which is indicated between 95 and 96 % in the PDD.

Answer:

1. The PDD was amended and the most current version of the PDD was sent to the validation team.

2. The number was based in project registered http://cdm.unfccc.int/UserManagement/FileStorage/FS_285759185), but to be conservative the project will use 70%.

3.2.3 Conclusion

The clarification requests have been resolved and the project does comply with the requirements. The calculation of the South-Southeast 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 March, 31, 2005. The crediting period is committed as a 7 years renewable crediting period and it starts on April, 1st,2007.

3.3.2 Findings

Clarification Request 6:

The start of the crediting period is defined in the PDD for April 1st, 2007. However, the validation team has noticed during the on-site visit that this starting date is rather improbable as the project equipment will be purchased only in the beginning of 2007 and installation needs about 6 months. The validation team asks to clarify Ecoinvest if the envisioned project schedule is feasible?

Answer:

The foreseen date will be maintained.

3.3.3 Conclusion

The corrective action 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.

After the on-site visit, the validation team informed the project participants about its preoccupations whether the crediting period may start as intended. The project participants hold on to the starting date of April, 1st, 2007.

3.4 Monitoring Plan

3.4.1 Discussion

The project is based on an approved monitoring methodology. The most updated version 4 of the methodology has been approved by the CDM Executive Board on July 28, 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 and project 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 and projecting emissions in a proper manner.

The monitoring plan does include all relevant parameters to determine potential leakage emissions. It is not expected that the project causes leakage emissions. 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.

A Monitoring Manual will be only written, after having purchased the project equipment. Then it will be also clearer, who will be responsible for registration, monitoring, measurement and reporting within the company and which agencies will be responsible for calibration of the flowmeters.

3.4.2 Findings

Clarification Request 7:

However, during the on-site visit there has not been presented documents like a Monitoring Manual or monitoring procedures to the validation team showing how the monitoring looks like and confirming the information given in the PDD. Santech has assured to the validation team to provide such information within 8-10 weeks from the date of the on-site visit. Ecoinvest and Santech should make sure, that the validation team will receive the necessary information.

Answer:

The PDD was amended and the most current version of the PDD was sent to the validation team.

Clarification Request 8:

Although chapter B.7.1. mentions quality control procedures and quality assurance procedures for certain parameters, it is nothing said about the uncertainty levels, which are mentioned in the methodology. Ecoinvest should add the uncertainty levels for such parameters, where QC and QA procedures are mentioned.

Answer:

The PDD was amended and the most current version of the PDD was sent to the validation team.

Clarification Request 9:

The monitoring information in Annex 4 is referring to Table 4b that explains the monitoring and calibration procedures. However, it is not possible for the validation team to find this Table in the PDD. Hence, the given information in the monitoring plan is quite general and should be more project specific, informing in detail about the project specific monitoring and calibration procedures.

Answer:

The PDD was amended and the most current version of the PDD was sent 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. However, for verification purposes it should be presented a Monitoring Manual explaining in detail monitoring procedures, tasks and responsibilities. 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 boundaries are clearly described and limited both to the landfill site and to the baseline energy grid. An exact and correct description of the project boundaries is given in the PDD. The GPS coordinates of four corner points of the landfill define and limit the area of the landfill site. Regarding the electricity consumption it is the interconnected grid South-Southeast-Midwest which defines the spatial boundary.

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 factor for determination of the electricity consumption at the landfill site is based on plants´ daily dispatch information provided by ONS (National System Operator). The emission factor has been calculated ex-ante and will be the same for all the years during the first crediting period. 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 205,112 tonnes CO2e over a crediting period of seven years, resulting in a calculated annual average of 29,302 tonnes CO2 over a crediting period of seven years.

3.5.2 Findings

Clarification Request 10:

The PDD should explicitly mention the spatial boundaries of the project activity, regarding the sources.

Answer:

The PDD was amended and the most current version of the PDD was sent to the validation team. 4 GPS coordinates define and limit the area of the landfill site.

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 this validation report.

3.6 Environmental Impacts

3.6.1 Discussion

The project has received a valid operational license issued by FATMA (*Fundação do Meio Ambiente*), the environmental agency of Santa Catarina after the Environmental Impact Assessment was carried out for the project. For the CDM project itself no EIA is 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. No comments were received.

3.7.2 Findings

Clarification Request 11:

Ecoinvest (who was in charge for the invitations) has provided all receipts to the validation team, showing that the invitations were sent to the local stakeholders. However, one receipt, namely for the “Local community association” is still missing. Ecoinvest should provide this missing receipt to the validation team.

Answer:

Appropriate information has been provided.

3.7.3 Conclusion

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

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

TÜV SÜD published the project documents on its website from August 15 until September 13, 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=1793&Ebene1_ID=26&Ebene2_ID=515&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 Santech Ltda. and Ecoinvest to validate the project “SANTECH – Saneamento & Tecnologia Ambiental Ltda. – SANTEC Resíduos landfill gas emission reduction Project Activity”.

Through landfill gas capture and flaring, 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. We can confirm that the indicated amount of emission reductions of 205,112 tonnes CO_{2e} over a crediting period of seven years, resulting in a calculated annual average of 29,302 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 , version12, issued on December 15, 2006 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 ACM0001 “Consolidated baseline methodology for landfill gas project activities” (version 4, 28 July 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, 2006/12/16

Werner Betzenbichler

Head of certification body
“climate and energy“

Munich, 2006/12/16

Markus Knödlseder

Project Manager

Annex 1: Validation Protocol

Annex 2: Information Reference List