FINAL VALIDATION REPORT

ALTO TIETÊ BIOGÁS, REDUÇÃO DE EMISSÕES E GERAÇÃO DE ENERGIA LTDA.

ALTO-TIETE LANDFILL GAS CAPTURE PROJECT

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Approved by: Mr. Wielpütz	Organisational unit: TÜV Nord JI/CDM Certification Program
Client: Alto Tietê Biogás, Redução de Emissões e Geração de Energia Ltda.	Client ref.: Mr. Iule Roberto Pais de Arruda

Summary/Opinion:

Alto Tietê Biogás, Redução de Emissões e Geração de Energia Ltda. has commissioned the TÜV NORD JI/CDM Certification Program to validate the project: "Alto-Tiete landfill gas capture project", with regard to the relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria include article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakech Accords), and the relevant decisions by COP/MOP and CDM Executive Board.

The project intends to reduce GHG emissions by capturing and flaring landfill gas from the landfill Alto Tiete and convert it into less harmful CO_2.

A risk-based approach has been followed to perform this validation. In the course of the validation 10 Corrective Action Requests (CARs) and 11 Clarification Requests (CRs) were raised and successfully closed.

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

In detail the conclusions can be summarised as follows:

- The validation team is convinced that the project is in line with all relevant host country criteria (Brazil) and all relevant UNFCCC requirements for CDM. Nevertheless the LoA´s of both parties are pending.
- The Brazilian DNA will only issue the host country approval on the basis of this positive validation opinion by the validator of the project. Thus the LoA could not be considered at the present validation stage.
- The project additionality is sufficiently justified in the PDD.
- The monitoring plan is transparent and adequate.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 3,364,168 t CO_{2e} is most likely to be achieved within the first 7 y crediting period.

The conclusions of this validation report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation except the host county approval which will be issued on the basis of this report.

Report No.: BRS–020 /2006-06/09	Subject Group: Environment	
Report title: *Alto-Tiete landfill gas capture project*		
Work carried out by: Maria Carolina Crisci Coelho; Dr. Ortrun Janson-Mundel; Rainer Winter		
Work verified by: Wolfgang Wielpütz		
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Indexing terms

Climate change
CDM
Validation
Kyoto Protocol

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Abbreviations

BAU	Business as usual
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
CETESB	Environmental and sanitation company of the São Paulo state (Companhia de Tecnologia de Saneamento Ambiental)
CH_4	Methane
CO_2	Carbon dioxide
CO_{2e}	Carbon dioxide equivalent
CP	Certification Program
CR	Clarification Request
DNA	Designated National Authority
EB	CDM Executive Board
EIA	Environmental Impact Assessment
GHG	Greenhouse gas(es)
hPa	Hectopascal
K	Kelvin
kW	Kilowatt
kWh	Kilowatt hour
LFG	Landfill gas
LoA	Letter of Approval
m	Meter
m^3	Cubic metres
MW	Megawatt
Nm^3	Standard cubic metres
PDD	Project Design Document
QC/QA	Quality control/Quality assurance
UNFCCC	United Nations Framework Convention on Climate Change

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1 INTRODUCTION

Alto Tietê Biogás, Redução de Emissões e Geração de Energia Ltda. has commissioned the JI/CDM Certification Program (CP) of TÜV NORD CERT GmbH to validate the project:

Alto-Tiete landfill gas capture project

with regard to the relevant requirements for Large – Scale CDM project activities.

1.1 Objective

The purpose of this 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

- the requirements of Article 12 of the Kyoto Protocol /KP/ ; the CDM modalities and procedures as agreed in the Marrakech Accords under decision 17/CP.7 /MA/; the annex to the decision; subsequent decisions made by CDM Executive Board,
- other relevant rules, including the host country (Brazil) legislation and sustainability 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 seen as necessary to provide assurance to stakeholders on the quality of the project and its intended generation of certified emission reductions (CERs).

1.2 Scope

The validation scope is given as an independent and objective review of the project design, the project's baseline study and monitoring plan (based on ACM0001 /ACM/) which are included in the PDD and other relevant supporting documents.

The items covered in the validation are described below:

- **UNFCCC & Host Country Criteria**
  - UNFCCC/Kyoto Protocol requirements, in particular, the requirements of the CDM as set out in decision 17/CP.7 (Marrakech Accords) /MA/, the present annex and relevant decisions by CDM Executive Board
  - Host country requirements / criteria

- **CDM Project Description**
  - Project design
  - Project boundaries
  - Predicted CDM project GHG emissions

- **Project Baseline**
  - Baseline methodology
  - Baseline GHG emissions

- **Monitoring Plan**
  - Monitoring methodologies
  - Indicators/data to be monitored and reported
  - Responsibilities

- **Background investigation and follow up interviews**

- **Global Stakeholder consultation**
  - Publishing the PDD on the TÜV NORD website
  - Review of comments

- **Draft validation reporting with CARs & CRs, if any**

- **Final validation reporting.**

The information included in the PDD and the supporting documents were reviewed against the requirements and criteria mentioned above. The TÜV NORD JI/CDM CP has, based on the recommendations in the Validation and Verification Manual/VVM/, 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 based on the information made available to TÜV NORD JI/CDM CP and on the contract conditions.

The validation is not meant to provide any consulting to the Alto Tietê Biogás, Redução de Emissões e Geração de Energia Ltda. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 History of the project

The project activity was already validated in the period March to June ’06. The PDD/PDD1/ was made publicly available through TÜV NORD JI/CDM CP website www.global-warming.de. Comments on the PDD were invited, i.e. 04 March 2006 to 12 April 2006. The validation was finalised in June 2006. The final validation report/FVR1/ and the revised PDD/PDD2/ were submitted to the Brazilian DNA to apply for the letter of approval. In the course of the approval process the Brazilian DNA demanded the substitution of the meanwhile valid template of the PDD (version

03.1)[/DNA1/]. The PDD and the final validation report were changed accordingly[/PDD3/,/FVR2/] and submitted again to the Brazilian DNA. Within the re-evaluation the Brazilian DNA requested the alteration of the methodology (ACM0001 instead of AM00011) and a corresponding revision of the PDD and the validation report[/DNA2/]. The PDD was revised again[/PDD4/] and (re-)published on the above given website. A draft validation report was issued based on this version of the PDD[/PDD4/]. After reviewing the revised and resubmitted project documentation; resolving the CRs & CARs raised and outstanding concerns TÜV NORD JI/CDM CP issued this final validation report.

1.4 GHG Project Description

1.4.1 Project Scope

The considered GHG project can be classified as a large-scale CDM project in the sector given in Table 1-1 (according to List of Sectoral Scopes of UNFCCC).

Table 1-1: Project Scope

No.	Project Scope
13	Waste handling and disposal

1.4.2 Project Entities

The following parties are involved in the developing of the project:

Project Participant 1:	Alto Tietê Biogás, Redução de Emissões e Geração de Energia Ltda.
(Hosty country)	Sandovalina, 53 – Bairro Morro Branco 08572-580 Itaquaquecetuba – SP Brazil
Contact person:	Mr. Iule Roberto Pais de Arruda (Director) +55-11-81720122 prat_iulearruda@hotmail.com
Project Participant 2:	Carbon Capital Markets Ltd
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Project Consultant: Ecológica Assessoria
Rua Dr. Bacelar nº 231 conjunto 31 – Edifício Cleveland
04026000 – São Paulo – SP
Brazil

Contact Person: Mr. Divaldo Costa Rezende
+55-11-50833252
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1.4.3 Project location

The project site is located at the municipality of Itaquaquecetuba, northeast of São Paulo state, in the Alto-Tiete region.
The waste disposition area is of 500,000 m^2 from a total surface of 884,000 m^2, including 2,319 m^2 of constructed areas.

1.4.4 Technical project description

The project activity involves the installation of a gas collection and flaring system (enclosed flares) through a network of pipes connected to the wellheads at the already existing cells and at the new cells in parallel to the waste disposal.

Vertical progressive drains to extract gas will compose the gas collection system. The drains are equipped with gas sensors (sampling points) to monitor the landfill gas flux and quality in order to analyse the trace gases.

This project activity is expected to reduce CO_2 emissions over the chosen 07-year "renewable crediting period" of 3,364,168 tCO_{2e} starting at 1st March 2008 and lasting until 28th February 2015.

2 VALIDATION TEAM

- The Validation Team was led by Mr. Rainer Winter. Mr. Winter works at TÜV NORD CERT GmbH as ISO 9001/ISO 14001 Auditor and environmental verifier for EMAS. He is also an approved emission verifier within the European Emission Trading Scheme. Mr. Winter is an authorized JI/CDM assessor and is in charge of the JI/CDM Certification Program of TÜV NORD CERT GmbH. For this validation he was assisted by:
- Maria Carolina Crisci Coelho, BRTÜV-Brazil (TÜV NORD Brazil), Mrs. Coelho is ISO 14001 Auditor and Product Manager for CDM Services for BRTÜV. She is an appointed expert for JI/CDM certification program of TÜV NORD CERT GmbH.
- Dr. Ortrun Janson-Mundel, TÜV NORD CERT GmbH. Dr. Janson Mundel is ISO 9001/ISO 14001 Auditor. She is an appointed expert for JI/CDM certification program of TÜV NORD CERT GmbH.

The validation report is verified by:

- Mr. Wolfgang Wielpütz. He is ISO 9001 and 14001 Auditor, environmental verifier for EMAS and DEHST-appointed verifier in the framework of EU-ETS. He is appointed JI/CDM assessor. Mr. Wielpütz is the head of the department: “Integrated management systems, environmental and occupational safety” and the deputy chief of TÜV NORD CERT GmbH.

3 METHODOLOGY

The validation of the project was carried out from March to June ’06. An additional review due to the required change of methodology was conducted from May to December ’07.The validation consisted of the following three phases:

- A desk review of the PDD (incl. annexes) and supporting documents with the use of a customised validation protocol according to the Validation and Verification Manual;
- Background investigation and follow-up interviews with personnel of the project proponent, the consultant, legal authorities and other stakeholders;
- Reporting of validation findings taking into account the public comments received on TÜV NORD website.

The report includes Corrective Action Requests and Clarification Requests (CAR and CR) identified in the course of this validation.

A **Corrective Action Request** is established if

- mistakes have been made in assumptions or the project documentation which directly will influence the project results,

- the requirements deemed relevant for validation of the project with certain characteristics have not been met or
- there is a risk that the project would not be registered by the UNFCCC or that emission reductions cannot be verified and certified.

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

After resolution of these CARs and CRs by the project proponent the validator issues this final validation report and opinion.

3.1 Validation Protocol

In order to ensure consideration of all relevant assessment criteria, a validation protocol was used. The protocol shows, in a transparent manner, criteria and requirements, means of verification and the results from pre-validating the identified criteria. The validation protocol serves the following purposes:

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

The validation protocol consists of three tables: Table 1 (Mandatory Requirements); Table 2 (Requirement Checklist); and Table 3 (Resolution of Corrective Action and Clarification Request) as described in Figure 1.

The completed validation protocol is enclosed in Annex to this report identifying 10 Corrective Action Requests and 11 Clarification Requests. All of them were analysed and closed according to the latest version of the PDD /PDD6/.

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

3.2 Review of Documents

The PDD[/PDD4/] submitted by Alto Tietê Biogás, Redução de Emissões e Geração de Energia Ltda. in May 2007 and supporting background documents related to the project design and baseline were reviewed.

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

The documents that were considered during the validation process are given in chapter 7 of this report. They are listed as follows:

- Documents provided by the project proponent (Table 7-1)
- Background investigation and assessment documents (Table 7-2)
- Websites used (Table 7-3).

In order to ensure the transparency of the decision making process, the reference codes listed in tables 7-1 to 7-3 are used in the validation protocol and – as far applicable – in the report itself.

3.3 Follow-up Interviews

On 2006-04-13 and on 2006-05-04, the TÜV NORD JI/CDM CP performed on-site visits.

During these visits, as well as earlier and after, interviews with the project proponent, the consultant, project stakeholders and with local authorities were carried out to confirm selected information and to resolve issues identified in the document review.

The main topics of the interviews are summarised in Table 3-1.

Table 3-1 Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
Project proponent representatives	- Environmental Policy - General aspects of the project - Project boundary - Technical details of the project realisation - Approval procedures and status - Quality and Environmental Management System - Involved personnel and responsibilities - Monitoring and measurement equipment - Baseline study assumptions - Environmental impacts - Socio economic impacts on the local population - Details of emissions reduction calculation

Interviewed Persons / Entities	Interview topics
	- Operational data - License, operation & maintenance authority and responsibility - QA/QC procedure - Monitoring and measurement control of GHG - Legal aspects of the project
Consultant	- Editorial aspects of PDD - Project boundary - Content of PDD - Procedural aspects - Details of emissions reduction calculation - Additionality of the project
State authorities	- Legal aspects of the project

3.4 Resolution of Clarification and Corrective Action Requests

In order to remedy any mistakes, problems or any other outstanding issues which needed to be clarified for positive conclusion on the project design, CARs and CRs were raised. These requests can be resolved or "closed out" by the project proponent by providing the corresponding response in the column 3 of the table three as meant in Figure 1 and submission of revised PDD and supporting documents.

In this validation report 10 CARs and 11 CRs are raised.

The CARs / CRs are documented in Annex (Validation Protocol - Table 3) and addressed in Chapter 4.

3.5 Public Stakeholder Comments

The PDD /PDD4/ was made publicly available through TÜV NORD JI/CDM CP website www.global-warming.de. Comments on the PDD were invited within 30 days, i.e. 15th May 2007 to 15th April 2007.

No comments were received. In case comments would have been received, they would have also been made publicly available on this website.

3.6 Finalising the report

TÜV NORD JI/CDM CP has submitted the draft validation report to the project proponents. After reviewing the revised and resubmitted project documentation /PDD6/; resolving the CRs & CARs raised and outstanding concerns TÜV NORD JI/CDM CP issued this final validation report.

4 VALIDATION FINDINGS

In the following paragraphs the findings from the desk review of the PDD[/PDD4/], interviews and supporting documents are summarised. This also includes the corresponding corrective action taken by the client and its final assessment.

This chapter also includes a brief discussion of important issues where considered necessary for the project assessment. For a more detailed assessment of single aspects within these categories pl. also refer to the validation checklist as presented in the annex.

The results are summarised in table 4-1:

Table 4-1: Summary of CAR and CR issued

Validation topic [1)]	No. of CAR	No. of CR
Project design (A1-A2)	2	2
Participation requirements (A3)	0	0
Baseline and additionality (B)	2	2
Crediting Period (C)	1	0
Monitoring plan (D)	4	3
Calculation of GHG emissions (E)	1	4
Environmental impacts (F)	0	0
Comments of local stakeholders (G)	0	0
SUM	**10**	**11**

[1)] The letters in brackets refer to the validation protocol

4.1 Participation Requirements

Brazil as a non Annex-I party and United Kingdom as an Annex-I party meet all relevant participation requirements. At the time of the completion of the validation both LoAs are pending. Although the approval of the Parties involved is required for registration the validation has to be carried out without the approval of both, because for the Brazilian DNA a positive validation opinion is a prerequisite for the host government approval and thus the LoA could not be considered at the present validation stage.

Possible changes of project documentation due to the approval process will be addressed in another revision of the final validation report (if applicable).

4.2 Project design

The objective of the project is to reduce GHG emissions by capturing landfill gas and combusting it in a flare and thus convert the methane in the landfill gas into less harmful carbon dioxide.

According to sustainable development various social, economic and environmental benefits will be achieved. The landfill gas capture project is supposed to have positive effects in the region such as improvement of waste handling and waste management, reducing the risks of toxic effects on the local community, watercourse pollution and other nuisances; creation of jobs will strengthen social responsibility and afforestation programs.

The project activity contains improved technology compared to Brazilian state of the art technology, because it is common practice in Brazil to operate sanitary landfills without landfill gas treatment or only with safety venting and burning.

The project comprises a gas collection composed by vertical and horizontal drains to extract the LFG gas. The LFG must be condensed and stored on the lowest collecting points for further decantation and pumping. A flaring system (enclosed flares) burns the gas at a range of temperature from 700°C to 1,000°C. The monitoring and control equipment will optimize the LFG pressure, volume and temperature at the flare inlet for the best burning efficiency.

The projects system boundaries were clearly described in the project design. However, in the hosted version of the PDD[/PDD4/], the project emissions resulting from the use of electricity in extracting and pumping the landfill gas were not considered. Therefore a CAR was raised and successfully resolved.

Corrective Action Request A1:	
CAR	According to ACM0001 CO_2 emissions resulting from the use of electricity in extracting and pumping the landfill gas should be accounted as project emissions and included in the emission reduction calculations respectively.
CA:	The emissions resulting from the electricity consumption for extracting and pumping the landfill gas were included in the section B.3 and B.6.1.
Conclusion:	The modified PDD addresses this issue in a correct manner. The corresponding calculations were checked and assessed to be correct. CAR was closed.

Some mistakes were identified according to the filling of the PDD form and one CAR and two CR were raised and successfully closed.

Corrective Action Request A2:	
CAR	In chapter B.6.4 of the PDD the table provided in the "Guidelines for completing the Project Design document" (version 06.2) has to be applied.
CA:	The table was modified and adjusted to the document version 06.2.
Conclusion:	In the revised PDD the table was correctly modified. CAR was closed.

Clarification Request A1:	
CR	References given in chapter B 7.1 and Annex 4 refer to chapters in old format of PDD.
CA:	The references were changed to the new version of the PDD.
Conclusion:	The PDD was correctly modified. CR was closed.

Clarification Request A2:	
CR	The numbering of the equations is not correct.
CA:	The equation's numbers were adjusted.
Conclusion:	The PDD was correctly modified. CR was closed.

4.3 Baseline and Additionality

This project activity applies the approved methodology ACM0001 Version 05: "Consolidated baseline methodology for landfill gas project activities". The project activity relates to the sectoral scope 13 "Waste handling and disposal".

According to ACM0001 the baseline scenario is the release of the landfill gas to the atmosphere - within the project boundaries. The current Brazilian legislation requires passive venting of the gas for safety reasons only. A treatment of the LFG is not required.

The proposed project activity does not consider the use of the captured gas to produce energy (electricity and/or thermal) and the only source claimed in this project will be the flaring of the captured gas from the landfill. All applicability criteria of ACM0001 are met by the project activity.

The baseline emissions were calculated (ex-ante) on the basis of a first order kinetic model. All parameters and values used for the calculation are selected in a transparent and comprehensive manner.

Nevertheless, some additional clarifications were required about the adjustment factor and description of the project scenarios. So, one CAR and two CR were raised and resolved by the project proponents.

Corrective Action Request B1:	
CAR	Clarification is needed why the Adjustment Factor has determined as 20 %.
CA:	The use of this adjustment factors rely on the recommendation of the Brazilian DNA.
Conclusion:	The adjustment factor suggested by DNA has been confirmed by the validation team/MDL/. CAR was closed.

Clarification Request B1:	
CR	In chapter B.2 should be added that flaring of the captured gas (case a) is the project situation.
CA:	The project situation was added in the chapter B.2.
Conclusion:	OK. CR was closed.

Clarification Request B2:	
CR	The sentence "Both scenarios above are covered…" on page 8 of the PDD is ambiguous, as the BAU case is not covered by ACM0001.
CA:	Only the project scenario is been considered in the ACM0001.
Conclusion:	The PDD was modified accordingly. CR was closed.

The additionality of the proposed project has to be demonstrated and assessed using the latest version of the "Tool for the demonstration and assessment of additionality". The applied tool in the hosted version of the PDD/PDD4/ was outdated. Therefore a CAR was raised and successfully closed.

Corrective Action Request B2:	
CAR	The latest version of the "Tool for the demonstration and assessment of additionality" has to be applied.
CA:	Version 03 of the "Tool for the demonstration and assessment of additionality" is applied.
Conclusion:	The latest version of the additionality tool was applied in the revised PDD. CAR was closed.

In the final version of the PDD/PDD6/ the additionality was demonstrated according to version 03 of the "Tool for demonstration and assessment of additionality". This version can be applied until 14th August 2008.

The arguments to justify the additionality were summarised in table 4-2. This table also includes the assessment of the validation team.

Table 4-2: Additionality assessment

Step 1)	Argument PP	Assessment of the validation team	
1a	**Define alternatives to the project activity**: 4 realistic and feasible alternatives to the proposed CDM project activity has been proposed, which includes Alternative 1: Continuation of current situation Alternative 2: The proposed project activity not undertaken as a CDM project activity Alternative 3: Commercial use of LFG off-site Alternative 4: Extraction of LFG for energy generation	The alternative 1 could be justified as a realistic and credible alternative to the project activity. All other alternatives given in the step 1a cannot be considered as realistic alternatives as the other alternatives are not viable due to the high capital investment. So only alternative 1 remains as a plausible and credible alternative for the project activity. Based on the analysis; baseline scenario 1: continuation of current practice scenario is selected as most likely scenario among other possible scenario because of below reasons: ▪ No capital investment ▪ No prevailing practice barrier (this is not a common practice) ▪ No other barriers like management or regulatory barrier	☒ Step passed ☐ Step not passed ☐ Not applicable
1b	**Enforcement of applicable laws and regulations:** There are no specific laws governing LFG mitigation in Brazil. Nevertheless local environmental agencies at state level are acting towards closing rubbish dumps and forcing municipalities and industries to give proper destination to the waste generated through concessions to private entities. In all cases, however, active collection and flaring of the landfill gas has never been enforced by law. In addition, all of the identified scenarios are in consistency with the applicable laws and regulations.	All alternatives mentioned in step 1a are in line with the national regulations and able to meet compliances of environmental regulations.	
2a	**Determine appropriate analysis method:** The proposed project activity does not generates financial or economic benefits other than CDM related income, therefore the Option I – Simple cost analysis shall be applied.	In accordance with the additionality tool, the validation team has checked the option I, II, III and found simple cost analysis the appropriate method for the project analysis as no revenue generation other than CDM is associated with the project activity.	☒ Step passed ☐ Step not passed ☐ Not applicable

Step 1)	Argument PP	Assessment of the validation team	
2b	**Option I. Apply simply cost analysis:** The installation of a LFG capture and flaring system, even an undeveloped one, would require costs for the landfill operator with no sort of financial compensation. The costs associated with the CDM project activity add up to 2,311,983. They are proportional to the landfill surface, cell dimensions, waste volume and the landfill topography. Under this scenario (investment with no financial returns) the project activity produces no economic benefits and therefore is not financially attractive without the CDM revenue stream.	The project activity does not generate any income except from CDM credits. ☐ Argument not justified ☐ Argument not convincing ☐ Argument justified but not decisive ☒ Argument justified / significant	
4 a	**Sub-step 4a. Analyze other activities similar to the proposed project activity:** There is not a similar project activity implemented previously or currently underway (other than CDM project activities) in Brazil.	☐ Argument not justified ☐ Argument not convincing ☐ Argument justified but not decisive ☒ Argument justified / significant	☒ Step passed ☐ Step not passed ☐ Not applicable
4 b	**Sub-step 4b. Discuss any similar options that are occurring:** No similar activities as the project activity are carried out in Brazil out of the CDM.	☐ Argument not justified ☐ Argument not convincing ☐ Argument justified but not decisive ☒ Argument justified / significant	
Assessment of the validation team		☒ **Project is additional** ☐ **Project is not additional**	

1) acc. to Additionality Tool

Thus the validation team arrived at the opinion that the project activity can be assessed to be additional and is not a BAU case.

4.4 Crediting Period

Acc. to the hosted PDD/PDD4/ the intended first crediting period of the project was Jan 2008 to December 2014 (renewable). Because of the delay of the project implementation that became obvious since the draft edition of the PDD, the project developer has changed the crediting period in the revised PDD to 1st March 2008 – 28th February 2015.

In PDD a correction related to the starting date of the crediting period was necessary and thus a CAR was raised and successfully resolved.

Corrective Action Request C1:	
CAR	The starting date given in chapter C.1.1. does not correspond to information given in annex 3.
CA:	The starting date in the annex 3 was corrected.
Conclusion:	The PDD was correctly modified. CAR was closed.

4.5 Monitoring Plan

The monitoring plan is based on the approved methodology ACM0001 Version 05: "Consolidated baseline methodology for landfill gas project activities". The applicability criteria are met.

The monitoring methodology requires the direct measurement of the amount of landfill gas captured and destroyed at the flare platform. The monitoring plan provides for the continuous measurement of the quality and quantity of LFG flared. All parameters required to determine the quantity of methane captured ($MD_{project,y}$), the quantity of methane destroyed by the flaring system ($MD_{flared,y}$) and the quantity of methane generated ($MD_{total,y}$), including boundary conditions, such as temperature and pressure of the gas are considered in the monitoring plan.

Within the project boundaries emissions originate also from the remaining fugitive emissions. As this part of the emissions is also part of the baseline a monitoring of these emissions is neither possible nor necessary. The CO_2 emissions from flaring are not to be considered as they origin from renewable carbon sources.

Details of monitoring, including the ex post calculation equation, are presented in the PDD and corresponding annexes/PDD6/

Some additional clarifications were required about the monitoring plan. So, four CAR and three CR were raised and resolved by the project proponents.

Corrective Action Request D1:	
CAR	The procedure to calculate ex-post emission reductions provided in Annex 4 does not match with chapter B.6.1. of PDD
CA:	The procedure was changed in the annex 4.
Conclusion:	Ok. CAR was closed.

Corrective Action Request D2:	
CAR	The parameter "Energy demand" has to be monitored as well.
CA:	The parameter $\boldsymbol{EL_{IMP}}$ was included in the chapter B.7.1 of the PDD.
Conclusion:	OK. CAR was closed.

Corrective Action Request D3:	
CAR	Parameters used for determining $PE_{flare,y}$ should be monitored as per the "Tool to determine project emissions from flaring gases containing Methane"
CA:	The parameters were included in chapter B.7.1 of the PDD.
Conclusion:	OK. CAR was closed.

Corrective Action Request D4:	
CAR	Clarification is required, if there are any fossil fuels used to operate the landfill gas project. If so, the quantities have to be monitored as well.
CA:	There is no fossil fuel used in the project activity.
Conclusion:	Clarification was checked and confirmed by the validation team. CAR was closed.

Clarification Request D1:	
CR	Information concerning the archiving of data is missing.
CA:	All the information concerning the archiving data was included.
Conclusion:	Ok. CR was closed.

Clarification Request D2 :	
CR	The monitoring methodology provided in annex 4 should be restricted to the project activity. Information relating to the generation of electricity or thermal energy is not relevant.
CA:	The additional information was excluded.
Conclusion:	OK. CR was closed.

Clarification Request D3:	
CR	The parameter "Landfill waste" will be monitored throughout the crediting period and thus should be included in section B.7.1.
CA:	The PDD has been revised accordingly.
Conclusion:	Ok. CR was closed.

4.6 Calculation of GHG Emissions and emission reductions

The baseline emissions were calculated on the basis of a first order kinetic model. In the calculation of the quantity of methane that would have been destroyed ($MD_{project}$ which is in this project case the same like MD_{flared}) the extraction efficiency of the capture system is considered as 70% and the flare efficiency as 98%. The project emissions of CO_2 due to extracting and pumping of the landfill gas by an electricity based pump system are accounted for by multiplying the quantity of electricity required, based on the capacity of 30 KW and 8760 h, with the grid emission factor of the Brazilian Southeast interconnected grid. The grid emission factor will be

calculated ex-post on an annual basis. Leakage emissions are not to be considered acc. to ACM0001.

All procedures for calculating emission reductions are well documented in the section B as well as in the annex 4 of the PDD. The set of calculation parameters considers specific Brazilian requirements (e.g. Adjustment factor as stipulated by the DNA) and assumptions like the extraction efficiency of 70 %. These assumptions are found to be reasonable within the framework of the ex-ante ER calculation. The ex-ante calculation of the emission reductions were checked by the validation team using an own calculation tool. These calculations have shown the same results as given in the PDD.

Ex post emission reduction calculation

The ex post calculation methodology allows for direct measurement of emission reductions. Monitoring, applied values and equations are described in section B and annex 4 of the PDD.

The applied formulae are adequate and allow for conservative monitoring of emission reductions.

Nevertheless some mistakes in the GHG emission calculation were detected during the validation process. Therefore the corresponding CAR and CR were raised.

Corrective Action Request E1:	
CAR	The ex-ante calculation of baseline emissions and emission reductions as well as the description of the parameters provided in the calculation sheet and table 8 of PDD/PDD4/ do in parts not correspond to the formulas / parameters described in chapter B.6.1 of PDD/PDD4/ACM0001. The calculation of the baseline emissions using the FOD-model is missing and has to be provided. Clarification is also required why in the calculation sheet an additional factor of 0.8 is used to calculate the emission reductions and the flared methane. The calculation of the fugitive emissions is not correct. Moreover it has to be differentiated between fugitive emissions and project emissions from flaring the residual gas stream.
CA:	All the adjustments were made. The FOD- model was provided. The 0.8 is the adjustment factor determined in the baseline, as mentioned in the PDD. The “fugitive emission” is now differentiated from the project emissions.
Conclusion:	All information has been provided and the ex-ante calculation has been corrected correspondingly. CAR was closed.

Clarification Request E1 :	
CAR	The specific source of the used FOD model should be provided.
CA:	The source is now mentioned in the PDD/PDD6/.
Conclusion:	Ok. See footnote on page 13 of the latest version of the PDD/PDD6/. CR was closed.

Clarification Request E2 :	
CAR	A different abbreviation should be used for the parameter $LFG_{flared,y}$ (methane available at the flaring point) in the ex-ante calculation to distinguish from the parameter $LFG_{flare,y}$ (quantity of landfill gas fed to the flare).
CA:	The abbreviation was changed.
Conclusion:	The PDD was modified. CR was closed.

Clarification Request E3 :	
CAR	The sum of project emission reductions provided in the calculation sheet and table 8 of PDD/PDD4/ is not correct and does not correspond to the value given in table 1 of PDD/PDD4/.
CA:	The value was changed to the correct number.
Conclusion:	The PDD/PDD6/ was modified with the inclusion of the correct data. CR was closed.

Clarification Request E4 :	
CAR	Clarification is required how values provided in figure 1 of PDD/PDD4/ correspond to values given in table 8.
CA:	The figure was removed.
Conclusion:	OK. CR was closed.

4.7 Environmental Impacts

The project activity will improve the environmental situation compared to the baseline scenario. No significant environmental impacts will be entailed by the project activity.

Additional emissions due to the combustion process were addressed. In case of normal flare operation these emissions are of negligible importance.

4.8 Comments by Local Stakeholders

Acc. to the requirements of the Brazilian DNA the Stakeholder involvement process has to be performed by means of letters submitted to a specific group of stakeholders. The requirements were fulfiled /PDD6/.

5 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

According to the modalities for the validation of CDM projects, TÜV NORD JI/CDM CP published the PDD /PDD4/ on its website www.global-warming.de on 15 May 2007 and invited comments within 30 days, until 15 June 2007 by parties, stakeholders and UNFCCC accredited non-governmental organisations. No comments were received in this period.

6 VALIDATION OPINION

Alto Tietê Biogás, Redução de Emissões e Geração de Energia Ltda. has commissioned the TÜV NORD JI/CDM Certification Program to validate the project: "Alto-Tiete landfill gas capture project", with regard to the relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria include article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakech Accords), and the relevant decisions by CDM Executive Board.

The project intends to reduce GHG emissions by capturing and flaring landfill gas from the landfill Alto Tiete and convert it into less harmful CO_2.

A risk based approach has been followed to perform this validation. In the course of the validation 10 Corrective Action Requests (CARs) and 11 Clarification Requests (CRs) were raised.

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

In detail the conclusions can be summarised as follows:

- The validation team is convinced that the project is in line with all relevant host country criteria (Brazil) and all relevant UNFCCC requirements for CDM. Nevertheless the LoA´s of both parties are pending
- The Brazilian DNA will only issue the host country approval on the basis of this positive validation opinion by the validator of the project. Thus the LoA could not be considered at the present validation stage.
- The project additionality is sufficiently justified in the all emitted versions of PDD.
- The monitoring plan is transparent and adequate.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 3,364,168 t CO_{2e} is most likely to be achieved within the first 7 y crediting period.

The conclusions of this validation report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation except the host county approval which will be issued on the basis of this report

Essen, 2007-12-12

Rainer Winter

TÜV NORD JI/CDM Certification Program

7 REFERENCES

Table 7-1: Documents provided by the project proponent

Reference	Document
/**DNA1**/	Brazilian DNA official letter (MDL 0152/2006/CIMGC – 2006-07-22)
/**DNA2**/	Brazilian DNA official letter (MDL 0214/2007/CIMGC – 2007-04-12)
/**IL**/	Installation Licence (CETESB) - #000.671 (11th Dec'00)
/**LS**/	Model letter to stakeholders (13th April'06 – letter to Geosciences Institute)
/**MDL**/	Ministério de Ciência e Tecnologia, Oficio no MDL 0152/2006/CIMGC, 2006-09-22
/**MR**/	Monitoring Reports: XLIX dt 2006-01 / L dt 2006-02 / water analysis dt 2005-09
/**OL**/	Operation Licence (CETESB) - #26000941 (10th April'06)
/**PDD1**/	Project Design Document "Alto-Tiete landfill gas capture project", 2006-03-02, (hosted for public comments during 04 Mar'06 to 12 April'06)
/**PDD2**/	Final Project Design Document "Alto-Tiete landfill gas capture project", 2006-06-05
/**PDD3**/	Final Project Design Document "Alto-Tiete landfill gas capture project", revision 3, 2006-10-15
/**PDD4**/	Final Project Design Document "Alto-Tiete landfill gas capture project", revision 4, 2007-03-26
/**PDD5**/	Final Project Design Document "Alto-Tiete landfill gas capture project", revision 5, 2007-06-18
/**PDD6**/	Final Project Design Document "Alto-Tiete landfill gas capture project", revision 6, 2007-12-13
/**TP**/	Technical Project – Descriptive Petition (maps dt 2006-02)
/**VA**/	Voucher annotation of letter by local stakeholders

Table 7-2: Background investigation and assessment documents

Reference	Document
/**ACM0001**/	ACM0001"Consolidated baseline methodology for landfill gas project activities". Version 05.
/**CPM**/	TÜVNORD JI / CDM CP Quality Management System (incl. CP procedures and forms)
/**FVR1**/	Final Validation Report – rev00 – 2006-06-05
/**FVR2**/	Final Validation Report – rev01 – 2006-11-02
/**GPDD**/	UNFCCC: Guidelines for completing the project design document (CDM-PDD) and the proposed new methodology: baseline (CDM-NMB) and the proposed new methodology: monitoring (CDM-NMM) – version 06.2
/**IPCC-GP**/	IPCC Good Practice Guidance & Uncertainty Management in National Greenhouse Gas Inventories, 2000
/**KP**/	Kyoto Protocol (1997)
/**MA**/	Decision 17/CP. 7 (Marrakesh – Accords)
/**RES.1**/	Resolution #1 of Inter-Ministerial Commission of Global Change (2003) – Brazil
/**VVM**/	IETA, PCF Validation and Verification Manual (V.4)

Table 7-3: Websites used

Reference	Link	Organisation
/**abetre**/	http://www.abetre.org.br	Brazilian association for waste treatment, recycling and management
/**cetesb**/	http://www.cetesb.sp.gov.br	Environmental and sanitation company of the São Paulo state
/**dna-br**/	http://www.mct.gov.br/clima	Ministry of Science and Technology (Brazil)
/**sabesp**/	http://www.sabesp.com.br	São Paulo state sanitation company
/**unfccc**/	http://cdm.unfccc.int	UNFCCC

Table 7-4: List of interviewed persons (see Section 3.3)

Reference	Mol[1]		Name	Organisation / Function
/**IM01**/ /**IM02**/	V	☒ Mr. ☐ Ms.	Roberto Kishi	Empreiteira Pajoan Ltd., Arq. – Technical-Operator
/**IM01**/ /**IM06**/	V	☒ Mr. ☐ Ms.	Francisco J. P. de Oliveira	Epal Fral Consultoria Ltd., Engineer – Director
/**IM01**/ /**IM02**/	V	☒ Mr. ☐ Ms.	Alejandro Bango	Ecológica Assessoria – Consultant
/**IM02**/	V	☒ Mr. ☐ Ms.	Paulo Zanardi	Ecológica Assessoria – Consultant
/**IM03**/ /**IM05**/	T	☒ Mr. ☐ Ms.	Cristiano Kengi	CETESB – Expert/Engineer
/**IM04**/	T	☐ Mr. ☒ Ms.	Josilene Ferrer	CETESB – Expert

[1] Means of Interview: (**T**elephone, **E**-Mail, **V**isit)

ANNEX

Validation Protocol

ANNEX : VALIDATION PROTOCOL

Table 1: Mandatory Requirements for Clean Development Mechanism (CDM) Project Activities

REQUIREMENT	Reference	Cross Reference / Comment	CONCLUSION
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3	Kyoto Protocol Art.12.2	The Annex I party is the UK. The project participant from the UK is the company *Carbon Capital Markets Ltd*	OK
2. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof	Kyoto Protocol Art. 12.2, Marrakech Accords, CDM Modalities §40a	Table 2, Section A.3 As per opinion of the validation team the projects contributes to the sustainable development of Brazil. Nevertheless the Brazilian DNA hasn´t confirmed the sustainable development contribution yet, as a positive validation is a prerequisite for the Brazilian DNA to issue the LoA, in which the contribution to sustainable development will be addressed. In accordance with the CDM M&P at the time of making the PDD public at the stage of validation a Party involved may or may not have provided its	(OK)

REQUIREMENT	Reference	Cross Reference / Comment	CONCLUSION
		approval. At the time of requesting registration the approval of the Parties involved is required. Possible changes of the project documentation due to the approval process will be addressed in a revision of the final validation report.	
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art.12.2.	Table 2, Section E.4.1	OK
4. The project shall have the written approval of voluntary participation from the designated national authorities of each party involved	Kyoto Protocol Art. 12.5a, Marrakech Accords, CDM Modalities §40a	In accordance with the CDM M&P at the time of making the PDD public at the stage of validation a Party involved may or may not have provided its approval. At the time of requesting registration the approval of the Parties involved is required. At the time of the completion of the validation both LoA´s are pending. For the Brazilian DNA a positive validation opinion is a prerequisite for the host government approval and thus	(OK)

REQUIREMENT	Reference	Cross Reference / Comment	CONCLUSION
		the LoA could not be considered at the present validation stage. Possible changes of the project documentation due to the approval process will be addressed in a revision of the final validation report.	
5. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	Table 2, Section E.1 to E.4.	~~CAR A1, CAR E1~~ OK
6. Reduction in GHG emissions shall be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity	Kyoto Protocol Art. 12.5c, Marrakech Accords, CDM Modalities §43	Table 2, Section B.2.	~~CAR B2~~ OK
7. Potential public funding for the project from Parties in Annex I is not a diversion of official development assistance	Marrakech Accords	No public funding is involved	OK
8. Parties participating in the CDM shall designate a national authority for the CDM	Marrakech Accords, CDM Modalities §29	The Brazilian DNA assigned for CDM is the “Global Climate Change International Commis-sion” and the UK DNA is the “Department for Environment, Food and Rural Affairs” (DEFRA).	OK
9. The host country is a Party to the Kyoto Protocol	Marrakech Accords,	Yes, Brazil, the host country,	OK

REQUIREMENT	Reference	Cross Reference / Comment	CONCLUSION
	CDM Modalities §30	has ratified the Kyoto Protocol on 23 August 2002. The UK has ratified the Kyoto Protocol on 31 May 2002.	
10. Comments by local stakeholders are invited, a summary of these provided and how due account was taken of any comments received	Marrakech Accords, CDM Modalities §37b	Table 2, Section G	OK
11. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, has been submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party has been carried out.	Marrakech Accords, CDM Modalities §37c	Table 2, Section F It is not necessary to carry out an environmental impact assessment.	OK
12. Baseline and monitoring methodology is previously approved by the CDM Methodology Panel	Marrakech Accords, CDM Modalities §37e	The baseline and monitoring methodology is ACM0001 "Consolidated baseline / monitoring methodology for landfill gas project activities", version 05.	OK
13. Provisions for monitoring, verification and reporting are in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP	Marrakech Accords, CDM Modalities §37f	Table 2, Section D	~~CAR D1-D4~~ OK
14. Parties, stakeholders and UNFCCC accredited NGOs have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available	Marrakech Accords, CDM Modalities, §40	The PDD was made available for public commenting on the UNFCCC website with a linkage to TÜVNORD website:	OK

REQUIREMENT	Reference	Cross Reference / Comment	CONCLUSION
		www.global-warming.de from 2007-05-15 to 2007-06-15.	
15. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances	Marrakech Accords, CDM Modalities, §45c,d	Table 2, Section B.2	OK
16. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure	Marrakech Accords, CDM Modalities, §47	Table 2, Section B.2	OK
17. The project design document is in conformance with the UNFCCC CDM-PDD format	Marrakech Accords, CDM Modalities, Appendix B, EB Decisions	The PDD is in conformance with the UNFCCC CDM-PDD format.	OK

Table 2: Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A. General Description of Project Activity *The project design is assessed.*					
A.1. Project Boundaries *Project Boundaries are the limits and borders defining the GHG emission reduction project.*					
A.1.1. Are the project's spatial (geographical) boundaries clearly defined?	/PDD/ (A.4.1) /IM01/ /IM02/	DR, I	Yes, the project´s spatial boundaries are clearly defined.	OK	OK
A.1.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	/PDD/ (B.4) /IM01/ /IM02/	DR, I	The project boundary is the landfill site where the gas is captured and flared. However, according to ACM0001 CO_2 emissions resulting from the use of electricity in extracting and pumping the landfill gas should be accounted as project emissions and included in the emission reduction calculations respectively.	~~CAR A1~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.2. Technology to be employed *Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.*					
A.2.1. Does the project design engineering reflect current good practices?	/PDD/ (A.4.3) /IM01/ /IM02/	DR, I	Yes, the gas extractor and flaring system employs environmentally safe and sound technology though the project design engineering is not yet finalized.	OK	OK
A.2.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	/PDD/ (A.4.3) /IM01/ /IM02/ /IM04/	DR, I	Common practice in Brazil is sanitary landfill without landfill gas treatment or only safety venting and burning. Infrastructure for extraction and combustion of LFG will be implemented.	OK	OK
A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	/PDD/ (A.4.3) /IM01/ /IM02/	DR, I	It is unlikely that the technology used can be substituted by other more efficient technology. An energy utilization with e.g. CHPs is economically not viable under current conditions in Brazil.	OK	OK
A.2.4. Does the project require extensive initial training and maintenance efforts in order	/PDD/ (B.7.2)	DR	The project activity will require only minimal additional training for	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
to work as presumed during the project period?			operation of the flare and operation and maintenance of the LFG drainage system.		
A.2.5. Does the project make provisions for meeting training and maintenance needs?	/PDD/ (B.7.2) /IM01/	DR	Yes. According to B.7.2, the landfill operator will train the technical team and will use quality control and quality assessment procedures.	OK	OK
A.3. Contribution to Sustainable Development *The project's contribution to sustainable development is assessed.*					
A.3.1. Is the project in line with relevant legislation and plans in the host country?	/PDD/ (B.5) /RES 1/ /IL/ /OL/ /IM01/ /IM02/ /AM03/ /IM05/	DR, I	Yes, the project is in line with Brazilian legislation and plans.	OK	OK
A.3.2. Is the project in line with host-country specific CDM requirements?	/PDD/ (A.2) /RES 1/	DR	The project follows the Resolution 1 of the Brazilian Inter-ministerial Committee for Climate Change. Nevertheless the Brazilian DNA will	(OK)	(OK)

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			finally decide whether the project is in line with the host country criteria - considering the results of this validation report.		
A.3.3. Is the project in line with sustainable development policies of the host country?	/RES. 1/	DR	The project is in line with current sustainable development priorities in Brazil. Nevertheless the Brazilian DNA will finally decide whether the project is in line with the sustainable development policies - considering the results of this validation report.	(OK)	(OK)
A.3.4. Will the project create other environmental or social benefits than GHG emission reductions?	/PDD/ (A.2) Section D	DR	Yes, improving the waste handling and waste management, reducing the risks of toxic effects on the local community, freatic layers, watercourse pollution and odor nuisances; creation of jobs in different fields will strengthen social responsibility programs, such as environmental education, construction of spot facilities, afforestation activities and reforestation with native species.	OK	OK
A.3.5. Has the PDD form been duly filled?	/PDD/	DR	In chapter B.6.4 of the PDD the table provided in the "Guidelines for completing the Project Design document" (version 06.2) has to be	~~CAR A2~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			applied. References given in chapter B 7.1 and Annex 4 refer to chapters in old format of PDD. The numbering of the equations is not correct.	~~CR A1~~ ~~CR A2~~	OK OK
B. Project Baseline *The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.*					
B.1. Baseline Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
B.1.1. Is the baseline methodology previously approved by the CDM Methodology Panel?	/PDD/ (B.1.) /ACM0001/	DR	Yes. The project applies the approved baseline methodology ACM0001: "Consolidated baseline methodology for landfill gas project activities", version 05.	OK	OK
B.1.2. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	/PDD/ (B.2.)	DR	Yes, the baseline methodology is applicable for this project. However, in chapter B.2 should be added that flaring the captured gas (case a) is the project situation.	~~CR B1~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.2. Baseline Determination *The choice of baseline will be validated with focus on whether the baseline is a likely scenario, whether the project itself is not a likely baseline scenario, and whether the baseline is complete and transparent.*					
B.2.1. Is the application of the methodology and the discussion and determination of the chosen baseline transparent?	/PDD/ (B.4.) /IM02/	DR, I	Yes, the determination of the chosen methodology is transparent and according to the requirements of the methodology. However, the sentence "Both scenarios above are covered…" on page 8 of the PDD is ambigious, as the BAU case is not covered by ACM0001.	~~CR B2~~	OK
B.2.2. Has the baseline been determined using conservative assumptions where possible?	/PDD/ (B.4., B.6.) /IM02/	DR, I	Clarification is needed why the Adjustment Factor has determined as 20 %.	~~CAR B1~~	OK
B.2.3. Has the baseline been established on a project-specific basis?	/PDD/ (B.6)	DR, I	Yes.	OK	
B.2.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/PDD/	DR	Yes.	OK	

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.2.5. Is the baseline determination compatible with the available data?	/PDD/ (B.4) (Annex 3)	DR	Yes.	OK	
B.2.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	/PDD/ (B.4)	DR	The continuation of the present situation is the most likely scenario.	OK	
B.2.7. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario (e.g. through demonstrating investment barriers, technology barriers, barriers to prevailing practices, and/or other barriers or through quantitative evidence that the project would otherwise not be implemented)?	/PDD1/ (B.5)	DR	It is shown that the project is additional mainly due to the fact that the project activity is not regulated by Brazilian legislation and that the project activity does not generate any benefits except from the CDM incentives. Nevertheless the project developer has to apply the latest version of the "Tool for the demonstration and assessment of additionality".	~~CAR B2~~	OK
B.2.8. Have the major risks to the baseline been identified?	/PDD/ (B.4) /IM01/	DR	The baseline might be influenced by a change of the Brazilian legislation. The validation team has arrived at the conclusion (by means of on-site visit and additional document review) that it is not likely that active venting of LFG will become mandatory in Brazil within the first crediting period. Nevertheless this assumption should	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			be verified during monitoring. Apart from this all relevant influences to the baseline scenario have been addressed.		
B.2.9. Is all literature and sources clearly referenced?	/PDD/	DR	Yes.	OK	OK
C. Duration of the Project/ Crediting Period *It is assessed whether the temporary boundaries of the project are clearly defined.*					
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	/PDD/ (C.1.1, C.1.2)	DR	The starting date given in chapter C.1.1. does not correspond to information given in annex 3. The expected operational lifetime is 21 years.	~~CAR C1~~	OK
C.1.2. Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max. two x 7 years or fixed crediting period of max. 10 years)?	/PDD/ (C.2.1.2.)	DR	Yes. The chosen crediting period is the renewable crediting period of 7 years.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D. Monitoring Plan *The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed ((Blue text contains requirements to be assessed for optional review of monitoring methodology prior to submission and approval by CDM EB).*					
D.1. Monitoring Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
D.1.1. Is the monitoring methodology previously approved by the CDM Methodology Panel?	/PDD/ (B.7.) /ACM0001/	DR	The selected monitoring methodology is in line with the previously approved monitoring methodology ACM0001.	OK	
D.1.2. Is the monitoring methodology applicable for this project and is the appropriateness justified?	/PDD/ (B.7.) /ACM0001/	DR	The applicability criteria of ACM0001 are met. All necessary information to justify the appropriateness is presented in the PDD and the supporting documents.	OK	
D.1.3. Does the monitoring methodology reflect good monitoring and reporting practices?	/PDD/ (B.7.) (Annex 4)	DR	In general the monitoring methodology reflects good monitoring and reporting practices but the monitoring plan offers a few inaccuracies which are listed below. The procedure to calculate ex-post	~~CAR~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			emission reductions provided in Annex 4 does not match with chapter B.6.1. of PDD[/5/]	~~D1~~	
			Information concerning the archiving of data is missing.	~~CR D1~~	OK
			The monitoring methodology provided in annex 4 should be restricted to the project activity. Information relating to the generation of electricity or thermal energy is not relevant.	~~CR D2~~	OK
			The parameter "Landfill waste" will be monitored throughout the crediting period and thus should be included in section B.7.1.	~~CR D3~~	
D.1.4. Is the discussion and selection of the monitoring methodology transparent?	/PDD/ (B.7.)	DR	Yes. The project developer justifies the applicability of the monitoring methodology in a satisfactory manner.	~~OK~~	
D.2. Monitoring of Project Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
D.2.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions	/PDD/ (B.7.) (Annex 4)	DR	According to ACM0001 CO_2 emissions resulting from the use of electricity in extracting and pumping the landfill gas should be accounted	~~CAR A1~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
within the project boundary during the crediting period?			as project emissions and included in the emission reduction calculations respectively.		
			Correspondingly, the parameter "Energy demand" has to be monitored as well.	~~CAR D2~~	OK
			Moreover, parameters used for determining $PE_{flare,y}$ should be monitored as per the "Tool to determine project emissions from flaring gases containing Methane"	~~CAR D3~~	OK
			Clarification is required if there are any fossil fuels used to operate the landfill gas project. If so, the quantities have to be monitored as well.	~~CAR D4~~	OK
			Within the project boundaries emissions originate also from the remaining fugitive emissions. As this part of the emissions is also part of the baseline a monitoring of these emissions is neither possible nor necessary.		
			The CO_2 emissions from flaring are not to be considered as they origin from renewable carbon sources.		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.2.2. Are the choices of project GHG indicators reasonable?	/PDD/ (B.7.) (Annex 4)	DR	See comments D.2.1.	~~CAR A1, CAR D2-D4~~	OK
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?	/PDD/ (B.7.) (Annex 4)	DR	See comments D.2.1.	~~CAR A1, CAR D2-D4~~	OK
D.2.4. Will the indicators give opportunity for real measurements of achieved emission reductions?	/PDD/ (B.7.) (Annex 4)	DR	See comments D.2.1.	~~CAR A1, CAR D2-D4~~	OK
D.2.5. Will the indicators enable comparison of project data and performance over time?	/PDD/ (B.7.) (Annex 4)	DR	See comments D.2.1.	~~CAR A1, CAR D2-D4~~	OK
D.3. Monitoring of Leakage *It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.*					
D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/PDD/ (B.6.1.) /ACM0001/	DR	Due to ACM0001 no leakage has to be considered.	OK	OK
D.3.2. Have relevant indicators for GHG leakage been included?	/PDD/ (B.6.1.)	DR	Due to ACM0001 no leakage has to be considered	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
	/ACM0001				
D.3.3. Will it be possible to monitor the specified GHG leakage indicators?	/PDD/ (B.6.1.) /ACM0001/	DR	Due to ACM0001 no leakage has to be considered	OK	OK
D.4. Monitoring of Baseline Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
D.4.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/PDD/ (B.7.) (Annex 4)	DR	All relevant parameters to determine the baseline will be collected and archived electronically inter alia through flow meters and sensors. Nevertheless the CAR and CRs as addressed in section D.1.3 are to be considered.	~~CAR D1~~ ~~CR D1~~ ~~CR D2~~ ~~CR D3~~	OK OK OK OK
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/PDD/ (B.7.) (Annex 4)	DR	Yes, all relevant indicators are taken into account.	OK	OK
D.4.3. Will it be possible to monitor the specified baseline indicators?	/PDD/ (B.7.) (Annex 4)	DR	Yes, the relevant indicators can be monitored continuously.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.5. Monitoring of Sustainable Development Indicators/ Environmental Impacts *It is checked that choices of indicators are reasonable and complete to monitor sustainable performance over time.*					
D.5.1. Does the monitoring plan provide the collection and archiving of relevant data concerning environmental, social and economic impacts?	/PDD/ /ACM0001 /Res. 1/	DR	ACM0001 and Resolution 1 do not require the monitoring of social or environmental indicators.	OK	OK
D.5.2. Is the choice of indicators for sustainability development (social, environmental, economic) reasonable?	/PDD/ /IM01/ /MR/	DR, I	Not applicable (see D.5.1)	OK	OK
D.5.3. Will it be possible to monitor the specified sustainable development indicators?	/PDD/	DR	Not applicable (see D.5.1)	OK	OK
D.5.4. Are the sustainable development indicators in line with stated national priorities in the Host Country?	/PDD/	DR	The validation team agrees that the project activity contributes to sustainable development in Brazil. Nevertheless the Brazilian DNA hasn't confirmed the sustainable development contribution in a Letter of Approval until now, hence the positive validation opinion of the validator is prerequisite for issuance of the Letter of Approval.	(OK)	(OK)

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.6. Project Management Planning *It is checked that project implementation is properly prepared for and that critical arrangements are addressed.*					
D.6.1. Is the authority and responsibility of project management clearly described?	/PDD/ (B.7.2.) /IM01/	DR, I	Yes, the technical operator of Empreiteira Pajoan Ltda, Roberto Kishi, is responsible for the project management.	OK	OK
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	/PDD/ (B.7.2.) /IM01/	DR, I	The landfill operation company Empreiteira Pajoan Ltda, is responsible for the monitoring, the measurement, the registration and the reporting. The project developer, Ecológica Assessoria Ltd. will monitor the variables at the project site when possible, if not it will be carried out by a certified laboratory (on a quarterly basis).	OK	OK
D.6.3. Are procedures identified for training of monitoring personnel?	/PDD/ (B.7.2.) /IM01/	DR, I	The landfill operator will be responsible for training of the monitoring and operation staff with the help of the equipment manufactures.	OK	OK
D.6.4. Are procedures identified for emergency preparedness for cases where emergencies can cause	/PDD/ (Annex 4)	DR, I	A procedure will be prepared by the project developer with the necessary technical and safety procedures for	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
unintended emissions?	/IM01/		normal operation and the emergency measures for the project operation.		
D.6.5. Are procedures identified for calibration of monitoring equipment?	/PDD/ (B.7., Annex 4) /IM01/	DR, I	Yes, the project owner will implement the necessary QC/QA procedures which will assure that the equipment will be tested, checked and duly maintained.	OK	OK
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?	/PDD/ (B.7., Annex 4) /IM01/	DR, I	see D.6.5	OK	OK
D.6.7. Are procedures identified for monitoring, measurements and reporting?	/PDD/ (B.7., Annex 4) /IM01/	DR, I	Yes, procedures for monitoring, measurements and reporting are implemented.	OK	OK
D.6.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/PDD/ (B.7., Annex 4) /IM01/	DR, I	see D.6.7	OK	OK
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/PDD/ (B.7., Annex 4) /IM01/	DR, I	see D.6.7	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.6.10. Are procedures identified for review of reported results/data?	/PDD/ (B.7., Annex 4) /IM01/	DR, I	see D.6.7	OK	OK
D.6.11. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	/PDD/ (B.7., Annex 4) /IM01/	DR, I I	see D.6.7	OK	OK
D.6.12. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	/PDD/ (B.7., Annex 4) /IM01/	DR, I	see D.6.7	OK	OK
D.6.13. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/PDD/ (B.7., Annex 4) /IM01/	DR, I	Yes. In case of non-conformities, further actions will be implemented, i.e., problem analysis and corrective actions.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E. Calculation of GHG Emissions by Source *It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.*					
E.1. Predicted Project GHG Emissions *The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.*					
E.1.1. Are all aspects related to direct and indirect GHG emissions captured in the project design?	/PDD/ (B.6.3, 6.4) /ACM0001/		According to ACM0001 CO_2 emissions resulting from the use of electricity in extracting and pumping the landfill gas should be accounted as project emissions and included in the emission reduction calculations respectively.	~~CAR A1~~	OK
E.1.2. Are the GHG calculations documented in a complete and transparent manner?	/PDD/ (B.6.3, 6.4)	DR	See comment on E.1.1.	~~CAR A1~~	OK
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?	/PDD/ (B.6.3, 6.4)	DR	See comment on E.1.1. Within the project boundaries emissions originate also from the remaining fugitive emissions which	~~CAR A1~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			are also part of the baseline emissions. The extraction efficiency was estimated in a transparent and comprehensive way.		
E.1.4. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	/PDD/ (B.6.3, 6.4)	DR	See comment on E.1.1.	~~CAR A1~~	OK
E.1.5. Have all relevant greenhouse gases and source categories listed in Kyoto Protocol Annex A been evaluated?	/PDD/ (B.6.3, 6.4) /ACM0001/	DR	Besides the methane captured and flared, ACM0001 requires accounting for CO_2 emissions resulting from the use of electricity in extracting and pumping the landfill gas as well. Therefore the CAR addressed in section E.1.1 is to be considered.	~~CAR A1~~	OK
E.2. Leakage *It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed.*					
E.2.1. Are potential leakage effects beyond the chosen project boundaries properly identified?	/PDD/ (B.6.1.) /ACM0001/	DR	According to ACM0001 no increase in emissions outside the project boundary – leakage is expected as a result of the project activity.	OK	OK
E.2.2. Have these leakage effects been properly accounted for in calculations?	/PDD/ (B.6.1.)	DR	See comment on E.2.1.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
	/ACM0001/				
E.2.3. Does the methodology for calculating leakage comply with existing good practice?	/PDD/ (B.6.1.) /ACM0001/	DR	See comment on E.2.1.	OK	OK
E.2.4. Are the calculations documented in a complete and transparent manner?	/PDD/ (B.6.1.) /ACM0001/	DR	See comment on E.2.1.	OK	OK
E.2.5. Have conservative assumptions been used when calculating leakage?	/PDD/ (B.6.1.) /ACM0001/	DR	See comment on E.2.1.	OK	OK
E.2.6. Are uncertainties in the leakage estimates properly addressed?	/PDD/ (B.6.1.) /ACM0001/	DR	See comment on E.2.1.	OK	OK
E.3. Baseline Emissions *The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.*					
E.3.1. Have the most relevant and likely operational characteristics and baseline indicators been chosen as reference for baseline emissions?	/PDD/ (B.6.3, 6.4)	DR	The ex-ante calculation of baseline emissions and emission reductions as well as the description of the parameters provided in the calculation sheet and table 8 of PDD/PDD4/ do in	~~CAR E1~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			parts not correspond to the formulas / parameters described in chapter B.6.1 of PDD[4]/ACM0001. The calculation of the baseline emissions using the FOD-model is missing and has to be provided. Clarification is also required why in the calculation sheet an additional factor of 0.8 is used to calculate the emission reductions and the flared methane. The calculation of the fugitive emissions is not correct. Moreover it has to be differentiated between fugitive emissions and project emissions from flaring the residual gas stream.		
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	/PDD/ (B.3.)	DR	The baseline boundary is the project boundary as defined in section B.3 of the PDD. All sources of emissions are accounted for.	OK	OK
E.3.3. Are the GHG calculations documented in a complete and transparent manner?	/PDD/ (B.6.3, 6.4 Annex 3)	DR	The specific source of the used FOD model should be provided. A different abbreviation should be used for the parameter $LFG_{flared,y}$	~~CR E1~~ ~~CR E2~~	OK OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			(methane available at the flaring point) in the ex-ante calculation to distinguish from the parameter $LFG_{flare,y}$ (quantity of landfill gas fed to the flare).		
			The sum of project emission reductions provided in the calculation sheet and table 8 of PDD/PDD4/ is not correct and does not correspond to the value given in table 1 of PDD.	~~CR E3~~	OK
			Clarification is required how values provided in figure 1 of PDD/PDD4/ correspond to values given in table 8.	~~CR E4~~	OK
			See also comments E.3.1.	~~CAR E1~~	OK
E.3.4. Have conservative assumptions been used when calculating baseline emissions?	/PDD/ (B.6.3, 6.4, Annex 3)	DR	See comments E.3.1	~~CAR E1~~	OK
E.3.5. Are uncertainties in the GHG emission estimates properly addressed in the documentation?	/PDD/ (B.6.3, 6.4 Annex 3)	DR	See comments E.3.1	~~CAR E1~~	OK
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?	/PDD/ (B.6.3, 6.4 Annex 3)	DR	See comments E.3.1	~~CAR E1~~	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E.4. Emission Reductions Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations.					
E.4.1. Will the project result in fewer GHG emissions than the baseline scenario?	/PDD/ (B.6.)	DR	Yes, about 70 % of the baseline emissions are likely to be reduced. The sum of project emission reductions provided in the calculation sheet and table 8 of PDD/PDD4/ is not correct and does not correspond to the value given in table 1 of PDD. Clarification is required how values provided in figure 1 of PDD/PDD4/ correspond to values given in table 8.	~~CR E3~~ ~~CR E4~~	OK OK
F. Environmental Impacts *Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.*					
F.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	/PDD/ (Section D)	DR	Yes, there is a sufficient description of the environmental impacts of the project.	OK	OK
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment	/PDD/	DR, I	No, an EIA is not required.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
(EIA), and if yes, is an EIA approved?	(Section D) /IM02/ /IM03/ /IM05/				
F.1.3. Will the project create any adverse environmental effects?	/PDD/ (Section D) /IM01/	DR, I	No, all environmental aspects are positive.	OK	OK
F.1.4. Are transboundary environmental impacts considered in the analysis?	/PDD/ (Section D) /IM01/	DR, I	No significant negative impacts are applicable.	OK	OK
F.1.5. Have identified environmental impacts been addressed in the project design?	/PDD/ (Section D) /IM01/	DR, I	Yes.	OK	OK
F.1.6. Does the project comply with environmental legislation in the host country?	/PDD/ /IM01/ /IM03/ /IM05/ /IL/ /OL/	DR, I	All required licenses of the landfill are available.	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
G. Comments by Local Stakeholder *Validation of the local stakeholder consultation process.*					
G.1.1. Have relevant stakeholders been consulted?	/PDD/ (Section E) /IM01/ /LS/	DR I	Yes. NGO's forum, local attorneys and prosecutor agencies, municipality chamber, state and local environmental authorities were contacted.	OK	OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	/PDD/ (Section E) /IM01/ /LS/	DR I	The Brazilian DNA requires consultation of specific stakeholders by means of letters. Evidence was provided to the validation team that letters were sent and received by local stakeholders per DNA procedure.	OK	OK
G.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	/PDD/ (Section E) /Res.1/ /IM01/ /LS/	DR I	See comment on G.1.2	OK	OK
G.1.4. Is a summary of the stakeholder comments received provided?	/PDD/ (Section E) /IM01/	DR I	No comments have been received.	OK	OK
G.1.5. Has due account been taken of any stakeholder comments received?	/PDD/ (Section E) /IM01/	DR I	See comment on G.1.4	OK	OK

Table 3: Resolution of Corrective Action and Clarification Requests

Draft report clarification requests and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CAR A1 According to ACM0001 CO_2 emissions resulting from the use of electricity in extracting and pumping the landfill gas should be accounted as project emissions and included in the emission reduction calculations respectively.	A.1.2., D.2., E.1.	The emissions resulted of the electricity consumption for extracting and pumping the landfill gas were included in the section B.3 and B.6.1.	The modified PDD addresses this issue in a correct manner. The corresponding calculations were checked and assessed to be correct. CAR was closed.
CAR A2 In chapter B.6.4 of the PDD the table provided in the "Guidelines for completing the Project Design document" (version 06.2) has to be applied.	A.3.5., E.4.1.	The table was modified and adjusted to the document version 06.2.	In the revised PDD the table was correctly modified. CAR was closed.
CAR B1 Clarification is needed why the Adjustment Factor has determined as 20 %.	B.2.2.	The use of this adjustment factors rely on the recommendation of the Brazilian DNA.	The adjustment factor suggested by DNA has been confirmed by the validation team. CAR was closed.
CAR B2 The latest version of the "Tool for the demonstration and assessment of additionality" has to be applied.	B.2.7.	Version 03 of the "Tool for the demonstration and assessment of additionality" is applied.	The latest version of the additionality tool was applied in the revised PDD. CAR was closed.
CAR C1	C.1.1.	The starting date in the annex 3 was	The PDD was correctly modified. CAR

Draft report clarification requests and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
The starting date given in chapter C.1.1. does not correspond to information given in annex 3.		corrected.	was closed.
CAR D1 The procedure to calculate ex-post emission reductions provided in Annex 4 does not match with chapter B.6.1. of PDD	D.1.3., D.4.1.	The procedure was changed in the annex 4.	OK. CAR was closed.
CAR D2 The parameter "Energy demand" has to be monitored as well.	D.2.	The parameter EL_{IMP} was included in the chapter B.7.1 of the PDD.	OK. CAR was closed.
CAR D3 Parameters used for determining $PE_{flare,y}$ should be monitored as per the "Tool to determine project emissions from flaring gases containing Methane"	D.2.	The parameters were included in chapter B.7.1 of the PDD.	OK. CAR was closed.
CAR D4 Clarification is required if there are any fossil fuels used to operate the landfill gas project. If so, the quantities have to be monitored as well.	D.2.	There is no fossil fuel used in the project activity.	Clarification was checked and confirmed by the validation team. CAR was closed.

Draft report clarification requests and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CAR E1 The ex-ante calculation of baseline emissions and emission reductions as well as the description of the parameters provided in the calculation sheet and table 8 of PDD/PDD4/ do in parts not correspond to the formulas / parameters described in chapter B.6.1 of PDD/PDD4/ACM0001. The calculation of the baseline emissions using the FOD-model is missing and has to be provided. Clarification is also required why in the calculation sheet an additional factor of 0.8 is used to calculate the emission reductions and the flared methane. The calculation of the fugitive emissions is not correct. Moreover it has to be differentiated between fugitive emissions and project emissions from flaring the residual gas stream.	E.3.	All the adjustments were made. The FOD-model was provided. The 0.8 is the adjustment factor determined in the baseline, as mentioned in the PDD. The “fugitive emission” is now differentiated from the project emissions.	All information has been provided and the ex-ante calculation has been corrected correspondingly. CAR was closed.

Draft report clarification requests and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CR A1 References given in chapter B 7.1 and Annex 4 refer to chapters in old format of PDD.	A.3.5.	The references were changed to the new version of the PDD.	The PDD was correctly modified. CR was closed.
CR A2 The numbering of the equations is not correct.	A.3.5.	The equation's numbers were adjusted.	The PDD was correctly modified. CR was closed.
CR B1 In chapter B.2 should be added that flaring the captured gas (case a) is the project situation.	B.1.2.	The project situation was added in the chapter B.2.	OK. CR was closed.
CR B2 The sentence "Both scenarios above are covered…" on page 8 of the PDD is ambigious, as the BAU case is not covered by ACM0001.	B.2.1.	Only the project scenario is been considered in the ACM0001.	The PDD was modified accordingly. CR was closed.
CR D1 Information concerning the archiving of data is missing.	D.1.3., D.4.1	All the information concerning the archiving data was included.	Ok. CR was closed.
CR D2 The monitoring methodology provided in annex 4 should be restricted to the project activity.	D.1.3., D.4.1	The additional information was excluded.	OK. CR was closed.

Draft report clarification requests and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
Information relating to the generation of electricity or thermal energy is not relevant.			
CR D3 The parameter "Landfill waste" will be monitored throughout the crediting period and thus should be included in section B.7.1.	D.1.3., D.4.1.	The PDD has been revised accordingly.	Ok. CR was closed.
CR E1 The specific source of the used FOD model should be provided.	E.3.3.	The source is now mentioned in the PDD/PDD6/.	Ok. See footnote on page 16 of the PDD/PDD6/ CR was closed.
CR E2 A different abbreviation should be used for the parameter $LFG_{flared,y}$ (methane available at the flaring point) in the ex-ante calculation to distinguish from the parameter $LFG_{flare,y}$ (quantity of landfill gas fed to the flare).	E.3.3.	The abbreviation was changed.	The PDD was modified. CR was closed.
CR E3 The sum of project emission reductions provided in the calculation sheet and table 8 of PDD/PDD4/ is not correct and does not correspond to the value given in table 1 of PDD/PDD4/.	E.4.1.	The value was changed to the correct number.	The PDD/PDD6/ was modified with the inclusion of the correct data. CR was closed.

Draft report clarification requests and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
CR E4 Clarification is required how values provided in figure 1 of PDD[/PDD4/] correspond to values given in table 8.	E.4.1.	The figure was removed.	OK. CR was closed.