VALIDATION REPORT

"ESTRE ITAPEVI LANDFILL GAS PROJECT (EILGP)" IN BRAZIL

REPORT NO. 2006-0773

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DET NORSKE VERITAS

VALIDATION REPORT

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Approved by: Michael Lehmann Technical Director	Organisational unit: DNV Certification, International Climate Change Services
Client: ESTRE – Empresa de Saneamento e Tratamento de Resíduos Ltda.	Client ref.: Alex Schlosser

Summary:

Det Norske Veritas Certification Ltd. (DNV) is performing a validation of the "ESTRE Itapevi Landfill Gas Project (EILGP)" project in Brazil on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and the subsequent decisions by the CDM Executive Board. This validation report summarizes the findings of the validation.

The validation consisted of the following three phases: i) a desk review of the project design, baseline and monitoring plan, ii) follow-up interviews with project stakeholders and iii) the resolution of outstanding issues and the issuance of the final validation report and opinion.

This validation report summarizes the findings of the validation. The only changes made to this version of the validation report compared to the validation report rev. 03 dated 16 November 2006 referred to in the letter of approval of the DNA of Brazil are linked to the status of issuance of the letter of approval by the Brazilian DNA and inclusion of complementary information in order to clarify the additionality, without any changes on previous conclusion, as requested by the EB 32.

In summary, it is DNV's opinion that the "ESTRE Itapevi Landfill Gas Project (EILGP)" as described in the revised PDD of 25 June 2007, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology ACM0001 (version 04 of 28 July 2006). Hence, DNV will request the registration of the "ESTRE Itapevi Landfill Gas Project (EILGP)" as a CDM project activity.

Report No.: 2006-0773	Subject Group: Environment
Report title: "ESTRE Itapevi Landfill Gas Project (EILGP)" in Brazil.	
Work carried out by: Raphael de Souza; Luis Filipe Tavares; Cintia Dias	
Work verified by: K.V. Raman and Michael Lehmann	

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Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CETESB	State of São Paulo environmental agency
CGR	Center for the Management of Residues (*Centro de Gerenciamento de Resíduos*)
CH_4	Methane
CL	Clarification request
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DAIA	Environmental Impacts Assessment Department (*Departamento de Avaliação de Impactos Ambientais)*
DNV	Det Norske Veritas
DNA	Designated National Authority
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
IQR	Landfill Quality Index (*IQR – Índice de Qualidade de Aterros de Resíduos*).
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
N_2O	Nitrous oxide
NGO	Non-governmental Organisation
ODA	Official Development Assistance
PDD	Project Design Document
SMA	State Secretary of Environmental Impacts *(Secretaria de Estado de Meio Ambiente)*
UNFCCC	United Nations Framework Convention on Climate Change

1 INTRODUCTION

ESTRE – Empresa de Saneamento e Tratamento de Resíduos Ltda and Econergy Brasil Ltda have commissioned Det Norske Veritas Certification Ltd (DNV) to perform a validation of the "ESTRE Itapevi Landfill Gas Project (EILGP)", located in the municipality of Itapevi, São Paulo State, Brazil.

This report summarises the findings of the validation of the project, performed on the basis of UNFCCC and host Party criteria for CDM projects, as well as criteria given to provide for consistent project operations, monitoring and reporting. This validation report summarizes the findings of the validation. The only changes made to this version of the validation report compared to the validation report rev. 02 dated 03 July 2006 referred to in the letter of approval of the DNA of Brazil are linked to the status of issuance of the letter of approval by the Brazilian DNA and inclusion of complementary information in order to clarify the additionality, without any changes on previous conclusion, as requested by the EB 32. The formats of the validation team description have been changed too. These changes were the only changes that have been done.

The validation team consisted of the following personnel:

Mr. Raphael de Souza	DNV Certification Rio de Janeiro	Team leader, CDM Validator
Mr. Luis Filipe Tavares	DNV Certification Rio de Janeiro	Waste sector expert.
Ms. Cintia Dias	DNV Certification Rio de Janeiro	GHG Auditor
Mr. K.V.Raman	DNV Certification Bangalore	GHG Auditor
Mr Michael Lehmann	DNV Certification Oslo	Technical reviewer

1.1 Validation Objective

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, the monitoring plan, and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the 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).

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board, including the consolidated baseline and monitoring methodology ACM0001 (version 04 of 28 July 2006). The validation team has, based on the recommendations in the Validation and Verification Manual /17/, and employed a risk-based approach, focusing on the identification of significant risks for project implementation and the generation of CERs.

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

1.3 Description of Proposed CDM Project

The "ESTRE Itapevi Landfill Gas Project (EILGP)" aims to capture and flare the landfill gas generated at the "Centro de Gerenciamento de Resíduos" (CGR) Itapevi landfill in order to avoid emissions of methane to the atmosphere**.** The landfill is located in the municipality of Itapevi, São Paulo State, Brazil. The landfill started operations in October 2003 and has a capacity to receive 3.2 million tones of waste. The landfill can receive waste of class IIa and IIb, from household, commercial and industrial facilities. The landfill receives about 900 tons of waste per day from 21 municipalities in the region (including municipalities and private companies).

The current practise at the landfill is to collect and burn the gas only through a passive system, with no systematic and monitored flare. Methane is emitted to the atmosphere through the existing wells, and only part of the gas is burned due to safety and odour reasons.

The project involves the development of a collection pipeline network and a flaring system. The collection system will be built using the existing wells. The wells will be covered and connected to a main pipeline to transport the landfill gas to the flare. A blower will be installed in order to increase the amount of landfill gas collected.

The estimated amount of GHG emission reductions from the project is calculated to be 634 028 tonnes CO_2 equivalents (tCO_2e) during the first renewable 7-year crediting period (with the potential of being renewed twice), resulting in estimated average annual emission reductions of 90 575 tCO_2e.

2 METHODOLOGY

The validation consisted of the following three phases:

I a desk review of the project design documents;
II follow-up interviews with project stakeholders;
III the resolution of outstanding issues and the issuance of the final validation report and opinion.

In order to ensure transparency, a validation protocol was customized for the project, according to the Validation and Verification Manual /17/. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

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

The completed validation protocol for the "ESTRE Itapevi Landfill Gas Project (EILGP)" is enclosed in Appendix A to this report.

Findings established during the validation can either be seen as a non-fulfilment of validation protocol criteria or where a risk to the fulfilment of project objectives is identified. *Corrective action requests* (CARs) are issued, where:

i) mistakes have been made with a direct influence on project results;
ii) validation protocol requirements have not been met; or
iii) there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be certified.

The term *clarification* (CL) may be used where additional information is needed to fully clarify an issue

Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities			
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**), a **Corrective Action Request (CAR)** of risk or non-compliance with stated requirements or a request for **Clarification (CL)** where further clarifications are needed.*	*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).A request for **Clarification (CL)** is used when the validation team has identified a need for further clarification.*

Validation Protocol Table 3: Resolution of Corrective Action Requests and Requests for Clarification			
Draft report corrective action requests and requests for clarifications	***Ref. to Table 2***	***Summary of project participants' response***	***Final 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 project participants during the communications with the validation team should be summarised in this section.*	*This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".*

Figure 1 Validation protocol tables

2.1 Review of Documents

The PDD version 01 of 17 March 2006 /1/ and the subsequent revisions (version 02 of 18 May 2006 /2/, version 03 of 19 June 2006 /3/, version 04 of 20 July 2006 /4/, version 05 of 05 September 2006 /5/, version 06 of 20 September 2006 /6/, version 07 of 08 November 2006 /7/and the final version 08 of 25 June 2007 /8/, submitted by ESTRE – Empresa de Saneamento e Tratamento de Resíduos Ltda and Econergy Brasil Ltda were assessed by DNV.

Also, additional documents such as the grid emission factor calculations, emission reduction calculations /9/ /10/ /11/, environmental licences and the letters sent to local stakeholders, were assessed during the validation.

2.2 Follow-up Interviews

On May 2006, DNV performed interviews with a representative of Econergy Brasil Ltda in order to confirm and to resolve issues identified in the document review. This included, but was not limited to:

- Management System
  - authority and responsibilities
  - training
  - maintenance
  - monitoring, measurement and calibration of monitoring equipment
  - emergency preparedness
  - records maintenance
  - internal audits
  - corrective actions
- Environmental Licenses.
- Consultation of local stakeholders
- Current practise of passive venting and unsystematic burning of LFG

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation was to resolve any outstanding issues which needed to be clarified for DNV's positive conclusion on the project design.

The initial validation of the project identified 2 (two) *corrective action requests* and 10 (ten) requests for *clarification*. The project participant's response to DNV's draft validation report findings and the final version of the PDD of 25 June 2007 addressed the *corrective action requests* and requests for *clarification* to DNV's satisfaction.

To guarantee the transparency of the validation process, the concerns raised and the response provided by the project participants are documented in more detail in the validation protocol in Appendix A.

2.4 Internal Quality Control

The draft validation report including the initial validation findings underwent a technical review before being submitted to the project participants. The final validation report underwent another technical review before requesting registration of the project activity. The technical review was performed by a qualified technical reviewer.

3 VALIDATION FINDINGS

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

The final validation findings relate to the project design as documented and described in the revised PDD of 25 June 2007.

3.1 Participation Requirements

The project participants are ESTRE – Empresa de Saneamento e Tratamento de Resíduos Ltda and Econergy Brasil Ltda of Brazil. The host Party Brazil meets all relevant participation requirements and has provided written approval of voluntary participation in the project /16/. No participating Annex I Party is yet identified.

3.2 Project Design

The objective of the Project is to capture and flare the landfill gas produced at the Itapevi landfill site owned by the project proponent and located in Sao Paulo, Brazil. The project activity thereby avoids emissions of methane to the atmosphere.

A 7-year renewable crediting period is selected (with the potential of being renewed twice), starting on 01 April 2007. The starting date of the project activity is forecasted to be 01 April 2007 with an expected operational lifetime of 21 years.

The current practise at the landfill is to collect and burn the gas only through a passive system, with no systematic and monitored flare. Methane is emitted to the atmosphere through the existing wells, and only part of the gas is burned due to safety and odour reasons.

The project involves the development of a collection pipeline network and a flaring system. The collection system will be built using the existing wells. The wells will be covered and connected to a main pipeline to transport the landfill gas to the flare. A blower will be installed in order to increase the amount of landfill gas collected.

The project will lead to sustainable development through reduced methane emissions and minimizing the risk of explosions at the site. The DNA of Brazil has confirmed that the project assists in achieving sustainable development /16/. The transfer of technology and specialized operations will be needed for project's flare system implementation and operation. This is likely to have a positive impact on employment and building capacity skills.

The project does not involve any public funding, and the validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards Brazil.

3.3 Baseline Determination

The project applies the approved baseline methodology ACM0001 (version 04 of 28 July 2006) – "*Consolidated baseline methodology for landfill gas project activities*" /18/. This methodology is applicable to project activities that reduce greenhouse gas emissions through landfill gas capture and destruction of methane by flaring and/or generation of electricity. In the case of the

"ESTRE Itapevi Landfill Gas Project (EILGP)", the destruction of methane will be through flaring only.

The selected baseline scenario is the partial atmospheric release of the landfill gas. As "ESTRE Itapevi Landfill Gas Project (EILGP)" does not have any contractual and legal obligations to burn methane, the baseline emissions are calculated using an "Adjustment Factor". The "Adjustment Factor" is estimated to be 20% of total methane destroyed by flaring. The "Adjustment Factor" of 20% allows for the destruction of LFG in the baseline scenario which would have occurred as a result of the continuation of the current practice of passive venting and unsystematic burning of LFG and is deemed to be appropriate.

GHG emissions by sources in the baseline were estimated using IPCC's guidelines and the first order decay model approach considering values of L_0 = 70 m^3CH_4/tonwaste and k (1/year) = 0.1. These figures are deemed appropriate and conservative.

3.4 Additionality

In accordance with ACM0001, the additionality of the project is demonstrated through the *Tool for the demonstration and assessment of additionality* /20/, which includes the following steps:

Step 0 -Preliminary screening based on the starting date of the project activity: As the starting date of the crediting period for the project is prior to the expected date of registration, this step is not applicable.

Step 1 - Identification of alternatives to the project activity consistent with current laws and regulations: The possible baseline scenarios are: a) LFG would continue to be released to the atmosphere and only small amounts of LFG would be burned due to safety and odour reasons and b) the implementation of capturing and flaring of LFG without CDM incentives. There is no legislation in Brazil obliging landfills to flare the collected gas. Hence, both scenarios are in compliance with all applicable legal and regulatory requirements.

Step 2 - Investment analysis: As the CDM project activity does not generate any financial or economic benefit other than the CDM related income, the simple cost analysis scenario is applied. Considering the additional costs necessary for increasing the LFG capture capacity, without having any revenues, the project is not a likely baseline scenario. Even if LFG was utilised to generate electricity, this would not significantly alleviate the economic and financial hurdles of the project.

Step 3 - Barrier analysis: Not selected (Step 2 is selected only).

Step 4 - Common practice analysis: DNV was able to confirm that possible future legislation that would require landfills to quantify and flare a certain amount of the gas produced is not likely to be implemented in near future, considering the waste disposition situation in Brazil. At present 53% of waste produced in Southeast of Brazil is disposed in dumps and only about 13% is destined to sanitary landfill. A major environmental problem related to domestic waste in Brazil is the lack of waste disposal to sanitary landfills. DNV was able to confirm that the investment to install systems to capture and flare methane is not common practice in Brazil.

Step 5 - - Impact of CDM registration: The sale of CERs will provide the necessary revenue for the project to make it economically feasible.

3.5 Monitoring Plan

The project correctly applies the approved monitoring methodology ACM0001 (version 04 of 28 July 2006) - *"Consolidated monitoring methodology for landfill gas projects activities"* /18/.

The following parameters will be monitored as per the monitoring plan:

- Amount of landfill gas captured;
- Amount of landfill gas sent to the flare;
- Flare efficiency;
- Methane fraction in the landfill gas;
- Temperature and pressure of the landfill gas;
- Electricity requirement of the project;
- Grid emission factor – *ex-ante* determination for the entire crediting period;
- Regulatory requirement changes.

The quality control and quality assurance datasheet for the project identifies several monitoring routines. As the project is not yet implemented, the responsibilities for project operation and monitoring and reporting have not yet been developed. However, by the time of the project implementation, a team and its responsibilities will be assigned. The management systems are to be assessed during the first verification.

All the data will be archived for a period of two years after the crediting period.

3.6 Calculation of GHG Emissions

Emission reductions are directly monitored and calculated *ex-post*, using the approach indicated in ACM0001 (version 04 of 28 July 2006). An adjustment factor of 20% for destruction of landfill gas in the baseline scenario will be applied during the first renewable 7-year crediting period.

For the *ex-ante* estimation of emission reductions the projected LFG generation from the landfill was determined using the IPCC first order decay model. A methane potential generation (L_0) of 70 m^3CH_4/ton waste, a decay constant k (1/year) of 0.1 and a collection efficiency of 65% were assumed.

For the calculation of project emissions due to the import of electricity used to pump the LFG, the Brazilian South-Southeast-Midwest interconnected grid CO_2 emission coefficient has been calculated and fixed *ex-ante* for the first 7-year crediting period and is calculated to be 0.2611 tCO_2e/MWh (weighted average of the build margin (BM) and operating margin (OM) emission coefficients). The calculation conform to the procedure given in ACM0002 (version 6 of 19 May 2006) and the calculations were based on electricity generation data provided by National Electricity System Operator (ONS) for the electricity generated in the South-Southeast-Midwest (S-SE-CO) grid in the years 2003-2005. Data for the years 2003-2005 are the most recent statistics available at the time of the PDD submission.

The project activity is projected to reduce 90 575 tCO_2 yearly. Considering the amount of uncertainty related to the methane generation and collection efficiency, which depends on the actual design and engineering of the project, this might be achievable if the project is

implemented suitably. However, experiences with other landfills have shown that the methane generation and collection efficiency of the landfills projected by the first order decay model has an inherent uncertainty of almost 50% and hence the amount of CERs, which will be monitored *ex-post*, might vary from the projected amount.

3.7 Environmental Impacts

The landfill has been granted the operational licence # 32002412 on 04 October 2005, which is valid until 04 October 2010. This license was issued by the State of São Paulo environmental agency (CETESB) /15/.

The landfill gas capture and flaring project has not yet obtained a licence for flaring, and such a licence must be applied for. Given that the flaring of landfill gas has little adverse environmental impacts, it is likely that the licence will be obtained when the project is implemented. At the first period verification of the project's emission reductions, it must be confirmed that this licence was eventually obtained.

3.8 Comments by Local Stakeholders

In accordance with the Resolution 1 of the Brazilian DNA, local stakeholders such as the Municipal Government, the state and municipal agencies, the Brazilian forum of NGOs, neighbouring communities and the office of the attorney general, were identified and were invited to comment on the project. Copies of the letters sent to the local stakeholders were verified during the follow up interviews /12/. Three comments were received.

Two comments requested further information about the project and these requests were addressed by the project participants.

The third comment was made by the Municipal Legislation Chamber of Itapevi –SP. This comment referred to a Civil Public Act and stated that the project was not in compliance with all requirements of the EIA carried out for the project. Moreover, 50% of the total revenues from the project are requested as a compensatory measure for not accomplishing EIA requirements. The project participants have addressed all issues raised. Moreover, DNV verified the operational licence # 32002412 that the project has received and which demonstrates that the project was found to meet all regulatory requirements by the relevant authorities evaluating the project. The claim on the revenues from the emission reductions from the project will have to be settled in accordance with Brazilian law.

It is DNV's opinion that the all comment received were sufficiently taken into account by ESTRE. The comments received and ESTRE's responses are transparently documented in section G of the latest version of the PDD.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The PDD of 17 March 2006 was made publicly available on DNV's climate change website (www.dnv.com/certification/climatechange) and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 22 March 2006 to 20 April 2006. One comment was received.

The comment (in unedited form) is given in the below text box, followed by an explanation of how DNV has taken due account of the comment received.

Comment by: Koch Tobias, Steinbeis Emissions Trading and Climate Protection (koch@emissions.de)

Inserted On: 2006-04-20

Subject: ESTRE Itapevi Landfill Gas Project

Comment: Concerning D.2.2.1:

The author of the PDD should communicate how he intends to measure the "Flare Efficiency" as stated in D.2.2.1.

Furthermore it is not clear how the monitoring could be "continuously" and the source of data is the "flare manufacturer".

It is strongly advisable that the methane content is analysed and recorded continuously

It would be also useful to state in the PDD how the quantity of the methane is computed out of the volume of the landfill gas and the methane content in detail also stating the frequency of this calculation. A more systematic approach is advisable to prevent problems during verification.

Concerning monitoring plan:

In the monitoring plan is missing information how out of the results of the measurement of the unburned methane the flare efficiency is calculated.

It would be very interesting to have explained how the measurement of methane emissions in the flare exhaust is done and if the operator has necessary equipment available

How DNV has taken due account of the comment:

The comment was sent to the project proponent which responded as follows:

Project participant answer:

The correct measurement of the "Flare Efficiency" will be made in two ways: (1) the continuous measurement of the flare's operation time, through the supervision computer system and (2) the yearly measurement of the methane content in the flue gas, made by a company with know-how on gas analysis. According to version 04 of ACM0001, in case the yearly measurement of efficiency of the flare is not performed, the efficiency of the flare shall be a default value of 90%. The measurement of methane in the LFG will be made continuously, by a flow-meter connected to a supervision computer system. Multiplying the percentage of methane in the LFG by the flow measured, the result is the flow of methane. To calculate the amount of methane, in tones, the following formulae is applied:
m = Pcond.Vcond/Tcond.Tnormal/Pnormal.Dnormal, where:

- m = mass of methane (tones);
- Pcond = pressure of the gas (bar);
- Vcond = flow measured (m^3);
- Tcond = temperature of the gas (K);

- Tnormal = temperature on STP (273 K);
- Pnormal = pressure on STP (1.013 bar);
- Dnormal = density of methane on STP (0.0007168 tmethane/m3methane);

All measurement concerning the flare efficiency measurements will be made by a company with know-how on gas analysis. Therefore, this company will provide all necessary data in order to calculate the equipment's efficiency. No procedure on flare's efficiency was detailed in the PDD because each company might have its own measurement methodology.

DNV agrees with the response given by the project proponent. The flare efficiency, as stated in the table D.2.2.1, is determined by measuring the hours of flaring (for estimating the flare efficiency) and the un-combusted methane in the flue gases (for estimating the combustion efficiency) in accordance with ACM0001.

The amount of methane in the landfill gas is estimated by measuring the flow of gas to the flare system (continuous measurement) and the methane content in the landfill gas (analyzed continuously by a gas analyzer). The formulae for the determination of methane in the landfill gas are included by the project proponent.

As stated by the project proponent, the measurements regarding the flare efficiencies will be done by a third party, with technical know-how of the measurement and calculations.

5 VALIDATION OPINION

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the "ESTRE Itapevi Landfill Gas Project (EILGP)", located in the municipality of Itapevi, São Paulo State, Brazil. The validation was performed on the basis of UNFCCC criteria for CDM project activities and relevant Brazilian criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The project participants are ESTRE – Empresa de Saneamento e Tratamento de Resíduos Ltda and Econergy Brasil Ltda of Brazil. The host Party Brazil meets all relevant participation requirements and has provided written approval of voluntary participation in the project /16/. *No participating Annex I Party is yet identified.*

The project objective is to capture and flare the landfill gas produced at the "Centro de Gerenciamento de Resíduos" (CGR) Itapevi landfill, to avoid emissions of methane to the atmosphere. The technology to be employed will be the improvement of landfill gas collection and flaring, through the installation of an active recovery system composed of a collection and transportation pipeline network and a flaring system.

The project applies the approved baseline and monitoring methodology ACM0001 (version 04 of 28 July 2006), i.e. "Consolidated baseline and monitoring methodology for landfill gas project activities". The baseline methodology has been correctly applied and the assumptions made for the selected baseline scenario are sound. It is sufficiently demonstrated that the project is not a likely baseline scenario and that emission reductions attributable to the project are additional to any that would occur in the absence of the project activity.

The monitoring methodology has been correctly applied. The monitoring plan sufficiently specifies the monitoring requirements.

By burning the methane contained in landfill gas the project results in reductions of CH_4 emissions that are real, measurable and give long-term benefits to the mitigation of climate change. Emission reductions are directly monitored and calculated ex-post, using the approach indicated in ACM0001. For the ex-ante estimation of emission reductions and the projected LFG generation from the landfill was determined using the IPCC first order decay model.

Local stakeholders, such as the Municipal Government, the state and municipal agencies, the Brazilian forum of NGOs, neighbouring communities and the office of the attorney general, were invited to comment on the project, in accordance with the requirements of Resolution 1 of the Brazilian DNA. Three comments were received and these have been taken into account during DNV's validation (please, see Validation Report item 3.8).

In summary, it is DNV's opinion that the "ESTRE Itapevi Landfill Gas Project (EILGP)", as described in the revised and resubmitted project design document of 25 June 2007, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology ACM0001 (version 04 of 28 July 2006). Hence, DNV will request the registration of the "ESTRE Itapevi Landfill Gas Project (EILGP)" as a CDM project activity.

6 REFERENCES

Documents provided by the project proponent that relate directly to the project:

/1/ Econergy Brasil Ltda: *Project Design Document for the "ESTRE Itapevi Landfill Gas Project (EILGP)"*, Version 1 of 17 March 2006.

/2/ Econergy Brasil Ltda: *Project Design Document for the "ESTRE Itapevi Landfill Gas Project (EILGP)"*, Version 2 of 18 May 2006.

/3/ Econergy Brasil Ltda: *Project Design Document for the "ESTRE Itapevi Landfill Gas Project (EILGP)"*, Version 3 of 19 June 2006.

/4/ Econergy Brasil Ltda: *Project Design Document for the "ESTRE Itapevi Landfill Gas Project (EILGP)"*, Version 4 of 20 July 2006.

/5/ Econergy Brasil Ltda: *Project Design Document for the "ESTRE Itapevi Landfill Gas Project (EILGP)"*, Version 5 of 05 September 2006.

/6/ Econergy Brasil Ltda: *Project Design Document for the "ESTRE Itapevi Landfill Gas Project (EILGP)"*, Version 6 of 20 September 2006.

/7/ Econergy Brasil Ltda: *Project Design Document for the "ESTRE Itapevi Landfill Gas Project (EILGP)"*, Version 7 of 08 November 2006.

/8/ Econergy Brasil Ltda: *Project Design Document for the "ESTRE Itapevi Landfill Gas Project (EILGP)"*, Version 8 of 25 June 2007.

/9/ Econergy Brasil Ltda: Spreadsheets for the calculation of the CGR Itapevi Baseline.

/10/ *Spreadsheets for the calculation of the combined margin emission Coefficient* (BR SSECO 2002-2004-2006.05.23.xls).

/11/ *Spreadsheets for the calculation of the combined margin emission Coefficient* (BR SSECO 2003-2005-2006.08.28.xls).

/12/ Letters sent to local stakeholder and the comments received.

/13/ CGR Itapevi - Environmental Licence # 00789 issued on 12 December 2004.

/14/ CGR Itapevi - Installation Licence # 32002340 issued on 18 March 2005. This license was evaluated by CETESB.

/15/ CGR Itapevi - Operation Licence # 32002412 issued on 04 October 2005 which is valid until 04 October 2010.

/16/ Comissão Interministerial de Mudança Global do Clima (DNA of Brazil): *Letter of Approval*. 19 January 2006

Background documents related to the design and/or methodologies employed in the design or other reference documents:

/17/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*. http://www.vvmanual.info

/18/ CDM Executive Board: *Approved Baseline and Monitoring Methodology ACM0001: "Consolidated baseline methodology for landfill gas project activities"*, version 04 of 28 July 2006.

/19/ CDM Executive Board: *Approved Baseline and Monitoring Methodology ACM0002: "Consolidated methodology for grid-connected electricity generation from renewable sources"*, version 6 of 19 May 2006.

/20/ CDM Executive Board: *Tool for the demonstration and assessment of additionality*. Version 02 of 28 November 2005.

Persons interviewed during the validation, or persons who contributed with other information that are not included in the documents listed above:

/21/ Eduardo Cardoso Filho - Econergy

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APPENDIX A

CDM VALIDATION PROTOCOL

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

Requirement	Reference	Conclusion	Cross Reference / Comment
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	OK	Table 2, Section E.4.1 No participating Annex I Party is yet identified.
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, CDM Modalities and Procedures §40a	--	Table 2, Section A.3
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art.12.2.	OK	Table 2, Section E.4.1
4. The project shall have the written approval of voluntary participation from the designated national authority of each party involved	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a	--	DNA of Brazil: Letter of Approval. 19 January 2006.
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	OK	Table 2, Section E
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, CDM Modalities and Procedures §43	OK	Table 2, Section B.2
7. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties.	Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2	OK	The validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards Brazil.
8. Parties participating in the CDM shall designate a national authority for the CDM	CDM Modalities and Procedures §29	OK	The Brazilian designated national authority for the CDM is the Comissão Interministerial de

Requirement	Reference	Conclusion	Cross Reference / Comment
			Mudança Global do Clima.
9. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol	CDM Modalities §30/31a	OK	Brazil has ratified the Kyoto Protocol on 23 August 2002.
10. The participating Annex I Party's assigned amount shall have been calculated and recorded	CDM Modalities and Procedures §31b	Not applicable.	No participating Annex I Party is yet identified.
11. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7	CDM Modalities and Procedures §31b	Not applicable.	No participating Annex I Party is yet identified.
12. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received	CDM Modalities and Procedures §37b	OK	Table 2, Section G
13. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be 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 shall be carried out.	CDM Modalities and Procedures §37c	OK	Table 2, Section F
14. Baseline and monitoring methodology shall be previously approved by the CDM Executive Board	CDM Modalities and Procedures §37e	OK	Table 2, Section B.1.1 and D.1.1
15. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP	CDM Modalities and Procedures §37f	OK	Table 2, Section D
16. Parties, stakeholders and UNFCCC accredited NGOs shall 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	CDM Modalities and Procedures §40	OK	The PDD was presented for public comments in the period of 22 March 2006 to 20 April 2006 on climatechange.dnv.com and comments were invited via the UNFCCC CDM website. One comment was received, made publicly available and has been considered in the validation of the

Requirement	Reference	Conclusion	Cross Reference / Comment
			project.
17. 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	CDM Modalities and Procedures §45c,d	OK	Table 2, Section B.2
18. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure	CDM Modalities and Procedures §47	OK	Table 2, Section B.2
19. The project design document shall be in conformance with the UNFCCC CDM-PDD format	CDM Modalities and Procedures Appendix B, EB Decision	OK	PDD is in accordance with CDM-PDD (version 02 of 1 July 2004).

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?	/1/	DR	The "ESTRE Itapevi Landfill Gas Project (EILGP)" is located in the municipality of Itapevi, São Paulo State, Brazil. The "ESTRE Itapevi Landfill Gas Project (EILGP)" is located in the municipality of Itapevi, São Paulo State, Brazil. However, the precise location of the project is not clearly identified in the PDD..	~~CL 2~~	OK
A.1.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	/1/	DR	The project's system boundary comprises the CGR Itapevi landfill and complementary facilities to collect, pump and flare the LFG. It is indicated that the project proponent will install wellheads at the existing concrete wells. The wellheads will be connected to a manifold. All the individual manifolds will be connected to the main transmission pipeline going to the flare system through a blower and a dewatering system. The system for the removal of leachate and its treatment prior to discharge will be as per the regulations specified in the operating licence.		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

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?	/1/	DR	The project design engineering reflects good practice through the use of top and bottom cover landfill, land fill gas recovery and flaring. ESTRE's Itapevi landfill was qualified with an IQR of 9.4 (range 0 to 10) in CETESB's 2004 assessment of the state's landfills.		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?	/1/	DR	The common practice in Brazil is sanitary landfill without landfill gas treatment or only safety flaring. The project uses standard technology available. The flare system which is the most critical part of the system is imported.		OK
A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	/1/	DR	The project is unlikely to be substituted by other more efficient technologies.		OK
A.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	/1/	DR	Yes, the project will require extensive initial training in the operation and maintenance of the flaring systems, in order to work as presumed during the project period.		OK
A.2.5. Does the project make provisions for meeting training and maintenance needs?	/1/	DR	The project activity will be implemented by engineers and specialist with experience in implementing of landfill gas capture and flaring projects. These professions will train the local operators and engineers on the		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			operations and training aspects.		
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?	/1/	DR / I	Environmental Licenses for landfill were issued by State of São Paulo environmental agency (CETESB). The PDD mentions that all pertinent licenses for the CGR Itapevi landfill. These licenses were issued by CETESB. However, no environmental, work or operation licenses of CGR Itapevi Landfill were presented. The operating licence of the landfill gas capture and flaring project is yet to be obtained and is in the process. This is to be verified during the verification stage.	~~CL 4~~	OK
A.3.2. Is the project in line with host-country specific CDM requirements?	/1/	DR	The project is in line with host country specific requirements. Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive the written confirmation by the DNA of Brazil that the project is in line with the host country specific CDM requirements.	~~CL 4~~	OK
A.3.3. Is the project in line with sustainable development policies of the host country?	/1/	DR	The project is in line with current sustainable development priorities in Brazil. The DNA of Brazil confirmed that the project assists in achieving sustainable development...	--	--
A.3.4. Will the project create other environmental or social benefits than GHG emission reductions?	/1/	DR	The project is expected to bring improvement on sustainable development		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			through reducing methane emissions and minimize the risk that any explosion occurs at the site. The project will also lead to capacity building and employment creation.		
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 Executive Board?	/1/	DR	The project applies the approved baseline methodology ACM0001 - "Consolidated baseline methodology for landfill gas project activities" which is previously approved by the CDM Executive Board.		OK
B.1.2. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified?	/1/	DR	The baseline methodology is applicable to the project activity as the project envisages the capture and flaring of the landfill gas and the baseline scenario is the partial or total release of the landfill gas to the atmosphere.		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?	/1/	DR	The application of the methodology is correct and the baseline determination is transparent.		OK
B.2.2. Has the baseline been determined using conservative assumptions where possible?	/1/	DR	As the landfill does not have any contractual obligations to burn methane, the baseline emissions are calculated based on the "Adjustment Factor", estimated as 20% of total methane destroyed at the baseline. A collection efficiency value of 80% was considered. For the estimation of the baseline emissions and the emission reductions, the project uses a collection efficiency of 80% which is on the higher side and needs justification.	~~CL 5~~	OK
B.2.3. Has the baseline been established on a project-specific basis?	/1/	DR	The baseline has been specifically designed for this project.		OK
B.2.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/	DR	The National Waste Management Policy is under discussions and there is enough evidence to conclude that it will result only in requirements for LFG collection but no requirements for LFG destruction of more than 20% of the LFG produced.		OK
B.2.5. Is the baseline determination compatible with the available data?	/1/	DR	Yes		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
B.2.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	/1/	DR	The selected baseline represents the most likely scenario. The common practice to dispose waste in large cities of Brazil is sanitary landfill. In the smaller cities the practice is open dumping. All of these scenarios don't have any facilities to collect and flare the landfill gas generated. Only the minimum quantity is flared for safety conditions.		OK
B.2.7. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario?	/1/ /20/	DR	In accordance with ACM0001, the additionality of the project is demonstrated through the Tool for the demonstration and assessment of additionality, which includes the following steps: Step 0 -Preliminary screening based on the starting date of the project activity: As the starting date of the CDM project activity is mentioned is prior to the expected date of registration, this step is not applicable. Step 1 - Identification of alternatives to the project activity consistent with current laws and regulations: The possible baseline scenarios selected were a) LFG released to the atmosphere and only small amounts of LFG would be burned due to safety and odour reasons i.e. the baseline scenario and b) to implement the project activity of landfill gas capture and flaring without CDM incentives. There is no legislation in Brazil obliging landfills to flare the collected gas. Both scenarios are thus in compliance with		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			all applicable legal and regulatory requirements. Step 2 - Investment analysis: As the CDM project activity does not generate any financial or economic benefit other than the CDM related income; the simple cost analysis scenario is applied. The project is not a likely baseline scenario considering the additional costs necessary to increasing the LFG capture and flaring capacity, without having any revenues. Step 3 - Barrier analysis: Not selected (Step 2 is selected only) Step 4 - Common practice analysis: DNV was able to confirm that possible future legislation that would require landfills to quantify and flare a certain amount of the gas produced is not likely to be implemented in near future when considering the waste disposition situation in Brazil. At present 53% of the waste produced in Southeast of Brazil is disposed in dump and only about 13 % is destined to sanitary landfill. A major environmental problem related to domestic waste in Brazil is the lack of waste disposal to sanitary landfills. DNV was able to confirm that the investment to install systems to capture and flare methane is not common practice in Brazil. Step 5 - Impact of CDM registration: The sale of CERs will provide the necessary revenue for the project to make it		

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			economically feasible.		
B.2.8. Have the major risks to the baseline been identified?	/1/	DR	The project considers an EAF of 20% and collection efficiency of 80%.	~~CL 5~~	OK
B.2.9. Is all literature and sources clearly referenced?	/1/	DR	Yes,		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?	/1/	DR	The project is foreseen to start on 01 April 2007 and the project's expected operational lifetime is 21 years and deemed reasonable.		OK
C.1.2. Is the assumed crediting time clearly defined (renewable crediting period of seven years with two possible renewals or fixed crediting period of 10 years with no renewal)?	/1/	DR	A renewable 7-year crediting period (with the potential of being renewed twice) is selected, with a forecasted starting date of 01 April 2007.		OK
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 Executive Board?	/1/	DR	The project applies the approved baseline methodology ACM0001 - Consolidated monitoring methodology for landfill gas		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			project activities		
D.1.2. Is the monitoring methodology applicable for this project and is the appropriateness justified?	/1/	DR	The monitoring methodology is applicable for the project as the project is a landfill gas capture and flaring. In line with the methodology the following parameters will be monitored: - Quantity of LFG captured- measured; - LFG flared – measured; - Methane fraction in LFG being flared- analyser; - Flare efficiency; - Temperature of LFG – measured; - Pressure of LFG – measured; - Electricity consumption – measured; - CO_2 emission intensity of grid – *ex-ante*; - Regulatory requirements. According to the latest PDD they only measure LFG to the flare. However, the monitoring plan states that this be compared with LFGTotal estimated and the lowest value will be applied. However, LFGtotal is not monitored. Version 04 of ACM0001 requires that In the case where LFG is just flared, one flow meter can be used provided that the meter used is calibrated periodically by an officially accredited entity. If not, the total flow and the flow to the flare with two flow meters have to be monitored and the lowest number has to be taken.	~~CL 10~~	OK
D.1.3. Does the monitoring methodology reflect good	/1/	DR	The monitoring methodology reflects good	~~CAR 1~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
monitoring and reporting practices?			monitoring practices. The monitoring methodology reflects good monitoring practices. The following needs to be corrected in table D.2.2.1 in line with the monitoring methodology. - Flare efficiency- the comments have got reversed. 1) should be continuous measurement of the operation time of flare and (2) periodic measurement of methane in flared gas. - The CH4 fraction in the landfill gas is stated to be monitored "continuously *(quarterly, monthly if unstable)".* This parameter is to be continuously monitored The grid electricity CO2 emission factor is fixed *ex-ante,* but the monitoring plan indicates that it is monitored "At *the validation and yearly after registration".* and need to be corrected.		
D.1.4. Is the discussion and selection of the monitoring methodology transparent?	/1/	DR	Yes		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 within the project boundary during the crediting period?	/1/	DR	Yes, in line with the methodology, the monitoring plan provides for the collection and archiving of all necessary data. The Adjustment factor has been selected at 20% and needs to be justified. The grid emission factor has been		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			estimated at 0.2611 considering the South-Southeast-Midwest grid. The factor is estimated as per the guidelines of the ACM0002 version 6. The Operating margin was calculated using the simple adjusted OM, with the vintage data of 2003 to 2005 from the Brazilian Electricity System Manager (ONS). The build margin BM has been calculated using the 20% of the total generation of the year 2005 as the generation of the 5 most recent plants is less than the 20%. Data for the years 2003-2005 are the most recent statistics available at the time of the PDD submission		
D.2.2. Are the choices of project GHG indicators reasonable?	/1/	DR	The choice of project GHG indicator CO_2 is reasonable. The monitoring plan indicates continuous monitoring of flare efficiency. However, in the comment it is indicated to be measured periodically. Please note that ACM0001 requires that the flare efficiency is monitored by continuously monitoring the operating hours and by quarterly (monthly if unstable) monitoring of the CH4 content in the exhaust gas. The monitoring plan needs to be corrected accordingly.	~~CL 6~~	OK
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?	/1/	DR	Yes. The CH_4 fraction in the landfill gas is stated to be monitored "continuously (quarterly, monthly if unstable)". The CH4 fraction in the landfill gas is stated to be monitored "continuously *(quarterly, monthly if unstable)".* The PDD should specify whether it is monitored continuously	~~CL 7~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			or only periodically.		
D.2.4. Will the indicators give opportunity for real measurements of project emissions?	/1/	DR	Yes. The grid electricity CO2 emission factor seems to be fixed *ex-ante,* but the monitoring plan indicates that it is monitored "At *the validation and yearly after registration".*	~~CL 8~~	OK
D.2.5. Will the indicators enable comparison of project data and performance over time?	/1/	DR	Yes		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?	/1/	DR	No potential emission sources of leakage are to be considered as per ACM0001.		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?	/1/	DR	The baseline emissions of GHG have been estimated prior to the project start, by the 1st order decay model using the IPCC guidelines.		OK
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/1/	DR	Yes		OK
D.4.3. Will it be possible to monitor / measure the specified baseline indicators?	/1/	DR	Yes		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?	/1/	DR	ACM0001 and the Brazilian DNA do not require the monitoring of social or environmental indicators.		OK
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?	/1/	DR	Although the PDD mention a team assigned to monitor emission reductions no detail is evidenced as manager structure.	~~CL 3~~	OK
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	/1/	DR	See D.6.1		OK
D.6.3. Are procedures identified for training of monitoring personnel?	/1/	DR	The project establishes contract specialized engineers which will training the operators.		OK
D.6.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR	No emergency procedures in case of unintended emissions of LFG were evidenced.	~~CL 9~~	OK
D.6.5. Are procedures identified for calibration of monitoring equipment?	/1/	DR	The project establishes periodical maintenance and testing of all measure equipments.		OK
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?	/1/	DR	See D.6.5		OK
D.6.7. Are procedures identified for monitoring,	/1/	DR	Computer-based equipment generates		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
measurements and reporting?			continuous data to feed spreadsheet of relevant and consolidated data.		
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)	/1/	DR	See D.6.7		OK
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/1/	DR	See D.6.1		OK
D.6.10. Are procedures identified for review of reported results/data?	/1/	DR	See D.6.1		OK
D.6.11. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	/1/	DR	See D.6.1		OK
D.6.12. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	/1/	DR	See D.6.1		OK
D.6.13. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR	See D.6.1		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. Project GHG Emissions *The validation of ex-ante estimated 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?	/1/	DR	Yes, all aspects related to direct GHG emissions have been captured in the project design. The direct project emissions result from the electricity consumption of the blower. There are no indirect emissions from the project.		OK
E.1.2. Are the GHG calculations documented in a complete and transparent manner?	/1/	DR	Yes		OK
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?	/1/	DR	Yes, conservative assumptions have been used to estimate the project GHG emissions. For calculation of project emissions due to the import of electricity used to pump the LFG, the amount of electricity consumed and Emission Factor (EF) of SSECO Brazilian grid with value of a combined margin emission coefficient of 0.2677 tCO2e/MWh (weighted average of the build and operating margin). However the	~~CAR 2~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			calculation doesn't agree with ACM0002 (version 6 of 19 May 2006) with respect to the determination of the BM emission coefficient..		
E.1.4. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	/1/	DR	See E.1.3.	~~CAR 2~~	OK
E.1.5. Have all relevant greenhouse gases and source categories listed in Kyoto Protocol Annex A been evaluated?	/1/	DR	Yes.		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 and estimated ex-ante.*					
E.2.1. Are potential leakage effects beyond the chosen project boundaries properly identified?	/1/	DR	No potential emission sources of leakage were established by ACM0001.		OK
E.3. Baseline Emissions *The validation of ex-ante estimated 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?	/1/	DR	The baseline GHG emissions have been estimated *ex-ante* following the IPCC guidelines and the first order decay model. In line with the guidelines, the following constants were assumed. - k - decay constant – 0.15 (1/year) - L_o - methane generation potential – 0.07	~~CL 5~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			m^3 methane/ Kg waste - F - fraction of methane in landfill gas - Collection efficiency – 80 %. For the *ex-ante* estimation of emission reductions the projected LFG generation from the landfill was determined using the IPCC first order decay model. A methane potential generation (L_0) of 70 m^3CH_4/ton waste, a decay constant k (1/year) of 0.1 and a collection efficiency of 80 % were assumed.		
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	/1/	DR	See E.3.1.		OK
E.3.3. Are the GHG calculations documented in a complete and transparent manner?	/1/	DR	Yes, the GHG calculations are documented in a transparent manner.		OK
E.3.4. Have conservative assumptions been used when calculating baseline emissions?	/1/	DR	See E.3.1		OK
E.3.5. Are uncertainties in the GHG emission estimates properly addressed in the documentation?	/1/	DR	See E.3.1		OK
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?	/1/	DR	Yes		OK
E.4. Emission Reductions *Validation of ex-ante estimated emission reductions*.					
E.4.1. Will the project result in fewer GHG emissions than the baseline scenario?	/1/	DR	The estimated amount of GHG emission reductions from the project is expected to be 634 028 tCO_2e during the first	~~CL 1~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			renewable 7-year crediting period, resulting in estimated average annual emission reductions of 90 575 tCO_2e. The first crediting period emission reductions were calculated considering only 72 months while it should be calculated considering 84 months (7 years).		
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?	/1/	DR I	Estre has all pertinent licenses for CGR Itapevi landfill. These licenses were issued by CETESB. The PDD mentions that all pertinent licenses for the CGR Itapevi landfill. These licenses were issued by CETESB. However, no environmental, work or operation licenses of CGR Itapevi Landfill were presented. The analysis of the environmental impacts for the flaring project is to be conducted by the State Secretary of Environment (SMA), through the Environment Impact Assessment Department (DAIA) and the State of Sao Paulo Environmental Agency (CETESB). The landfill gas capture and flaring project has not yet obtained a license. The license must be applied for when the project is implemented. Given that the flaring of	~~CL 4~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
			landfill gas has little adverse environmental impacts, it is likely that the license will be obtained when the project is implemented. The first period verification of the project must confirm that this license was eventually obtained.		
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/	DR	See F.1.1.		OK
F.1.3. Will the project create any adverse environmental effects?	/1/	DR	Since the project involves the capture and flaring of landfill gas, there will be no adverse environmental effects. Leachate from the landfill is to be treated to the specification of Brazilian laws and regulations before discharge.		OK
F.1.4. Are transboundary environmental impacts considered in the analysis?	/1/	DR	The project will have no trans-boundary impacts.		OK
F.1.5. Have identified environmental impacts been addressed in the project design?	/1/	DR	The environmental impacts are to be identified in the EIA.		OK
F.1.6. Does the project comply with environmental legislation in the host country?	/1/	DR	The project is yet to obtain the working licence for the flaring facility. Given that the flaring of landfill gas has little adverse environmental impacts, it is likely that the license will be obtained when the project is implemented. The first period verification of the project must confirm that this license was eventually obtained.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
G. Stakeholder Comments *The validator should ensure that a stakeholder comments have been invited and that due account has been taken of any comments received.*					
G.1.1. Have relevant stakeholders been consulted?	/1/	DR I	Yes, relevant stakeholders were identified for the project. Local stakeholders were invited to comment on the project in accordance with the requirements of Resolution 1 of the Brazilian DNA. Comments by local stakeholders, such as the Municipal Government, the state and municipal agencies, the Brazilian forum of NGOs, neighbouring communities and the office of the attorney general, were invited. Three comments were received. The letters sent to the local stakeholders were evidenced at site.		OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/	DR	As per the requirement of the DNA of Brazil, letters and executive summary of the project activity were sent to all the stakeholders identified .		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?	/1/	DR	A stakeholder consultation process is required as per the Resolution 1 of the Brazilian DNA. The stakeholder consultation process has been carried out in accordance with such regulations by the sending of letters and executive summary of the project activity to all the stakeholders and inviting comments.		OK
G.1.4. Is a summary of the stakeholder comments received provided?	/1/	DR	Yes, a summary of the stakeholders comments received has been provided.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl	Final Concl
G.1.5. Has due account been taken of any stakeholder comments received?	/1/	DR	Yes due account has been taken by the project proponent.		OK

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
CAR 1 The monitoring methodology reflects good monitoring practices. The following needs to be corrected in table D.2.2.1 in line with the monitoring methodology. - Flare efficiency- the comments have got reversed. 1) should be continuous measurement of the operation time of flare and (2) periodic measurement of methane in flared gas. - The CH_4 fraction in the landfill gas is stated to be monitored "*continuously (quarterly, monthly if unstable)*". This parameter is to be continuously monitored The grid electricity CO_2 emission factor is fixed *ex-ante*, but the monitoring plan indicates that it is monitored "*At the validation and yearly after registration*". and need to be corrected.	D.1.3	Table D.2.2.1 was updated on PDD version 4, on page 15.	The PDD has been revised as requested. The CAR is closed.
CAR 2 For calculation of project emissions due to the import of electricity used to pump the LFG, the amount of electricity consumed and Emission Factor (EF) of SSECO Brazilian grid with value of a combined margin emission coefficient of 0.2677 tCO_2e/MWh (weighted average of the build and operating margin). However the calculation doesn't agree with ACM0002 (version 6 of 19 May 2006) with respect to the determination of the	E.1.3 E.1.4	The PDD and the CERs estimative were updated with the new Emission Factor equals to 0.2611 tCO_2e /MWh.	The revised PDD of 25 June 2007, applies the combined emission factor determined in accordance with the most recent version of ACM0002. This CAR is therefore closed.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
BM emission coefficient.			
CL 1 The first crediting period emission reductions were calculated considering only 72 months while it should be calculated considering 84 months (7 years).	E.4.1	The PDD was updated on Pages 9 and 23. The crediting period will be from 01 January 2007.	A correct number of months are being used in calculation of the first crediting period in the revised PDD of 25 June 2007. This CL is therefore closed.
CL 2 The "ESTRE Itapevi Landfill Gas Project (EILGP)" is located in the municipality of Itapevi, São Paulo State, Brazil. However, the precise location of the project is not clearly identified in the PDD.	A.1.1	The PDD was updated on page 5.	Complementary information included in the revised PDD of 25 June 2007, clearly identifies the location of the project. This CL is therefore closed.
CL 3 Although the PDD mention a team assigned to monitor emission reductions no detail is evidenced as manager structure.	D.6.1	As the project is not implemented, no emergency procedures were evidenced. By the time of the project's implementation, all emergency procedures will be developed.	The provided response is satisfactory. The management system should be assessed during the initial verification. This CL is therefore closed.
CL 4 The PDD mentions that all pertinent licenses for the CGR Itapevi landfill. These licenses were issued by CETESB. However, no environmental, work or operation licenses of CGR Itapevi Landfill were presented.	A.3.1 A.3.2 F.1.1	The last Operational License of CGR Itapevi was included on pages 24, 25 and 26.	The license sent by the client was assessed by DNV. This CL is therefore closed.
CL 5 For the estimation of the baseline emissions and the emission reductions, the project uses a collection efficiency of 80% which is on the higher side and needs justification.	B.2.2 B.2.8 E.3.1	A document from US EPA presents a conservative value of collection efficiency of 80%. The source was sent to the validation team. However, the PDD has been corrected to reflect 65% collection efficiency.	The source document is the US EPA document on developing landfills, dated September 1996 and indicating a value of 75 to 85% collection efficiency. However, a conservative value of 65% was selected. Considering the amount of uncertainty related to the methane generation and collection efficiency, which depends on

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
			the actual design and engineering of the project, this might be achievable if the project is implemented suitably. However, experiences with other landfills have shown that the methane generation and collection efficiency of the landfills projected by the first order decay model has an inherent uncertainty of almost 50% and hence the amount of CERs, which will be monitored *ex-post*, might vary from the projected amount. This CL is therefore closed.
CL 6 The monitoring plan indicates continuous monitoring of flare efficiency. However, in the comment it is indicated to be measured periodically. Please note that ACM0001 requires that the flare efficiency is monitored by continuously monitoring the operating hours and by quarterly (monthly if unstable) monitoring of the CH_4 content in the exhaust gas. The monitoring plan needs to be corrected accordingly.	D.2.2	The measurement of methane in the LFG will be made continuously, by a flow-meter connected to a supervision computer system. Multiplying the percentage of methane in the LFG by the flow measured, the result is the flow of methane. To calculate the amount of methane, in tones, the following formulae is applied: m = Pcond.Vcond/Tcond.Tnormal/Pnormal. Dnormal, where: - m = mass of methane (tones); - Pcond = pressure of the gas (bar); - Vcond = flow measured (m^3); - Tcond = temperature of the gas (K); - Tnormal = temperature on STP (273 K); - Pnormal = pressure on STP (1.013	The provided response is satisfactory. As the project is not implemented yet, the monitoring system should be assessed during the initial verification. This CL is therefore closed.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
		bar); - Dnormal = density of methane on STP (0.0007168 tmethane/m^3methane). All measurement concerning the Flare Efficiency measurements will be made by a company with know-how on gas analysis. Therefore, this company will provide all necessary data in order to calculate the equipment's efficiency. No procedure on flare's efficiency was detailed in the PDD because each company might have its own measurement methodology.	
CL 7 The CH_4 fraction in the landfill gas is stated to be monitored "*continuously (quarterly, monthly if unstable)*". The PDD should specify whether it is monitored continuously or only periodically.	D.2.3	The methane content on LFG is measured continuously, in the flare's entrance. The Table D.2.2.1 was updated.	The monitoring plan in the revised PDD of 25 June 2007, is in accordance with the most recent version of ACM0001. This CL is therefore closed.
CL 8 The grid electricity CO_2 emission factor seems to be fixed *ex-ante*, but the monitoring plan indicates that it is monitored "*At the validation and yearly after registration*".	D.2.4	The Table D.2.2.1 was updated.	The revised PDD of 25 June 2007, notes that the grid electricity CO_2 emission factor will be updated at baseline renewal only. This CL is therefore closed.
CL 9 No emergency procedures in case of unintended emissions of LFG were evidenced.	D.6.4	As the project is not implemented, no emergency procedures were evidenced. By the time of the project's implementation, all emergency procedures will be developed.	The provided response is satisfactory because the project is not implemented yet. The management system, including emergency procedures, should be assessed during the first verification. This CL is therefore closed.

Draft report corrective action requests and requests for clarifications	Ref. to Table 2	Summary of project participants' response	Final conclusion
CL 10 According to the latest PDD they only measure LFG to the flare. However, the monitoring plan states that this be compared with LFGTotal estimated and the lowest value will be applied. However, LFGtotal is not monitored. Version 04 of ACM0001 requires that In the case where LFG is just flared, one flow meter can be used provided that the meter used is calibrated periodically by an officially accredited entity. If not, the total flow and the flow to the flare with two flow meters have to be monitored and the lowest number has to be taken.	D.1.2	The project is not generating electricity to the grid (not monitoring LFGtotal) but just flaring LFG. PDD revised accordingly (only monitoring the LFGflare).	PDD of 25 June 2007 revised to DNV's satisfaction. This CL is therefore closed.

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APPENDIX B

CERTIFICATES OF COMPETENCE

CERTIFICATE OF COMPETENCE

Michael Lehmann

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1

GHG Auditor:	Yes		
CDM Validator:	Yes	***JI Validator:***	--
CDM Verifier:	Yes	***JI Verifier:***	--
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 1, 2, 3 & 9		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	Yes	*AM0027*	Yes
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes	*AM0028, AM0034*	Yes
ACM003, ACM0005, AM0033, AM0040	Yes	*AM0030*	Yes
ACM0004	Yes	*AM0031*	Yes
ACM0006, AM0007, AM0015, AM0036, AM0042	Yes	*AM0032*	Yes
ACM0007	Yes	*AM0035*	Yes
ACM0008	Yes	*AM0038*	Yes
ACM0009, AM0008, AMS-III.B	Yes	*AM0041*	Yes
AM0006, AM0016, AMS-III.D, ACM0010	Yes	*AM0034*	Yes
AM0009, AM0037	Yes	*AM0043*	
AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS-III.I	Yes	*AM0046*	
AM0014	Yes	*AM0047*	
AM0017	Yes	*AMS-II.A-F, AM0044*	Yes
AM0018	Yes	*AMS-III.A*	Yes
AM0020	Yes	*AMS-III.E, AMS-III.F*	Yes
AM0021	Yes		
AM0023	Yes		
AM0024	Yes		

Høvik, 25 June 2007

Einar Telnes
Director, International Climate Change Servicer

Michael Lehmann
Technical Director

CERTIFICATE OF COMPETENCE

Luis Filipe Tavares

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1

GHG Auditor:	Yes		
CDM Validator:	Yes	***JI Validator:***	No
CDM Verifier:	Yes	***JI Verifier:***	No
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 9 & 13		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	No	*AM0021*	No
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029	No	*AM0023*	No
ACM003, ACM0005, AM0033, AM0040	No	*AM0024*	No
ACM0004	No	*AM0027*	No
ACM0006, AM0007, AM0015, AM0036, AM0042	No	*AM0028, AM0034*	No
ACM0007	No	*AM0030*	No
ACM0008	No	*AM0031*	No
ACM0009, AM0008, AMS-III.B	No	*AM0032*	No
AM0006, AM0016, AMS-III.D	No	*AM0035*	No
AM0009, AM0037	No	*AM0038*	No
AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS-III.I	No	*AM0041*	No
AM0014	No	*AM0034*	No
AM0017	No	*AMS-II.A-F*	No
AM0018	No	*AMS-III.A*	No
AM0020	No	*AMS-III.E, AMS-III.F*	No

Høvik, 25 June 2007

Einar Telnes
Director, International Climate Change Servicer

Michael Lehmann
Technical Director

CERTIFICATE OF COMPETENCE

Raman Venkata Kakaraparthi

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1

GHG Auditor:	Yes		
CDM Validator:	Yes	***JI Validator:***	--
CDM Verifier:	--	***JI Verifier:***	--
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope 5		
Technical Reviewer for (group of) methodologies:			
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029, AM0045	Yes		

Høvik, 25 June 2007

Einar Telnes
Director, International Climate Change Servicer

Michael Lehmann
Technical Director

CERTIFICATE OF COMPETENCE

Cintia Dias

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1

GHG Auditor:	Yes		
CDM Validator:	Yes	***JI Validator:***	--
CDM Verifier:	No	***JI Verifier:***	--
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	No	*AM0021*	No
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029	No	*AM0023*	No
ACM003, ACM0005, AM0033, AM0040	No	*AM0024*	No
ACM0004	No	*AM0027*	No
ACM0006, AM0007, AM0015, AM0036, AM0042	No	*AM0028, AM0034*	No
ACM0007	No	*AM0030*	No
ACM0008	No	*AM0031*	No
ACM0009, AM0008, AMS-III.B	No	*AM0032*	No
AM0006, AM0016, AMS-III.D	No	*AM0035*	No
AM0009, AM0037	No	*AM0038*	No
AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS-III.I	No	*AM0041*	No
AM0014	No	*AM0034*	No
AM0017	No	*AMS-II.A-F*	No
AM0018	No	*AMS-III.A*	No
AM0020	No	*AMS-III.E, AMS-III.F*	No

Høvik, 25 June 2007

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director

CERTIFICATE OF COMPETENCE

Raphael de Souza

Qualification in accordance with DNV's Qualification scheme for CDM/JI (ICP-9-8-i1-CDMJI-i1

GHG Auditor:	Yes		
CDM Validator:	Yes	***JI Validator:***	--
CDM Verifier:	No	***JI Verifier:***	--
Industry Sector Expert for Sectoral Scope(s):	Sectoral scope		
Technical Reviewer for (group of) methodologies:			
ACM0001, AM0002, AM0003, AM0010, AM0011, AM0012, AMS-III.G	No	*AM0021*	No
ACM002, AMS-I.A-D, AM0019, AM0026, AM0029	No	*AM0023*	No
ACM003, ACM0005, AM0033, AM0040	No	*AM0024*	No
ACM0004	No	*AM0027*	No
ACM0006, AM0007, AM0015, AM0036, AM0042	No	*AM0028, AM0034*	No
ACM0007	No	*AM0030*	No
ACM0008	No	*AM0031*	No
ACM0009, AM0008, AMS-III.B	No	*AM0032*	No
AM0006, AM0016, AMS-III.D	No	*AM0035*	No
AM0009, AM0037	No	*AM0038*	No
AM0013, AM0022, AM0025, AM00379, AMS-III.H, AMS-III.I	No	*AM0041*	No
AM0014	No	*AM0034*	No
AM0017	No	*AMS-II.A-F*	No
AM0018	No	*AMS-III.A*	No
AM0020	No	*AMS-III.E, AMS-III.F*	No

Høvik, 25 June 2007

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Michael Lehmann
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