

CDM VALIDATION REPORT

Rellenos Sanitarios RESA

**VALIDATION OF THE PROJECT ACTIVITY:
Puebla Landfill Gas to Energy Project**

AENOR REFERENCE: 2008/0044/CDM/01

VERSION:1

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

Validation Report:	AENOR Reference n°:	Version of this report:	Date:	
	2008/044/CDM/01	1	2012/05/25	
PDD:	Title:	GSC publication date:	Comments received:	
	Puebla Landfill Gas to Energy Project	30/12/2008	<input type="checkbox"/> Yes* <input checked="" type="checkbox"/> No	
Parties involved:	Host Party:	Other involved Parties:		
	Mexico			
Project Participant(s):	In host Party:	In other involved Parties:		
	Rellenos Sanitarios RESA			
Size of the project activity:	<input type="checkbox"/> Small scale <input checked="" type="checkbox"/> Large scale			
Applied methodology/ies:	Title:	Code:	N° version	Scope:
	Consolidated baseline and monitoring methodology for landfill gas project activities	ACM0001	11	13
Applied tools:	Title:	Version:		
	To determine methane emissions avoided from disposal of waste at solid waste disposal site	05.1.0		
	Title:	Version:		
	To calculate the emission factor for an electricity system	02.2.1		
	Title:	Version:		
	To determine the project emissions from flaring gases containing methane	01		
	Title:	Version:		
	To calculate the project or leakage CO2 emissions from fossil fuel combustion	02		
	Title:	Version:		
	To calculate the baseline, project and/or leakage	01		

* The comments are detailed in Section 4 of this Validation Report

VALIDATION REPORT
Puebla Landfill Gas to Energy Project

		emissions from electricity consumptions.			
Emission reductions (ER):		GSC PDD:		Final PDD:	
<input checked="" type="checkbox"/> Annual average of the ER (tCO₂e)		201,794		132,220	
<input type="checkbox"/> Total ER (tCO₂e)					
Previous versions of this document:				Version:	Date:
				1	
				2	
				3	
				4	
Report prepared by:		Climate Change Unit. AENOR			

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

Abbreviations

ACM0001	Consolidated baseline and monitoring methodology for landfill gas project activities"
ACM0002	Approved consolidated baseline and monitoring methodology for zero-emissions grid-connected electricity generation from renewable sources
BM	Build Margin
CAR	Corrective Action Requested
CCGT	Combined Cycle Gas turbine
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CL	Clarification
CONAE	Mexican National Commission for the efficient use of energy
DECISION	Modalities and Procedures for a Clean Development Mechanism as Defined in Article 12
3/CMP.1	of the Kyoto Protocol
DNA	Designated National Authority
EB	Executive Board of the CDM of the Kyoto Protocol
EIA	Environmental Impact Assessment
GSC	Global Stakeholder Consultation
GHG	Greenhouse Gasses
GWhe	Electrical Giga Watt hour
GWht	Thermal Giga Watt hour
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MWH	Mega Watts hour
MoU	Memorandum of Understanding
PDD	Project Design Document
PP	Project Participant
SENER	Energy Secretariat of Mexican Government
scfm	Standard cubic feet per minute
tC	Carbon tonnes
tCO ₂ e	Carbon dioxide equivalent tonnes
TJ	Tera Joules
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual

VALIDATION REPORT
Puebla Landfill Gas to Energy Project

<i>Table of Contents</i>	<i>Page</i>
1 INTRODUCTION.....	7
1.1 Objective	7
1.2 Scope	7
2 METHODOLOGY	8
2.1 Appointment of team members and technical reviewers	9
2.2 Document review	10
2.3 Follow-up actions	10
2.4 Findings	11
2.5 Internal Quality Control	11
3 VALIDATION FINDINGS	11
3.1 Approval	11
3.2 Participation	12
3.3 Project Design Document	12
3.4 Project description	12
3.5 Baseline methodology	13
3.5.1 Applicability of the selected methodology to the project activity	13
3.5.2 Project boundary	14
3.5.3 Baseline identification	14
3.5.4 Algorithms and/or formulae used to determine emission reductions	16
3.6 Additionality	22
3.6.1 Starting date of the project activity and prior consideration of the CDM	22
3.6.2 Analysis of the additionality	24
3.7 Monitoring Plan	34
3.7.1 Compliance of the monitoring plan with the approved methodology	34
3.7.2 Implementation of the Monitoring Plan	35
3.8 Comments by Local Stakeholders	35
3.9 Environmental Impacts	36
4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS.....	36
5 VALIDATION OPINION.....	37
6 CORRECTIVE ACTIONS REQUESTS, CALRIFICATIONS AND FORWARD ACTION REQUESTS	

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

7 REFERENCES

ANNEX 1: CDM VALIDATION PROTOCOL

VALIDATION REPORT**Puebla Landfill Gas to Energy Project**

1 INTRODUCTION**1.1 Objective**

This validation concerns a project implemented by the Project Participant, Rellenos Sanitarios RESA (hereinafter) RESA, in Mexico to reduce emissions from the decomposition of municipal solid waste that would otherwise be emitted to the atmosphere. The objectives of the validation exercise are to confirm that the project meets the necessary CDM criteria, follows the approved methodology, and that the proposals presented by PPs in the PDD will lead to a realistic determination of the emissions reductions.

RESA has commissioned AENOR to validate this project activity. The purpose of such a validation is to have an independent, third party assess the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant UNFCCC and host country issues and criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is a requirement for all CDM projects and is considered essential in providing quality assurance for the project.

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

1.2 Scope

The scope of the validation covers the additionality assessment, the Environmental Impact Study and the stakeholder consultation. In addition, it covers the baseline methodology, the calculation of the emission factor (ex-ante) and the monitoring methodology to quantify the emissions reductions during the operational life of the project.

The following documents were reviewed as part of the scope of the activity:

- PDDs (First version /1/ and final version /2/), including baseline study and monitoring plan.
- Approved Methodology: ACM0001 version 11
- Decision 3/CMP.1 and relevant decisions from the EB./3/
- Associated documentation (environmental requirements, investment analysis, etc.)
- Letter of approval .

The validation scope is defined as an independent and objective review of the PDD, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. AENOR, based on the Specific Instruction for the Processing and Conducting of Validation, Registration, Verification and Certification of Kyoto Protocol CDM Project Activities (IE/DTC/0039) /4/, has used a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

The validation is not meant to provide any consultancy services to the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the PDD.

2 METHODOLOGY

The project assessment aims at being a risk based approach and is based on the methodology developed in the Validation and Verification Manual (version 01.2) /5/, an initiative of Designated and Applicant Entities, which aims to harmonize the approach and quality of all such assessments.

The validation of the project was started in December 2008 and concluded in May 2012. The validation was performed in several phases, starting with a desk review of the PDD against the approved methodology and CDM and other relevant criteria. The desk review was followed by a site visit to the project site and main stakeholders in Mexico.

In order to ensure transparency, a validation protocol was customized for the project, according to Specific Instructions IE/DTC/0039. The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results derived from validating the identified criteria.

The sequence of the validation is given in the table 1 below:

Topic	Date
Submission of PDD for global stakeholder consultation process	30/12/2008
On-site visit	10/02/2009
Validation Protocol - Version 01.	18/02/2009
Final Validation Report	25/05/2012

Table 1: Sequence of the main validation activities

2.1 Appointment of team members and technical reviewers

The list of involved personnel and the qualification status are summarized in the table below:

Name	Qualification	
	Position in the team	Technical areas
Jose Luis Fuentes Perez	Chief validator	TA 13.1
Marcelino Pellitero	Validator	TA.13.1
Pablo Taboada	Technical reviewer	TA.13.1
Jose Antonio Gesto	Technical reviewer	TA.13.1

Table 2: List of the personnel involved

Technical areas (TA) mentioned above correspond to the following:

TA code	Technical area
TA 1.1	Thermal energy generation from fossil fuels and biomass including thermal electricity from solar (COMPLEX);
TA 1.2	Energy generation from renewable energy sources.
TA 2.1	Electricity distribution;
TA 2.2	Heat distribution
TA 3.1	Energy demand
TA 4. 1	Cement sector (COMPLEX);
TA 4.2	Aluminum (COMPLEX);
TA 4.3	Iron and steel (COMPLEX);
TA 4.4	Refinery (COMPLEX)
TA 5.1	Chemical process industries (COMPLEX).
TA 6.1	Construction.
TA 7.1	Transport.

VALIDATION REPORT
Puebla Landfill Gas to Energy Project

TA 8.1	Mining and mineral processes, excluding those included in TA 8.2 below;
TA 8.2	Oil and gas industry, coal mine methane recovery and use (COMPLEX).
TA 9.1	Metal production.
TA 10.1	Mining and mineral processes, excluding those included in TA 10.2 below;
TA 10.2	Oil and gas industry, coal mine methane recovery and use (COMPLEX).
TA 11.1	Chemical process industries (COMPLEX);
TA 11.2	GHG capture and destruction.
TA 12.1	Chemical process industries (COMPLEX).
TA 13.1	Waste handling and disposal;
TA 13.2	Animal waste management.
TA 14.1	Forestry
TA 15.1	Agriculture
TA 15.2	Animal waste management.

2.2 Document review

The Project Design Document submitted by the PPs was reviewed against the approved methodology and against CDM and other relevant criteria. Additional background documents related to the project design, baseline and financial analysis were also made available before and during the on-site visit in Mexico.

To address the corrective actions and clarification requests that arose from the desk review and on-site visit, the consultants revised the project design document version 0 submitted in December 2008 to GSC and developed a final version (version 1).

2.3 Follow-up actions

The AENOR validation team composed of José Luis Fuentes Pérez and Marcelino Pellitero Martínez conducted interviews with project developers in Mexico to confirm selected information and to resolve issues identified in the document review.

On 10 February 2009, the AENOR validation team carried out the visit to the project site. During these days, representatives from Project Participants were interviewed, in addition to relevant local stakeholders.

The main topics of the interviews are summarized in Table 3.

Interviewed organisation Person/Position	Interview topics
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VALIDATION REPORT
Puebla Landfill Gas to Energy Project

Interviewed organisation Person/Position	Interview topics
<ul style="list-style-type: none"> • Jorge Abed: Financial Director RESA • Yusif Abed: Operational Director RESA • Edagr Jiménez: Operations Department RESA • Ruben Ansures: RESA • Virgilio Vázquez: Puebla Municipality 	<ul style="list-style-type: none"> ➤ Project design. ➤ Compliance with environmental law. ➤ Permits and authorizations applicable to landfill projects. ➤ Additionality assessment. ➤ Ex-ante baseline determination. ➤ Consultation with municipality's authorities, land owners and other stakeholders.

2.4 Findings

The objective of this validation phase was to resolve the requests for corrective actions and clarifications and any other outstanding issues that needed to be clarified for AENOR's positive conclusion on the project design. The corrective action requests (CARs) and clarification requests (CLs) raised by AENOR were resolved during communications with the project participants. To guarantee the transparency of the validation process, the concerns raised and responses given are described in this report and also documented in the validation protocol in Annex 1.

Since modifications to the Project design were necessary to resolve AENOR's concerns, the Client decided to revise the documentation and finally resubmitted the project design document (version 1). After reviewing the revised and resubmitted project documentation, AENOR issued this final validation report and opinion.

2.5 Internal Quality Control

As final step of the validation, the validation report and the protocol have to undergo an internal quality control by means of a technical review following the procedures of AENOR. The technical reviewer is a competent person of AENOR, independent from the team that carried out the validation of the project activity.

3 VALIDATION FINDINGS

3.1 Approval

Approval requirements have been validated with the evidence of the LoA requested from the PP in the proposed project activity, through **CAR 1**.

Letter of Approval from Mexican DNA has been provided to the validation team directly from the Project Participant. The LoA was issued in November 2008 (No. 206/2008)/6/ by the Interministerial Commission on Climate Change. AENOR confirms that the LoA is unconditional with respect to the following:

- Mexico is a Party of the Kyoto Protocol.
- The LoA authorizes RESA as a voluntary Project Participant and confirmed its project contributes to Mexico's sustainable development.
- The LoA refers to the precise proposed CDM project activity title in the PDD being submitted for registration.

Then, **CAR 1 is closed**.

The validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards Mexico.

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

3.2 Participation

Mexico, is the party involved in the project.

AENOR confirms that participation of the PP has been approved by the party involved in the Kyoto Protocol, by means of the LoA issued from DNA. AENOR checked the web site of the UNFCCC and web from Mexican DNA and confirms that LoA has been issued by the respective DNA, and it is valid for the proposed CDM project activity. AENOR does not doubt the authenticity of the letter of approval received from PP, hence AENOR confirms that LoA is in compliance with paragraphs 45-48 of the VVM v.1.2. No additional specification of the project activity is contained in the LoA.

The project participant has been listed in section A.3 of the final PDD. This information is consistent with the information provided in Annex 1. AENOR confirms that no entities other than those approved as project participants are included in these sections of the final PDD.

3.3 Project Design Document

Due to the clarifications and corrective actions requested during the validation process, the Project Participants have made a final version of the PDD, version 1 dated on 27 April 2012, which includes all issues raised to the PPs either corrected or clarified. The first PDD version 0 was submitted for GSC.

The PDD is in compliance with relevant forms and guidance of the VVM stated by the CDM documentation.

3.4 Project description

Title of the project activity: Puebla Landfill Gas to Energy Project.

Project Participants: RESA

The participation of the Project Participant has been approved by the Party involved by the letter of approval.

Host Party: Mexico.

Description:

The main purpose of the Project is to extract and utilize methane gas generated by the Puebla Landfill (Chiltepeque landfill) for generating electricity for use at the landfill site and for sale to the Interconnected National System. The project will be implemented in two phases: Phase I, collection and flaring of the landfill gas and phase II, electricity generation.

The capturing, flaring and utilization of landfill gas instead of passively venting, it will result in measurable reductions of GHG emissions that deliver long-term benefits to the mitigation of climate change. The project will also result in mitigation of climate change by displacing or avoiding energy from other sources. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The clarification **CL 1** was requested from PPs to provide further information about the equipment and technology to be employed by the project activity and provide evidence to check the information in the PDD concerning the description of the project. As a result, the sections A.2 and A.4.3 have been completed with more detailed information on different equipment and facilities to be implemented by the PP at landfill site, along with a more clear description of the project.

Although the landfill occupies a property of 67 ha, the project will be developed on section A of the landfill site, with an area of 32 Ha as provided evidence demonstrate: Resolution of the E.I.A (94-1-01/3310) /40/ granted for the current operation of the landfill and the "Puebla Landfill's Useful Life Expansion project"/7/. These documents detail that the waste deposition area according to the EIA

VALIDATION REPORT**Puebla Landfill Gas to Energy Project**

was 27.94 ha, however, it is now extended by another 4.1 ha as the expansion project approved by the Municipality of Puebla states, leading to a total waste deposition area of section A of 32 ha.

The landfill started its operation in 1995 and it is expected to continue operations till 2022, though section A will be closed in 2013. Hence, after 2013 the deposition will continue in section B. The operational lifetime of the project is 11.5 years considering the operation started on 1 July 2011 and that the RESA concession /8/ by the Municipality of Puebla is valid till end 2022.

AENOR has also checked the technical specifications of the blowers /9/, flare /10/, diesel generator /11/ and generators set /12/ provided by the PP. Based on them, AENOR deems that technical description in the PDD is consistent with data sources. The purpose of the project activity, type of technology used and the contribution of the project to sustainable development are described in the PDD. The information provides the reader with a clear understanding of the proposed CDM project activity. Then, **CL 1 is closed**.

Through reviewing the licenses, permits and desk review of documents mentioned in this report, the site view and interviews with the Project Participant and stakeholders, CARs and CLs have been detected in order to provide information in the PDD consistent with referenced documents. All these CARs and CLs have been correctly closed and they are appropriately discussed below. Hence, in the opinion of AENOR the project description in the final PDD is accurate and complete.

The location of the project activity is provided in Section A.4.1 of the PDD. The Project is located in San Francisco Totimehuacán town, State of Puebla, Mexico.

The geographical coordinates of the project have been detailed in the final PDD in decimals format to comply with the CDM requirements: Latitude 18.982833° N and longitude -98.139664° W.

The average yearly emission reduction estimated from the project area are 132,220 tCO₂e over the selected 10-year fixed crediting period, well below the estimated 201,794 tCO₂e in the PDD submitted to GSC. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

The project start date is properly defined as 14 April 2008 as it is justified in section 3.6.1. The start date of the crediting period has been determined as 1/10/2012 to comply with the CDM requirements.

3.5 Baseline methodology

3.5.1 Applicability of the selected methodology to the project activity

The PDD describes the baseline methodology, which complies with the approved consolidated baseline methodology ACM0001 (Version 11) /13/. The version of the methodology has been updated to 11, as the PDD submitted to GSC was carried out with version 9.1. Thus, the version of the methodology has been correctly addressed in the final PDD and calculations validated by the AENOR validation team.

In addition, a clarification **CL 3** was requested from PP to further explain the applicability conditions of the approved methodology and to state how the project activity fulfils these conditions. Further information has been addressed in section B.2 of the final PDD.

The ACM0001 version 11 which entails recovery and destruction of LFG is considered applicable to this type of project.

The methodology states that "This methodology is applicable to landfill gas capture project activities, where the baseline scenario is the partial or total atmospheric release of the gas and the project activities includes situations such as:

- a) The captured gas is flared; or

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

- b) The captured gas is used to produce energy (e.g. electricity/thermal energy). Emission reductions can be claimed for thermal energy generation, only if the LFG displaces use of fossil fuel either in a boiler or air heater. For claiming emission reductions for other thermal energy equipment (e.g., kiln), project proponents may submit a revision to this methodology;
- c) The captured gas is used to supply consumers through natural gas distribution networks. If emission reductions are claimed for displacing natural gas, project activities may use approved methodology AM0053."

The applicability conditions have been discussed appropriately in the PDD, being conditions a) and b) applicable to the project activity. However, option c) of the methodology (The captured gas is used to supply consumers through natural gas distribution networks,) has not been considered since this is not a component of the envisaged project activity at the Puebla landfill site.

Based on site visits, interviews with stakeholders and relevant documents provided by PP during the validation process and mentioned in this validation report, AENOR confirms the applicability conditions of the selected methodology to the project activity, as well as, the version of this methodology used. Then, **CL 3 is closed.**

3.5.2 Project boundary

The description of the project boundaries stated in the PDD is in compliance with the methodology, which reads: "The project boundary is the site of the project activity where the gas is captured and destroyed/used, and includes all the power generation sources connected to the Interconnected National System to which the project activity is connected". The spatial extent of the project boundaries described in the PDD was clearly observed during the site visit.

In addition, all emission sources and gases related to the baseline scenario, project scenario, and leakage are clearly identified and described in a complete manner in section B.3 of the final PDD. CH₄ is the main emission source and is included in the baseline, as well as CO₂ from electricity consumption. CO₂ emissions from thermal energy generation have been deleted in the final PDD as no thermal energy is in the proposed project. They were initially considered in the PDD to GSC by mistake. CO₂ project emissions from on site fossil fuel consumption due to the project activity other than for electricity generation and emissions from on site electricity are also accounted and CO₂ emissions from on site electricity use will be considered in case the project uses electricity from the grid. Leakage is not considered according to the applicable methodology.

No other sources of greenhouse gas emissions have been identified by the DOE, within the project boundary following project implementation, which are expected to contribute more than 1% of the overall expected average annual emissions reductions, and which are not addressed by the applied methodology.

3.5.3 Baseline identification

As the PP updated the methodology to version 11, section B4 of the PDD has been also updated to comply with the procedure for the selection of the most plausible baseline scenario.

Related to the baseline scenario, it was requested in the **CL4** to provide further information regarding the usual business practice of landfill sites in Mexico, as the partial or total release of the gas to the atmosphere is the most credible and realistic baseline scenario identified in the PDD.

With regard to this, the PP has addressed more information in section B.4 of the PDD concerning the current situation of landfill sites in Mexico. This information has been cross-checked with other Mexican landfill sites registered as CDM such as references number 3074 /14/ and 4598 /15/. Then, **CL 4 is closed.**

VALIDATION REPORT**Puebla Landfill Gas to Energy Project**

Furthermore, during the on-site visit, this information was also cross-checked with authorities of the Puebla Municipality, Consultants and Mexican PP involved in waste management in Mexico. Hence, in opinion of the AENOR team, the baseline scenario is credible and realistic and it has been chosen in a transparent manner following the steps of the applicable methodology:

1a. The list of alternatives that the project participants considered was complete and realistic. The alternatives considered are as follows:

Regarding the disposal/treatment of waste:

- LFG1 – The project activity (capture of landfill gas and its flaring and/or its use) undertaken without being registered as a CDM project activity;
- LFG2 – Atmospheric release of the landfill gas or partial capture of landfill gas and destruction to comply with the regulations or contractual requirements or to address safety and odour concerns.

Regarding the power generation, project participants considered the following alternatives as realistic and credible:

- P1 – Power generated from landfill gas undertaken without being registered as CDM project activity;
- P6 – Existing and/or new grid-connected power plants.

No alternatives were considered for heat generation because the project will not claim emission reductions for heat generation.

The validation team considers this approach to be adequate. During the on-site assessment it was observed that no heat generation occurs in the pre-project scenario and PP does not contemplate the thermal energy as part of the proposed project activity.

In the context of the baseline scenario identification, and according to the methodology the following alternatives were excluded:

- P2: Existing or construction of a new on-site or off-site fossil fuel fired cogeneration plant.
- P3: Existing or construction of a new on-site or off-site renewable based cogeneration plant.
- P4: Existing or construction of a new on-site or off-site fossil fuel fired captive power plant.
- P5: Existing or construction of a new on-site or off-site renewable based captive power plant.

Appropriate justifications for eliminating these alternatives are shown in the PDD. With regard to the scenarios P3 and P5, they are discarded as renewable energy options are not available at the landfill site (hydro, marine) and others such as windmills are not suitable for safety reasons since the area is still operating. Options P2 and P4 are discarded due to the PP is a company dedicated to waste management, power generation is not its core business. AENOR deems the exclusion of these alternatives to be reasonable.

Hence, the remaining alternatives P1 and P6 for power generation and LFG1 and LFG2 for disposal/treatment of waste are the only alternatives to be considered as credible.

Based on the selected alternatives the potential baseline scenarios could be a combination of LFG1 and P1, i.e., the capture of landfill gas and its flaring and/or used to generate electricity without being registered as a CDM project activity and, the combination of LFG2 and P6, which represents the current situation.

1b. Consistency with the applicable laws and regulations.

With regard to this matter, the Mexican government has no regulations requiring reductions of GHG emissions. The regulation NOM-083-SEMARNAT-2003 does not specify any requirement for active collection, flaring and/or utilization of LFG. Moreover, this regulation has not been enforced in Mexico as AENOR verified during the site visit and checking other projects in Mexico such as

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

recently registered project /14/, /15/. Therefore, as it is systematically not enforced throughout the country, it does not need to be considered in the baseline determination as the methodology states.

2. Concerning the fuel for the baseline choice of energy source taking into account the national.

No specific baseline fuel has been chosen as the fuel in the power plants connected to the Interconnected National System are defined by the CFE and their emission factors are calculated by the tool to calculate the emission factor for an electricity system /16/.

3. Tool for demonstration and assessment of additionality /17/ shall be used to assess which of these alternatives should be excluded from further consideration.

Based on the tool of additionality an investment analysis demonstrates in the PDD that combination of LFG1 and P1 is not an economically feasible option, hence, it is excluded from further consideration.

Accordingly, the combination of LFG2 and P6 which represents the current situation is the only remaining alternative and the baseline scenario, i.e, the landfill gas would continue to be released into the atmosphere and the electricity would be generated by existing and/or new grid connected power plants.

3.5.4 Algorithms and/or formulae used to determine emission reductions

Concerning the determination of the emission reductions in the PDD, the **CAR 4** was raised from the PP requesting the following issues:

- To provide the spreadsheet calculation to reproduce it, as well as the evidence, assumptions and data sources used for the determination of the emission reductions.
- To correctly address in the PDD all steps of the applicable methodology and applicable tools, using the same formulae and same nomenclature.
- To correctly use the most updated data for the calculation of the emission reduction at the moment of submission of the PDD to the DOE for validation.

These issues requested have been correctly resolved; all evidence, assumptions and data sources along with the spreadsheet have been provided to reproduce the calculation to obtain same results. However, once all inputs for the calculations were provided to the validation team, the PP had to update values and data in the spreadsheet due to mistakes and inconsistencies with sources.

Furthermore, all steps of the applicable methodology ACM0001 version 11 have been quoted in the final PDD with the same formulae and same nomenclature than those appearing in the mentioned methodology and the applicable versions of the tools, thus, **CAR 4 is closed**.

The methodology ACM0001 version 11 is applied exactly as prescribed and inputs used for the emission reduction projection as well as default values available in the applied methodology were verified to be correct. The PDD clearly states which equations were used in calculating baseline emission, as detailed below.

$$BE_y = (MD_{Project,y} - MD_{BL,y}) * GWP_{CH_4} + EL_{LFG,y} * CEF_{elec,BL,y} + ET_{LFG,y} * CEF_{ther,BL,y}$$

As stated in the PDD, as the proposed project activity does not include a thermal energy component, all following equations will exclude this component for simplification:

$$BE_y = (MD_{Project,y} - MD_{BL,y}) * GWP_{CH_4} + EL_{LFG,y} * CEF_{elec,BL,y}$$

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

- $MD_{BL,y} = MD_{Project} * AF$; Since in the baseline scenario no landfill gas is destroyed/combusted $AF=0$.
- $MD_{Project,y}$ will be determined ex-post as per the methodology and tools as is correctly quoted in the final PDD.

The sum of the quantities fed to the flare(s), to the power plant(s), to the boiler(s) and to the natural gas distribution network must be compared annually with the total quantity of methane generated and the lowest value of the two must be adopted as $MD_{project,y}$.

In case the total amount of methane generated is the highest value, $MD_{project,y}$ is given by:

$$MD_{project,y} = MD_{flared,y} + MD_{electricity,y} + MD_{thermal,y} + MD_{PL,y}$$

Where:

$MD_{flared,y}$ = Quantity of methane destroyed by flaring (tCH₄)

$MD_{electricity,y}$ = Quantity of methane destroyed by generation of electricity (tCH₄)

$MD_{thermal,y}$ = Quantity of methane destroyed for the generation of thermal energy (tCH₄)

$MD_{PL,y}$ = Quantity of methane sent to the pipeline for feeding to the natural gas distribution network (tCH₄)

Since the project activity does not include thermal energy generation and feeding of methane to a natural gas distribution network, the components, $MD_{thermal,y}$ and $MD_{PL,y}$ become 0.

Then, $MD_{project,y} = MD_{flared,y} + MD_{electricity,y}$ being both terms calculated as per meth. and tools associated as clearly described the final PDD.

- To calculate ex-ante **$MD_{Project,y}$** , the following formula is applied according to the methodology:

$$MD_{Project,y} = BE_{CH_4,SWDS,y} / GWP_{CH_4}$$

According to the methodology ACM0001 Version 11 and the "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site" /18/, the ex-ante estimation of the amount that would have been destroyed/combusted during the year, in tones of methane $MD_{Project,y}$ is based on the methane generation from the landfill in the absence of the project activity at year y ($BE_{CH_4,SWDS,y}$), which is calculated with a multi-phase model. The model calculates the methane generation based on the actual waste streams $W_{j,x}$ disposed in each year x, starting with the first year after the start of the project activity until the end of the year y, for which baseline emissions are calculated (years x with $x = 1$ to $x = y$).

The methodology clarifies that the year "x" refers to the year since the landfill started receiving waste [x runs from the first year of landfill operation ($x=1$) to the year for which emissions are calculated ($x=y$)]. The PDD states that the landfill started operation in 1995 and is expected to be open till 2022, which is correctly applied in the CER's spreadsheet calculation.

The landfill waste disposal history, along with the waste composition data were requested from the PP through the CAR 4. These sources of information have been provided to the validation team and quoted in the PDD.

Regarding the former one, the official document /00SL/0098/02/09/ /19/ by the Municipality of Puebla and provided by the PP has been used in the calculation. This document checked by the AENOR validation team shows that the waste deposition amounts used by RESA are in line with

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

the amounts indicated in this official document. For the last month of 2010, and years 2011, 2012, 2013 (year on which section A will be closed), the estimated amount of waste deposition has been calculated based on data from the "Useful Life Expansion Project of the Puebla Landfill" /7/ approved by the Municipality of Puebla. Hence, they are deemed by the AENOR team as credible and realistic.

Concerning the latter, through cross-checking the report "Municipal Solid Waste in the Chiltepeque Landfill" /20/ performed by RESA which manages the landfill since 1995, the AENOR validation team has verified that waste composition rates considered in calculation are also in line with the report, they are hence, appropriate and credible.

Thus, the amount of methane that would have been destroyed/combusted during the year, in tonnes of methane in project scenario, Equation 13 of ACM0001 v.11 (MDProject_y = BECH₄,SWDS_y/GWPCH₄) is estimated ex-ante by using the "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site", and a multi-phased first order methane emissions model as follows:

$$BE_{CH_4,SWDS,y} = \varphi \cdot (1-f) \cdot GWP_{CH_4} \cdot (1-OX) \frac{16}{12} \cdot F \cdot DOC_f \cdot MCF \cdot \sum_{x=1}^y \sum_j W_{j,x} \cdot DOC_j \cdot (1-e^{-k_j}) \cdot e^{-k_j \cdot (y-x)}$$

The following parameters were validated during the site visit: "The value for the Oxidation factor" (reflecting the amount of methane from SWDS that is oxidized in the soil or other material covering the waste) was initially chosen as 0, but changed to 0.1 after site visit because the landfill is covered with soil cover. The methane correction factor (MCF) was chosen to be 1, due to the fact that the Puebla Landfill is a managed disposal site with controlled placement of waste, cover material...as AENOR could validate during the visit.

The applicable methodology ACM0001 (v. 11) also states that "the efficiency of the degassing system which will be installed in the project activity should be taken into account while estimating the ex-ante estimation". As a result of the CAR 4, information about this issue has been included in the final PDD. An efficiency of 65% has been taken for this project activity which is considered suitable by AENOR team, considering that it is based on site conditions and the proposed system design by applying the methodology for estimating collection efficiency published by U.S. EPA, Landfill Methane Outreach Program (www.epa.gov/lmop/index.htm) in the User's Manual for the Central America Landfill Gas Model /21/. AENOR has also checked that this value is in parallel with estimations given in the Users Manual for Mexico, also prepared by US EPA.

Moreover, AENOR has checked other registered projects in Mexico to verify that similar efficiency values have been chosen such as reference number 3074.

AENOR has checked that calculation of the BECH₄,SWDS_y was correct in the PDD and the ER spreadsheets.

Concerning the term **MD_{flared,y}**, as per the methodology, it is calculated as follows:

$$MD_{flared,y} = (LFG_{flare,y} * W_{CH_4,y} * D_{CH_4}) - (PE_{flare,y} / GWP_{CH_4})$$

Because of CAR 4 and CL1, the PP has developed in section B.6.1 the applicability of the tool "to determine project emissions from flaring gases containing methane" /22/ and has provided further information about the flaring system. An enclosed flaring system will be used, with a continuous monitoring of the methane destruction efficiency of the flare. This parameter has been gathered in the monitoring plan to be monitored. Moreover, AENOR has verified that technical specifications for the flare are consistent with the data source by John Zink /10/.

MD flared is calculated considering the following assumptions: Captured LFG to be flared will be directly related to the potential amount of LFG to be combusted. Captured LFG will be only flared if LFG is not combusted in generators. Based on this premise, the potential power generation with

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

LFG is the lower value of the potential power generation according to the LFG availability and the potential power generation according to the installed capacity. Using these reasonable assumptions for AENOR and, considering that the starting operation of the proposed project activity was on 1 July 2011, and the set of two generators would start to operate on 1 October 2012 the percentage flared would be as follows as calculated in the spreadsheet replicated by AENOR to obtain same values.

Year	% flared
2012	60,03%
2013	59,83%
2014	53,66%
2015	46,73%
2016	38,98%
2017	30,35%
2018	20,79%
2019	10,27%
2020	0,00%
2021	0,00%
2022	0,00%

The average methane fraction in the Puebla landfill is considered to be 50% of the LFG, AENOR deems reasonable this value. The methane density is 0.0007168 tCH₄/m³CH₄ and GWP_{CH₄} = 21 t CO₂/t CH₄. PE_{flare,y} has been calculated as per the procedure described in the “Tool to determine project emissions from flaring gases containing methane” applying in the ex-ante calculation an efficiency of 98% based on evidence by John Zink.

AENOR has checked that assumptions in the PDD and calculations are consistent with data sources and they are deemed reasonable and credible.

Related to the quantity of methane destroyed by generation of electricity, it is calculated as per the methodology: $MD_{electricity,y} = LFGelectricity,y * w_{CH_4,y} * DCH_4$

For the estimation of the $MD_{electricity,y}$ the evidence, data sources and assumptions for the estimated calculations were requested through CAR 4. As a consequence, section B.6.3 of the PDD has been strengthened with the information requested. All inputs parameters have been correctly quoted in the PDD and evidence provided supporting data. The power plant efficiency (40.1%), the nominal capacity of 1.6 MW and the real capacity of generators on site (1.355 MW) have been provided by MADISA Caterpillar [12].

Regarding the capacity of generators, the equipment supplier has provided a technical document [23] explaining the loss of capacity of generators from 1.6 to 1.355 MW due to the altitude and temperature of the project location. Operation hours of the engines (8000 h) have been estimated by the operator RESA. AENOR has cross-checked that other similar landfill gas project registered in Mexico such as reference numbers 2271 [24] and 1920 [25] used the same estimation of operation hours, thus, it is accepted as credible. The NCV value of methane = 11946 kcal/kg is from the engineering toolbox and accepted by AENOR.

Considering all assumptions and data used, the following results are obtained for MD_{project} depending the way to be calculated.

Year	$MD_{Project,y} = BE_{CH_4,SWDS,y} / GWP_{CH_4}$	$MD_{project,y} = MD_{flared,y} + MD_{electricity,y}$

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

2012	2.434	2.405
2013	9.688	9.572
2014	8.398	8.308
2015	7.305	7.237
2016	6.377	6.327
2017	5.587	5.553
2018	4.913	4.893
2019	4.337	4.328
2020	3.842	3.842
2021	3.417	3.417
2022	2.287	2.287

Then, as it can be observed due to the consideration of project emissions from flaring values the total amount of methane that would have been destroyed/combusted of the right column is lower. These values have been chosen for the ex-ante estimations, then, conservative approach.

Related to the calculation of the parameter $ELLFG_y$ (net quantity of electricity produced using LFG, which in the absence of the project activity would have been produced by power plants connected to the grid or by an onsite/ off-site fossil fuel based captive power generation, during year y , in megawatt hours (MWh)), through the CAR 4 further information was requested to assess values used to estimate project electricity generation. This term has been calculated considering the assumptions explained above, but also, discounting the electricity consumption by the blowers ($EC_{pj,y}$). PP has provided the technical specifications of the blowers [9], based on it, its consumption is calculated taking into account a motor=15HP with a capacity=311 scfm.

Finally, related to $CEFelect,BL_y$ "CO₂ emission intensity of the baseline source of electricity displaced" according to the methodology, as in the baseline the electricity is generated by power plants connected to the grid, the emission factor has been finally calculated as per the tool "Tool to calculate the emission factor for an electricity system" version 02.2.1, following the 6 steps defined in the tool.

With regard to the emission factor calculation, in the first PDD submitted to GSC, the emission factor was calculated per version 1.1 of the tool to obtain an ex-ante emission factor as follows: $CM=0.5*OM+0.5*BM=0.5*0.637+0.5*0.404=0.52$ t CO₂/MWh, using data from 2004 to 2006.

Hence, as per CAR 4 was requested from the PP to calculate the emission factor using the most updated data available at the time of submission of the PDD to the DOE for validation, since 2007 data was available at that time. As a result, calculation were updated with data from 2005 to 2007 resulting in an $OM=0.6131$ t CO₂/MWh and $BM=0.3597$ t CO₂/MWh, then, the $CM=0.5*0.6131+0.5*0.3597=0.4864$ t CO₂/MWh, well lower the initially one calculated, then, conservative in baseline context. Moreover, AENOR has checked that the emission factor calculated is lower than others calculated in similar registered projects in Mexico using data for the same period of time, such as registered projects 3074 and 3378.

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

The emission factor has been calculated following the 6 steps of the tool. Spreadsheets /26/ have been provided in order to reproduce in a transparent manner the grid emission factor calculation, to obtain the same results.

Both, the Operating margin and Build margin have been calculated ex-ante. For calculating the Operating Margin, the simple OM has been used as low cost/must run for the five most recent years considered (2003-2007) constitute less than 50% (20%). Option B has been applied as data for option A is not available, i.e, OM is calculated based on the net electricity supplied to the grid by all power plants serving the system, and based on the fuel type and total fuel consumption of the project electricity system.

For calculating the BM, in terms of vintage of data, option 1 has been followed and the sample group of power units "m" is determined as per the version 02.2.1 of the tool. For Mexico, the $SET_{\geq 20\%}$ (47,782,141 MWh) has been selected as it comprises a larger annual generation than the set of five power plants that have been built most recently, $SET_{\geq 5\%}$ (20,434,944 MWh). Then, SET_{sample} corresponds to $SET_{\geq 20\%}$. The oldest power units included in calculation is from year 2003, then, none of power units in SET_{sample} is more than 10 years ago. Then, as per the tool the SET_{sample} is used for calculating the build margin. The CO₂ emission factor of each power unit is determined using the option A2.

Finally, the combined margin is determined as per option a), i.e, weighted average: $CM = 0.5 \cdot OM + 0.5 \cdot BM$, resulting the following: $CM = 0.5 \cdot 0.6131 + 0.5 \cdot 0.3597 = 0.4864 \text{ t CO}_2/\text{MWh}$.

Data used in the OM and BM have been taken from the Electricity Sector Outlooks /27/ 2004-2013, 2005-2014, 2006-2015, 2007-2016, 2008-2017 by SENER. Hence, they are from an official source, then, AENOR deems as credible and reliable.

Other data such as the $EFCO_{2,i,y}$ is calculated in tCO_2/GJ according to the Reviewed 2006 IPCC Guidelines for Greenhouse Gas Inventories (lower value of 95%) /28/ ; $FC_{i,y}$ is expressed in TJ/day in the Forecast Reports, thus the total annual consumption per fuel type can be calculated by multiplying by 365.

Formulae and factors used to calculate the Operating Margin and the Build Margin are properly described in the final PDD and they are considered correct and transparent. Efficiency factors for GT (Gas Turbine), CCGT (Combined Cycle Gas Turbine) and IC (Internal Combustion) plants and self-use rates are obtained in a conservative way.

AENOR has reproduced the calculation to obtain same results. Formulae are well used and data from official sources (SENER) and IPCC are correct. Then, AENOR deems the $CEF_{elect,BL,y} = 0.4864 \text{ t CO}_2/\text{MWh}$ to be correct.

Related to the **Project emissions**, according to the methodology $PE_y = PE_{EC,y} + PE_{FC,i,y}$.

Project emissions from electricity consumption ($PE_{EC,y}$) will be only calculated in case electricity is bought from the Interconnected National System (SIN) and no electricity is generated onsite from LFG. When electricity is generated from the captured LFG (phase 2), electricity consumption by the project activity is already considered in the net electricity export to the Interconnected National System (SIN) ($EL_{LFG,y}$) which is the electricity generated minus the electricity consumed by the project activity.

On the other hand, the electricity consumed by the project will be generated by the diesel generator till the interconnection to the grid. The PDD takes into account these emissions as project emissions from the fossil combustion.

The final PDD establishes the calculation of the $PE_{EC,y}$ in case the electricity consumption is from the Interconnected National System, applying the version 01 of the tool to calculate baseline, project and/or leakage emissions from electricity consumption /29/.

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

Scenario A is applied, then, $PE_{EC,y} = \sum_j EC_{PJ,i,y} * EF_{EL,i,y} * (1 + TDL_{i,y})$; $EF_{EL,i,y}$ is calculated per option A1 of the tool which means that $EF_{EL,i,y} = EF_{gridCM}$. Moreover, a default value of 20% is considered for $TDL_{i,y}$.

Project emissions from onsite fuel consumption are calculated as per the version 02 of the tool to calculate project or leakage CO2 emissions from fossil fuel combustion /30/ as follows

$PE_{FC,i,y} = \sum_i FC_{i,i,y} * COEF_{i,y}$, being the $COEF_{i,y}$ calculated with Option B, i.e, $COEF_{i,y} = NCV_{i,y} * EF_{CO2,i,y}$.

To estimate the $PE_{FC,i,y}$ assumptions considered are based on the operation hours of the diesel generator and its fuel consumption per hour. The diesel generator will only be used if no electricity is generated onsite and if no electricity is taken from the grid. According to the PP (RESA), a diesel generator with a capacity between approximately 0.03 and 0.05 MW will be installed. The diesel consumption is estimated according to the equipment provider (Perkins) /11/ between 7.6 l/h and 14.2 l/h. For the calculation of the project emissions from fossil fuel consumption the most conservative values have been applied when no electricity generation is produced from LFG, i.e, consumption of 14.2 l diesel/hour.

A motor of 0.05 MW is considered with a consumption of 14.2 l/h working full time (8760h) and applying a $NCV_{diesel} = 43.3$ GJ/t and $EFCO2_{diesel} = 0.0748$ t CO2/GJ from IPCC 2006 (upper values) and density = 0.865 kg/l (Energy National Commission from Mexico, CONAE) /31/. As values are conservative and data sources credible and reliable, AENOR deems appropriate calculations.

Finally, regarding Leakage, according to ACM0001 Version 11, no leakage effects need to be accounted under this methodology, which was correctly stated in the PDD.

$$ER_y = BE_y - PE_y.$$

Calculation of values applied for BE_y and PE_y were described above. The PDD clearly documents how each equation is applied and the actual calculations are clearly presented in the CER Spreadsheet.

Projections were found to be in line with the time schedule for the project's implementation provided and the indicated crediting period of 10 years. The table required for the indication of projected emission reductions (Section A.4.4) has been correctly applied. It lists emission reductions starting in October 2012 till September 2022, which is in line with the crediting period stated in Section C.2.2.2 of the PDD as 10 years, and reflects the values presented in section B.6.4 summary of ex-ante calculation of emission reductions.

AENOR confirms that all assumptions and data used by the PP are listed in the final PDD, including their references and sources. Furthermore, all documentation used by the project participant as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD, they are correct and appropriate and all values used in the PDD are considered reasonable in the context of the proposed CDM project activity that result in a conservative estimate of emission reductions.

Hence, the total emission reductions from the project are estimated to be 1,322,197 tCO2e over a 10-year crediting period which represents a reasonable and conservative estimation using the assumptions given by the Project and lower than 2,017,941 tCO2e as per PDD to GSC.

The baseline methodology ACM0001 and the tools have been applied correctly to calculate project emissions, baseline emissions, leakages and emission reductions. All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD. Then, **CAR 4 is closed.**

3.6 Additionality

3.6.1 Starting date of the project activity and prior consideration of the CDM

It was foreseen that the start date of the project activity is 14 April 2008.

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

Regarding this matter, **CAR 2** was raised to the PPs to demonstrate whether the start date was defined according to the current definition of the “Starting date” as stated in the “Glossary of the CDM terms” /32/ and how the prior consideration of the CDM was considered according to the “Guidance on the demonstration and assessment of prior consideration of the CDM” v.4 /33/.

As a result, the PP has provided suitable evidence in order to assess whether the starting date of the project is appropriate according to the Glossary of CDM terms, as well as a timeline of the project in order to assess whether the selected date is the earliest date at which either implementation or construction or real action of the project begins.

Accordingly, the PP has provided AENOR with the timeline of the project activity and the evidence to support it which is detailed in the table below.

Nº	Date	Activity	Document
1	05/11/2007	Working plan for PDD development for the LFG Flaring and Waste to Energy Project in Puebla	“Memorandum of Agreement between RESA-SENE” /34/
2	21/12/2007	Preliminary assessment to determine the viability of the LFG project as a CDM project.	SENE Consultants Puebla Report /35/
3	09/01/2008	Internal letter from RESA where they decide to hire Alfa for the construction and operation of the LFG project in Puebla (date of investment decision)	Letter internal RESA /36/
4	14/04/2008	Signature of the contract for civil works for the LFG project at the Chiltepeque landfill. (Project Starting Date)	“Civil Contract Alfa and Resa” /37/
5	27/11/2008	Letter of approval for the LFG project in Puebla from Mexican DNA	Host Country Approval
6	15/12/2008	Contract for CDM validation with AENOR	Offer 353 Landfill gas Mexico_V02 /38/
7	30/12/2008 – 29/01/2009	Publication of the PDD on the UNFCCC website	Global Stakeholder Consultation period for comments

The selected starting date corresponds to the date on which “Civil Engineering Contract” was signed with ALFA. In the opinion of the AENOR validation team, this date is the earliest date at which the real implementation of the project activity begins. This date replaced the initial one considered in the PDD to GSC (1/01/2011) as it was not fixed based on the Glossary of the CDM Terms. This latter date was an initial estimation date of the operation of the project.

Regarding the prior consideration of the CDM and taking into account the “guidance on the demonstration and assessment of prior consideration of the CDM” v.4, as the project starting date is before 02 August 2008 and, the PDD was submitted for global stakeholder consultation on 30 December 2008, id est, after the starting date the PP has to demonstrate that the CDM was seriously considered in the decision to implement the project activity.

VALIDATION REPORT**Puebla Landfill Gas to Energy Project**

Following the bullet a) of the guidance, the PP has provided evidence of the two first milestones /34/ /35/ prior to the project start date, even prior to the investment decision. These evidence highlight the awareness of the CDM prior to the start date, even, the preliminary assessment by SENES consultants is used as basis for the investment decision as demonstrates that the CDM is a decisive factor for carrying out the project.

Concerning the bullet b) of the guidance, the different milestones and their evidence demonstrate that continuing and real actions have been taken to secure the CDM status in parallel with its implementation. The gap between them is less than 2 years. On the other hand, AENOR does not doubt of the authenticity of the evidence, then, AENOR deems that prior consideration is demonstrated. Hence, **CAR 2 is closed.**

On the other hand, the starting date of the crediting period taking into account the schedule under the CDM process has been updated to be 1 October 2012 or registration date, whichever is later.

3.6.2 Analysis of the additionality

The additionality of Puebla Landfill Gas to Energy project activity as required by ACM0001 version 11 is demonstrated by applying the "Tool for the demonstration and assessment of additionality" version 05.2.1. /17/

During the validation process **CAR 3** was raised regarding the assessment and demonstration of the additionality of the project activity explained in the first version of the PDD. Finally, all issues requested to the PP have been resolved in opinion of the validation team since the new criteria and assumptions considered fulfil with the methodology and tool of additionality. Therefore the **CAR 3 was closed.**

The new assumptions are explained in the subsequent paragraphs.

Applying step 1 of the tool, plausible alternative baseline scenarios to the project have been identified and discussed in the latest PDD. These are:

Option 1: Alternative 1 (LFG1) and Alternative 3 (P1), with part of the captured LFG being flared and/or used; this is the proposed project undertaken without being registered as a CDM project activity;

Option 2: Alternative 2 (LFG2) and Alternative 8 (P6), that is, the current practice;

The alternatives presented in the Step 1 are realistic and credible and comply with the regulation in place, NOM-083-SEMARNAT-2003.

Concerning the step 2, the PP has finally chosen the investment analysis. An IRR benchmark analysis has been used by Rellenos Sanitarios (RESA) to demonstrate the additionality of the Project activity. It has been demonstrated that the project IRR post-tax without CDM revenues is estimated to be 3.93%. The Project IRR post-tax is lower than the IRR benchmark of 9.77% adopted by the Project Participant. As per the "Tool for the demonstration and assessment of additionality" version 05.2.1 a relevant benchmark for a project's IRR can be derived from Government bond rates, increased by a suitable risk premium to reflect the private investment or project type. Thus, a post-tax benchmark has been derived from the Mexican Government treasury bonds raised by the country-specific risk premium indicated by the OECD. According to the current Mexican income tax law, shareholders do not pay income tax on dividends received, since they can accredit the taxes paid by the company distributing the dividends, making this benchmark a fully post tax benchmark. Furthermore, similar post-tax benchmark (Government bond rate+ OECD risk premium) has been used for similar registered projects in Mexico /14/ /49/.

The average rate of 7.77%, for a 10-year Government Bonds during year 2007 /41/ raised by the country-specific risk premium of 2% indicated by the OECD in 2007 was considered to arrive at the benchmark of 9.77%. The IRR benchmark of 9.77% is validated to be suitable for the project activity by AENOR's validation team in compliance with paragraph 12, Annex 5 of the EB62 report and

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

paragraph 114 (b) of the VVM version 1.2. The references from the Bank of Mexico and OECD have been verified and crosschecked by AENOR and are found to be a conservative assumption in the CDM/additionality context hence accepted by the validation team (there are longer term Government bonds with higher rates, on the other hand the risk premium considered in this project activity is significantly lower than other used in former registered landfill gas to energy projects in Mexico).

Table 3- Comparison of post-tax benchmarks among similar registered CDM projects in Mexico

Project Activity	Rate (%)
Project 0425 : Aguas Calientes- EcoMethane Landfill Gas to Energy Project /43/	15
Project 0523 : Ecatepec- EcoMethane Landfill Gas to Energy Project /44/	15
Project 1240 : Hasars Landfill Gas Project /45/	10
Project 1242 : Tultitlan- EcoMethane Landfill Gas to Energy Project /46/	15
Project 1307 : Durango – EcoMethane Landfill Gas to Energy Project /47/	15
Project 1920 : Verde Valle Landfill Gas Project	9.33
Project 2186 : Monterrey II LFG to Energy Project /48/	16
Project 2271 : Tecamac – EcoMethane Landfill Gas to Energy Project	16
Project 3074 : Coyula Landfill Gas Project	9.2
Project 3127 : Culiacan Northern Landfill Gas Project /49/	9.4
Project 3378: Landfill Gas Recovery and Flaring Project in the El Verde Landfill, León /50/	10.6
Project 3877 : Relleno Norte Landfill Gas Project /51/	12.31
Project 4598 : Monterrey I LFG to Energy Project	15.00
Puebla Landfill Gas to Energy Project	9.77

Source: <http://cdm.unfccc.int/Projects/registered.html>

The IRR improves to 20.76% on considering CDM revenues, which is above the benchmark.

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

The validation team verified that taxes and depreciation used in the investment analysis comply with the Mexican legal requirements i.e. 28% value of the income tax and depreciation periods for civil works, machinery and equipment /53/.

Following Annex 5 of EB62 "Guidelines on the Assessment of Investment Analysis", it has been validated that the project IRR calculation reflects the expected operation of the underlying project activity (an operational lifetime of 11 years and 6 months) and that the capital cost of the assets and their depreciation as an expense to the project were not treated both to constitute a double counting of this cost and that the cost of financing expenditures (i.e. loan repayments and interest) was not included in the calculation of project IRR in the final version of the PDD and the IRR calculation spreadsheet /52/.

AENOR has verified and confirmed that the values used in the financial analysis are consistent with the value of the source and that this information was available before the starting date of the Project and was thus likely to be considered in the decision. References are included in the PDD and IRR calculation spreadsheet.

The financial worksheets have been evidenced and verified to be correct. The assumptions used, the base documents and the financial calculations have also been verified.

In addition, during the assessment of this project, the reasonableness of the parameters used in the project IRR calculation were analyzed by comparison with similar projects signed as CDM project in the same area and public available data, as follows:

Power tariff

As mentioned in the PDD the project activity will be developed under the independent production formula considered by the "Law of Public Service of Electrical Energy" /54/. According to the Mexican Law, independent generators can sell the electricity to CFE at a price that is 10% below CFE's short term marginal cost. In order to be conservative the PP has applied the 10% discount to the maximum marginal cost observed at the time of investment decision at Oriente node /55/ but also taking into account the inflation rate in Mexico /56/.

Therefore, the energy generated will be sold to CFE at an average price of 82.72 US\$/MWh during the operation of the proposed project activity.

Besides, AENOR checked the PDDs of landfill gas to energy projects in Mexico and found the tariff used in the investment analysis in the final version of the PDD is within the range of the tariffs for the registered CDM projects.

Table 4. Comparison of tariffs among similar registered CDM projects in Mexico.

Project	Tariff (US\$/MWh)	Indexed (Y/N)
Project 0425 : Aguas Calientes- EcoMethane Landfill Gas to Energy Project	70.00	Yes
Project 0523 : Ecatepec- EcoMethane Landfill Gas to Energy Project	70.00	Yes
Project 1240 : Hasars Landfill Gas Project	65.00	No

VALIDATION REPORT
Puebla Landfill Gas to Energy Project

Project	Tariff (US\$/MWh)	Indexed (Y/N)
Project 1242 : Tultitlan- EcoMethane Landfill Gas to Energy Project	80.00	Yes
Project 1307 : Durango – EcoMethane Landfill Gas to Energy Project	70.00	Yes
Project 1920 : Verde Valle Landfill Gas Project	75.89	No
Project 2186 : Monterrey II LFG to Energy Project	87.00	Yes
Project 2271 : Tecamac – EcoMethane Landfill Gas to Energy Project	60.00	Yes
Project 3074 : Coyula Landfill Gas Project	75.89	Yes
Project 3127 : Culiacan Northern Landfill Gas Project	83.00	Yes
Project 3378: Landfill Gas Recovery and Flaring Project in the El Verde Landfill, León	53.80	Yes
Project 3877 : Relleno Norte Landfill Gas Project	157.82	Yes
Puebla Landfill Gas to Energy Project	58.39²	Yes

Source: <http://cdm.unfccc.int/Projects/registered.html> and Project Proponent.

As stated in the PDD, after the investment decision date, the interconnection node changed to Puebla, but in order to verify the conservativeness of the assumptions made by the PP, the validation team checked the average tariff of Puebla node for 2009 /57/ and found it 32.22% lower than the one appearing in the investment analysis for the same year (41.11 USD/MWh vs. 60.64 USD/MWh). Therefore, AENOR considers that the value for the tariff used for the IRR calculation as has been done in the PDD is conservative and it was valid and applicable at the time of the investment decision.

On the other hand, taking into account the latest intentions from the Republic Presidency of Mexico (2009) showed in its “National Agreement in favour of Family Economy and Employment” /58/, the electricity tariffs in high voltage will be reduced 20% and it will be allowed a fixed tariff for 12 months for many companies in order to reduce the uncertainties of the enterprises and boost the

² This is the tariff established at the time of investment decision. CPI indexation results in an average tariff of 82.72 USD/MWh during the operational lifetime of the Project activity.

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

economic activity. Hence, the indexed electricity tariff can be considered conservative and reasonable considering this scenario.

Operating hours and collection efficiency

The generation equipment capacity factor of 91% and the collection system efficiency of 65% were found to be higher than the average of similar projects signed as CDM project in the same area (88.73% and 64.50% respectively), hence conservative in the CDM/additionality context and therefore accepted by AENOR's validation team.

Table 5: Comparison of the annual running hours and collection efficiency among similar registered CDM projects in Mexico

Project	Operating hours	Load Factor (%)	Collection Efficiency (%)
Project 1240 : Hasars Landfill Gas Project	7,972	95	65
Project 1242 : Tultitlan- EcoMethane Landfill Gas to Energy Project	7,972	91	50
Project 1307 : Durango – EcoMethane Landfill Gas to Energy Project	7,446	91	65
Project 1920 : Verde Valle Landfill Gas Project	7,972	91	60
Project 2186 : Monterrey II LFG to Energy Project	8,147	85	70
Project 2271 : Tecamac – EcoMethane Landfill Gas to Energy Project	8,000	91	85
Project 3074 : Coyula Landfill Gas Project	6,964	93	65
Project 3127 : Culiacan Northern Landfill Gas Project	6,964	91	45
Project 3378: Landfill Gas Recovery and Flaring Project in the El Verde Landfill, León	8,322	79	65
Project 3877 : Relleno Norte Landfill Gas Project	7,972	79	75
Puebla Landfill Gas to Energy Project	8,000	91	65

Source: <http://cdm.unfccc.int/Projects/registered.html> and Project Proponent.

VALIDATION REPORT
Puebla Landfill Gas to Energy Project

Investment cost of the LFG power plant

The investment cost of the LFG power plant was estimated by updating to the investment decision date the values provided by the “U.S. Methane Emissions 1990–2020: Inventories, Projections, and Opportunities for Reductions” /59/ issued by the Environmental Protection Agency (EPA) which is deemed a reliable source hence accepted by the validation team of AENOR.

The comparison results confirm that the investment of 1,598,832 US\$/MW stated in the PDD is within the range of the investment per MW for the registered CDM projects. (See Table 6 below).

Table 6: Comparison of investment per MW among similar registered CDM projects in Mexico

Project	Nominal Capacity MW	Investment Electrical Plant US\$	Investment/MW US\$
Project 1240 : Hasars Landfill Gas Project	4.00	7,000,000	1,750,000
Project 1242 : Tultitlan- EcoMethane Landfill Gas to Energy Project	1.30	1,251,050	962,346
Project 1307 : Durango – EcoMethane Landfill Gas to Energy Project	2.00	2,693,100	1,346,550
Project 1920 : Verde Valle Landfill Gas Project	5.00	9,499,440	1,899,888
Project 2186 : Monterrey II LFG to Energy Project	5.30	6,550,000	1,235,849
Project 2271 : Tecamac – EcoMethane Landfill Gas to Energy Project	1.95	1,652,977	847,680
Project 3074 : Coyula Landfill Gas Project	1.00	1,873,500	1,873,500
Project 3127 : Culiacan Northern Landfill Gas Project	1.00	1,500,000	1,500,000
Project 3378 : Landfill Gas Recovery and Flaring Project in the El Verde Landfill, León	5.60	11,610,267	2,073,262
Project 3877 : Relleno Norte Landfill Gas Project	1.60	1,411,455	882,159

VALIDATION REPORT
Puebla Landfill Gas to Energy Project

Project	Nominal Capacity MW	Investment Electrical Plant US\$	Investment/MW US\$
Puebla Landfill Gas to Energy Project	3.20³	5,116,261	1,598,832

Source: <http://cdm.unfccc.int/Projects/registered.html> and Project Proponent

According to above project discussion and since the value used in the financial analysis is consistent with the value of the source, in AENOR's opinion the total LFG power plant investment used in the PDD was reasonable, valid and applicable at the time of the investment decision.

Investment cost of the Collection System and Flare Station

The investment cost of the Collection System and Flare Station was determined based on an SCS Consultants estimate dated December 2007 which provided a quotation of US\$ 2,502,129 /60/.

In addition to verify if the report and data considered were appropriate for the project activity, the reasonableness of the applied investment costs of 78,094 US\$/Ha were found to be within the range of the investment per hectare for the registered CDM projects in the same are hence accepted by the validation team of AENOR.

Table 7: Comparison of LFG collection and flaring system investment per hectare among registered CDM projects in Mexico

Project	Ha	Investment LFG US\$	Investment/Ha US\$
Project 1240 : Hasars Landfill Gas Project	70.00	3,324,125	47,488
Project 1920 : Verde Valle Landfill Gas Project	50.00	2,812,400	56,248
Project 2271 : Tecamac – EcoMethane Landfill Gas to Energy Project	20.74	1,558,242	75,130
Project 3074 : Coyula Landfill Gas Project	47.00	1,435,300	30,538
Project 3127 : Culiacan Northern Landfill Gas Project	33.00	1,342,457	40,681

³ The nominal capacity of the generating equipment is 3.2 MW but as stated in the PDD the effective capacity is 2.71 MW. For comparison purposes with other CDM registered projects, the nominal capacity has been used.

VALIDATION REPORT
Puebla Landfill Gas to Energy Project

Project	Ha	Investment LFG US\$	Investment/Ha US\$
Project 3378 : Landfill Gas Recovery and Flaring Project in the El Verde Landfill, León	25.00	1,593,305	63,732
Project 3877 : Relleno Norte Landfill Gas Project	16.00	1,978,490	123,656
Puebla Landfill Gas to Energy Project	32.04	2,502,129	78,094

Source: <http://cdm.unfccc.int/Projects/registered.html> and Project Proponent

According to above project discussion and since the value used in the financial analysis is consistent with the value of the source, in AENOR's opinion the total LFG collection and flaring system investment used in the PDD was reasonable, valid and applicable at the time of the investment decision.

O&M Costs

The applied O&M costs were estimated by updating to the investment decision date the values provided by the "Handbook for the Preparation of Landfill Gas to Energy Projects in Latin America and the Caribbean" /61/ issued by the World Bank which is reliable source and contains information specifically on Latin America landfills.

In addition to verify if the report and data considered were appropriate for the project activity, the reasonableness of the applied average annual O&M costs of 2.50 cUS\$/KWh were found to be lower than the average of similar projects signed as CDM project in the same area (4.93 cUS\$/KWh), hence conservative in the CDM/additionality context and therefore accepted by the validation team of AENOR.

Table 8. Comparison of O&M costs among similar registered CDM projects in Mexico

Project	Nominal Capacity (MW)	O&M costs (cUS\$/KWh)
Project 1240 : Hasars Landfill Gas Project	4.00	3.57
Project 1242 : Tultitlan- EcoMethane Landfill Gas to Energy Project	1.30	6.24
Project 1307 : Durango – EcoMethane Landfill Gas to Energy Project	2.00	5.58

VALIDATION REPORT
Puebla Landfill Gas to Energy Project

Project	Nominal Capacity (MW)	O&M costs (cUS\$/KWh)
Project 1920 : Verde Valle Landfill Gas Project	5.00	2.48
Project 2186 : Monterrey II LFG to Energy Project	5.30	5.53
Project 2271 : Tecamac – EcoMethane Landfill Gas to Energy Project	1.95	4.33
Project 3074 : Coyula Landfill Gas Project	1.00	5.61
Project 3127 : Culiacan Northern Landfill Gas Project	1.00	6.54
Project 3378 : Landfill Gas Recovery and Flaring Project in the El Verde Landfill, León	5.60	6.55
Project 3877 : Relleno Norte Landfill Gas Project	1.60	2.88
Project 4598 : Monterrey I LFG to Energy Project	7.42	6.15
Puebla Landfill Gas to Energy Project	3.20	2.50

Source: <http://cdm.unfccc.int/Projects/registered.html> and Project Proponent

Taking into account the documents provided by the PP and the different cross-checks carried out by the AENOR validation team, the applied annual operational costs and the assumptions made were considered reasonable and appropriate.

Sensitivity Analysis

The PDD includes a sensitivity analysis to demonstrate that the conclusion regarding the financial/economic attractiveness is robust to reasonable variations in the critical assumptions.

For this purpose, variations in the range of +/- 10% for the parameters of electricity tariff, total investment costs, electricity generation and operational costs have been considered, since that range is reasonable for the project context and these variables constitute more than 20% of either total project costs or total project revenues.

The sensitivity analysis shows that without the income from CERs sales the IRR of the proposed project is also lower than the benchmark, even when the possible variations of the main parameters are considered. It was confirmed that the conclusion obtained in the analysis mentioned above was robust to conclude that the project activity is unlikely to be financially attractive.

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

However AENOR has validated that higher variations in the parameters, that would make the project IRR reach the benchmark, are not likely to occur: due to the following facts:

- 30.8% increase in the energy selling price. As told before, the chosen price was set, according to the Mexican Law, at a price that is 10% below CFE's short term marginal at Oriente node indexed by 3.864%, average inflation for period 2005-2007, during the whole assessment period. In addition, the PP applied the 10% discount on the maximum marginal cost observed at the time of investment decision, which added to the Mexican Government intention of 20% reduction in high voltage tariff for 12 months in order to boost the economic activity, AENOR validates that it is unlikely that the chosen electricity tariff could increase by 30.8% to make the project IRR reach the benchmark.
- 30.7% decrease in the total investment costs. Prices including those for the main equipments and raw materials have been increasing in recent years in Mexico. In addition the investment cost per MW of the project was found to be in line with similar registered projects in the area; therefore, it is unlikely that the total investment will decrease by 30.7%, such that the project IRR reaches the benchmark.
- >100% decrease in the total O&M costs. This means that even without operational and maintenance costs the project IRR does not reach the benchmark.
- 33% increase in electricity generation. The model assumes a capacity factor of 91% which was found to be higher than those observed in similar registered projects in the area; therefore, it is unlikely that the electricity generation increase by 33% to make the project IRR reach the benchmark.

AENOR reviewed and confirmed all related documents. The assessments show clearly that investment is unlikely to be 30.7% lower, the electricity tariff 30.8% higher and the electricity generation 33% higher while the required operational costs variation scenario is unreal

In summary, it is AENOR's opinion that the additionality of the project is sufficiently demonstrated based on the investment analysis and thus it is sufficiently demonstrated that the project is not a likely baseline scenario and those emission reductions are therefore additional.

Barrier analysis

The barrier analysis has not been selected to demonstrate the additionality.

Common practice analysis

According to the tool, a common practice analysis is carried out. AENOR assessed the geographical scope of the common practice analysis and found it appropriate. The analysis shows that there are only two activities similar to the project activity in Mexico without CDM support: Simeprode and Prados de la Montana.

The Simeprode landfill project was financed through a GEF grant /62/ and the Prados de la Montana landfill had high local real estate values /63/. These funds and incentives are not available for the proposed project activity. Therefore the proposed project clearly differentiates from these projects, and it cannot be taken as a common practice in Mexico.

In summary, based on our local and sectoral expertise it is AENOR's opinion that the additionality of the project is sufficiently demonstrated based on the investment analysis, that the project is not a likely baseline scenario, and that those emission reductions are, therefore, additional.

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

3.7 Monitoring Plan**3.7.1 Compliance of the monitoring plan with the approved methodology**

The Project uses the approved consolidated monitoring methodology ACM0001 v.11 for landfill gas project activities.

During the validation process the **CAR 5** was requested from the PP to consider in the PDD the parameters to be monitored applicable to the proposed project activity and consistent with the project description in the PDD, which are required by the applicable methodology and associated tools. In addition to explain the quality control and quality assurance to apply for monitoring activities, including the calibration requirements with more detail. Finally, all issues requested to the PP have been resolved in opinion of the validation team. Therefore **the CAR 5 has been solved**.

In this regard, the section B.7.1 has been appropriately completed in the final PDD. All parameters required by the methodology and associated tools have been considered. Monitoring plan of the PDD states the calibration and operation conditions of the equipment for monitoring activities, in compliance with the applicable methodology (ACM0001 v11), the "Tool to determine Project emissions from flaring gases containing Methane" and "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" and "tool to calculate project or leakage CO₂ emissions from fossil fuel combustion". Based on them, all required parameters have been included.

The parameter initially considered in the PDD (w_x) has not been considered as this has been used for the ex-ante calculations of the baseline emissions following the requirements of the applicable methodology. Once, the project activity is operational, MD_{project,y} will be determined ex-post by metering the actual quantity of methane captured and destroyed according to the methodology. AENOR has also cross-check this matter with other similar registered landfills such as projects number 1920/25/, 2271/24/, 2186/48/, 3378/50/.

Accordingly, the following parameters are considered in section B.7.1 of the final PDD:

- GWP_{CH_4} .
- $LFG_{total,y}$: Total amount of LFG captured at Normal Temperature and Pressure.
- $LFG_{flare,y}$: Total amount of LFG flared at Normal Temperature and Pressure.
- $LFG_{electricity,y}$: Total amount of LFG combusted at Normal Temperature and Pressure.
- $w_{CH_4,y}$: methane fraction in the LFG.
- T: Temperature of the landfill gas
- P: Pressure of the landfill gas
- $EL_{LFG,y}$: Net amount of electricity generated from LFG in year y.
- Operation hours of the power plant.
- $PE_{EC,y}$: Project emissions from electricity consumption by the project activity.
- $EC_{P,j,y}$: Total quantity of electricity consumed by the project activity during year y.
- $PE_{FC,j,y}$: Project emission from fossil fuel combustion in process j during year y.
- $FC_{i,j,y}$: Quantity of fuel type I combusted in process j during the year y.
- EF_{CO_2} : CO₂ emission factor of fuel type I in year y.

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

- $NCV_{i,y}$: Net calorific value of fossil fuel type i in year y .
- Density of the fuel type I in year y .
- PE_{flare} : Project emission from flaring of the residual gas stream in year y .
- $f_{vi,h}$: Volumetric fraction of component I in the residual gas in the hour h where $i=CH_4$.
- $FV_{RG,h}$: Volumetric flow rate of the residual gas in dry basis at normal conditions in the hour h .
- $t_{O_2,h}$: Volumetric fraction of O_2 in the exhaust gas of the flare in the hour h .
- $f_{v_{CH_4,FG,h}}$: Concentration of methane in the exhaust gas of the flare in dry basis at normal conditions in the hour h .
- T_{flare} : Temperature in the exhaust gas of the flare.
- Flare efficiency in hour h .

As a result of the CAR 5, further detailed information has been included in the final PDD regarding the quality control and quality assurance to carry out during the monitoring activities. An operational and management diagram has been provided. Calibration requirements have also been considered for the equipment and installations. Equipment will be calibrated as per manufacturer's recommendations. Maintenance activities will be carried out in accordance with the appropriate national/international standards.

RESA will be responsible for the operation, maintenance, and monitoring activities related to the project activity. Furthermore, the monitoring plan includes information to gather, record, process, and manage data to calculate the emission reductions, considers training actions, details responsibilities and authorities of monitoring activities, defines procedures for collecting, archiving, measuring and calculation procedure, and clearly mentions equipment details and calibration requirements.

In the opinion of the AENOR team all necessary parameters required by the selected approved methodology are contained in the monitoring plan. They are clearly described and the means of monitoring described in the plan comply with the requirements of the methodology. Thus, the monitoring plan is in compliance with the applicable methodology.

3.7.2 Implementation of the Monitoring Plan

After the review of evidence provided by the PP, the interview and communications with PP and consultants, AENOR confirms that monitoring arrangements described in the monitoring plan are feasible within the project design and that the means considered for the implementation, including data management, quality and assurance control procedures, are sufficient to ensure that the emission achieved resulting from the proposed CDM project activity can be reported ex post and verified.

Therefore, in opinion of the AENOR validation team the PP will be able to implement the monitoring plan.

3.8 Comments by Local Stakeholders

In order to assess the adequacy of the local stakeholder consultation, during the on-site visit the AENOR team requested the PP not only to provide evidence about the consultation process, but also to hold interviews with the local stakeholders relevant for the project activity as local authorities. With regard to this, it was requested through **CL 5** to provide evidence about the consultation process. As a result, minutes [39] of the event performed in March 2008 was provided, thus **CL 5 is closed**.

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

By means of documents reviewed and the interviews performed, AENOR considers that the summary of the comments received during the consultation process, along with the PP responses included in section E.2 of the PDD is complete. The main conclusions of the meetings and opinions collected are included in the PDD, section E.2. A summary of the comments received during the process is included in the PDD. But also, the information in section E.3 of the PDD gives a summary of how the comments received from local stakeholders were considered.

Hence, in the opinion of the AENOR team the local stakeholder consultation process was suitability performed.

3.9 Environmental Impacts

The interview with the Municipality of Puebla confirmed that the project fulfils with the environmental legislation and will help to alleviate the current environmental problems of the landfill, such as odors.

However, during the validation process a clarification **CL 2** was requested from the PP in order to clarify the fulfillment of the proposed project with the environmental legislation.

Based on the explanations from PP and local authorities no additional environmental permits are necessary for the project activity from SEMARNAT, and there are no requirements in the current authorizations concerning the project activity. The landfill is currently operating with the approved E.I.A (94-1-01/3310) /40/. Therefore, **CL 2 has been closed**.

No significant negative environmental impacts have been considered. Main impacts due to the project will be produced during the construction such as dust, noise and soil movements.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

According to Decision 3/CMP.1, the validator shall make publicly available the PDD and receive, within 30 days, comments on the validation requirements from parties, stakeholders and UNFCCC accredited NGOs and make them publicly available.

AENOR published the project documents on CDM website (<http://unfccc.cdm.int>) on 30 December 2008 and invited comments by parties, stakeholders and non-governmental organisations. No comments were received.

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

5 VALIDATION OPINION

AENOR has performed a validation of the Puebla Landfill Gas to Energy Project in Mexico. The validation process was performed on the basis of all issues and criteria of UNFCCC for CDM projects, the host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting. The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation.

The validation consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) the resolution of outstanding issues and the issuance of the final validation report and opinion. In the course of the validation process, several corrective actions and clarifications were raised and all of them successfully closed.

The Project participant used the “tool for demonstration and assessment of additionality” version 05.2.1, and the “Guidelines on the demonstration and assessment of prior consideration of the CDM” version 04 to demonstrate the additionality of the Project. In line with these documents as well as the guidance in the ACM0001 methodology, the PDD provides an analysis to determine that the project activity itself is not the baseline scenario and not economically attractive over other credible alternatives identified. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

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 AENOR with sufficient evidence to validate the fulfillment of the stated criteria.

In detail the conclusions can be summarised as follows:

- The project is in line with all relevant host country criteria of DNA of Mexico and all relevant UNFCCC requirements for CDM.
- The project additionality is sufficiently justified in the PDD using investment analysis with all input parameters that were valid, appropriate, conservative and applicable at the time of investment decision making.
- 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 average calculated emission reductions of 132,220tCO_{2e} per year are most likely to be achieved within the crediting period.

In our opinion, the project correctly applies and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria. The validation is based on the information made available to us and the engagement conditions detailed in this report.

The validation has been performed using a risk based approach, as described above. The only purpose of this report is its use during the registration process as part of the CDM project cycle. Hence, AENOR cannot be held liable by any party for decisions made or not made based on the validation opinion, which goes beyond the purpose.

Madrid, 25 May 2012

Luis Robles Olmos
Authorized Person



Jose Luis Fuentes Pérez
Validation Team Leader



VALIDATION REPORT
Puebla Landfill Gas to Energy Project

6 CORRECTIVE ACTION REQUESTS, CLARIFICATIONS AND FORWARD ACTION REQUESTS

FINDING	N° 1		
Classification	CAR <input checked="" type="checkbox"/>	CL <input type="checkbox"/>	FAR <input type="checkbox"/>
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	LoA has to be provided to the validation team.		
PP RESPONSE #1 <i>It shall address the corrective action taken in details</i>	<i>This section shall be filled by the PP.</i>		
<i>It shall provide and indentified the evidences proposed (if applicable)</i>	LoA has been provided		
DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure additional corrective action and DOE assessments (#2, #3, etc.) shall be added</i>	LoA has been provided directly from PPs and confirms that: Letter of Approval confirms that: <ul style="list-style-type: none"> The Parties are a Party to the Kyoto Protocol The participation is voluntary The CDM project activity contribute to the sustainable development (host Party) The title of the project activity is precise and coincides with the title included in the PDD, then CAR 1 is closed.		
PP RESPONSE #2 <i>Corrective action</i>	<i>This section shall be filled by the PP.</i>		
<i>Evidences proposed</i>			
DOE Assessment #2			
Conclusion <i>Tick the appropriate checkbox</i>	CAR/CL CLOSED <input checked="" type="checkbox"/>	To be checked during the first periodic verification <input type="checkbox"/>	

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

FINDING	Nº 2		
Classification	CAR <input checked="" type="checkbox"/>	CL <input type="checkbox"/>	FAR <input type="checkbox"/>
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>CAR 2</p> <p>To demonstrate whether the start date was defined according to the current definition of the "Starting date" as stated in the "Glossary of the CDM terms" and how the prior consideration of the CDM was considered according to the "Guidance on the demonstration and assessment of prior consideration of the CDM".</p>		
PP RESPONSE #1	<i>This section shall be filled by the PP.</i>		
<i>It shall address the corrective action taken in details</i>	Evidence of starting date and evidence of main milestones of the project have been provided to AENOR.		
<i>It shall provide and indentified the evidences proposed (if applicable)</i>	Civil construction works contract and others detailed in table 6 of the PDD		
DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure additional corrective action and DOE assessments (#2, #3, etc.) shall be added</i>	<p>The final PDD shows that the starting date is 14/04/2008 as it is defined in the glossary of CDM terms and also evidence have been provided for demonstrating the prior consideration of the project based on the guidance of prior consideration. AENOR has checked the hints and considered appropriate the information provided in PDD.</p> <p>Thus, CAR 2 is closed.</p>		
PP RESPONSE #2	<i>This section shall be filled by the PP.</i>		
<i>Corrective action</i>			
<i>Evidences proposed</i>			
DOE Assessment #2			
Conclusion <i>Tick the appropriate checkbox</i>	CAR/CL CLOSED <input checked="" type="checkbox"/>	To be checked during the first periodic verification <input type="checkbox"/>	

VALIDATION REPORT
Puebla Landfill Gas to Energy Project

FINDING	Nº 3		
Classification	CAR <input checked="" type="checkbox"/>	CL <input type="checkbox"/>	FAR <input type="checkbox"/>
<p>Description of finding</p> <p><i>Describe the finding in unambiguous style; address the context (e.g. section)</i></p>	<p>To demonstrate that the project activity itself is not a likely baseline scenario, the Project Proponent shall follow every sub-step of the tool for the demonstration and assessment of additionality, version 05.2 Therefore, PP shall clearly state the chosen analysis method and the reasons to do so.</p> <p>The following things have to be corrected, clarified or modified:</p> <ul style="list-style-type: none"> •The Option II of sub-step 2b is not correctly applied. The PDD shall compare the 3 different alternatives proposed. The alternatives analyzed are different from the Alternatives proposed in the Step 1. Investment comparison analysis does not require the calculation of a benchmark because the purpose of the method is to determine whether the project is less financially attractive than at least one the alternatives proposed in the PDD. •The source of the cost information provided shall be included in the PDD. •The PDD shall identify clearly the financial indicator chosen i.e, project IRR, equity IRR, NPV, post-tax , pre-tax... •The period of assessment should not be limited to the proposed crediting period. Financial indicators shall reflect the technical lifetime of the project or if a shorter period is chosen, include the fair value of the project activity assets at the end of the assessment period. •Evidence about the appropriateness of the input values used (techno-economic parameters and assumptions) in the investment analysis shall be provided i.e. tariff, power supply, electricity generation, investment costs, etc... •Input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant. PDD shall clearly state the time when investment decision took place. •Sensitivity analysis is not included in the PDD. •The arguments presented in the technological barriers are generic. <p>The source of the tables showing the common practice shall be included in the PDD.</p>		
<p>PP RESPONSE #1</p>	<p><i>This section shall be filled by the PP.</i></p>		
<p><i>It shall address the corrective action taken in details</i></p>	<p>Additionality tool have been updated to version 5.2.1, sources of data, clearly identified financial indicator and sensitivity analysis have been included in excel spreadsheet and PDD and barrier analysis have been discarded.</p>		
<p><i>It shall provide and indentified the evidences proposed (if applicable)</i></p>	<p>Puebla_Report_21_Dec_2007.pdf Puebla investment analysis.xls</p>		

VALIDATION REPORT
Puebla Landfill Gas to Energy Project

DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure additional corrective action and DOE assessments (#2, #3, etc.) shall be added</i>	PDD and financial model has been updated correctly and evidence and sources provided have been found appropriate.	
PP RESPONSE #2	<i>This section shall be filled by the PP.</i>	
<i>Corrective action</i>		
<i>Evidences proposed</i>		
DOE Assessment #2		
Conclusion <i>Tick the appropriate checkbox</i>	CAR/CL CLOSED <input checked="checked" type="checkbox"/>	To be checked during the first periodic verification <input type="checkbox"/>

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

FINDING		Nº 4	
Classification	CAR <input checked="" type="checkbox"/>	CL <input type="checkbox"/>	FAR <input type="checkbox"/>
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>The following issues was requested from PPs:</p> <ul style="list-style-type: none"> To provide the spreadsheet calculation to reproduce it, as well as the evidence, assumptions and data sources used for the determination of the emission reductions. To correctly address in the PDD all steps of the applicable methodology and applicable tools, using the same formulae and same nomenclature. To correctly use the most updated data for the calculation of the emission reduction at the moment of submission of the PDD to the DOE for validation. 		
PP RESPONSE #1	<i>This section shall be filled by the PP.</i>		
<i>It shall address the corrective action taken in details</i>	Official data source and calculations have been provided. PDD has been updated to fully comply with methodology and tools.		
<i>It shall provide and indentified the evidences proposed (if applicable)</i>			
DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure additional corrective action and DOE assessments (#2, #3, etc.) shall be added</i>	The calculation has been provided along with the data source used and assumptions. They have been reproduced to obtain same results. Formulas and steps followed are in compliance with the applicable methodology and tools associated. Then, CAR 4 is closed.		
PP RESPONSE #2	<i>This section shall be filled by the PP.</i>		
<i>Corrective action</i>			
<i>Evidences proposed</i>			
DOE Assessment #2			
Conclusion <i>Tick the appropriate checkbox</i>	CAR/CL CLOSED <input checked="" type="checkbox"/>	To be checked during the first periodic verification <input type="checkbox"/>	

VALIDATION REPORT
Puebla Landfill Gas to Energy Project

FINDING	Nº 5		
Classification	CAR <input checked="" type="checkbox"/>	CL <input type="checkbox"/>	FAR <input type="checkbox"/>
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>CAR 5</p> <p>To include in the PDD the parameters to be monitored applicable to the proposed project activity and consistent with the project description in the PDD, which are required by the applicable methodology and associated tools.</p> <p>Moreover, to further explain the quality control and quality assurance to apply for the monitoring activities, including the calibration requirements of the detailed parameters in the monitoring plan.</p>		
PP RESPONSE #1	<i>This section shall be filled by the PP.</i>		
<i>It shall address the corrective action taken in details</i>	Sections B.7.1 and B.7. of the PDD have been further developed.		
<i>It shall provide and indentified the evidences proposed (if applicable)</i>			
DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure additional corrective action and DOE assessments (#2, #3, etc.) shall be added</i>	<p>All parameters applicable to the proposed project activity have been considered in the final PDD. Moreover, further information has been included in the monitoring plan of the PDD for monitoring activities regarding the QA/QC. CAR 5 is closed.</p>		
PP RESPONSE #2	<i>This section shall be filled by the PP.</i>		
<i>Corrective action</i>			
<i>Evidences proposed</i>			
DOE Assessment #2			
Conclusion <i>Tick the appropriate checkbox</i>	CAR/CL CLOSED <input checked="" type="checkbox"/>	To be checked during the first periodic verification <input type="checkbox"/>	

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

FINDING	Nº 1	
Classification	CAR <input type="checkbox"/>	CL <input checked="" type="checkbox"/> FAR <input type="checkbox"/>
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Further information shall be provided in the PDD about equipment and technology to be installed and provide evidence to check the information in the PDD concerning the description of the project.	
PP RESPONSE #1	<i>This section shall be filled by the PP.</i>	
<i>It shall address the corrective action taken in details</i>	Technical specifications of main equipments have been provided to AENOR.	
<i>It shall provide and indentified the evidences proposed (if applicable)</i>		
DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure additional corrective action and DOE assessments (#2, #3, etc.) shall be added</i>	This clarification has been solved as further information is quoted in the final PDD on technology and equipment. Moreover, information is consistent with evidence.	
PP RESPONSE #2	<i>This section shall be filled by the PP.</i>	
<i>Corrective action</i>		
<i>Evidences proposed</i>		
DOE Assessment #2		
Conclusion <i>Tick the appropriate checkbox</i>	CAR/CL CLOSED <input checked="" type="checkbox"/>	To be checked during the first periodic verification <input type="checkbox"/>

VALIDATION REPORT
Puebla Landfill Gas to Energy Project

FINDING	Nº 2		
Classification	CAR <input type="checkbox"/>	CL <input checked="" type="checkbox"/>	FAR <input type="checkbox"/>
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	To clarify the fulfillment of the project with the environmental legislation.		
PP RESPONSE #1	This section shall be filled by the PP.		
<i>It shall address the corrective action taken in details</i>	According to SEMARNAT, no additional environmental requirements are necessary for the proposed project activity. PP has provided the E.I.A approved and used for the operation of the current landfill. No other requirements are necessary.		
<i>It shall provide and indentified the evidences proposed (if applicable)</i>			
DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure additional corrective action and DOE assessments (#2, #3, etc.) shall be added</i>	Based on explanations from PP and local authorities the project complies with the environmental legislation and any other environmental requirements are not necessary.		
PP RESPONSE #2	<i>This section shall be filled by the PP.</i>		
<i>Corrective action</i>			
<i>Evidences proposed</i>			
DOE Assessment #2			
Conclusion <i>Tick the appropriate checkbox</i>	CAR/CL CLOSED <input checked="" type="checkbox"/>	To be checked during the first periodic verification <input type="checkbox"/>	

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

FINDING	Nº 3		
Classification	CAR <input type="checkbox"/>	CL <input checked="" type="checkbox"/>	FAR <input type="checkbox"/>
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	To further explain the applicability conditions of the approved methodology and to state how the project activity fulfils these conditions.		
PP RESPONSE #1	<i>This section shall be filled by the PP.</i>		
<i>It shall address the corrective action taken in details</i>	PP has detailed more the PDD to clarify the conditions.		
<i>It shall provide and indentified the evidences proposed (if applicable)</i>			
DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure additional corrective action and DOE assessments (#2, #3, etc.) shall be added</i>	Further information has been included in section B.2 of the final PDD, to clearly demonstrate the applicability conditions. Moreover, these issues are also confirmed with other evidence provided due to other issues requested.		
PP RESPONSE #2	<i>This section shall be filled by the PP.</i>		
<i>Corrective action</i>			
<i>Evidences proposed</i>			
DOE Assessment #2			
Conclusion <i>Tick the appropriate checkbox</i>	CAR/CL CLOSED <input checked="" type="checkbox"/>	To be checked during the first periodic verification <input type="checkbox"/>	

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

FINDING	N° 4		
Classification	CAR <input type="checkbox"/>	CL <input checked="" type="checkbox"/>	FAR <input type="checkbox"/>
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	To provide further information regarding the usual business practice of landfill sites in México to confirm the baseline scenario identified in the PDD.		
PP RESPONSE #1	<i>This section shall be filled by the PP.</i>		
<i>It shall address the corrective action taken in details</i>	PP has detailed more the PDD to clarify the baseline scenario.		
<i>It shall provide and indentified the evidences proposed (if applicable)</i>			
DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure additional corrective action and DOE assessments (#2, #3, etc.) shall be added</i>	This issue has been clarified as further information has been included in the final PDD, as well as the mention to the main regulations on waste management.		
PP RESPONSE #2	<i>This section shall be filled by the PP.</i>		
<i>Corrective action</i>			
<i>Evidences proposed</i>			
DOE Assessment #2			
Conclusion <i>Tick the appropriate checkbox</i>	CAR/CL CLOSED <input checked="" type="checkbox"/>	To be checked during the first periodic verification <input type="checkbox"/>	

VALIDATION REPORT
Puebla Landfill Gas to Energy Project

FINDING	Nº 5		
Classification	CAR <input type="checkbox"/>	CL <input checked="" type="checkbox"/>	FAR <input type="checkbox"/>
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	To provide evidence about the stakeholder consultation process.		
PP RESPONSE #1	<i>This section shall be filled by the PP.</i>		
<i>It shall address the corrective action taken in details</i>	PP has provided to AENOR the minutes of the consultation process carried out for the project.		
<i>It shall provide and indentified the evidences proposed (if applicable)</i>			
DOE Assessment #1 <i>The assessment shall encompass all open issues. In case of non-closure additional corrective action and DOE assessments (#2, #3, etc.) shall be added</i>	As a result, minutes of the event performed in March 2008 was provided, which is before 30/12/2008 when occurred the publication of the PDD.		
PP RESPONSE #2	<i>This section shall be filled by the PP.</i>		
<i>Corrective action</i>			
<i>Evidences proposed</i>			
DOE Assessment #2			
Conclusion <i>Tick the appropriate checkbox</i>	CAR/CL CLOSED <input checked="" type="checkbox"/>	To be checked during the first periodic verification <input type="checkbox"/>	

VALIDATION REPORT

Puebla Landfill Gas to Energy Project

7 REFERENCES

Category 1 documents: Documents provided by the project proponents that relate directly to the GHG components of the project. These have been used as direct sources of evidence for the determination conclusions.

Category 2 documents: Background documents related to the design and/or methodologies employed in the design or other reference documents. Where applicable, Category 2 documents have been used to check project assumptions and confirm the validity of information given in the category 1 document.

Category	Ref	Document Name	Date	Author/Competent Authority
1	1	PDD submitted for GSC, version 0	December 2008	Project Participant.
1	2	Final PDD, version 1	April 2012	Project Participant
2	3	Decision 3/CMP.1 and relevant decisions from the EB./		CDM
1	4	IE/DTC/0039		AENOR
1	5	VVM version 01.2	July 2010	UNFCCC
2	6	Letter of approval	November 2008	Project participant
2	7	Landfill's useful life expansion project	2009	Project participant
2	8	RESA concession	2008	Municipality of Puebla/PPs
2	9	Technical specifications of blowers		John Zink
2	10	Technical specifications of the flare		John Zink
2	11	Technical specifications of diesel generator		Perkins
2	12	Technical specifications of generator sets		Caterpillar MADISA
1	13	Approved Methodology: ACM0001 (Version 11)	May 2009	UNFCCC
2	14	Project 3074: Coyula Landfill Gas Project	April 2010	UNFCCC
2	15	Project 4598: Monterrey I Landfill Gas project	June 2011	UNFCCC
1	16	Version 02.2.1 of the "Tool to calculate the emission factor for an electricity system"	2011	UNFCCC
1	17	Version 5.2.1 of the "Tool for the demonstration and assessment of additionality"	August 2011	UNFCCC

VALIDATION REPORT
Puebla Landfill Gas to Energy Project

Category	Ref	Document Name	Date	Author/Competent Authority
1	18	Version 05.1.0 of the "Tool to determine methane emissions avoided from disposal of waste at solid waste disposal site"	June 2011	UNFCCC
2	19	Waste disposal history. Document 00SL/0098/02/09	February 2009	Municipality of Puebla
2	20	Municipal Solid Waste in the Chiltepeque Landfill	April 2008	RESA
2	21	Landfill Methane Outreach Program (www.epa.gov/lmop/index.htm) in the User's Manual for the Central America Landfill Gas Model. 2007 Users Manual for Mexico, also prepared by US EPA. 2009	2007 2009	Environmental Protection Agency. United States
1	22	Tool to determine project emissions from flaring gases containing methane. V.1	EB 28	UNFCCC
2	23	Technical specification of the capacity of the generators.	2011	Caterpillar MADISA
2	24	Project 2271: Tecamac Ecomethane Landfill Gas to Energy Project.	March 2009	UNFCCC
2	25	Project 1920: Verde Valle Landfill Gas	July 2009	UNFCCC
2	26	ER Spreadsheet calculation		Project Participants
2	27	Electricity Sector Outlooks [27] 2004-2013, 2005-2014, 2006-2015, 2007-2016, 2008-2017 by SENER	Several years	SENER
1	28	2006 IPCC Guidelines.	2006	IPCC
1	29	Tool to calculate baseline, project and/or leakage emissions from electricity consumption. EB 39, Annex 7, version 1	May 2008	UNFCCC
1	30	Version 02 of the "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion"	August 2008	UNFCCC
2	31	Density of diesel		Energy National Commission from Mexico, CONAE
1	32	Glossary of CDM Terms v6		UNFCCC
1	33	Version 4 of the "Guidelines on the demonstration and assessment of prior consideration of the CDM"	July 2011	UNFCCC
2	34	Memorandum of agreement between RESA and SENES	November 2007	RESA/SENES

VALIDATION REPORT
Puebla Landfill Gas to Energy Project

Category	Ref	Document Name	Date	Author/Competent Authority
2	35	SENES Reports	December 2007	SENES
2	36	Letter internal RESA	January 2008	RESA
1	37	Civil Contract ALFA-RESA	April 2008	RESA
1	38	Offer landfill gas to AENOR	December 2008	RESA
2	39	Minutes of the stakeholder process	March 2008	RESA
2	40	Approval of E.I.A for the current operation of the landfill. 94-1-01/3310	1994	Government of Puebla State. Mexico
1	41	Mexican government bonds	2007	Central Bank of Mexico
1	42	Country Risk Classifications of the Participants to the Arrangement on Officially Supported Export Credits. (http://www.oecd.org/document/49/0,2340,en_2649_34171_1901105_1_1_1_1,00.html)	Various years	Organization for Economic Co-operation and Development (OECD)
2	43	Project 0425: Aguas Calientes- EcoMethane Landfill Gas to Energy Project		UNFCCC
2	44	Project 0523: Ecatepec- EcoMethane Landfill Gas to Energy Project		UNFCCC
2	45	Project 1240 : Hasars Landfill Gas Project		UNFCCC
2	46	Project 1242: Tultitlan- EcoMethane Landfill Gas to Energy Project		UNFCCC
2	47	Project 1307: Durango – EcoMethane Landfill Gas to Energy Project		UNFCCC
2	48	Project 2186 : Monterrey II LFG to Energy Project		UNFCCC
2	49	Project 3127 : Culiacan Northern Landfill Gas Project		UNFCCC
2	50	Project 3378: Landfill Gas Recovery and Flaring Project in the El Verde Landfill, León		UNFCCC
2	51	Project 3877 : Relleno Norte Landfill Gas Project		UNFCCC
1	52	IRR calculation spreadsheet for the project.		PP
2	53	Tax and depreciation requirements. http://www.cddhcu.gob.mx/LeyesBiblio/pdf/82.pdf		Mexican Federal Government

VALIDATION REPORT
Puebla Landfill Gas to Energy Project

Category	Ref	Document Name	Date	Author/Competent Authority
1	54	Electricity Public Service Law Government of Mexico	December 1993	Mexican Federal Government
1	55	CFE's marginal cost at Oriente Node (http://app.cfe.gob.mx/Aplicaciones/OTROS/costostotales/ConsultaArchivoProyectado.aspx)	2007	CFE
1	56	Mexican inflation rate. http://www.banxico.org.mx/PortalesEspecializados/inflacion/inflacion.html	Various years	Central Bank of Mexico
2	57	CFE's marginal cost at Puebla Node (http://app.cfe.gob.mx/Aplicaciones/OTROS/costostotales/ConsultaArchivoProyectado.aspx)	2009	CFE
2	58	National Agreement in favor of the Economy Family and Employment. http://www.presidencia.gob.mx/infografias/2009/enero/070109_economia_empleo/index.html	2009	Mexican Federal Government
2	59	U.S. Methane Emissions 1990-2020: Inventories, Projections, and Opportunities for Reductions		Environmental Protection Agency. United States
1	60	Project budget presented in the study "Landfill gases flaring and waste to energy project, Chiltepeque, Puebla, Mexico"	December 2007	SENES Consultants
1	61	Handbook for the Preparation of Landfill Gas to Energy Projects in Latin America and the Caribbean, January 2004. http://www.bancomundial.org.ar/lfg/Archivos/handbook.pdf (table 8.5).	2004	World Bank
2	62	Pilot project of capture and use of the gas methane for the generation of electrical energy in domestic sanitary fillings. http://sedesol2006.sedesol.gob.mx/subsecretarias/desarrollourbano/sancho/gasmetano.htm		SEDESOL
2	63	Urban development general program for DF 1987-1988. México		General Directorate for urban planning and environmental protection

Annex 1.
VALIDATION PROTOCOL
PROJECT: "Puebla Landfill Gas to Energy Project"

PROJECT PARTICIPANT: Rellenos Sanitarios RESA

Validation Type	
<input checked="" type="checkbox"/> Validation of a Project Activity	
Validation Team: José Luis Fuentes Marcelino Pellitero	
Version of this Validation Protocol: 2	Date: 25/05/2012

Validation protocol. Puebla Landfill Gas to Energy Project

CHECKLIST TOPIC / QUESTION	MoV/Ref *	COMMENTS	Draft Conclusio n	Final Conclusio n
A. GENERAL DESCRIPTION OF PROJECT ACTIVITY				
A.1. Approval				
A.1.1 Have all the Parties involved in the project activity provided a written Letter of Approval of the project activity?	DR	CAR 1 LoA has to be provided to the validation team. LoA has been provided, then, CAR 1 is closed.	CAR 1	OK
A.1.2 Do the Letters of Approval confirm that: <ul style="list-style-type: none"> The Party is a Party to the Kyoto Protocol The participation is voluntary The CDM project activity contribute to the sustainable development (host Party) The title of the project activity is precise and coincides with the title included in the PDD? 	DR	To assess when CAR 1 is closed. Letters of Approval confirm that: <ul style="list-style-type: none"> The Parties are a Party to the Kyoto Protocol The participation is voluntary The CDM project activity contribute to the sustainable development (host Party) The title of the project activity is precise and coincides with the title included in the PDD, then CAR 1 is closed.	CAR 1	OK
A.1.3 Has the Letter of Approval be obtained from the project participants or directly from the DNA? In case that it has been obtained from the project participant, how has been assessed its authenticity?	DR	To assess when CAR 1 is closed. LoA has been obtained from PP. AENOR does not doubt of its authenticity. CAR 1 is closed.	CAR 1	OK
A.1.4. If either LoA contains additional specification or conditions of the project activity, then has the request for registration been based on the documents specified in the LoA?	DR	To assess when CAR 1 is closed. No additional information in contained in the LoAs.	CAR 1	OK
A.1.5. If the LoA references a specific version of the Validation Report or PDD and this version cannot be		To assess when CAR 1 is closed.	CAR 1	OK

Validation protocol. Puebla Landfill Gas to Energy Project

submitted, then has either of the following been submitted? a) a statement indicating final LoA has not been received, or b) an updated Validation Report/ PDD		No additional information in contained in the LoAs.		
A.2. Project participants				
A.2.1. Is the form of required for the indication of project participants correctly applied in the PDD?	DR	The form of required for the indication of project participants is correctly applied in the PDD.	OK	OK
A.2.2. Is the participation of all project participants approved by a Party to the Kyoto Protocol?	DR	To assess when CAR 1 is closed. The participation of all project participants approved by a Party to the Kyoto Protocol is confirmed with LoAs.	CAR 1	OK
A.2.3. Is all information on participants / Parties provided in consistency with details provided by further chapters of the PDD (in particular annex 1)?	DR	All information on participants / Parties provided is consistency with details provided by further chapters of the final PDD (in particular annex 1).	OK	OK
A.2.4. Are any other project participants approved but not listed in the PDD?	DR	No, they are not.	OK	OK
A.3. Project Design Document				
A.3.1. Does the used project title clearly enable to identify the unique CDM project activity? Is it consistent in all section of the PDD and in all documents?	DR	The used project title clearly enable to identify the unique CDM project activity and it is consistent in all section of the PDD and in all documents	OK	OK
A.3.2. Is there any indication concerning the version number and the date of the version? <i>(Note: PDDs older than 6 months are not acceptable)</i>	DR	Final PDD is version 1, dated on 27 April 2012	OK	OK

Validation protocol. Puebla Landfill Gas to Energy Project

A.3.3. Is this consistent with the time line of the project's history?	DR	This is consistent with the time line of the project's history.	OK	OK
A.3.4. Is the PDD prepared in accordance with the latest template and requirements from the CDM Executive Board?	DR	The PDD is prepared in accordance with the latest template and requirements from the CDM Executive Board under the VVM.	OK	OK
A.3.5. Has the PDD been published for Global Stakeholder Consultation (GSC) in UNFCCC website?	DR	On 30 December 2008	OK	OK
A.3.6. Have there been any comments during the GSC process?	DR	No received comments	OK	OK
A.3.7. Have them correctly addressed by the validation team?	DR	n/a	OK	OK
A.4. Description of the project activity The PDD (section A.2) shall contain a clear description of the project activity that provides the reader with a clear understanding of the precise nature of the project activity.				
A.4.1. Is the description delivering a transparent overview of the project activities? Is the description of the proposed CDM project activity as contained in the PDD sufficiently covers all relevant elements, is accurate and that it provides the reader with a clear understanding of the nature of the proposed CDM project activity?	DR	CL 1 Further information shall be provided in the PDD about equipment and technology to be installed and provide evidence to check the information in the PDD concerning the description of the project. This clarification has been solved as further information is quoted in the final PDD on technology and equipment. Moreover, information is consistent with evidence. Then, CL1 is closed.	CL 1	OK
A.4.2. What proofs are available demonstrating that the	DR	To assess when CL1 is closed.	CL 1	OK

Validation protocol. Puebla Landfill Gas to Energy Project

project description is in compliance with the actual situation or planning?		The references listed in section 7 of this validation report detail all documents used to confirm the description of the PDD.		
A.4.3. Is the information provided by these proofs consistent with the information provided by the PDD?	DR	To assess when CL 1 is closed. Information provided about description of the project is consistent with evidence.	CL 1	OK
A.4.4. Has the validation team conducted a physical site inspection to confirm the description of the PDD? If not, justify.	DR	On 10 February 2009	OK	OK
A.4.5. If the proposed CDM project activity involves the alteration of an existing installation or process, does the project description clearly state the differences resulting from the project activity compared to the pre-project situation?	DR	The project does not involve the alteration of an existing installation or process.	OK	OK
A.4.6. In the case of greenfield project activity, is the project design described sufficiently by means of specifications, drawings and manuals?	DR	To be assessed when CL 1 is closed. The Greenfield project activity is described sufficiently by means of technical specifications, and other documents provided and referenced in section 7 of this report.	CL1	OK
A.4.7. Does the PDD explain how the proposed project activity reduces greenhouse gas emissions (i.e. what type of technology is being employed, what measures are undertaken as part of the project activity, etc);	DR	The PDD describes correctly how the proposed project activity reduces greenhouse gas emissions.	OK	OK
A.5. Technical description of the project activity The PDD (section A.4) shall contain a clear description of the project activity that provides the reader a clear				

Validation protocol. Puebla Landfill Gas to Energy Project

understanding of the technical aspects of its implementation.				
A.5.1. Location of the project activity				
A.5.1.1. Does the information provided on the location of the project activity allow for a clear identification of the site(s)? Are the latitude and longitude on the site indicated (decimal points)?	DR	<p>The Puebla Landfill Gas to Energy Project is promoted by Rellenos Sanitarios RESA in the State of Puebla, Mexico.</p> <p>The Chiltepeque site is located approximately 12 km to the northeast of the Puebla City core in the State of Puebla. The city of Puebla is located approximately 107 km southeast of Mexico City.</p> <p>The geographical coordinates of the entrance of the site are: Latitude 18.982833° N and longitude -98.139664° W.</p>	OK	OK
A.5.1.2. How is it ensured and/or demonstrated that the project proponents can implement the project at this site (ownership, licenses, contracts etc.)?	DR	<p>During the on site visit the validation team confirmed with the local authorities (Municipality of Puebla) the fulfillment of the project activity with local legislation. With regard to this, as a result of CL1 the PP has provided the "Useful Life expansion project" and its approval from Municipality of Puebla, along with the Exploitation concession. The landfill is currently operating with the approved E.I.A (94-1-01/3310). Regarding the relevant federal legislation of the host country the NORM-083-SEMARNAT-2003 and the Law for Solid waste prevention and Management do not specify minimum requirements regarding the implementation of LFG collection, flaring and or utilization systems.</p> <p>CL 2</p> <p>To clarify the fulfillment of the proposed project activity with the environmental legislation.</p> <p>CL 2 is closed, as it has been clarified that no additional permits or authorizations are required from SEMARNAT for the proposed project activity.</p>	CL 2	OK

Validation protocol. Puebla Landfill Gas to Energy Project

<i>A.5.2. Category of the project activity</i>				
A.5.2.1. Does the project qualify as a small scale CDM project activity as defined in paragraph 6 (c) of decision 3/CMP.1 on the modalities and procedures for the CDM?	DR	The project is not a small scale	OK	OK
A.5.2.2. To which category(ies) does the project activity belonging to? Is this category correctly identified and indicated?	DR	Sectoral scope 13: Waste handling and disposal	OK	OK
A.5.2.3. Does proposed project activity confirm to one of the project categories defined for small scale CDM project activities?	DR	N/A	OK	OK
A.5.2.4. In the case of a small scale project activity, is it justified that it is not a debundled component of a larger project activity?	DR	N/A	OK	OK
A.5.2.5. In case of small scale project activities, is the estimate of emissions reductions increasing during the crediting period? In affirmative case, have project participants demonstrated in the CDM-SSC-PDD that the project activity characteristics are defined in a way that precludes project activities to go beyond the limits for SSC Project activities (as stipulated in paragraph 3 of		N/A	OK	OK

Validation protocol. Puebla Landfill Gas to Energy Project

the General Guidelines to SSC CDM methodologies)?				
<i>A.5.3. Technology to be employed by the project activity</i>				
A.5.3.1. Does the description of the technology to be applied provide sufficient and transparent input/information to evaluate its impact on the greenhouse gas balance? And, is the explanation how the project will reduce greenhouse gas emission transparent and suitable?	DR	To assess when CL1 is closed. The description of the technology to be applied provides sufficient and transparent information to evaluate its impact on the greenhouse gas balance, as evidence and calculation with assumptions have been provided and reproduced on a transparent and suitable way.	CL1	OK
A.5.3.2. Does the project require extensive initial training and maintenance efforts in order to be carried out as scheduled during the project period? If so, does the project make provisions for meeting training and maintenance needs?	DR	The project requires training and maintenance in order to be carried out during the project period. With regard to this as a result of the transfer of technology well detailed in the PDD, training local labour to perform the operation and maintenance will be planned.	OK	OK
A.5.3.3. Is a schedule available for the implementation of the project and are there any risks for delays? Is the schedule consistent with the starting date of the crediting period?	DR	A schedule was provided for the implementation of the project. On the other hand the starting date of the project has been updated to fulfil with CDM requirements.	OK	OK
<i>A.5.4. Estimated amount of emission reductions over the chosen crediting period</i>				
A.5.4.1. Is the form required for the indication of projected emission reductions correctly applied?	DR	The form required for the indication of projected emission reductions correctly applied.	OK	OK

Validation protocol. Puebla Landfill Gas to Energy Project

A.5.4.2. Are the figures provided consistent with other data presented in the PDD?	DR	The figures provided are consistent with other data presented in the PDD.	OK	OK
<i>A.5.5. Public funding of the project activity</i>				
A.5.5.1. In case of public funding from Annex I Parties is it confirmed that such funding does not result in a diversion of official development assistance?	DR	No public funding from Annex I Parties is used.	OK	OK
A.5.5.2. Is all information provided consistent with the details given in remaining chapters of the PDD (in particular annex 2)	DR	All information provided is consistent with the details given in remaining chapters of the PDD (in particular annex 2)	OK	OK
B. BASELINE AND MONITORING METHODOLOGY				
B.1. Title and reference of the approved baseline and monitoring methodology				
B.1.1. Are reference number, version number, and title of the approved baseline and monitoring methodology clearly indicated?	DR	Reference number, version number, and title of the approved baseline and monitoring methodology are clearly indicated. ACM0001, Version 11 – “Consolidated baseline and monitoring methodology for landfill gas project activities.”	OK	OK
B.1.2. Is the applied version the most recent one and / or is this version still applicable?	DR	The version applied is applicable.	OK	OK
B.1.3. Does the PDD refer to the corresponding tools with their latest approved versions?	DR	The PDD refers to the corresponding tools with their approved and applicable versions.	OK	OK

Validation protocol. Puebla Landfill Gas to Energy Project

B.1.4. Have any sources of greenhouse gas emissions been identified by the DOE ,within the project boundary following project implementation, which are expected to contribute more than 1% of the overall expected average annual emissions reductions, and which are not addressed by the applied methodology?	DR	No other sources of greenhouse gas emissions have been identified by the DOE ,within the project boundary following project implementation, which are expected to contribute more than 1% of the overall expected average annual emissions reductions, and which are not addressed by the applied methodology.	OK	OK
B.2. Applicability of the selected methodology to the project activity				
B.2.1. Are the chosen tools considered applicable in accordance with the design of the project and the provisions of the applied methodology?	DR	The chosen tools considered are applicable in accordance with the design of the project and the provisions of the applied methodology	OK	OK
B.2.2. Is the choice of the methodology correctly justified by the PDD and is the project in conformance with all applicability criteria of the applied methodology?	DR	CL 3 To further explain the applicability conditions of the approved methodology and states how the project activity fulfils these conditions. Further information has been included in section B.2 of the final PDD, and then CL 3 is closed.	CL3	OK
B.2.3 Has been applied the specific guidance provided by the CDM Executive Board in respect to the approved methodology?	DR	The specific guidance provided by the CDM Executive Board in respect to the approved methodology is applied.	OK	OK
Fill in the required amount of sub checklists for applicability criteria as given by the methodology applied and comment at least every line answered with "No"				

Validation protocol. Puebla Landfill Gas to Energy Project

<p>B.2.4. Criterion 1 -</p> <p>LFG capture project activities, where the baseline scenario is the partial or total atmospheric release of the gas and the project activities include situations such as: The captured gas is flared; and/or</p>	DR	<table><tr><td>Applicability checklist</td><td>Yes/No</td></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr><tr><td>Evidence provided?</td><td>Yes</td></tr><tr><td>Compliance verified?</td><td>yes</td></tr></table>	Applicability checklist	Yes/No	Criterion discussed in the PDD?	Yes	Evidence provided?	Yes	Compliance verified?	yes	CL 3	OK
Applicability checklist			Yes/No									
Criterion discussed in the PDD?			Yes									
Evidence provided?			Yes									
Compliance verified?			yes									
<p>To assess when CL3 is closed.</p> <p>Once evidence has been provided and clear description of the project detailed in the PDD is clear that project aimed to captured gas to be flared.</p>												
<p>B.2.5. Criterion 2 - The captured gas is used to produce energy (e.g. electricity/thermal energy). Emission reductions can be claimed for thermal energy generation, only if the LFG displaces use of fossil fuel either in a boiler or in an air heater. For claiming emission reductions for other thermal energy equipment (e.g. kiln), project proponents may submit a revision to this methodology;</p>	DR	<table><tr><td>Applicability checklist</td><td>Yes/No</td></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr><tr><td>Evidence provided?</td><td>Yes</td></tr><tr><td>Compliance verified?</td><td>Yes</td></tr></table>	Applicability checklist	Yes/No	Criterion discussed in the PDD?	Yes	Evidence provided?	Yes	Compliance verified?	Yes	CL 3	OK
Applicability checklist			Yes/No									
Criterion discussed in the PDD?			Yes									
Evidence provided?			Yes									
Compliance verified?			Yes									
<p>To assess when CL3 is closed.</p> <p>Once evidence has been provided and clear description of the project detailed in the PDD is clear that project aimed to captured gas to be flared and also to generate electricity, but not thermal energy.</p>												
<p>B.2.6. Criterion 3 - The captured gas is used to supply consumers through a natural gas distribution network. If emissions reductions are claimed for displacing natural gas, project activities may use approved methodology AM0053.</p>	DR	<table><tr><td>Applicability checklist</td><td>Yes/No</td></tr><tr><td>Criterion discussed in the PDD?</td><td>Yes</td></tr><tr><td>Evidence provided?</td><td>Yes</td></tr></table>	Applicability checklist	Yes/No	Criterion discussed in the PDD?	Yes	Evidence provided?	Yes	CL 3	OK		
Applicability checklist			Yes/No									
Criterion discussed in the PDD?			Yes									
Evidence provided?			Yes									

Validation protocol. Puebla Landfill Gas to Energy Project

		<div>Compliance verified?</div> <div>Yes</div>		
		This condition is not applicable to the proposed project as natural gas will not be generated and provided to consumers.		
<p>B.2.7. Was there a request for clarification, revision or deviation made for the adopted methodology in relation to the proposed project activity?</p> <p>If so, were the correct procedures provided by the CDM EB followed?</p>	DR	No request for clarification, revision or deviation made for the adopted methodology in relation to the proposed project activity has been carried out.	OK	OK
B.3. Description of the Project Boundary				
B.3.1 Are all the sources and gases included in the project boundary of the project activity (baseline scenario, project scenario and leakage) in accordance with the applied methodology?	DR	All the sources and gases are included in the project boundary of the project activity (baseline scenario, project scenario and leakage) in accordance with the applied methodology	OK	OK
B.3.2. Are the inclusion or exclusion of the sources of gases correctly justified?	DR	The inclusion or exclusion of the sources of gases is correctly justified	OK	OK
B.3.3. Do the spatial and technological boundaries as verified on-site comply with the discussion provided by	DR	The spatial and technological boundaries as verified on-site comply with the discussion provided by the PDD.	OK	OK

Validation protocol. Puebla Landfill Gas to Energy Project

the PDD?				
B.3.4. In case of grid connected electricity projects, is the relevant grid correctly identified in accordance with EB guidance and the underlying methodology?	DR	The relevant grid is correctly identified in accordance with EB guidance and the underlying methodology.	OK	OK
B.4. Description of the baseline scenario identification				
B.4.1. Is the baseline scenario clearly described?	DR	CL 4 To provide further information regarding the usual business practice of landfill sites in México to confirm the baseline scenario identified in the PDD. This issue has been clarified as further information has been included in the final PDD, as well as the mention to the main regulations on waste management. Then, CL 4 is closed.	CL 4	OK
B.4.2. Have there been other alternative scenarios considered? Is it justified the selected scenario as the most likely one?	DR	To assess when CL4 is closed. Other alternatives have been defined and it is correctly justified the most likely one.	CL 4	OK
B.4.3. Does the PDD follow the steps to determine the baseline scenario required by the methodology?	DR	To assess when CL4 is closed. The PDD follows the steps to determine the baseline scenario required by the methodology.	CL 4	OK
B.4.4. Has the baseline scenario been determined using conservative assumptions where possible?	DR	To assess when CL4 is closed. The baseline scenario has been determined using conservative assumptions where possible.	CL 4	OK
B.4.5. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies? <i>(Note:</i>	DR	To assess when CL4 is closed. The baseline scenario sufficiently takes into account relevant	CL 4	OK

Validation protocol. Puebla Landfill Gas to Energy Project

refer Annex 3 EB 22). Are they listed in the PDD?		national and/or sectoral policies. They are detailed in the PDD.		
<p>B.4.6 If alternatives are excluded:</p> <p>a.- Is sufficient evidence/ justification provided to support every exclusion of alternatives? Is it reasonable?</p> <p>b.- Is it shown that at least one credible and feasible alternative does not face a barrier? Is this reasonable?</p>	DR	<p>To assess when CL4 is closed.</p> <p>The justification provided to support each exclusion of alternatives is reasonable.</p>	CL 4	OK
B.4.7 Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	DR	The baseline scenario determination is compatible with the available data and all literature and sources are clearly referenced.	OK	OK
B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity (assessment and demonstration of additionality):				
B.5.1 Is the start date defined in accordance with the "Glossary of CDM terms"? What evidence is provided to verify that this was the official start date? Is this considered reliable and reasonable?	DR	<p>CAR 2</p> <p>To demonstrate whether the start date was defined according to the current definition of the "Starting date" as stated in the "Glossary of the CDM terms" and how the prior consideration of the CDM was considered according to the "Guidance on the demonstration and assessment of prior consideration of the CDM".</p> <p>The final PDD shows that the starting date is 14/04/2008 based on the definition given in the glossary of CDM terms and also evidence have been provided for demonstrating the prior consideration of the project based on the guidance of prior consideration. Then, CAR 2 is closed.</p>	CAR 2	OK
B.5.2 Is it a new project activity (start date on or after August 2008) or an existing project?	DR	It is an existing project	OK	OK

Validation protocol. Puebla Landfill Gas to Energy Project

<p>B.5.3 For a new project which does not require a new methodology and has not published its PDD for stakeholder comments prior to the start date, then:</p> <p>a. Have the project proponents informed the DNA and/or UNFCCC secretariat in writing? How has this notification been verified? (i.e. confirmation from the DNA or UNFCCC)</p> <p>b. Was the notification made within 6 months of the project activity start date?</p> <p>c. Does the letter/ notification indicate the precise geographic location and provide a brief description of the proposed project?</p> <p>d. Have the project proponents informed the DNA and/or UNFCCC secretariat of the progress of the project activity every subsequent two years after the initial notification?</p>	DR	N/A	OK	OK
<p>B.5.4 For an existing project which has a start date prior to the publication of the PDD for global stakeholder comments, has the project proponent provided the following:</p> <p>a. Evidence of awareness of the CDM prior to the project activity start date and that the benefits of the CDM were a decisive factor in the decision to proceed with the</p>	DR	<p>To assess when CAR 2 is closed.</p> <p>The PP has provided evidence of the SENES consultant report and MoA between RESA and SENES prior to the project start date which evidence the awareness of the CDM before to the start date, even, the preliminary assessment by SENES consultants is used as basis for the investment decision as demonstrates that the CDM is a decisive factor for carrying out the project.</p> <p>The different milestones and their evidence demonstrate that continuing and real actions have been taken to secure the CDM status in parallel with its implementation. The gap between them</p>	CAR 2	OK

Validation protocol. Puebla Landfill Gas to Energy Project

project? (e.g. Board minutes, notes etc) Is this sufficient? b. Reliable evidence that demonstrates real actions were taken to secure CDM status in parallel with the project's implementation? (e.g. contracts with consultants for CDM/PDD/methodology services, ERPAs, correspondence with CER buyers, DOEs, DNAs or the UNFCCC). Is this sufficient?		is less than 2 years. On the other hand, AENOR does not doubt of the authenticity of the evidence.		
B.5.5. Is the project additionality assessed according to the applicable methodology? Detail the Tool used to demonstrate the Additionality of the project activity.	DR	<p>To demonstrate that the project activity itself is not a likely baseline scenario, the Project Proponent shall follow every sub-step of the tool for the demonstration and assessment of additionality, version 05.2. Therefore, PP shall clearly state the chosen analysis method and the reasons to do so.</p> <p>The following things have to be corrected, clarified or modified:</p> <ul style="list-style-type: none"> • The Option II of sub-step 2b is not correctly applied. The PDD shall compare the 3 different alternatives proposed. The alternatives analyzed are different from the Alternatives proposed in the Step 1. Investment comparison analysis does not require the calculation of a benchmark because the purpose of the method is to determine whether the project is less financially attractive than at least one the alternatives proposed in the PDD. • The source of the cost information provided shall be included in the PDD. • The PDD shall identify clearly the financial indicator chosen i.e., project IRR, equity IRR, NPV, post-tax , pre-tax... • The period of assessment should not be limited to the 	CAR 3	OK

Validation protocol. Puebla Landfill Gas to Energy Project

		<p>proposed crediting period. Financial indicators shall reflect the technical lifetime of the project or if a shorter period is chosen, include the fair value of the project activity assets at the end of the assessment period.</p> <ul style="list-style-type: none"> • Evidence about the appropriateness of the input values used (techno-economic parameters and assumptions) in the investment analysis shall be provided i.e. tariff, power supply, electricity generation, investment costs, etc... • Input values used in all investment analysis should be valid and applicable at the time of the investment decision taken by the project participant. PDD shall clearly state the time when investment decision took place.. • Sensitivity analysis is not included in the PDD. • The arguments presented in the technological barriers are generic. • The source of the tables showing the common practice shall be included in the PDD. <p>Additionality tool have been updated to version 5.2.1, sources of data, clearly identified financial indicator and sensitivity analysis have been included in excel spreadsheet and PDD and barrier analysis have been discarded.</p> <p>CAR 3 is closed.</p> <p>Yes, the additionality has assessed according to the "Tool for the demonstration and assessment of additionality" version 05.2.1.</p>		
B.5.6. In the case of a small scale project activity, is the additionality justified according to the applicable CDM	DR	Not applicable. The project is a large scale project	N/A	N/A

Validation protocol. Puebla Landfill Gas to Energy Project

requirements specific for small scale project activities?				
B.5.7 Have realistic and credible alternatives been identified providing comparable outputs or services?	DR	Yes, realistic and credible alternatives have been identified.	OK	OK
B.5.8. Is the project activity without CDM included in these alternatives?	DR	Yes, it is included	OK	OK
B.5.9. Is a discussion provided for all identified alternatives concerning the compliance with applicable laws and regulations?	DR	Yes, a discussion is provided for all identified alternatives	OK	OK
B.5.10. In case of using a FSR as a basis of the decision, is this analysis made in accordance with the EB Guidance?	DR	Not applicable. The project activity does not use a FSR as a basis of the decision.	N/A	N/A
B.5.11. In case the PDD argues that specific laws are not enforced in the country or region: Is evidence available concerning that statement?	DR	Not applicable since there is no reference to not enforced laws.	N/A	N/A
B.5.12. In case of applying step 2 / investment analysis of the additionality tool: Is the analysis method identified appropriately?	DR	To assess when CAR 3 is closed. Yes, the analysis method has been identified appropriately	CAR 3	OK
B.5.13. In case of Option I (simple cost analysis): Is it demonstrated that the activity produces no economic benefits other than CDM income?	DR	Not applicable since Option I is not considered in the analysis	N/A	N/A

Validation protocol. Puebla Landfill Gas to Energy Project

a. Are the assumptions for all alternatives compared consistent (including discount rates if applicable)?				
<p>B.5.14. In case of Option II (investment comparison analysis): Is the most suitable financial indicator clearly identified (IRR, NPV, cost benefit ratio, or (levelized) unit cost)?</p> <p>a. Are the assumptions for all alternatives compared consistent (including discount rates if applicable)?</p>	DR	Not applicable since Option II is not considered in the analysis	N/A	N/A
<p>B.5.15. In case of Option III (benchmark analysis): Is the most suitable financial indicator clearly identified (IRR, NPV, cost benefit ratio, or (levelized) unit cost)?</p> <p>a. If an IRR indicator is used, is the choice of benchmark appropriate to the type of IRR calculated? (</p> <p>b. Is the choice of benchmark or discount rate justified with supporting evidence for its appropriateness?</p>	DR	<p>To assess when CAR 3 is closed.</p> <p>Yes, project IRR post-tax has been clearly identified</p> <p>Yes, the choice of benchmark have been justified with supporting evidence and found appropriate.</p>	CAR 3	OK
B.5.16 If risk premiums are applied in the development of the benchmark, are they reasonable and justified?	DR	<p>To assess when CAR 3 is closed.</p> <p>Yes, the OECD risk premium applied is reasonable and it has been justified appropriately.</p>	CAR 3	OK
B.5.17 Do the project participants justify the period of assessment in the context of the underlying project activity?	DR	<p>To assess when CAR 3 is closed.</p> <p>Yes, the period of assessment is justified in the context of the project activity.</p>	CAR 3	OK

Validation protocol. Puebla Landfill Gas to Energy Project

B.5.18 Is the period of assessment appropriate?	DR	To assess when CAR 3 is closed. Yes, the period of assessment is appropriate.	CAR 3	OK
B.5.19 Is any residual value of the project activity assets included in the analysis? Are residual value calculations reasonable and justified and consistent with local accounting rules or international best practice?	DR	To assess when CAR 3 is closed. Residual value is considered zero in the analysis which is consistent with local accounting rules.	CAR 3	OK
B.5.20 Are depreciation and other non-cash items related to the project activity deducted from net profits used for calculating the financial indicator (e.g. IRR, NPV)?	DR	To assess when CAR 3 is closed. Yes, they have been deducted in estimating gross profits on which tax is calculated, but they have been added back to net profits for the purpose of calculating the Project IRR post-tax	CAR 3	OK
B.5.21 Is the treatment of taxation consistent with the chosen benchmark? (i.e. taxation should only be treated as an expense in the IRR/NPV calculation if the chosen benchmark is intended for post-tax calculations?	DR	To assess when CAR 3 is closed. The chosen benchmark is intended for post-tax calculations so taxation is correctly considered in the analysis.	CAR 3	OK
B.5.22 Recommended project: If the implementation of the project ceased and then recommenced due to consideration of the CDM, then: a. Are input values valid and applicable at the time of making the decision to recommence the project? b. Are capital costs incurred prior to the revised project activity start date input as the recoverable value of the assets (limited to the potential reuse/ resale of tangible	DR	Not applicable. The project activity is not a recommended project	N/A	N/A

Validation protocol. Puebla Landfill Gas to Energy Project

assets)? c. How has the fair market value of the capital expenditures been calculated and validated? (e.g. by chartered specialists). Is this fair market value reasonable and justified?.				
d.- Is the book value as well as the expectation of the potential profit or loss included in the fair value calculation?				
B.5.23 Has the project participant supplied unprotected and traceable spreadsheet versions of all investment analysis?	DR	To assess when CAR 3 is closed. Yes, the PP supplied unprotected and traceable spreadsheet versions of all investment analysis	CAR 3	OK
B.5.24 From the investment analysis provided, is it possible to reproduce the results?	DR	To assess when CAR 3 is closed. Yes it is possible.	CAR 3	OK
B.5.25 Costs of financing expenditures (i.e. loan repayments and interest) should only be included in the cashflow as costs if an equity IRR is used, not if a project IRR is used. Are interest payments taken into account in the calculation of tax, if the benchmark is for after-tax comparison?	DR	To assess when CAR 3 is closed. Not applicable	CAR 3	N/A
B.5.26 If an Equity IRR has been used, is the debt portion of the investment cost included as a cash	DR	Not applicable. The project proponent uses Project IRR.	N/A	N/A

Validation protocol. Puebla Landfill Gas to Energy Project

outflow? (i.e. as well as interest costs and principle repayments – double counting)				
<p>B.5.27 Sensitivity analysis:</p> <p>a. Are all variable and critical costs and revenues in the analysis included in the sensitivity analysis?</p> <p>b. Is the assessed range of variations reasonable in light of the reliability of the estimated input values and the likely range?</p> <p>c. Is the sensitivity analysis possible to reproduce?</p>	DR	<p>To assess when CAR 3 is closed.</p> <p>All critical costs and revenues are included in the sensitivity analysis. The assessed range of variation is reasonable and the sensitivity analysis is possible to reproduce.</p>	CAR 3	OK
<p>B.5.28 Are input values used in all the investment analysis valid and applicable at the time of the investment decision taken by the project participant?</p> <p>Is the time of investment decision appropriately justified by evidences?</p>	DR	<p>To assess when CAR 3 is closed.</p> <p>Input values used in the investment analysis are valid and applicable at the time of investment decision. Investment decision date has been justified appropriately.</p>	CAR 3	OK
<p>B.5.29 Does the PDD present the investment analysis in a transparent manner and provide all the relevant assumptions (preferably in the CDM-PDD form, or in separate annexes to the CDM-PDD)</p>	DR	<p>To assess when CAR 3 is closed.</p> <p>Yes, the PDD present the investment analysis in a transparent manner and provide all the relevant assumptions.</p>	CAR 3	OK
<p>B.5.30 Have the listed input values been consistently applied in all calculations?</p>	DR	<p>To assess when CAR 3 is closed.</p> <p>Yes, all listed values have been consistently applied.</p>	CAR 3	OK

Validation protocol. Puebla Landfill Gas to Energy Project

B.5.31 Are all references made in the investment analysis correctly referenced/ sourced? Have these sources been verified?	DR	To assess when CAR 3 is closed. All references made in the investment analysis are correctly referenced. All the sources have been verified.	CAR 3	OK
B.5.32 Have financial calculations been verified by: assessing all parameters and assumptions against the available evidence and expertise; crosschecking the parameters against 3rd party or publicly available sources; reviewing feasibility reports, public announcements and annual financial reports; assessing the correctness of computations and the sensitivity analysis?	DR	To assess when CAR 3 is closed. Yes, financial calculations have been verified and the entire parameters haven been crosschecked.	CAR 3	OK
B.5.33 Have values from a feasibility study report (FSR) approved by national authorities been used? If so: a. Has the FSR been the basis of the decision to proceed with the investment in the project? How has this been verified? b. Are the values used in the PDD and associated annexes valid and consistent with the FSR? c. At the time of the investment decision, are the input values from the FSR valid and applicable (based on specific local and sectoral expertise and knowledge)?	DR	Not applicable. The project activity does not use a FSR as a basis of the decision.	N/A	N/A
B.5.34. In case of applying step 3 (barrier analysis) of the	DR	Not applicable since barrier analysis has not been applied.	N/A	N/A

Validation protocol. Puebla Landfill Gas to Energy Project

additionality tool: Is a complete list of barriers developed that prevent the different alternatives to occur?				
B.5.35. Do any such identified barriers have a clear and direct impact on the financial returns of the project activity? (these are not barriers and should be assessed in the investment analysis)	DR	Not applicable since barrier analysis has not been applied.	N/A	N/A
B.5.36 Are the identified barriers real and substantiated by independent sources of data such as relevant national legislation, surveys of local conditions and national or international statistics?	DR	Not applicable since barrier analysis has not been applied.	N/A	N/A
B.5.37. Is it clearly explained how approval of the project in the CDM would enable the proposed project activity to surmount the barrier? Is the rationale reasonable and justified with evidence?	DR	Not applicable since barrier analysis has not been applied.	N/A	N/A
B.5.38. Does the review of relevant background information on the nature of the company(ies) and entity(ies) involved in the financing and implementation of the project sufficiently justify that the barriers related to the lack of access to capital, technologies and skilled labour are real?	DR	Not applicable since barrier analysis has not been applied.	N/A	N/A
B.5.39 Has common practice analysis been undertaken?	DR	To assess when CAR 3 is closed.	CAR 3	OK

Validation protocol. Puebla Landfill Gas to Energy Project

		Yes, it has been undertaken.		
B.5.40 Is the geographical and temporal scope of the common practice analysis appropriate for the assessment related to the project activity's technology or industry type?	DR	To assess when CAR 3 is closed. Yes, the geographical and temporal scope of the analysis is appropriate.	CAR 3	OK
B.5.41 Have all comparable projects been included in the common practice analysis If some projects have been excluded as non comparable, is the exclusion reasonable and justified?	DR	To assess when CAR 3 is closed. Yes, all comparable projects have been included. The exclusion of projects is reasonable and justified.	CAR 3	OK
B.5.42 Have similar and operational projects other than CDM project activities been undertaken in the region?	DR	To assess when CAR 3 is closed. No similar projects have been undertaken in the region.	CAR 3	OK
B.5.43 Are these widely observed and commonly carried out? If so: a. How have the essential distinctions with the proposed CDM project activity been assessed? b. Are such distinctions justified with sufficient evidence? c. If inaccessibility of data is the reason why some projects have not been included in the analysis, is justification of this claim provided?	DR	To assess when CAR 3 is closed. No they are not commonly carried out.	CAR 3	OK

Validation protocol. Puebla Landfill Gas to Energy Project

B.5.44 Overall, is the proposed CDM project activity considered common practice?	DR	To assess when CAR 3 is closed. No, the project activity cannot be considered common practice.	CAR 3	OK
B.5.45. Is it demonstrated/justified that the project activity is not a likely baseline scenario?	DR	To assess when CAR 3 is closed. Yes it has been demonstrated and justified.	CAR 3	OK
B.6. Emissions reductions				
<i>B.6.1. Explanation of methodological choices</i>				
B.6.1.1. Is it explained how the procedures provided in the methodology are applied by the proposed project activity?	DR	<p>CAR 4</p> <ul style="list-style-type: none"> To provide the spreadsheet calculation to reproduce it, as well as the evidence, assumptions and data sources used for the determination of the emission reductions. To correctly address in the PDD all steps of the applicable methodology and applicable tools, using the same formulae and same nomenclature. To correctly use the most updated data for the calculation of the emission reduction at the moment of submission of the PDD to the DOE for validation. <p>The calculation has been provided along with the data source used and assumptions. They have been reproduced to obtain same results. Formulas and steps followed are in compliance with the applicable methodology and tools associated and the most updated data has been used. Then, CAR 4 is closed.</p>	CAR 4	OK
B.6.1.2. Is every selection of options offered by the methodology correctly justified and is this justification	DR	To assess when CAR 4 is closed Every selection of options offered by the methodology is correctly justified and its justification in line with the situation verified on-	CAR 4	OK

Validation protocol. Puebla Landfill Gas to Energy Project

in line with the situation verified on-site?		site, once uncorrected issues have been correctly quoted.		
B.6.1.3. Are the formulae required for the determination of emissions reductions correctly presented and used? <i>(Open excel, trazability of data, etc)</i>	DR	To assess when CAR4 is closed The formulae required for the determination of emissions reductions are correctly presented and used in the final PDD.	CAR 4	OK
B.6.1.4 Are all the data and assumptions listed in the PDD and are appropriate and calculations result in a conservative estimate of emission reductions?	DR	To assess when CAR4 is closed All the data and assumptions are listed in the PDD and are appropriate and calculations result in a conservative estimate of emission reductions.	CAR 4	OK
B.6.2. Data and parameters that are available at validation				
B.6.2.1. Is the list of parameters presented in chapter B.5.1 considered to be complete with regard to the requirements of the applied methodology? Is all the information required for each parameter included?	DR	To assess when CAR 4 is closed The list of parameters presented in chapter B.6.2 is considered to be complete with regard to the requirements of the applied methodology and the information required for each parameter is included.	CAR 4	OK
B.6.2.2. Are all the data derived from official data sources or replicable records and have been correctly quoted?	DR	To assess when CAR 4 is closed All the data are derived from official data sources or replicable records and have been correctly quoted.	CAR 4	OK
B.6.2.3. For each parameter: a. Title in line with Methodology? b. Data unit correctly expressed? c. Appropriate description?	DR	To assess when CAR 4 is closed For all parameters in section B.6.2 of the final PDD, i.e, Dch4, BEch4swds, regulatory requirements of landfill gas, AF, CE, model correction factor, OX, F, DOCf, MCF, DOCi, ki, FCI,m,y, EFco2,i,y , EF co2,m,i,y, EFgrid,cm, TDL, EGy, EGm,y, an average net energy conversion efficiency the titles are in line with methodology, data units are correctly expressed, the descriptions are appropriate, the sources are clearly referenced, the values are correct, and they have been verified and correctly justified, and measurement	CAR 4	OK

Validation protocol. Puebla Landfill Gas to Energy Project

d. Source clearly referenced? (and appropriate?) e. Correct value provided? f. Has this value been verified? g. Choice of data correctly justified? h. Measurement method correctly described?		methods described.		
B.6.2.4. Will the data and parameters result in a conservative estimate of emissions reductions?	DR	To assess when CAR 4 is closed The data and parameters result in a conservative estimate of emissions reductions.	CAR 4	OK
<p><i>B.6.3 Calculation of GHG Emission Reductions – Baseline Emissions</i></p> <p><i>It is assessed whether the baseline emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i></p>				
B.6.3.1 Are the calculations documented according to the approved methodology and in a complete and transparent manner?	DR	To assess when CAR 4 is closed The calculations are documented according to the approved methodology and in a complete and transparent manner.	CAR 4	OK
B.6.3.2. Have conservative assumptions been used when calculating the baseline emissions?	DR	To assess when CAR 4 is closed Conservative assumptions have been used when calculating the baseline emissions	CAR 4	OK
B.6.3.3 Are uncertainties in the baseline emission	DR	To assess when CAR 4 is closed	CAR 4	OK

Validation protocol. Puebla Landfill Gas to Energy Project

estimates properly addressed?		Uncertainties in the baseline emission are properly addressed.		
B.6.3.4. Is additional background information on baseline data provided in Annex 3 of the PDD? Is this information consistent with data presented by other sections of the PDD?	DR	To assess when CAR 4 is closed Additional background information on baseline data is provided in Annex 3 of the PDD and is consistent with data presented by other sections of the PDD.	CAR 4	OK
<i>B.6.4 Calculation of GHG Emission Reductions – Project Emissions</i> <i>It is assessed whether the project emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.</i>				
B.6.4.1 Are the calculations documented according to the approved methodology and in a complete and transparent manner?	DR	To assess when CAR 4 is closed. The calculations are documented according to the approved methodology and associated tools in a complete and transparent manner.	CAR 4	OK
B.6.4.2. Have conservative assumptions been used when calculating the project emissions?	DR	To assess when CAR 4 is closed. Conservative assumptions have been used when calculating the project emissions.	CAR 4	OK
B.6.4.3 Are uncertainties in the project emission estimates properly addressed?	DR	To assess when CAR 4 is closed. Uncertainties in the project emission are properly addressed.	CAR 4	OK
<i>B.6.5. Calculation of GHG Emission Reductions – Leakage</i> <i>It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of</i>				

Validation protocol. Puebla Landfill Gas to Energy Project

<i>default factors and values – where applicable – is justified.</i>				
B.6.5.1 Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	DR	No leakage effects need to be accounted under this methodology	OK	OK
B.6.5.2. Have conservative assumptions been used when calculating the leakage emissions?	DR	No leakage effects need to be accounted under this methodology	OK	OK
B.6.5.3. Are uncertainties in the leakage emission estimates properly addressed?	DR	No leakage effects need to be accounted under this methodology	OK	OK
<i>B.6.6. Ex-ante calculation of emission reductions</i>				
B.6.6.1. Are the GHG calculations documented in a complete and transparent manner? Are all the calculations correct?	DR	To assess when CAR 4 is closed Calculations are documented in a complete and transparent manner and they are correct.	OK	OK
B.6.6.2. Is the data provided in this section consistent with data as presented in other chapters of the PDD?	DR	To assess when CAR 4 is closed Data are consistent throughout the PDD.	OK	OK
<i>B.6.7. Summary of the ex-ante estimation of emission reductions</i>				
B.6.7.1. Will the project result in fewer GHG emissions than the baseline scenario?	DR	The project result in fewer emission reductions than the baseline scenario	OK	OK
B.6.7.2. Are the emissions reductions projected in line	DR	The emissions reductions are projected in line with the	OK	OK

Validation protocol. Puebla Landfill Gas to Energy Project

with the envisioned time schedule for the project' implementation and the indicated crediting period?		envisioned time schedule for the project' implementation and the indicated crediting period.		
B.7. Application of the monitoring methodology and description of the monitoring plan				
<i>B.7.1. Description of the monitoring plan</i>				
B.7.1.1 Is the monitoring plan documented according to the approved methodology and relevant tools and in a complete and transparent manner?	DR	The monitoring plan is documented according to the approved methodology and relevant tools, in a complete and transparent manner.	OK	OK
B.7.1.2. Does the monitoring methodology provide a consistent approach in the context of all parameters to be monitored and further information provided in the PDD?	DR	The monitoring methodology provides a consistent approach in the context of all parameters to be monitored and further information provided in the PDD.	OK	OK
B.7.1.3. Does the monitoring plan provide a clear description of the organization structure involved in monitoring activities and their responsibilities?	DR	The monitoring plan provides a clear description of the organization structure involved in monitoring activities and their responsibilities.	OK	OK
B.7.1.4. If applicable: Does annex 4 provide useful information enabling a better understanding of the envisioned monitoring provisions?	DR	Annex 4 does not provide further information.	OK	OK
B.7.1.5. Is the registration, monitoring, measurement and reporting procedure defined?	DR	The registration, monitoring, measurement and reporting procedures are defined.	OK	OK
<i>B.7.2 Compliance of the monitoring plan with the approved</i>				

Validation protocol. Puebla Landfill Gas to Energy Project

<i>methodology</i>				
B.7.2.1 Is the list of parameters considered to be complete with regard to the requirements of the applied methodology? Are all of them clearly described in the monitoring plan and in accordance with the methodology and tools?	DR	<p>CAR 5</p> <p>To include in the PDD the parameters to be monitored applicable to the proposed project activity and consistent with the project description in the PDD, which are required by the applicable methodology and associated tools.</p> <p>Moreover, to further explain the quality control and quality assurance to apply for the monitoring activities, including the calibration requirements of the detailed parameters in the monitoring plan.</p> <p>All parameters applicable to the proposed project activity have been considered in the final PDD. Moreover, further information has been included in the monitoring plan of the PDD for monitoring activities regarding the QA/QC.</p> <p>Then, CAR 5 is closed.</p>	CAR 5	OK
B.7.2.2. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the emission reductions within the project boundary during the crediting period?	DR	<p>To assess when CAR 5 is closed.</p> <p>The monitoring plan provides information for the collection and archiving of all relevant data necessary for estimation or measuring the emission reductions within the project boundary during the crediting period.</p>	CAR 5	OK
<p>B.7.2.3. For each parameter, is the:</p> <p>a. Title in line with methodology?</p> <p>b. Data unit correctly expressed?</p> <p>c. Parameter appropriately described?</p> <p>d. Source clearly referenced?</p>	DR	<p>To assess when CAR 5 is closed.</p> <p>For the each parameter in the monitoring plan, i.e, GWPch4, LFGtotal, LFGflare, LFGelectricity, wch4, T, P, ELLfg, Operation of the energy plant, PEec, ECpj, PEfc, FC, EFco2, NCV, density of fuel type, PEflare, fvi,h, FVRG,h, tO2,h, fvch4,FG,h, Tflare, and the flare efficiency, the titles are in line with methodology, data units are correctly expressed, the descriptions are appropriate, the sources are clearly referenced, the values are correct, they have been verified and correctly justified, and measurement methods described in compliance with the methodology/tools, correct</p>	CAR 5	OK

Validation protocol. Puebla Landfill Gas to Energy Project

e. Correct value provided for the purpose of PDD estimations?		references to standards if applicable, the accuracy defined if possible and the QA/QC further detailed and appropriate.		
f. Has this value been verified?				
g. Measurement methods correctly described and in line with the methodology/tools?				
h. Correct reference to standards (i.e. for calibration and maintenance)?				
i. Indication of accuracy provided?				
j. QA/QC procedures described?				
k. QA/QC procedures appropriate?				
<i>B.7.3 Implementation of the Monitoring Plan</i>				
B.7.3.1 Do the means of monitoring of each of the parameters included in the plan complies with the requirements of the methodology?	DR	To assess when CAR 5 is closed. The means of monitoring of each of the parameters included in the plan complies with the requirements of the methodology.	CAR 5	OK
B.7.3.2. Is the measurement equipment described and deemed appropriate?	DR	To assess when CAR 5 is closed. The measurement equipment are described and deemed appropriate.	CAR 5	OK
B.7.3.3. Are procedures identified for maintenance of monitoring equipment and installations? Are provisions regarding the calibration intervals included in the monitoring plan?	DR	To assess when CAR 5 is closed. The procedures are identified for maintenance of monitoring equipment and installations and provisions regarding the calibration requirements included in the monitoring plan.	CAR 5	OK

Validation protocol. Puebla Landfill Gas to Energy Project

B.7.3.4. Is the measurement accuracy addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements or lack of data?	DR	To assess when CAR 5 is closed. The calibration requirements are addressed and deemed appropriate if applicable. Procedures are in place on how to deal with erroneous measurements or lack of data.	CAR 5	OK
B.7.3.5. Is the monitoring Plan sufficient to ensure the verification of a proper implementation of the monitoring plan?	DR	To assess when CAR 5 is closed. The monitoring Plan is sufficient to ensure the verification of a proper implementation of the monitoring plan.	CAR 5	OK
B.8. Date of completion of the application of the baseline study and monitoring methodology and the name of the responsible person(s)/entity(ies)				
B.8.1. Is there any indication of a date when the baseline and monitoring was determined?	DR	The final PDD states the date 19/1/2012 in section B.8 of the PDD.	OK	OK
B.8.2. Is this consistent with the time line of the PDD history?	DR	This date is consistent with the timeline of the PDD history.	OK	OK
B.8.3. Is the information on the person(s)/entity(ies) responsible for the application of the baseline and monitoring methodology provided consistent with the actual situation?	DR I	The information on the person(s)/entity(ies) responsible for the application of the baseline and monitoring methodology provided is consistent with the actual situation.	OK	OK
B.8.4. Is information provided whether this person / entity is also considered a project participant? (<i>Guidelines for Completing the Project Design Document (CDM-PDD) and the</i>	DR	The entity is not a project participant as PDD states.	OK	OK

Validation protocol. Puebla Landfill Gas to Energy Project

Proposed New Baseline and Monitoring Methodologies (CDM-NM)				
C. DURATION OF THE PROJECT ACTIVITY / CREDITING PERIOD				
C.1. Duration of the project activity				
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	DR	To assess when CAR 2 is closed. The final starting date of the project and the operational lifetime of the project are clearly defined and reasonable.	CAR 2	OK
C.2. Choice of the crediting period and related information				
C.2.1. Is the assumed crediting period clearly defined and reasonable (renewable crediting period of max 7 years with potential for 2 renewals or fixed crediting period of max. 10 years)? And, is the starting date of the crediting period corrected considered?	DR	A fixed crediting period of ten years is chosen. The starting date of crediting period has been updated to 1/10/2012 to be in compliance with CDM requirements.	OK	OK
D. ENVIRONMENTAL IMPACTS				
D.1. Documentation on the analysis of the environmental impacts, including transboundary impacts				

Validation protocol. Puebla Landfill Gas to Energy Project

D.1.1. Has the analysis of the environmental impacts of the project activity been sufficiently described in the PDD?	DR	The analysis of the environmental impacts of the project activity have been sufficiently described in the PDD	OK	OK
D.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, has an EIA been approved?	DR	To assess when CL2 is closed The landfill is currently operating with an approved E.I.A and no additional permits are required.	CL 2	OK
D.1.3. Will the project create any adverse environmental effects? Has any environmental impact identified as significant?	DR	No significant negative environmental impacts have been considered. Main impacts due to the project will produce during the construction such as dust, noise and soil movements.	OK	OK
D.1.4. Are transboundary environmental impacts identified in the analysis?	DR	No transboundary environmental impacts are identified in the analysis as there are not transboundary impacts.	OK	OK
D.1.5. Does the project comply with any other environmental legislation in the host country?	DR	To assess when CL2 is closed. The project complies with any other environmental legislation in the host country.	CL2	OK
D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party.				
D.2.1. Have the identified environmental impacts been	DR	The identified environmental impacts been addressed in the PDD sufficiently.	OK	OK

Validation protocol. Puebla Landfill Gas to Energy Project

addressed in the PDD sufficiently?				
E. STAKEHOLDERS' COMMENTS				
E.1. Brief description how comments by local stakeholders have been invited and compiled				
E.1.1. Have relevant local stakeholders been consulted prior to the publication of the PDD? Is the exact date of the consultation process included in the PDD?	DR	CL 5 it was requested through CL 5 to provide evidence about the consultation process. As a result, minutes of the event performed in March 2008 was provided, which is before 30/12/2008 when occurred the publication of the PDD.	CL 5	OK
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	DR	Appropriate media were used to invite comments by local stakeholders	OK	OK
E.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?	DR	A stakeholder consultation process is not required, unless any interested person apply for this consultation process to the SEMARNAT, according to article 40 of the mentioned regulation. However, no persons applied for this process under SEMARNAT regulation.	OK	OK
E.1.4. Is the undertaken stakeholder process that was carried out described in a complete and transparent manner?	DR	The undertaken stakeholder process has been carried out and described in a complete and transparent manner.	OK	OK
E.2. Summary of the comments received				
E.2.1. Is a summary of the stakeholder comments received provided?	DR	A summary is detailed in section E.2 of the PDD	OK	OK

Validation protocol. Puebla Landfill Gas to Energy Project

E.3. Report on how due account was taken of any comments received				
E.3.1. Has due account been taken of any stakeholder comments received?	DR	How the comments were considered is detailed in section E.3 of the PDD	OK	OK

*MoV/Ref: Means of Validation and references of background documents.