VALIDATION REPORT

Quezon City Controlled Disposal Facility Biogas Emission Reduction Project in Philippines

REPORT NO. 2007-1142

REVISION NO. 02

VALIDATION REPORT

DET NORSKE VERITAS
DNV CERTIFICATION AS

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Approved by: Einar Telnes, Director	Organisational unit: Climate Change Services.
Client: Pangea Green Energy S.r.l.	Client ref.: Mr. Federico Micheli

Project Name: Quezon City Controlled Disposal Facility Biogas Emission Reduction Project
Country: Philippines
Methodology: ACM0001.
Version: 05.
GHG reducing Measure/Technology: LFG flaring and electricity generation
ER estimate: 1,163,394 tCO_2e
Size
☒ Large Scale
☐ Small Scale
Validation Phases:
☒ Desk Review
☒ Follow up interviews
☒ Resolution of outstanding issues
Validation Status
☒ Corrective Actions Requested
☒ Clarifications Requested
☒ Full Approval and submission for registration
☐ Rejected

In summary, it is DNV's opinion that the "Quezon City Controlled Disposal Facility Biogas Emission Reduction Project" in the Philippines, as described in the PDD of 31 July 2007 meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology ACM0001 (Version 5). Hence, DNV requests the registration of the project as a CDM project activity.

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Key words:
Validation.

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Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CH_4	Methane
CL	Clarification request
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
DNV	Det Norske Veritas
DNA	Designated National Authority
EPWMD	Environmental Protection and Waste Management Department
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
LFG	Landfill Gas
MERALCO	Manila Electric Company
MP	Monitoring Plan
MSW	Municipal Solid Waste
MVP	Monitoring and Verification Plan
N_2O	Nitrous oxide
NGO	Non-governmental Organisation
ODA	Official Development Assistance
PDD	Project Design Document
POG	Payatas Operations Group
QC	Quezon City
UNFCCC	United Nations Framework Convention on Climate Change

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1 EXECUTIVE SUMMARY – VALIDATION OPINION

Det Norske Veritas Certification AS (DNV) has performed a validation of the "Quezon City Controlled Disposal Facility Biogas Emission Reduction Project" in the Philippines. The validation was performed on the basis of UNFCCC criteria and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation and the subsequent follow-up interviews have provided DNV with sufficient evidence to determine the fulfillment of stated criteria.

The host country is the Philippines and the Annex I Party is Italy. Both Parties fulfill the participation criteria and have approved the project and authorized the project participants. The DNA of the Philippines has confirmed that the project assists in achieving sustainable development.

The project correctly applies ACM0001 (Version 5) "Consolidated methodology for landfill gas project activities". AMS I.D (Version 10) "Grid connected renewable electricity generation" has been used to arrive at the grid emission factor of Philippines.

In the proposed project activity, emission reductions are claimed from reduction of GHG emissions through systematic and efficient LFG recovery system and from electricity generation and supply to the grid and partial flaring, thus displacing fossil fuel for electricity generation in the Philippines electricity grid.

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 total emission reductions from the project are estimated to be on average 116 339 tCO_2e per year over the selected 10 year crediting period. The emission reduction forecast has been checked and is deemed likely that the stated amount is achieved given that the underlying assumptions do not change.

Adequate training and monitoring procedures have been implemented.

In summary, it is DNV's opinion that the "Quezon City Controlled Disposal Facility Biogas Emission Reduction Project" in the Philippines, as described in the PDD of 31 July 2007 meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology ACM0001 (Version 5). Hence, DNV requests the registration of the project as a CDM project activity.

VALIDATION REPORT

1.1 Introduction

Pangea Green Energy S.r.l. has commissioned Det Norske Veritas Certification AS (DNV) to perform a validation of the Quezon City Controlled Disposal Facility Biogas Emission Reduction Project in Philippines (hereafter called “the project”). This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, and the subsequent decisions by the CDM Executive Board.

1.2 Objective

The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, monitoring plan, and the project’s compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

1.3 Scope

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

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

2 METHODOLOGY

The validation consists of the following three phases:

I a desk review of the project design documents

II follow-up interviews with project stakeholders

III the resolution of outstanding issues and the issuance of the final validation report and opinion.

The following sections outline each step in more detail.

2.1 Desk Review of the Project Design Documentation

The following table outlines the documentation reviewed during the validation:

/1/ Pangea Green Energy Philippines, Incorporated, CDM-PDD of the "*Quezon City Controlled Disposal Facility Biogas Emission Reduction Project*" Version 11 of 30 November 2007, Version 10 of 31 July 2007, version 9 of 10 July 2007 and Version 1 of 9 March 2007.

/2/ Host Country (Philippines) Letter of Approval for the "*Quezon City Controlled Disposal Facility Biogas Emission Reduction Project*" dated 25 April 2007.

/3/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*. http://www.vvmanual.info

/4/ ACM0001 (Version 5) "Consolidated methodology for landfill gas project activities"

/5/ AMS I.D (Version 10) "Grid connected renewable electricity generation"

/6/ Annex-1 Country Italy's Letter of Approval Prot. No 4445/RAS/2007 dated 18 July 2007

/7/ Memorandum of Agreement between the Quezon City Government and Pangea Green Energy S.r.l. and Pangea Green Energy Philippines Inc., signed 14 February 2007

/8/ Quotations and Sales Contract between Pangea Green Energy Philippines Inc. and equipments suppliers

/9/ Invitation letters, minutes, attendance sheets and presentation materials of the stakeholders meeting held in Payatas on 23 February 2007

/10/ Notice to Proceed issued by Quezon City on 28 June 2007

/11/ Republic Act No 9003 Ecological Solid Waste Management Act of 2000, Republic of the Philippines and DENR Administrative Order No. 2001-34 Implementing Rules and Regulation of RA 9003

Main changes between the version published for the 30 days stakeholder commenting period and the final version submitted for registration:

- *Correction of the gas collection efficiency*
- *Details on adjustment factor*

- Details on manufacturer flare specifications

- Alternatives to the Project activity

- Monitoring plan

- Project Management & training responsibilities

-- Financial Analysis

- Starting date of the project activity

- Additional information as a result of requests for clarification from the Executive Board:
a) the operational lifetime of the project activity has been corrected from 30 years to 10 years as mentioned in the PDD;
b the IRR calculation has been corrected with and without CERs;
c) more information about the project activity has been added
d) more information about the baseline has been given

2.2 Follow-up Interviews with Project Stakeholders

DNV performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review.

	Date	Name	Organization	Topic
/12/	2007-05-22	Mr. Andrea Fontana	Pangea Green Energy S.r.l.	Baseline scenario
	2007-07-04	Mr. Ivano Conte		IRR analysis
	2007-07-11	Mr. Massimiliano Cussotto		Project's licences
				Project management and monitoring procedures
				Local stakeholder consultation

2.3 Resolution of Outstanding Issues

The objective of this phase of the validation is to resolve any outstanding issues which need to be clarified prior to DNV's positive conclusion on the project design. In order to ensure transparency a validation protocol is customised for the project. The protocol shows in transparent manner criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

The validation protocol consists of three tables. The different columns in these tables are described in the figure below. The completed validation protocol for the Quezon City

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Controlled Disposal Facility Biogas Emission Reduction Project is enclosed in Appendix A to this report.

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

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

A request for clarification (CL) may be used where additional information is needed to fully clarify an issue.

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Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities		
Requirement	***Reference***	***Conclusion***
The requirements the project must meet.	*Gives reference to the legislation or agreement where the requirement is found.*	*This is either acceptable based on evidence provided (**OK**), a **Corrective Action Request (CAR)** of risk or non-compliance with stated requirements or a request for **Clarification (CL)** where further clarifications are needed.*

Validation Protocol Table 2: Requirement checklist				
Checklist Question	***Reference***	***Means of verification (MoV)***	***Comment***	***Draft and/or Final Conclusion***
The various requirements in Table 2 are linked to checklist questions the project should meet. The checklist is organised in different sections, following the logic of the large-scale PDD template, version 03 - in effect as of: 28 July 2006. Each section is then further sub-divided.	*Gives reference to documents where the answer to the checklist question or item is found.*	*Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.*	*The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.*	*This is either acceptable based on evidence provided (**OK**), or a **corrective action request (CAR)** due to non-compliance with the checklist question (See below). A request for clarification (CL) is used when the validation team has identified a need for further clarification.*

Validation Protocol Table 3: Resolution of Corrective Action and Clarification Requests			
Draft report clarifications and corrective action requests	***Ref. to checklist question in table 2***	***Summary of project owner response***	***Validation conclusion***
If the conclusions from the draft Validation are either a CAR or a CL, these should be listed in this section.	*Reference to the checklist question number in Table 2 where the CAR or CL is explained.*	*The responses given by the project participants during the communications with the validation team should be summarised in this section.*	*This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".*

Figure 1 Validation protocol tables

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2.4 Internal Quality Control

The draft validation report including the initial validation findings underwent a technical review before being submitted to the project participants. The final validation report also underwent another technical review before requesting registration of the project activity. The technical review was performed by a technical reviewer qualified in accordance with DNV's qualification scheme for CDM validation and verification.

2.5 Validation Team

Role/Qualification	Last Name	First Name	Country
Team Leader	Galluccio	Giulia	Italy
CDM Validator	Chaudhary	Anu	India
Technical Reviewer	K.V.	Raman	India

The qualification of each individual validation team member is detailed in Appendix B to this report.

3 VALIDATION FINDINGS

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

The final validation findings relate to the project design as documented and described in the revised and resubmitted project design documentation.

3.1 Participation Requirements

The project participants are Quezon City Government and Pangea Green Energy Philippines, Incorporated on behalf of the host country Philippines and Pangea Green Energy S.r.l on behalf of the Annex I Party Italy. Both the Parties have ratified the Kyoto Protocol and fulfill the CDM requirements. A letter of approval from the DNA of Philippines confirming that the project assists in achieving the sustainable development targets in Philippines has been received. A copy of the Letter of Approval from the DNA of Italy issued on 18 July 2007 has been obtained.

The project activity does not involve any public funding.

3.2 Project Design

The proposed project activity involves the extraction, collection, processing and flaring of biogas (landfill gas) emissions from the Quezon City controlled disposal facility and use for electricity generation or flaring when electricity generation is not possible. The project thus avoids methane emissions to the atmosphere.

The CDM project activity will interest the 22-hectare disposal facility but for the forecasted LFG calculation production is only considered the waste filled in the two mounds after January 2001, when the disposal was re-opened after a trash slide. Since January 2001 the landfill has been filled up with new wastes, which have been disposed on both the existing mounds. The PDD show:

- in figure 1 the Payatas landfill plant with the the area interested by the 2000 trashslide and the location and the layout of the proposed LFG recovery and treatment plant;
- in figure 3 a schematic section of the Payatas dumpsite in relation to waste disposal before and after 2000 closure.

The technology employed by the project is a pioneering technology in the Philippines. The project activity involves the construction and installation of the following:

- biogas collection network, consisting of appropriate wells, pipes and gravel filter;
- biogas aspiration and conditioning system and dehumidification equipment;
- biogas flare;
- energy production plant, composed of electricity generating equipment;
- monitoring and control system

The technology constitutes current good practice and is not likely to be replaced during the crediting period. The project is expected to contribute towards sustainable development through improved local environment, promote a new technology and similar project activities in the Philippines and reduce health and safety hazards in the surrounding areas.

The starting date of the project is 23 July 2007 and the lifetime of the project is expected to be 10 years. The project applies for a fixed crediting period of 10 years starting 1 January 2008.

3.3 Baseline Determination

The proposed landfill gas capture and utilization project applies the approved consolidated methodology ACM0001 (Version 5) “Consolidated methodology for landfill gas project activities” and the project fulfils the methodology applicability criteria.

The baseline scenario chosen for the proposed project activity is continuation of the current practice at the Quezon City controlled disposal facility i.e., total atmospheric release of all the methane generated by the dumpsite.

After implementation of the proposed project activity a LFG (biogas) collection efficiency of about 54% and electricity generation capacity of 700 kW is expected to be achieved. It has been confirmed during the site interviews that there was no collection/flaring of LFG in the baseline and that regulations in the Philippines also do not call for the collection and flaring of LFG from the landfills; it refer to the Implementing Rules and Regulations (IRR) of Republic Act 9003 (also known as Philippine Ecological Solid Waste Management Act of 2000),where at Rule III is reported the definition of a controlled dump and at Rule XIII are reported the operations of controlled dumpsites (Section 2 - Minimum Requirements for Operation of Controlled Dumpsites)

Hence, an adjustment factor (AF) has not been taken into account for this project activity. This is deemed acceptable based on the current ongoing practice in the Philippines.

Two sources of project emissions have been identified:

- Emissions generated due to import of electricity from the grid during plant down time.
- Project emissions from flaring of the residual gas stream.

CO_2 emissions from the burning of LFG for electricity generation are considered carbon neutral and hence not considered as project emissions.

3.4 Additionality

The project's additionality has been demonstrated with the help of the latest tool for determination and assessment of additionality:

Step 1: It was assessed during the follow up interviews that Philippines has no legal requirement for landfill gas management, capture and flaring and that this situation is not likely to change in future.

The alternatives identified for the project activity are:

a) The baseline scenario wherein there is no capture of methane gas produced in the controlled dumpsite.

b) Second alternative is the implementation of the proposed project activity in the absence of CDM revenues.

c) Other possible scenarios i.e. the sale of raw gas directly to customers – this alternative has been ruled out since there is no local gas demand for on-site utilization.

Step 2: Investment analysis: Since the project activity generates revenue and none of the identified alternatives are feasible, a benchmark analysis has been applied to the project activity. The benchmark for projects in the Philippines is considered based on the yield granted by the Republic of Philippines 10 Years Treasury Bond, which is 7.10%. It has been demonstrated that the project IRR without considering the CDM revenues is -6.11%.

A sensitivity analysis has been carried out for the project with variation in the following parameters:

1. Total investment (I);
2. Operating & Maintenance Costs (O&M);
3. Electricity sales price (E).

The analysis has been performed testing sensitivity at values at a range of ±10%, at increments of 2.50%. The Project IRR values fluctuate between -8.60% and -3.86 %, thereby demonstrating that the project is not viable under normal investment conditions.

Step 3: The barriers to the project have been demonstrated through technology and prevailing practice barrier discussion:

a) Technology barrier: It has been argued that the lack of prior experience on this kind of project in the Philippines could translate into unforeseen problems with the technology. Hence, the estimations of LFG production based on this model may not be completely reliable.

b) Barrier due to prevailing practice: As this project is a pioneering commercial LFG collection operation in the Philippines, there is a general lack of personnel skilled in this kind of technology. New staff may require extensive training in the operation and maintenance of the equipment.

Step 4 – Common practice analysis – the proposed project activity is a pioneering commercial LFG collection operation in the Philippines. The proposed project is not taken up as a common practice in the region.

Provided the above barriers, it is deemed likely that the project would not represent a baseline scenario, and it can thus be deemed additional to what would otherwise occur.

3.5 Monitoring

The selected monitoring methodology is in line with the approved consolidated monitoring methodology ACM0001 (Version 5) - "Consolidated baseline methodology for landfill gas project activities". The monitoring plan is in line with the monitoring methodology and monitoring the following parameters:

- Landfill gas generated – measured.
- LFG flared – measured.
- Faction of methane in the landfill gas.
- Flare project emissions (PEflare) which requires the monitoring of -
  - Volumetric fraction of component *i* in the residual gas in the hour *h* where i = CH4, CO, CO2, O2, H2, N2
  - Volumetric flow rate of the residual gas in dry basis at normal (NTP) conditions2 in the hour
  - Volumetric fraction of O2 in the exhaust gas of the flare in the hour
  - Concentration of methane in the exhaust gas of the flare in dry basis at normal conditions in the hour
  - Temperature in the exhaust gas of the enclosed flare
- Temperature (T) and pressure (P) of the landfill gas.
- External energy (grid electricity) used for plant start-up and on-site generator maintenance – measured.
- LFG fed to the generator for the production of electricity for internal consumption

When the phase 2 of the project becomes operational, the following parameters will also be monitored:
- LFG fed to the power plant for exportation.
- Electricity exported to the grid.
- Operating hours of the power plant.

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

The grid emission factor (CEF) has been estimated ex-ante at the start of the crediting period and has been calculated as a combined margin based on the operating margin (OM) and build margin (BM) as per the approved methodology ACM0002 as recommended in methodology AMS I.D. Based on a 3-year vintage data from 2003-05, the value of OM is calculated as 0.595, the BM as 0.320 and the combined margin is 0.46.

Project emissions from flaring of the residual gas stream are calculated based on the flare efficiency and the mass flow rate of methane in the residual gas stream that is flared. The methodological "Tool to determine project emissions from flaring gases containing methane" has been applied.

An enclosed flare is used. According to the above mentioned Tool option (b) "Continuous monitoring of the methane destruction efficiency of the flare (flare efficiency) has been chosen by project participants.

The actual emission reductions would be calculated ex-post based on the actual amount of methane captured and flared.

Procedures for training of monitoring personnel and calibration of equipment have been duly identified.

3.6 Estimate of GHG Emissions

The emissions associated with fugitive landfill gas emissions have been taken into account. It has been estimated that 54% of the LFG is captured and destroyed in the project scenario as compared to the baseline where there was no collection and combustion of landfill gas.

Project emissions generated due to import of electricity from the grid during plant down time and the emissions from flaring of the residual gas stream have been taken into account.

The first order decay model has been used to estimate the amount of landfill gas destroyed. The value of the decay constant (k) has been estimated to be 0.08 and the Lo value has been estimated to be 134 m^3/ton and reasonable. Actual emission reductions will be monitored directly ex-post. This is considered conservative.

The project estimates to reduce 116 339 tCO_2e per year for the duration of the project activity. However, experiences with other landfills have shown that the methane generation and collection efficiency of the landfills projected by the first order decay model has an inherent uncertainty of almost 50% and hence the amount of CERs, which will be monitored ex-post, might vary from the projected amount.

3.7 Environmental Impacts

The project activity does not fall under the category of projects covered by the Philippine EIS System and are therefore not required to secure an Environmental Compliance Certificate (ECC).

Pangea submitted an application for Certificate of Non-Coverage on 15 February, 2007 to the Environmental Management Bureau (EMB) of the Philippines, the government office in-charge of implementing the Philippine EIS System and a copy of the application and the certificate have been provided to DNV.

The project is not expected to create any significant adverse environmental effects.

3.8 Comments by Local Stakeholders

A public consultation was organised by Pangea in cooperation with the Payatas Operations Group (POG). Invitation letter for the same were sent out to all relevant stakeholders such as the officials of POG, EPWMD, Quezon City, local community, and various organizations or groups in the vicinity of the project activity. The other organizations consulted were the Department of Energy, Department of Environment and Natural Resources and the Quezon City local government unit. DNV has verified the documentation of the local stakeholder consultation, including the invitation list, invitation letter, signed attendance forms and responses.

No negative comments were received from the stakeholders. There were some concerns and clarifications, which have been satisfactorily addressed by the project proponent.

3.9 Comments by Parties, Stakeholders and NGOs

The PDD of March 2007 was made publicly available on DNV's climate change website and Parties, stakeholders and NGOs were through the CDM website invited to provide comments during a 30 days period from 1 April 2007 to 30 April 2007. No comments were received.

APPENDIX A

CDM VALIDATION PROTOCOL

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

Requirement	Reference	Conclusion
About Parties		
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3.	Kyoto Protocol Art.12.2	OK
2. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	OK
3. The project shall have the written approval of voluntary participation from the designated national authority of each Party involved.	Kyoto Protocol Art. 12.5a, CDM Modalities and Procedures §40a	~~CAR 1~~
4. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof.	Kyoto Protocol Art. 12.2, CDM Modalities and Procedures §40a	~~CAR 1~~
5. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties.	Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2	OK
6. Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29	OK
7. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities §30/31a	OK
8. The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedures §31b	OK

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Requirement	Reference	Conclusion
9. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.	CDM Modalities and Procedures §31b	OK
About additionality		
10. Reduction in GHG emissions shall be additional to any that would occur in the absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.	Kyoto Protocol Art. 12.5c, CDM Modalities and Procedures §43	OK
About forecast emission reductions and environmental impacts		
11. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.	Kyoto Protocol Art. 12.5b	OK
For large-scale projects only		
12. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	CDM Modalities and Procedures §37c	OK
About stakeholder involvement		
13. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received.	CDM Modalities and Procedures §37b	OK
14. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to	CDM Modalities and Procedures §40	OK

Requirement	Reference	Conclusion
comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available.		
Other		
15. The baseline and monitoring methodology shall be previously approved by the CDM Executive Board.	CDM Modalities and Procedures §37e	OK
16. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	CDM Modalities and Procedures §45c,d	OK
17. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure.	CDM Modalities and Procedures §47	OK
18. The project design document shall be in conformance with the UNFCCC CDM-PDD format.	CDM Modalities and Procedures Appendix B, EB Decision	OK
19. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP.	CDM Modalities and Procedures §37f	OK

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Table 2 Requirements Checklist

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A. General Description of Project Activity *The project design is assessed.*					
A.1. Project Boundaries *Project Boundaries are the limits and borders defining the GHG emission reduction project.*					
A.1.1. Are the project's spatial boundaries (geographical) clearly defined?	/1/ /7/	DR	Yes, the project is located in the Quezon City, state of Manila, Philippines.		OK
A.1.2. Are the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	/1/ /7/	DR	The project boundary includes biogas collection at the old and new sites as well as activities including flaring of biogas, electricity generation and electricity transmission to MERALCO. The CDM project activity will interest only the wastes which were disposed after the reopening of the landfill as a "controlled dumpsite", in particular from January 2001.		OK
A.2. Participation Requirements *Referring to Part A, Annex 1 and 2 of the PDD as well as the CDM glossary with respect to the terms Party, Letter of Approval, Authorization and Project Participant.*					

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CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
A.2.1. Which Parties and project participants are participating in the project?	/1/	DR	The project participants are Quezon City Government and Pangea Green Energy Philippines, Incorporated on behalf of the host country Philippines and Pangea Green Energy S.r.l on behalf of the Annex I Party Italy.		OK
A.2.2. Have all involved Parties provided a valid and complete letter of approval and have all private/public project participants been authorized by an involved Party?	/1/ /2/ /6/	DR	A letter of Approval has been obtained from the DNA of Philippines, however the LoA from Italy is still awaited.	~~CAR 1~~	OK
A.2.3. Do all participating Parties fulfil the participation requirements as follows: - Ratification of the Kyoto Protocol - Voluntary participation - Designated a National Authority	/1/	DR	Yes, Philippines ratified the Kyoto Protocol on 20 November 2003. DNA of Philippines: Department of Environment and Natural Resources (DENR). Italy ratified the Kyoto Protocol on 1 June 2002. The DNA of Italy: Ministry for the Environment and Territory, Department for Global Environment, International and Regional Conventions.		OK
A.2.4. Potential public funding for the project from Parties	/1/	DR	There is no public funding of the project		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
in Annex I shall not be a diversion of official development assistance. A.2.5.			activity.		
A.3. Technology to be employed *Validation of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.*					
A.3.1. Does the project design engineering reflect current good practices?	/1/ /12/	DR I	The project design engineering consists of construction and installation of the following equipment: • LFG (biogas) collection network • LFG (biogas) aspiration and conditioning system • LFG (biogas) flare • electricity generating equipment and distribution lines for delivery of electricity to end users • monitoring and control system		OK
A.3.2. Does the project use state of the art technology or would the technology result in a significantly	/1/	DR	The project activity involves extraction, collection, processing and flaring of landfill		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
better performance than any commonly used technologies in the host country?	/12/	I	gas which involves a new technology not very prevalent currently in the Philippines.		
A.3.3. Does the project make provisions for meeting training and maintenance needs?	/1/ /12/	DR I	Yes, appropriate provisions for training and maintenance have been made.		OK
A.4. Contribution to Sustainable Development *The project's contribution to sustainable development is assessed.*					
A.4.1. Has the host country confirmed that the project assists it in achieving sustainable development?	/1/ /2/	DR	A letter of Approval from the DNA of Philippines has been provided confirming that the project assists in achieving the sustainable development targets in Philippines.		OK
A.4.2. Will the project create other environmental or social benefits than GHG emission reductions?	/1/ /12/	DR I	Yes, the project would be addressing the environmental, health and safety concerns of the local government and also help in creating a better environment for people residing in the immediate surroundings of the facility. The project will also promote technology related to LFG extraction, collection, flaring and for power generation.		OK
B. Project Baseline *The validation of the project baseline establishes whether the*					

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.					
B.1. Baseline Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					
B.1.1. Does the project apply an approved methodology and the correct version thereof?	/1/ /4/	DR	Yes, the project applies approved consolidated methodology ACM0001 (Version 05) "Consolidated baseline methodology for landfill gas project activities".		OK
B.1.2. Are the applicability criteria in the baseline methodology all fulfilled?	/1/ /4/ /5/	DR	Yes, the project fulfils the following applicability criteria of ACM0001 (Version 5) and AMS-I.D (Version 10): C. The captured gas is flared D. The gas is used to produce energy and emission reductions are claimed for displacing energy generation from other sources based on the small-scale methodology AMS-I.D since the amount of electricity generated is less than 15 MW threshold.		OK
B.2. Baseline Scenario Determination *The choice of the baseline scenario will be validated with*					

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.					
B.2.1. What is the baseline scenario?	/1/ /11/	DR	The baseline scenario is the total atmospheric release of the landfill gas.		OK
B.2.2. What other alternative scenarios have been considered and why is the selected scenario the most likely one?	/1/	DR	The following alternatives to the project activity have been identified: • Baseline scenario wherein there is no capture of methane gas produced from the controlled dumpsite. • Implementation of the proposed project activity in the absence of CER revenues. • Other possible alternatives also need to be discussed such as : • Sale of raw gas directly to the customers and • Only capture and flaring of the landfill gas with no electricity generation.	~~CL 1~~	OK
B.2.3. Has the baseline scenario been determined according to the methodology?	/1/	DR	Yes		OK
B.2.4. Has the baseline scenario been determined using conservative assumptions where possible?	/1/	DR	Yes		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.2.5. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/ /11/	DR	Yes, there are no current laws and regulations for managing and controlling methane gas produced in controlled dumpsites. Due to the regulations reported in the Implementing Rules and Regulations (IRR-Act n. 9003), the operation of a controlled dumpsite doesn't require the installation of a biogas collection network.		OK
B.2.6. Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?	/1/ /11/ /12/	DR I	The baseline data and the underlying baseline calculations and assumptions are provided. However, clarification is sought for the following: • It needs to be clarified whether LFG was being captured in the baseline for safety or other reasons? If yes, the baseline collection efficiency needs to be specified. • In the absence of any regulatory requirements for LFG in Philippines, what is the Adjustment Factor used for a conservative estimate of baseline	~~CL 2~~ ~~CAR 3~~	

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			emissions (as required by the methodology)?		
B.2.7. Have the major risks to the baseline been identified?	/1/	DR	No risks to the baseline have been identified.		OK
B.3. Additionality Determination *The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.*					
B.3.1. Is the project additionality assessed according to the methodology?	/1/ /4/ /5/ /8/ /12/	DR I	Yes, the project's additionality is assessed using the "Tool for the demonstration and assessment of additionality": Step 1: Alternatives to the project activity – The following alternatives to the project activity have been identified: • Baseline scenario wherein there is no capture of methane gas produced from the controlled dumpsite. • Implementation of the proposed project activity in the absence of CER revenues. Other possible alternatives also need to be discussed such as : • Sale of raw gas directly to the customers and	~~CL 1~~	OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			• Only capture and flaring of the landfill gas with no electricity generation. Step 2: Investment Analysis – Benchmark analysis is applied to demonstrate that the project does not have a good rate of return from the investor's perspective. The project IRR is compared to a benchmark value of 7.10%. The revised IRR calculations in the form of excel worksheets also need to be provided. Step 3: Barrier analysis – Technology barriers – Due to lack of prior experience for this kind of project activities in the Philippines, some unforeseen problems pertaining to technology implementation could arise. Barrier due to prevailing practice - The project is one of the first few commercial LFG collection projects in the Philippines. There is a general lack of awareness and trained personnel in this kind of technology. Step 4 : Common practice analysis No such similar project activities have yet been implemented in the Philippines.	~~CL 3~~	

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.3.2. Are all assumptions stated in a transparent and conservative manner?	/1/ /12/	DR I	Refer to CL.	~~CL 3~~	OK
B.3.3. Is sufficient evidence provided to support the relevance of the arguments made?	/1/ /8/ /12/	DR I	Refer to CL.	~~CL 3~~	OK
B.3.4. If the starting date of the project activity is before the date of validation, has sufficient evidence been provided that the incentive from the CDM was seriously considered in the decision to proceed with the project activity?	/1/ /12/	DR I	The starting date of the project activity is after the date of validation.	~~CAR 2~~	OK
B.4. Calculation of GHG Emission Reductions – Project emissions *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.*					
B.4.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /4/ /5/	DR	Two sources of project emissions have been identified: • Emissions generated due to import of electricity from the grid during plant down time • Project emissions from flaring of the		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			residual gas stream		
B.4.2. Have conservative assumptions been used when calculating the project emissions?	/1/	DR	Yes		OK
B.4.3. Are uncertainties in the project emission estimates properly addressed?	/1/	DR	Yes		OK
B.5. Calculation of GHG Emission Reductions – Baseline emissions *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.*					
B.5.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /4/ /5/ /11/	DR	The project emission reduction calculation worksheets have been provided. • However, it needs to be clarified whether LFG was being captured in the baseline for safety or other reasons? If yes, the baseline collection efficiency needs to be specified. • In the absence of any regulatory requirements for LFG in Philippines, what is the Adjustment Factor used for a conservative estimate of baseline emissions (as required by the	~~CL 2~~	

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			methodology)?		
B.5.2. Have conservative assumptions been used when calculating the baseline emissions?	/1/	DR	As above	~~CL 2~~	OK
B.5.3. Are uncertainties in the baseline emission estimates properly addressed?	/1/	DR	No such uncertainties have been identified.		OK
B.6. Calculation of GHG Emission Reductions – Leakage *It is assessed whether leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified.*					
B.6.1. Are the leakage calculations documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	No sources of leakage have been identified for the project activity.		OK
B.7. Emission Reductions *The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.*					
B.7.1. Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.	/1/	DR	Yes. The project is expected to generate total emission reductions of 1,163,394 tCO2e over the 10 years crediting period.		OK
B.8. Monitoring Methodology *It is assessed whether the project applies an appropriate baseline methodology.*					

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B.8.1. Is the monitoring plan documented according to the approved methodology and in a complete and transparent manner?	/1/	DR	Yes, the monitoring plan is in line with the approved methodology ACM0001 (Version 05) "Consolidated monitoring methodology for landfill gas project activities" and AMS I.D. (Version 10) "Grid connected renewable electricity generation".		OK
B.8.2. Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, for this project activity, whichever occurs later?	/1/	DR	Yes the archived data will be kept for at least 2 years after the end of the crediting period.		OK
B.9. Monitoring of Project Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
B.9.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/	DR	Yes, Two sources of project emissions have been identified: • Emissions generated due to import of electricity from the grid during plant down time. • Project emissions from flaring of the residual gas stream. Appropriate monitoring plan has been		OK

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			designed for the monitoring of all parameters required for estimating the project emissions, such as: - the amount of landfill gas generated - the amount of gas fed to the flare - the fraction of methane in the landfill gas - the flare project emissions (PEflare), - temperature (T) and pressure (P) of the landfill, - external energy (electricity) is required only for plant start-up and on-site generator maintenance: that amount of power supply is taken into account.		
B.9.2. Are the choices of project GHG indicators reasonable and conservative?	/1/	DR	Yes		OK
B.9.3. Is the measurement method clearly stated for each GHG value to be monitored and deemed appropriate?	/1/	DR	Yes.		OK
B.9.4. Is the measurement equipment described and deemed appropriate?	/1/	DR	Yes.		OK
B.9.5. Is the measurement accuracy addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/1/	DR	Yes, procedures are in place to ensure that accurate measurements are carried out.		OK
B.9.6. Is the measurement interval identified and deemed appropriate?	/1/	DR	Yes, the monitoring frequency is clearly		OK

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			indicated.		
B.9.7. Is the registration, monitoring, measurement and reporting procedure defined?	/1/	DR	Yes		OK
B.9.8. Are procedures identified for maintenance of monitoring equipment and installations? Are the calibration intervals being observed?	/1/	DR	Yes, maintenance and calibration procedures are in place.		OK
B.9.9. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/	DR	Yes the procedures are in place.		OK
B.10. Monitoring of Baseline Emissions *It is established whether the monitoring plan provides for reliable and complete baseline emission data over time.*					
B.10.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period?	/1/	DR	Yes, all parameters required for the estimation of baseline emissions will be monitored, such as: - the amount of landfill gas generated - no relevant regulations for LFG project activities are foreseeable - the quantity of methane fed to the generator for the production of electricity for internal consumption. When PHASE 2 is operational, the following		OK

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			will be monitored: - the quantity of methane fed to the energy plant for exportation - the quantity of electricity exported (ELEX,LFG); - the operating hours of the energy plant. Also any future relevant regulations for LFG project activities need to be monitored and taken care of.		
B.10.2. Are the choices of baseline GHG indicators reasonable and conservative?	/1/	DR	Yes		OK
B.10.3. Is the measurement method clearly stated for each baseline indicator to be monitored and also deemed appropriate?	/1/	DR	Yes		OK
B.10.4. Is the measurement equipment described and deemed appropriate?	/1/	DR	Yes		OK
B.10.5. Is the measurement accuracy addressed and deemed appropriate? Are procedures in place on how to deal with erroneous measurements?	/1/	DR	Yes		OK
B.10.6. Is the measurement interval for baseline data identified and deemed appropriate?	/1/	DR	Yes, the monitoring frequency is clearly indicated.		OK
B.10.7. Is the registration, monitoring, measurement and reporting procedure defined?	/1/	DR	Yes		OK
B.10.8. Are procedures identified for maintenance of	/1/	DR	Yes, maintenance and calibration procedures		OK

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
monitoring equipment and installations? Are the calibration intervals being observed?			are in place.		
B.10.9. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/	DR	Yes		OK
B.11. Monitoring of Leakage *It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.*					
B.11.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR	No sources of leakage have been identified.		OK
B.12. Monitoring of Sustainable Development Indicators/ Environmental Impacts *It is assessed whether choices of indicators are reasonable and complete to monitor sustainable performance over time.*					
B.12.1. Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/1/ /10/ /11/	DR	There are no such requirements from the host legislation.	~~CL 7~~	OK
B.12.2. Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic	/1/ /10/	DR	As above		

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
impacts?					
B.12.3. Are the sustainable development indicators in line with stated national priorities in the Host Country?	/1/ /10/	DR	As above		
B.13. Project Management Planning *It is checked that project implementation is properly prepared for and that critical arrangements are addressed.*					
B.13.1. Is the authority and responsibility of overall project management clearly described?	/1 /12//	DR I	The authority and responsibility of project management is not clearly described in the PDD.	~~CL 4~~	
B.13.2. Are procedures identified for training of monitoring personnel?	/1 /12/	DR I	Yes, appropriate procedures have been identified for training of monitoring personnel.		OK
B.13.3. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR	No such emergencies are foreseen.		OK
B.13.4. Are procedures identified for review of reported results/data?	/1/	DR	No such procedures have been identified.	~~CL 4~~	
B.13.5. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting?	/1/	DR	No such procedures have been identified.	~~CL 4~~	

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
C. Duration of the Project/ Crediting Period *It is assessed whether the temporary boundaries of the project are clearly defined.*					
C.1.1. Are the project's starting date and operational lifetime clearly defined and evidenced?	/1 /8/ /12/	DR I	Yes, the project is expected to start on 23 July 2007.	~~CAR 2~~	OK
C.1.2. Is the start of the crediting period clearly defined and reasonable?	/1 /12/	DR I	The project applies for a fixed crediting period of 10 years starting 1 January 2008. This is deemed reasonable. The date of the start of crediting period cannot be the same as the project starting date. This needs to be revised.	~~CAR 2~~	OK
D. Environmental Impacts *Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.*					
D.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/ /10/	DR	No significant negative environmental impacts are expected to occur due to the proposed project activity.		OK
D.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/	DR	The project activity does not fall under the category of projects covered by the Philippine EIS System and are therefore not	~~CL 5~~	OK

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			required to secure an Environmental Compliance Certificate (ECC). Pangea submitted an application for Certificate of Non-Coverage on 15 February, 2007 to the Environmental Management Bureau (EMB) of the Philippines, the government office in-charge of implementing the Philippine EIS System. A copy of the application and the certificate needs to be provided to DNV.		
D.1.3. Will the project create any adverse environmental effects?	/1/	DR	The project is not expected to create any significant adverse environmental effects.		OK
D.1.4. Are transboundary environmental impacts considered in the analysis?	/1/	DR	No		OK
D.1.5. Have identified environmental impacts been addressed in the project design?	/1/	DR	No negative environmental impacts have been identified.		OK
D.1.6. Does the project comply with environmental legislation in the host country?	/1/ /10/ /11/ /12/	DR I	Yes	~~CL 7~~	OK
E. Stakeholder Comments					

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
The validator should ensure that stakeholder comments have been invited with appropriate media and that due account has been taken of any comments received.					
E.1.1. Have relevant stakeholders been consulted?	/1/ /9/ /12/	DR I	A public consultation was organised by Pangea in cooperation with the Payatas Operations Group (POG). Invitation letter for the same were sent out to all relevant stakeholders such as the officials of POG, EPWMD, Quezon City, local community, and various organizations or groups in the vicinity of the project activity. The other organizations consulted were the Department of Energy, Department of Environment and Natural Resources and the Quezon City local government unit.		OK
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1/ /9/ /12/	DR I	Yes		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?	/1/ /9/ /12/	DR I	This needs to be confirmed through interviews with the DNA of Philippines.	I	OK

VALIDATION REPORT

CHECKLIST QUESTION * MoV = Means of Verification, DR= Document Review, I= Interview	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E.1.4. Is a summary of the stakeholder comments received provided?	/1/ /9/ /12/	DR I	A summary of the comments received needs to be provided to DNV. The PDD indicates that no negative comments were received concerning the project activity, however, it is also indicated that appropriate mitigation measures have been proposed/taken by Pangea. The two statements are contradictory and need to be clarified along with more details regarding the stakeholder consultation conducted and the response received.	~~CL 6~~	OK
E.1.5. Has due account been taken of any stakeholder comments received?	/1/ /9/ /12/	DR I	As above	~~CL 6~~	OK

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
~~**CAR 1**~~ A copy of the Letter of Approval from the DNA of Italy needs to be provided.	Table 1 A.2.2	The formal LoA from the Italian DNA has been obtained	OK. Italian DNA issued the LoA on 18 July 2007. The CAR has been closed satisfactorily.
~~**CAR 2**~~ The start date of the crediting period cannot be the same as the start of the project activity. This needs to be revised.	C.1.1 C.1.2	The start date of project activity has been modified at 23/07/2007	The PDD has been corrected accordingly and the corrective action request has now been closed. OK
~~**CAR 3**~~ There is a discrepancy in the collection efficiency provided in Table 4 and Section B.6.3 of the PDD. This needs to be corrected.	B.2.6	PDD Version 5 contains a misprint at page 22 (the value of 40% must be corrected in 54%): so Table 4 maintains the same correct values (never changed in Version 5 and Version 7), while in Version 7 the collection efficiency has been corrected from 40% to 54%.	The PDD has been corrected and the CAR has been closed satisfactorily. OK
~~CL 1~~ Alternatives to the project activity – The following alternatives to the project activity have been identified: 1) Baseline scenario wherein there is no capture of methane gas produced from	B.2.2 B.3.1	The PDD has been updated accordingly and sent to DNV.	The required changes have been made in the PDD and the clarification request is now closed. OK

VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
the controlled dumpsite. 2) Implementation of the proposed project activity in the absence of CER revenues. Other possible alternatives also need to be discussed such as : 3) Sale of raw gas directly to the customers and 4) Only capture and flaring of the landfill gas with no electricity generation.			
~~CL 2~~ The project emission reduction calculation worksheets have been provided. • However, it needs to be clarified whether LFG was being captured in the baseline for safety or other reasons? If yes, the baseline collection efficiency needs to be specified. • In the absence of any regulatory requirements for LFG in Philippines, what is the Adjustment Factor used for a conservative estimate of baseline emissions (as required by the	B.2.6 B.5.1 B.5.2	The explanation has been provided in the PDD.	It has been confirmed that no LFG was being captured in the baseline, therefore AF is equal to 0. The clarification request has now been closed. OK

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
methodology)?In the absence of any regulatory requirements for LFG in Philippines, what is the Adjustment Factor used for a conservative estimate of baseline emissions (as required by the methodology)?			
~~CL 3~~ Revised IRR calculations in the form of excel work sheets need to be provided.	B.3.1 B.3.2 B.3.3	The revised benchmark analysis in the PDD refers now only to an objective and certain value as the benchmark: the Philippines 10 Years Treasury Bond has been used. Calculations have been updated accordingly, together with the update on investment cost according to the latest "estimates" from equipments suppliers.	The revised excel work sheets on IRR analysis, sensitivity analysis and evidences on revised investment cost have been provided. The clarification request has been closed. OK
~~CL 4~~ The authority and responsibility of project management is not clearly described in the PDD. Also procedures need to be identified for review of reported results and corrective actions.	B.13.1 B.13.4 B.13.5	Procedures will be prepared prior the implementation of the project. Roles and responsibilities will be further addressed within the PDD.	This has been addressed in the PDD and the clarification request has now been closed. OK
~~CL 5~~ Pangea submitted an application for	D.1.2	The application for the Certificate of Non Coverage contains an	The environment management plan Description has been provided and the

VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
Certificate of Non-Coverage on 15 February, 2007 to the Environmental Management Bureau (EMB) of the Philippines, the government office in-charge of implementing the Philippine EIS System. A copy of the application and the certificate needs to be provided to DNV.		environmental management plan description. The environmental management plan description is a part of the Project Description, a document required for the issue of the Certificate of Non Coverage. An electronic copy of the Project Description has been provided to DNV.	clarification request has now been closed. OK
~~CL 6~~ A summary of the comments received needs to be provided to DNV. The PDD indicates that no negative comments were received concerning the project activity, however, it is also indicated that appropriate mitigation measures have been proposed/taken by Pangea. The two statements are contradictory and need to be clarified along with more details regarding the stakeholder consultation conducted and the response received.	E.1.5 E.1.4	Minutes and other evidences on the stakeholder consultation process will be sent to DNV in electronic format.	The required documents and details have been provided and the clarification request has been closed. OK
~~CL 7~~ Has the site got a valid land-use, construction	B.12.1	For the local permits: 1) Electrical permit --> temporary	The relevant licenses and permits have been verified and the clarification

VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 2	Summary of project owner response	Validation team conclusion
and operation permit? A copy of the licences and permits needs to be provided.		(for electricals during construction) - issued on 06 June 2007 2) Electrical permit --> Permanent (for electricals of plant & facilities) - issued on 05 June 2007 3) Mechanical permit - issued on 08 June 2007 4) Notice to Proceed - issued on 25 June 2007 5) Fire Permit - QC Fire Department required us to secure this before commissioning (normally this is secured together with the building permit but since we were not required to get a building permit this can be secured later); preparation of required documents for this is ongoing 6) Permit to Operate - also required before commissioning; the QC Engineering Department will inspect our facilities when completed; this should be secure before commissioning.	request has now been closed. OK

APPENDIX B

CERTIFICATES OF COMPETENCE

CERTIFICATE OF COMPETENCE

Einar Telnes

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

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

Høvik, 6 November 2006

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director

CERTIFICATE OF COMPETENCE

Giulia Galluccio

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

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

Høvik, 15. December 2006

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director

CERTIFICATE OF COMPETENCE

Anu Chaudhary

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

GHG Auditor:	Yes		
CDM Validator:	Yes	***JI Validator:***	Yes
CDM Verifier:	--	***JI Verifier:***	--
Industry Sector Expert for Sectoral Scope(s):	--		

Høvik, 22 December 2006

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Director, International Climate Change Services

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CERTIFICATE OF COMPETENCE

Raman Venkata Kakaraparthi

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

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

Høvik, 22 December 2006

Einar Telnes
Director, International Climate Change Services

Michael Lehmann
Technical Director