

Validation Report

of "Luohe MSW Landfill Site LFG Recovery to Power Project " in "China"

GLC Report No: 031.001, Rev. 08

Validation Report

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Organisational Unit Germanischer Lloyd Certification GmbH (GLC), Greenhouse Gas Services		
Client UPM Umwelt-Projekt-Management GmbH	Client reference person Dilger Martin	
Summary: Project Name: " Luohe MSW Landfill Site LFG Recovery to Power Project " Project Country: "China" Sectoral Scope, Technical Area CDM Sectoral Scope 1 — Energy industries(renewable-/non-renewable sources) CDM Sectoral Scope 13-Waste handling and disposal Technical Area:1.1, 13.1 Methodology: AMS-III.G, AMS-I.D. Version: 06,16 Name: "AMS-III.G. Landfill methane recovery" "AMS-I.D. Grid connected renewable electricity generation" Project Size: <input type="checkbox"/> Large Scale <input checked="" type="checkbox"/> Small Scale GHG Project: The project activity intends to reduce GHG emissions through displacing equivalent electricity generated by fossil fuel based power plants of Central China Power Grid (CCPG). ER Estimation: 415,582 t CO _{2eq} total 41,558 t CO _{2eq} per year Crediting Period: <input checked="" type="checkbox"/> Fixed (10 years) <input type="checkbox"/> Renewable (7years) <input checked="" type="checkbox"/> Positive Validation opinion: <input type="checkbox"/> Negative		
Project assessed by: Ruifeng Li Jian Shi Nuno Barbosa	Assessment reviewed by: Yanwei Chen Jose-Emilio Moreno Markus Weber	Work approved by: Markus Weber
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History of report revisions:

Rev.	Date	Person (short sign or name)	Function	Action
01	2011-03-28	Ruifeng, Li Jian, Shi	Assessment team leader Auditor	Reporting Reporting
02	2011-04-24	Yanwei Chen	Technical Reviewer	Review with corrections and comments
03	2011-08-05	Ruifeng, Li Jian, Shi	Assessment team leader Auditor	Review of reporting Revision of Report
04	2011-08-18	Yanwei Chen	Technical Reviewer	Second round Review with corrections and comments
05	2011-09-12	Nuno Barbosa	Expert	Expert input
06	2011-09-15	Jose-Emilio, Moreno	Technical Expert	Technical expert review
07	2011-09-16	Ruifeng, Li Jian, Shi	Assessment Team Leader Auditor	Review of reporting Revision of Report
08	2011-09-19	Markus Weber	Final Reviewer and Approver	Final Review and Approval

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Abbreviations

CAR	Corrective Action Request
CCPG	Central China Power Grid
CDM	Clean Development Mechanism
CDM-EB	CDM Executive Board (the board)
CER	Certified Emission Reduction
CH ₄	Methane
CL	Clarification request
CMP	Meeting of the Parties to the Kyoto Protocol
CO ₂	Carbon dioxide
CO ₂ eq	Carbon dioxide equivalent
COP/MOP	The Conference of the Parties to the United Nations Framework Convention on Climate Change serving as the Meeting of the Parties to the Kyoto Protocol
DNA	Designated National Authority
DOE	Designated Operation Entity
EIA	Environmental Impact Assessment
FAR	Forward Action Request
GSP	Global Stakeholder Publication
GHG	Greenhouse gas(es)
GLC	Germanischer Lloyd Certification GmbH
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
ISO	International Standard Organisation
LFG	Landfill Gas
LoA	Letter of Approval
NGO	Non-governmental Organisation
ODA	Official development assistance
O&M	Operation and maintenance
PDD	Project Design Document
PP	Project Participant (s)
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual

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1 INTRODUCTION

The objective of the validation project is to provide an independent assessment by a third party of the proposed project activity, with regards to relevant UNFCCC and Host Country criteria.

The proposed project, "Luohe MSW Landfill Site LFG Recovery to Power Project", is a LFG capture and utilization project which produces and delivers electricity to Central China Power Grid. The estimated average annual GHG emission reduction in the crediting period is 41,558tCO_{2e}.

UPM Umwelt-Projekt-Management GmbH has commissioned Germanischer Lloyd Certification GmbH (GLC) to perform the validation of the "Luohe MSW Landfill Site LFG Recovery to Power Project" in "China" (hereafter called "the project"). This validation report summarizes 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 made by COP/MOP and the CDM Executive Board.

1.1 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).

UNFCCC criteria refer to the Kyoto Protocol criteria, the CDM rules and modalities as agreed in the Bonn Agreement and the Marrakech Accords, and subsequent decisions made by COP/MOP & CDM Executive Board.

1.2 Scope and Criteria

The validation scope is defined as an independent and objective review of Project Design Document (PDD) and supporting documentation. The PDD and supporting documentation are 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 AMS-III.G.- "Landfill methane recovery" version 06 ^{/20/} and AMS-I.D.- "Grid connected renewable electricity generation" version 16 ^{/1/}. The validation was based on the recommendations and guidance of the Validation and Verification Manual ^{/2/}.

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

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1.3 Project Description

The " Luohe MSW Landfill Site LFG Recovery to Power Project " is a new small-scale LFG capture and utilization project located in Luohe City, Henan Province, China ^{/3/}. LFG is collected for electricity generation. Electricity generated by the project will be delivered to Central China Power Grid. Geographic coordinates of the engine house of the power plant is longitude 113°59'59" E (113.9997 E) and latitude 33°30'20" N (33.5056 N).

The project reduces GHG emission through destruction of LFG which would otherwise be released to atmosphere, and through utilizing LFG to generate electricity and displace electricity from fossil fuel fired power plants connected to CCPG, which consists of Henan Province, Hubei Province, Hunan Province, Jiangxi Province, Sichuan Province as well as Chongqing Municipality ^{/4/}. The largest installed capacity of this project is 2.0MW (0.5MW×4) ^{/3/} ^{/5/} and the estimated average annual GHG emission reduction in the crediting period is 41,558 tCO₂e ^{/6/}. The project start date is 03 Aug. 2009 ^{/21/}, the operational lifetime is 15 years and the crediting period is 10 years, starting from 01 December 2011 or the actual registration date which is later.

The technologies adopted in the proposed project include a gas collection system, a gas pre-treatment system, gas engines and a transmitting system.

The gas collection system consists of gas collecting wells, gas collecting sub-hoses and a main pipe. The numbers of gas wells will be increased as waste accumulating in the landfill area. All sub-hoses will be connected to the main pipe so that the recovered LFG from gas wells could be collected together for utilization. The operation pressure of the gas collection system is provided by draught fans.

Prior to electricity generation, LFG will be pre-treated to remove its impurities, moistures etc, to prevent corrosion in the engines. The gas pre-treatment is composed of leachate condensation separation; filtration, dewatering, drying, pressurization and removing solid impurities.

The proposed project activity is planned to employ 4 sets of gas engines with capacities of 500kW each when the LFG generation hits the peak at the landfill site. The generated electricity will be exported to CCPG through the transmitting system.

The technical key data ^{/5/} is provided in Tables 1-1:

Table 1-1: Technical Data of the gas engine

Parameter	Unit	Value
Model:	-	500GF-N1 (500GF-NK)
Quantity:	-	4
Rated Capacity:	kW	500
Rated Voltage:	V	400
Lifetime:	y	15
Manufacture:	-	Jinan Diesel Engine Co., Ltd.
Rated Rotation Speed	r/min	1000

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2 VALIDATION TEAM

A competent team with relevant knowledge and experience in the specific scopes and sectors was by GLC appointed. The appointment of the team takes into account the required scope, technical area and project activity knowledge requirements for validating the project design and the relevant CERs achieved by the project activity.

Table 2-1: Validation team members, qualification and knowledge

	Name	Function ¹⁾	Sectoral scope specific knowledge	Technical area specific knowledge	Local knowledge	Type of involvement						
						Desk review	On-site visit / interviews	Reporting	Supervision of work	Technical review	Expert input	Approval
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Ruifeng Li	ATL			X	X	X	X	X			
<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Jian, Shi	TA			X			X				
<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Yanwei, Chen	TR			X					X		
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Nuno Barbosa	E	X	X							X	
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Jose-Emilio, Moreno	TR+ E	X	X						X		
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Markus Weber	TR + FA								X		X

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1) ATL: Assessment Team Leader; A: Auditor; TA: Trainee auditor, E: Expert; TR: Reviewer; FA: Final Approver.

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3 METHODOLOGY

The validation consists of the following three phases:

- I desk review of the project design documentation and supporting documents
- II on-site assessment and follow-up interviews with project stakeholders
- III resolution of outstanding issues and the issuance of the final validation report and opinion

This final validation report summarizes the findings after all phases of the validation. The following sections outline each step in a more detailed way.

3.1 Desk Review of the Project Design Documentation and Supporting Documents

The initial version of the PDD as well as supporting documents is initially assessed in the context of a desk-review. A complete list of documentation reviewed during the validation is presented in Section 7.

3.2 On-Site Assessment and Follow-Up Interviews with Project Stakeholders

From 24 January 2010 to 27 January 2010, Mr. Ruifeng Li from GLC's validation team conducted out on-site visits to the following site(s):

- The proposed project site;
- office of Shanghai BCCY New Power Industry Co., Ltd

In the context of such on-site visits, GLC performed visual inspection to the project site, assessment of project related documents provided by the project participants. The members of the validation team also conducted interviews with representatives of project participant and project stakeholders in order to confirm selected information and to resolve issues earlier identified during the desk review of documents. The main topics of the interviews and interviewed persons are summarized in the Table 3-1.

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Table 3-1: Interviewed persons and interview topics

Name	Organization/Position	Interview Topics
Na Li	Shanghai BCCY New Power Industry Co., Ltd/CDM Manager	<ul style="list-style-type: none">- Project design and adopted technology- Demonstration of additionality (including prior CDM consideration)- GHG emission reduction calculations- Application of the monitoring methodology as well as expected design and application of the monitoring plan- Assessment of environmental impacts, environmental licensing and legal compliance- Stakeholder consultation process- Project overview, and detailed explanation about the project's relevant technical aspects- Project implementation schedule
Ying Shen	Oasis/CDM project manager	
Guomin Chen Zide Chen	villager villager	

3.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation was to resolve any outstanding issues which needed to be clarified prior to GLC's positive conclusion on the project design as described in the Project Design Document (PDD) and supporting documentation. In order to ensure transparency, a validation questionnaire was customised for the project, according to the latest Validation and Verification Manual (VVM) ^[2]. This questionnaire shows in transparent manner VVM requirements, source, means and findings of validation as well as the results from validating the identified criteria. The validation questionnaire serves the following purposes:

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

The validation questionnaire consists of one table with sub-sections. These sections are related to the different topics which have to be validated and checked with respect to the VVM requirements. The completed validation questionnaire for the " Luohe MSW Landfill Site LFG Recovery to Power Project " is enclosed in Annex A to this report. The different columns of this questionnaire are explained in Table 3-2.

Findings established during the validation can either be seen as a non-fulfilment of criteria of the applicable CDM baseline and monitoring methodology, and/or applicable criteria of the CDM or where a risk to the fulfilment of project objectives is identified.

Corrective action requests (CAR) are issued, where:

- i) the project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions; or
- ii) applicable baseline and monitoring methodology, and/or applicable criteria of the CDM have not been met; or
- iii) there is a risk that emission reductions cannot be monitored or calculated or that the project would not be accepted as CDM project activity

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A request for clarification (CL) may be used provided information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met or where additional information is needed to fully clarify a particular issue.

The validation questionnaire consists of individual frames for each Corrective action requests (CAR) and request for clarification (CL) raised. The content of each frame is described in the figure below. To guarantee the transparency of the validation process, the concerns raised by GLC and the responses provided by the project proponents are fully documented in Annex A of this report.

Forward Action Requests (FARs) are issued during validation to highlight issues related to project implementation that require review/assessment during the subsequent verification(s) of the project activity. FARs are not related to the CDM requirements for registration

The findings are separately presented in a findings list table which is also attached in Annex A. The different columns of this list are explained in Table 3-3.

The resolution of all raised CAR and CL for the " Luohe MSW Landfill Site LFG Recovery to Power Project " is enclosed in Annex A of this Validation Report.

Table 3-2: Structure of the Validation Questionnaire

<i>CHECKLIST QUESTION / VVM REQUIREMENT</i>	<i>SOURCE</i>	<i>MEANS AND FINDINGS OF VALIDATION</i>	<i>Draft Concl..</i>	<i>Final Concl.</i>
Lists CDM requirements which the project should meet. The checklist is organised in several different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Gives reference to documents where the checklist question or item is from.	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), Clarification request (CL), or Forward Action Request (FAR).	This is either: OK, when the Draft Conclusion is OK or raised CAR/CLs have been successfully closed out; OK, with only FAR remaining; Or: CAR/CLs

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Table 3-3: Structure of the Findings List – Resolution of Corrective Action and Clarification Requests

Description of Finding (CAR, CL, FAR) <i>Describe the finding in a transparent manner i.e. state clearly what is required and why; address the context (e.g. section)</i>	Date <i>(dd/mm/yyyy)</i>	Project Participants Response <i>This section shall be filled by the PP. The finding shall be addressed with suitable arguments and evidence</i>	Date <i>(dd/mm/yyyy)</i>	GLC Assessment <i>The assessment shall include how the finding is closed i.e. how it is found that the response is assessed to be appropriate and meeting the specific requirement of the finding. In case the response is not satisfactory, additional response and DOE assessments (#2, #3, etc.) shall be sought.</i>	Date <i>(dd/mm/yyyy)</i>
In this column a finding is described in a clear and transparent manner. It also shall be described which further information is needed or which correction must be applied.	Date of raising the finding.	In this column the PP shall provide a clear statement how to close the finding. This statement shall be sustained with suitable arguments and evidence.	Date of PP response.	In this column GLC shall provide the conclusion of the assessment. The finding can be close here or if the argumentation and/or evidence are not suitable a new line below with the continuation of the finding will be opened.	Date of GLC assessment

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3.4 Technical Review

Before submission of the final Validation Report, a technical review was carried out by GLC for the whole validation procedure and the draft report. The appointed technical reviewer team is competent GHG auditors for the sectoral scope and technical area this project falls under. Each involved reviewer is not directly involved in the validation assessment up to the start of the internal technical review phase of this project.

As a result of the internal technical review process, the validation opinion and the topic specific assessments as prepared by the validation's assessment team leader may be confirmed or revised. Furthermore, reporting improvements might be achieved.

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4 VALIDATION FINDINGS

The findings from the desk review of published PDD, visits, follow-up interviews and supporting documents are summarized here.

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of verification of assessed documentation and assumptions; and the results from validating the identified criteria are all documented in more detail in the validation questionnaire in Annex A of this report. The validation findings relate to the project design as documented and described in the revised and resubmitted project design documentation (PDD version 6 dated 2011-09-15^{24/} and supporting documentation).

For each case where GLC had identified an issue that needed clarification or that represented a risk to the fulfilment of the project objectives, a CL or a CAR have been issued respectively. All raised CARs and CLs are documented in Annex A. The validation of " Luohe MSW Landfill Site LFG Recovery to Power Project " resulted in five (5) CARs and nine (9) CL. Upon successful closure of the raised CARs and CLs and based on the on-site findings and the reviewed project documentation; the validation team confirms that there are no remaining non-conformities.

The main changes between the first version of the PDD made available for the validation (PDD version 1 dated 2009-12-09 ^{7/}) and the final PDD (PDD version 6 dated 2011-09-15) are summarized below:

- Version number and completion date;
- Name of company from Annex I country changed from Umwelt Projekt Management GmbH to UPM Umwelt-Projekt-Management GmbH, but the consistency among LoAs, MoC, final PDD and this validation report is guaranteed;
- Changes as described in PDD response of CARs/CLs;
- AMS-I.D. Version 16 is applied as Version 15 expired on 10 Feb. 2011;
- "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site" (version 5.1.0) is applied;
- ER and IRR changes due to change of crediting period start date;
- The time table for the demonstration of CDM prior consideration was updated;
- Project starting date was corrected as per applicable guidance of the "Glossary of CDM Terms";
- Expected starting date of the crediting period was changed;
- Ex-ante estimated emission reductions were corrected;
- Minor typing corrections were implemented;

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5 VALIDATION REPORTING

5.1 Participation and Approval

Document review and background research is used as means of validation for participation requirements.

The project participants of the proposed project are:

- Shanghai BCCY New Power Industry Co., Ltd. approved by "China" DNA, through the Letter of Approval of "China" dated 2010-07-13 ^{/8/}.
- UPM Umwelt-Projekt-Management GmbH approved by the Annex I DNA, through the letter of Approval of "Germany" dated 2011-06-14 ^{/10/}.

Project participants are listed in a tabular form in section A.3 of the PDD and this information is consistent with the contact details provided in Annex I of the PDD. No entities other than those approved as project participants are included in these sections of the PDD.

The Letter of Approval of the "China" is received from the project participant, which confirms that:

- "China" is a party to Kyoto Protocol;
- The participation of Shanghai BCCY New Power Industry Co., Ltd. is voluntary;

The project complies with the requirements and contributes to sustainable development of "China".

The Letter of Approval of "Germany" for UPM Umwelt-Projekt-Management GmbH is also received from the project participant, which confirms that:

- UPM Umwelt-Projekt-Management GmbH is located in "Germany" which is a party to Kyoto Protocol;
- The participation of UPM Umwelt-Projekt-Management GmbH is voluntary.

The proposed project can be found in "China" DNA's database (<http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2584.doc>). In this database the status of it is indicated as "approved". The name of project and name of project owner in database are consistent with information in LOA of "China" submitted to the DOE. Thus it is confirmed that the "China" approval ^{/10/} received is authentic.

The authenticity of LOA of "Germany" for UPM Umwelt-Projekt-Management GmbH is confirmed through searching on-line list "https://www.jicdm.dehst.de/promechg/pages/project1.aspx". The project can be found in the list and the company name, project name, issued date indicated in it are consistent with the information on "Germany" LOA submitted.

The project fulfils all relevant requirements.

By reviewing the Modalities of Communication (MoC) document ^{/11/} (dated 2010-12-17) which signed by both project participants, the validation team was able to confirm that the form is correctly completed.

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5.2 Project Design Document

The project assessment confirmed that the PDD is based in the currently valid PDD template and it was completed in accordance with the latest version of the applicable guidelines for completing the simplified project design document (CDM-SSC-PDD)^{/12/}.

5.3 Project Description

Document check, physical inspection, follow-up interview, and background research are used as means of validation for project design.

The project is a LFG capture and utilization project and does not involve alteration of the existing installation or process^{/3/}, Project description details are given in Section 1.3 of this report. The technology employed is domestic and the project contributes to sustainable development of the host country. No ODA is involved in project financing.

A clear and sufficient description of the project activity is provided in the PDD, covering all relevant aspects. Precise nature of the project activity and the technical aspects of its implementation are presented in an understandable manner. All information regarding project design in PDD is consistent with the result of on-site inspection and document check.

The operational lifetime of the project estimated as 15 years

A 10 year fixed crediting period is selected, starting from 01 December 2011 or the date of registration of the project as a CDM project activity (whichever is later).

The total emission reductions from the project are estimated to be 415,582 tCO₂e over the selected 10 year fixed crediting period (average of 41,558 tCO₂e per year).

5.4 Baseline and Monitoring Methodology

5.4.1 Applicability of the Selected Methodology to the Project Activity

Through document check and background research it is verified that the project has applied valid versions of an approved CDM baseline and monitoring methodology as well as approved CDM tools: AMS-III.G. "Landfill Methane Recovery " (Version 06), AMS-I.D. "Grid Connected renewable electricity generation" (Version 16), "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site" (Version 5.1.0)^{/13/} and "Tool to calculate the emission factor for an electricity system" (Version 02)^{/14/}.

The project is a new small-scale LFG capture and utilization project supplying electricity to CCPG which is dominated by fossil-fuel power plants, thus the electricity generated by the proposed project displaces electricity generated by fossil-fuel power plants in the grid.

The recovered methane is only used for combustion to generate electrical energy, with no upgrading, distribution or hydrogen production involved. In the crediting period the baseline emission under type III component is below 60 kt CO₂e/year.

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The project is a new project. It only contains new renewable-energy unit without any existing facility and does not involve in co-generation, retrofitting or modification.

The project fulfils all applicability criteria of the above mention methodology and tools.

5.4.2 Project Boundary

As prescribed by the methodology AMS-III.G. (version 06), project boundary of the project is identified as the physical, geographical site of the landfill where gas is captured and destroyed/ used, including LFG collection system, power generation system, auxiliary equipment, etc and CCPG which the generated electricity will be supplied to. CCPG consists of Henan province, Hubei province, Hunan province, Jiangxi province, Sichuan Province and Chongqing municipality ^{/4/}.

Through document review it is verified that the identified project boundary is in compliance with the methodology and is sufficiently justified.

5.4.3 Baseline Identification

As prescribed by the methodology AMS.III.G. (Version 06) and AMS.I.D. (Version 16), the baseline scenario is explicitly prescribed by the applied methodology and the PDD provides verifiable description of the identified baseline scenario:

For Methane Destruction:

The baseline scenario is the situation where, in the absence of the project activity, biomass and other organic matter are left to decay within the project boundary and methane is emitted to the atmosphere.

Baseline emission shall exclude methane emissions that would have to be removed to comply with national or local safety requirement or legal regulations ($MD_{reg,y}$). In this case $MD_{reg,y}$ is identified as zero, because it is evidenced that despite regulations to mandate the flaring and treatment of landfill gas ^{/15//43/}, these regulations are not widely enforced and the common practice in China remains venting LFG ^{/16//17/}. Actually for the project activity, prior to project implementation there is no LFG capture facility or plan to install such facility on site. This is confirmed through on-site visit and interview with the landfill operator. The validation team hereby confirm that zero is a suitable value for $MD_{reg,y}$ in the context of the proposed project activity.

For Electricity Generation:

Product of electricity energy baseline expressed in kWh of electricity produced by the renewable generating unit multiplied by an emission factor. Combined margin (CM) is adopted for emission factor.

Overall, through document review, on-site inspection and interview, it is verified that the baseline scenario is identified according to the methodology; and in regard to item 86 of VVM, the validation team hereby confirm the following statements:

- a) All the assumptions and data used by the project participants are listed in the PDD, including their references and sources;
- b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD;

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- c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;
- d) Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD;
- e) The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.

The selected baseline scenario was thus correctly determined as per the applicable guidance of applied methodology. The application of the applied baseline methodology in the context of the selection of the baseline scenario is thus transparent and correct.

5.4.4 Algorithms / Formulae used to Determine Emission Reductions

The calculation is done as per applied methodology AMS.III.G. "Landfill Methane Recovery" (Version 06)^{/20/}, AMS-I.D. "Grid Connected renewable electricity generation" (Version 16)^{/1/}, and relevant methodology tool "Tool to calculate the emission factor for an electricity system" (Version 02)^{/14/} and "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site" (version 5.1.0).^{/13/}

The ER_y of the project activity during the crediting period is the difference between the baseline emission (BE_y) and the sum of project emission (PE_y) and leakage. Leakage is considered zero as per the methodologies.

Baseline Emission:

As prescribed in baseline methodology, the baseline emission will be (a) the amount of methane that would have been destroyed/ combusted multiplied by the GWP of CH_4 , and (b) the kWh produced/ displaced by the renewable generating unit multiplied by an emission coefficient of the associated grid (measured in $kgCO_{2e}/kWh$).

(a) The amount of methane that would have been destroyed/ combusted multiplied by the GWP of CH_4 ($BE_{CH_4,y} - Md_{reg,y}$)

The calculation of the amount of methane that would have been destroyed/combusted, is based on the first order decay (FOD) model described in the methodological tool "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site" (Version 5.1.0). Following variable values were applied:

The operation of the landfill started in 2004 and is expected to be terminated in 2018^{/3 //27/}.

Waste amount is assumed as increased by 4% per year in FSR. The waste composition of Luohe City is on wet basis in FSR.

The methane correction factor MCF was chosen as 1.0 for anaerobic managed solid waste disposal sites. This is assessed as correct based on on-site visit and interview.

The values of the fraction of degradable organic carbon DOC_i is also on wet basis.

The decay rate for the waste types k_j considers the mean annual temperature $MAT \leq 20^\circ C$ and the ratio between mean annual precipitation and the potential evapotranspiration < 1 . Trough cross-check the official data provided by Meteorological Archives of Henan Provincial Meteorological Administration^{/51/}, the validation team confirms it is valid.

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The methane collection rate is 60% in FSR. A statement ^{/52/}regarding the methane collection rate is provided by the FSR design institute to further discuss the selection of 60% due to the reason that:

Due to the irregular sedimentation of the landfill body as well as accumulation of some of leachate and condensate water at bottom of gas wells or lower parts of gas collection pipes, the utilization rate of gas wells and relative gas collection facilities would be reduced about by 10% to 15%.

The reasons are considered as appropriate by validation team.

According to "Technical code for municipal solid waste sanitary landfill" issued in 2004 (CJJ17-2004)^{/43/}, in Chapter 10 "closure of landfill" it is indicated that final covering layer at closure of landfill should be clay covering structure or artificial material covering structure. As the proposed project has been covered, thus to be conservative the oxidation factor was chosen as 0.1.

Baseline emission should exclude methane emissions that would have to be removed to comply with national or local safety requirement or legal regulations ($MD_{reg,y}$). In this case $MD_{reg,y}$ is identified as zero, because it is evidenced that despite regulations to mandate the flaring and treatment of landfill gas ^{/15/43/}, these regulations are not widely enforced and the common practice in China remains venting LFG ^{/17/}. To be more specific:

- Both Waste Management in China issued by World Bank^{/16/} and China National Action Plan for Recovery and Utilization of landfill Gas (revision) ^{/33/} show that venting with out flaring/utilization is the common practice of landfill in China.
- Notification of Inspection Outcome on China National Sanitary Landfill Site issued by Ministry of construction in 2007 shows that out of 372 landfill sites in 31 provinces, cities and autonomous regions in China, more than 90% of the landfills have no LFG recovery and utilization facilities.

Prior to project implementation there had been no LFG capture facility or plan to install such facility on site. This is confirmed through on-site visit and interview with the landfill operator. The validation team hereby confirm that zero is a suitable $MD_{reg,y}$ in the context of the proposed project activity.

The validation team is convinced of the result of the methane production calculation. All default values have been assessed as reasonable and consistent with source. It is deemed to be adequate and transparent.

(b) KWh produced/ displaced by the renewable generating unit multiplied by an emission coefficient of the associated grid ($BE_{elec,y}$)

As per AMS-I.D., baseline emission is calculated as net electricity output $EL_{grid,y}$ multiplied by the emission factor EF.

As per "Tool to calculate the emission factor for an electricity system" (Version 02),, the baseline emission factor EF is determined ex-ante and estimated as a combined margin (CM), consisting of the weighted average of operating margin ($EF_{grid,OM,y}$) and build margin ($EF_{grid,BM,y}$) factors.

The calculation method of OM and BM is derived from the methodology tool and relevant methodology deviation ^{/34/}. Data used in the calculation of OM and BM are from Energy Statistical Yearbook 2006, 2007 & 2008^{/35/}, China Electric Power Yearbook 2005, 2006, 2007 & 2008^{/36/} and IPCC 2006 ^{/37/}. They are all publicly available at the time of GSP.

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The parameter values and calculation approaches are all summarized in “Official calculation for Grid Emission Factor” published by Chinese DNA in July 2009 ^{/4/}. The calculation of the project strictly follows this official calculation and has got the same result.

Off-grid power plants are chosen not to be included in the EF calculation.

EF_{grid,OM,y} calculation: Due to the fact that the low-cost/must-run resources constituting less than 50% of the total grid generation ^{/35/} and that the data for “Dispatch Data Analysis” is not available, the simple OM emission factor calculation method is applied. The OM factor is calculated considering generation sources serving the system (not including the low-cost and must-run power plants) and three years average data (2005-2007). The EF_{grid,OM,y} is calculated to be 1.1255 t CO_{2e}/MWh and will not be changed during the fixed 10y crediting period.

EF_{grid,BM,y} calculation: Due to the data unavailability at the power plant level in China, in accordance to the documents related to methodology deviation of AM0005 and AMS-I.D ^{/34/}, the EF_{grid,BM,y} is calculated to be 0.5802 tCO_{2e}/MWh and will not be changed during the fixed 10y crediting period.

In accordance with the tool to calculate the emission factor for an electricity system (version 02), weight factors of wOM = wBM = 0.5 have been used and the resultant electricity baseline emission factor EF works out as 0.8529 t CO_{2e}/MWh.

The validation team is convinced of the result of the emission coefficient calculation. It is deemed to be adequate and transparent.

The net electricity output EL_{grid,y} applies estimated value in FSR, with the calculation as follows:

For the first 8 years:

EL_{grid,y} = load (MW) * Operation hours (h) * full load factor of engine(%) * (1-self-consumption rate (%)).

For the last 7 years:

EL_{grid,y} = load (MW) * Operation hours (h) * full load factor of engine(%) * (1-self-consumption rate (%))
*Decreasing load rate of engine (%)

This equation is from FSR, issued by Henan Zhengzhou Electric Design Institute ^{/27/} and further confirmed by the Institute in FSR clarification statement ^{/50/}. Based on estimation of FSR, the load rate of engine of the project will be decreased according to decreasing of LFG amount, a decreasing load rate of engine of 90% is applied for the last 7 years. Such decreasing load rate of engine is provided by the design institute of FSR according to similar projects operation experience.

The conservative coefficient is 0.9. Even if 1 is applied, project IRR is still below benchmark.

The self-consumption rate is 10%, which is assessed as reasonable according to local knowledge.

Overall the estimation of net electricity output is assessed as reasonable.

Appendix B “Assessment of financial parameters” contains details of the assessment regarding EL_{grid,y}.

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Project Emission:

According to the methodology AMS-III.G version 06 and AMS-I.D version 16, Project activity emissions consist of CO₂ emissions related to the power used by the project activity facilities. Since the project generates electricity by itself and that in baseline emission calculation only the net supply of electricity is counted, project emission is regarded as zero.

Leakage:

The equipments of the project are not transferred from another activity ^{/27/}, thus according to methodology leakage is not to be considered.

In conclusion, all values used in the PDD to calculate emission reductions are considered reasonable in the context of the proposed CDM project activity and calculation approach is correct.

5.5 Additionality of the Project Activity

The project additionality is demonstrated by applying the Attachment A to Appendix B of the UNFCCC's Simplified Modalities and Procedures^{/30/} for Small-scale CDM Project Activities.

5.5.1 Prior Consideration of the Clean Development Mechanism

The starting date of the project is 2009-08-03, the date of construction contract signed by the project owner ^{/21/}. Through document check, the validators hereby confirm that 2009-08-03 is the earliest date of project construction, implementation or real action (the earliest device purchase contracts are signed on 2009-09-09 ^{/5/}), in compliance with the latest CDM glossary.

Project start date is prior to the date when the project was published for global stakeholder comments (2009-12-22).

The project start date is after 2008-08-02, thus is a new project activity according to the categorization in "Guidelines on the Demonstration and Assessment of Prior Consideration of the CDM", Version 03 ^{/22/}.

Assessment is done in accordance to the specific requirements in above guideline.

Notification letters to Chinese DNA and to UNFCCC have been received and checked by the validators. The website of UNFCCC is also cross-checked to confirm the authenticity of letters. Through document check and further investigation it is hereby confirmed that:

- Notification of CDM prior consideration sent to EB^{/23/} on 2009-12-15 and on UNFCCC website the Date received is indicated as 2009-12-15.
- Notification of CDM prior consideration sent to DNA^{/18/} was signed by project owner on 2009-10-16 and signed by Chinese DNA on 2009-10-12.
- Both notification letters submitted to validators are in standard form, containing precise geographical location and a brief description of the proposed project activity.

Both notification letters are within 6 months of project start date and less than 2 years before the date of validation (GSP date is 2009-12-22), thus the prior-consideration of CDM is sufficiently justified, as per EB guidelines and VVM.

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Moreover, description of key event timeline regarding CDM application and project implementation is included in PDD Section B.5. to justify the decisive role the CDM plays in the decision to proceed with the project and the continuous actions taken to ensure CDM status after project start.

Evidences used to assess this include: CDM board meeting decision dated 2008-09-21 ^{/26/}, Construction contract signed on 2009-08-03^{/21/}, Engine Purchasing Contract signed on 2009-09-09, Emission Reduction Purchase Agreement dated 2009-10-15 ^{/28/}, CDM consultancy agreement signed with Oasis on 16 Oct. 2009^{/29/}. Finally, PDD of the project was published on 2009-12-22 and on-site validation of DOE was performed from 2010-01-24 to 2010-01-27. CDM activities are continuous with time gap of less than 1 year.

GLC hereby confirms that the proposed CDM project activity complies with the requirements of the latest version of the Guidance on prior consideration of CDM.

5.5.2 Identification of Alternatives

The project additionality is demonstrated by applying the Attachment A to Appendix B of the UNFCCC's Simplified Modalities and Procedures^{/30/} for Small-scale CDM Project Activities and no alternative needs to be considered.

5.5.3 Investment Analysis

According to Attachment A to Appendix B of UNFCCC's Simplified Modalities and Procedures for Small-scale CDM Project Activities, investment barrier is chosen to demonstrate additionality. In details the benchmark analysis is chosen as the applied investment analysis method.

The project IRR (post-tax) is 2.89% without CDM revenue, lower than the benchmark of 8% which is based on the Interim Rules on Economic Assessment of Electric Engineering Retrofit Projects^{/31/}, which is a current valid national guidance of investing in the power industry in China and commonly used document. Thus the project scenario is not the most economically feasible without benefits from CER sales.

Four parameters are chosen for sensitivity analysis: Total Investment, Annual O & M cost, feed-in tariff, and Annual operation hours. Through discussion of the possibility of their variations, it is justified that the attainable variation of sensitivity analysis indicators is not likely to make project IRR reach the benchmark.

All parameters used to calculate the IRR without CDM revenue are from Draft FSR (except for CER price which does not have) which is completed in September 2008, within the same month when the investment decision made (CDM board meeting decision ^{/26/}). The period of time between the finalization of the Draft FSR and the investment decision is sufficiently short for the validators to confirm that it is unlikely in the context of the underlying project activity that the input values would have materially changed. GLC compared the data in Chapter 9 of the draft FSR and final approved FSR, and no inconsistency was observed. Therefore, the validity of compared data is guaranteed.

On the basis of specific local and sectoral expertise, confirmation is provided, by cross-checking or other appropriate manner, that the input values from the draft FSR are valid and applicable at the time of the investment decision.

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Appendix B "Assessment of financial parameters" contains details of the assessment of financial parameters used in investment analysis including benchmark, electricity output, electricity tariff, investment, O&M cost, etc. The assessment covers initial adoption of the values as well as their attainable variations as demonstrated in the sensitivity analysis.

The whole financial calculation is checked transparent, correct and reproducible.

The assessment is strictly following "Guidelines on the Assessment of Investment Analysis, version 04" ^{/32/} and the Validation and Verification Manual, version 01.2 ^{/2/}.

For more detailed information, please refer to Appendix B.

5.5.4 Barrier Analysis

Not applied.

Technological barriers have been discussed in GSP PDD. However, PP has changed to apply Investment analysis for the proposed project.

5.5.5 Common Practice Analysis

Not applied according to methodology.

5.6 Monitoring Plan

The project applies the approved CDM Baseline and Monitoring Methodology AMS.III.G. "Landfill Methane Recovery" (version 06)^{/20/}, AMS-I.D. "Grid Connected renewable electricity generation" (version 16)^{/1/} and "Tool to calculate the emission factor for an electricity system" (Version 02)^{/14/}. The selected monitoring methodology is applicable for the project.

Document check, background research and follow-up interview are used as means of validation for monitoring plan.

According to the applied methodology and methodology tool, the project monitoring consists of metering total amount of landfill gas captured at Normal Temperature and Pressure ($LFG_{total,y}$), amount of landfill gas combusted in engines at Normal Temperature and pressure ($LFG_{engines,y}$; $LFG_{engines\ 2,y}$; $LFG_{engines\ 3,y}$; $LFG_{engines\ 4,y}$), methane fraction in the landfill gas ($W_{CH_4,y}$), total amount of electricity produced by all the engines of the proposed project in year y ($EL_{LFG,y}$), the amount of electricity consumed by the project activity in year y ($EL_{onsite,y}$), net amount of electricity exported to CCPG by the proposed project in year y ($EL_{grid,y}$), operation hours of the generators, methane emissions that would be captured and destroyed to comply with national or local safety requirement or legal regulation in the year y ($MD_{reg,y}$)

Measurement will be done through 5 flow meters that continuously monitor the flow of LFG fed into 4 engines, 3 electrical meters and 1 gas analyzer. As described in PDD, the gas analyzer is to continuously monitor methane fraction in collected LFG after pre-treatment process; E1 is to continuously monitor the electricity produced by all engines, E2 is to continuously monitor the electricity consumed by the project activity, E3 is to continuously monitor the electricity exported to the CCPG, it's

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bidirectional. The meter accuracy will be in compliance with the requirement of national regulation “the Technical administrative code of electric energy metering (DL/T448—2000)”.

The project’s monitoring plan, as outlined in the latest version of the PDD, includes:

- General description of the responsibilities and authorities for project management;
- General procedures for data gathering;
- General description of the installation of metering equipment;
- General information related to calibration requirements of metering equipment;
- General information about QA/QC procedures.

General description of the monitoring plan has thus been elaborated in the PDD.

Through document check and interview it is verified that the monitoring plan described in PDD is in compliance with the methodology and all the monitoring arrangements are feasible within the project design and project participant’s competence.

General description of the monitoring plan has thus been elaborated in the PDD. The monitoring plan is to be implemented to enable subsequent verification of emission reductions. The application of the monitoring methodology is transparent and GLC considers the project participants able to implement the monitoring plan.

5.7 Stakeholder Consultation

Based on the on-site validation investigation, relevant local stakeholders have been invited to comment on the project on 2009-09-12 through posting notice on Luohe Daily newspaper. The stakeholder consulting meeting held on 2009-09-23. Summary of comments is available in the PDD in section E.2. And given the positive comments received, no due account is required.

Germanischer Lloyd Certification GmbH published the project documents on UNFCCC’s website (<http://cdm.unfccc.int/Projects/Validation/DB/LO2OMJ0NMZGUJETGQ9DD2BY3OUJRTH/view.html>) on 2009-12-22 and invited comments within the period from 2009-12-22 to 2010-01-20 by Parties, stakeholders and non-governmental organisations. No comments were received.

5.8 Environmental Impacts

In China, Environmental Impacts Assessment is required according to Chinese legislation. The EIA report of the project has been approved by local government on 2009-04-02 ^{/38/}. According to EIA, the environment impact of the project is not significant and is controllable using measures identified in EIA. The analysis of the environmental impacts of the project activity is sufficiently described in PDD.

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6. VALIDATION OPINION

Germanischer Lloyd Certification GmbH has performed a validation of " Luohe MSW Landfill Site LFG Recovery to Power Project " in "China". The validation was performed on the basis of UNFCCC criteria and host country criteria, as well as criteria given to provide consistent project operations, monitoring and reporting. The review of the project design documentation and the subsequent follow-up interviews have provided Germanischer Lloyd Certification GmbH with sufficient evidence to determine the fulfilment of stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria. The project will hence be recommended by Germanischer Lloyd Certification GmbH for registration.

The project applies approved CDM Baseline and Monitoring Methodology AMS.III.G. "Landfill Methane Recovery" (version 06)^{1/}, AMS-I.D. "Grid Connected renewable electricity generation" (version 16)^{2/}. The methodology has been correctly applied and the assumptions made for the selected baseline scenario are sound. By displacing fossil fuel-based electricity with electricity generated from a renewable source and avoiding CH₄ to be sent to the atmosphere, the project results in average reductions of 41,558 t CO₂eq per year emissions per year that are real, measurable and give long-term benefits to the mitigation of climate change.

Given that the project is implemented as designed, the project is likely to achieve the estimated amount of emission reductions.

It is sufficiently demonstrated that the project is not a likely baseline scenario and that emission reductions attributable to the project are additional to any that would occur in the absence of the project activity.

No relevant negative environmental impacts are expected from the implementation of the project activity. A global and local stakeholder consultation was conducted.

In summary, it is GLC's opinion that " Luohe MSW Landfill Site LFG Recovery to Power Project "in "China" as described in the revised project design document of 2011-09-15(version 6), meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies approved CDM Baseline and Monitoring Methodology AMS.III.G. "Landfill Methane Recovery" (version 06), AMS-I.D. "Grid Connected renewable electricity generation" (version 16). Hence, GLC will request the registration of the " Luohe MSW Landfill Site LFG Recovery to Power Project "as a CDM project activity.

Beijing, 2011-09-19

Ruifeng, Li
Assessment Team Leader

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7. REFERENCES

The following table outlines the documentation reviewed during the validation:

- /1/ CDM-EB: Approved Consolidated Baseline and Monitoring Methodology AMS-I.D. "Grid-connected renewable electricity generation" version 16.
- /2/ CDM EB: Validation and Verification Manual (VVM), Version 01.2.
- /3/ Henan Zhengzhou Electric Design Institute: Draft Feasibility Study Report, dated Sep. 2008.
- /4/ Chinese DNA: Grid Emission Factor, July 2009.
- /5/ Shanghai BCCY New Power Industry Co., Ltd.: Engine Purchasing Contract signed, dated 09 Sep. 2009.
- /6/ Shanghai BCCY New Power Industry Co., Ltd.: Emission Reduction Sheet and IRR worksheet.
- /7/ Shanghai BCCY New Power Industry Co., Ltd.: Project Design Document (PDD) for the Luohe MSW Landfill Site LFG Recovery to Power Project. Version 1 of 09 Dec. 2009.
- /8/ Chinese DNA: Letter of Approval, dated 13 Jul. 2010
- /9/ Chinese DNA Website for already issued LoAs:
<http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2571.pdf>
- /10/ Germany DNA: Letter of Approval, dated 14 June 2011
- /11/ Shanghai BCCY New Power Industry Co., Ltd. : Completed modalities of communication (MoC) document between PPs and the CDM-EB, countersigned on 17 Dec. 2010.
- /12/ UNFCCC: Guidelines for completing the simplified project design document (CDM-SSC-PDD) and the form for submissions on methodologies for small-scale CDM project activities (F-CDM-SSC-Sub), version 05.
- /13/ CDM EB: Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site, version 5.1.0.
- /14/ CDM EB: Tool to calculate the emission factor for an electricity system, version 02
- /15/ Standard for Pollution Control on the Landfill Site of Municipal Solid Waste (GB 16889 -1997)
Standard for Pollution Control on the Landfill Site of Municipal Solid Waste (GB 16889 -2008)
- /16/ Waste Management in China: Issues and Recommendations, by World Bank, 2005.
- /17/ Notification of Inspection Outcome on China National Sanitary Landfill Site (2007), by Ministry of construction. 2007
- /18/ Shanghai BCCY New Power Industry Co., Ltd.: Notification of prior consideration of CDM to host country DNA, confirmed on 23 Oct. 2009.
- /19/ CDM-EB: Guidelines for the reporting and validation of plant load factors, version 01 EB 48
- /20/ CDM-EB: Approved Consolidated Baseline and Monitoring Methodology AMS-III.G. "Landfill

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Methane Recovery "version 06.

- /21/ Shanghai BCCY New Power Industry Co., Ltd. : Construction Contract signed, dated 03 Aug. 2009.
- /22/ CDM EB: Guidelines on the demonstration and assessment of prior consideration of the CDM (version 3), EB 49 Report Annex 22
- /23/ Shanghai BCCY New Power Industry Co., Ltd.: Notification of prior consideration of CDM to UNFCCC, confirmed on 15 Dec. 2009.
- /24/ Shanghai BCCY New Power Industry Co., Ltd.: Project Design Document (PDD) for the Luohe MSW Landfill Site LFG Recovery to Power Project, version 6 of 15 September 2011.
- /25/ Project cooperation contract, signed between the project owner and Luohe City Municipal waste Innocuous treatment center, dated 10 Feb. 2009.
- /26/ Shanghai BCCY New Power Industry Co., Ltd.: CDM Board Meeting Decision, dated 21 Sep. 2008.
- /27/ Henan Zhengzhou Electric Design Institute: Final Feasibility Study Report, dated Jun. 2009.
- /28/ Shanghai BCCY New Power Industry Co., Ltd.: Emission Reduction Purchasing Agreement signed with UPM Umwelt-Projekt-Management GmbH, dated 15 Oct. 2009.
- /29/ CDM Consultancy Agreement signed between Oasis Science and Technology Development Beijing Co., Ltd with UPM Umwelt-Projekt-Management GmbH, dated 16 Oct. 2009.
- /30/ CDM-EB: Simplified modalities and procedures for small-scale clean development mechanism project activities (Annex II to Decision 21/CP.18)
- /31/ Interim Rules on Economic Assessment of Electric Engineering Retrofit Projects, issued by the State Power Corporation of China .2003.
- /32/ CDM-EB: Guidelines on the Assessment of Investment Analysis, version 04
- /33/ China National Action Plan for Recovery and Utilization of landfill Gas (revision), August 2005.
- /34/ CDM-EB: Application of AM0005 and AMS-I.D in China
<http://cdm.unfccc.int/UserManagement/FileStorage/6POIAMGYOEDOTKW25TA20EHEKPR4DM>
-EB response on this request for deviation
http://cdm.unfccc.int/UserManagement/FileStorage/AM_CLAR_QEJWJEF3CFBP1OZAK6V5YXPQKK7WYJ
- /35/ China Energy Statistics Yearbook (2005-2008)
- /36/ China Electricity Yearbook (2006-2008)
- /37/ IPCC: 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Feb 2009 version.
- /38/ Shanghai BCCY New Power Industry Co., Ltd.: EIA approved, dated 2 Apr. 2009.
- /39/ CDM EB: Glossary of CDM Terms (Version 05)
- /40/ ISO 14064-2:2006 - Greenhouse gases - Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal

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enhancements

- /41/ ISO 14064-3:2006 - Greenhouse gases - Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions
- /42/ CDM-EB:General Guidelines to SSC CDM methodologies, version 15 EB 58
- /43/ Chinese Technical Code for Sanitary Landfill of Municipal Domestic Refuse (CJJ17-2001), 2001 Chinese Technical Code for Sanitary Landfill of Municipal Domestic Refuse (CJJ17-2004).
- /44/ Shanghai BCCY New Power Industry Co., Ltd.: Final Feasibility Study Report approved by Henan Province Development and Reform Commission, dated 31 Jul. 2009.
- /45/ Generator Manufacture: Statement upon Operation Hours, dated 2 Apr. 2010.
- /46/ Shanghai BCCY New Power Industry Co., Ltd.: Statistics of Contracted Costs. Feb. 2011.
- /47/ Shanghai BCCY New Power Industry Co., Ltd.: Statistics of other Costs, 26 Jan. 2011.
- /48/ Interim Regulations on the People's Republic of value-added tax, released in 1993 and revised in 2008.
- /49/ People's Republic of China Enterprise Income Tax Law published in 2007.
- /50/ Henan Zhengzhou Electric Design Institute: FSR clarification statement dated 03 Sep.2010.
- /51/ Meteorological Archives of Henan Provincial Meteorological Administration: Meteorological data statement, dated 08 Mar.2010.
- /52/ Henan Zhengzhou Electric Design Institute: Statement regarding methane collection rate, dated 29 Apr.2010.
- /53/ Tariff documents:
Document Fagai Jiage[2006] 7, issued by National Development and Reform Commission on 04 Jan. 2006;
Document Yu Fagai Jiaguan[2005] 449, issued by Henan Province Price Bureau.

Persons interviewed:

List of persons interviewed as part of the validation, or persons contributed with other information that are not included in the documents listed above are listed in Section 3.2.

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ANNEX A: VALIDATION QUESTIONNAIRE AND RESOLUTION OF CORRECTIVE ACTION AND CLARIFICATION REQUESTS (FINDINGS'S LIST)

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Validation Questionnaire

CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
1. APPROVAL				
1.1. Please indicate all project participants involved in the CDM project and define the Host and the Investor Country.		<p>According to published PDD, the Host Country of this project is P. R. China and the Investor Country (Country of CER buyer) of this project is Germany.</p> <p>The Project participants involved in the proposed project are:</p> <p>In Host Country: -Shanghai BCCY New Power Industry Co., Ltd.</p> <p>In Investor Country (Annex I Country): -UPM Umwelt-Projekt-Management GmbH</p> <p>However, the letter of Approvals of both countries and MoC are pending.</p>	CAR 1	OK
1.2. Have the DNA of each Party indicated as being involved provided a written letter of approval? <i>(This letter has to confirm the following issues)</i>	VVM 45	Letter of approval of China and Germany are both pending.	CAR 1	OK
1.2.1. Is every party a party to the Kyoto Protocol?	VVM 45	Letter of approval of China and the Annex I Country are pending.	CAR 1	OK
1.2.2. Is the participation voluntary?	VVM 45	Letter of approval of China and the Annex I Country are pending.	CAR 1	OK

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
1.2.3. Does the letter of approval by the DNA of the host Party confirm the contribution of the proposed CDM project activity to the sustainable development of the host party/country? <i>(Please specify how this requirement was validated e.g. interview with relevant authority and review of the original document)</i>	VVM 124	Letter of approval of China and the Annex I Country are pending	CAR 1	OK
1.2.4. Will the project create other environmental or social benefits than GHG emission reductions?		Yes, besides GHG emission reduction, the project also creates environmental and social benefits through reducing air pollution, providing clean energy, etc. These are verified through document check (FSR, EIA, and stakeholder related documents) and on-site interview with local stakeholders.	OK	OK
1.2.5. Is the project title of the proposed CDM activity submitted to the UNFCCC for registration in every document correct?	VVM 45	The letter of Approval of the Host country and Annex I Country are pending. Project title correctness will be assessed as all documents are available.	CAR 1	OK
1.3. Does the letter of approval refer to a specific version of the PDD? If yes, is it the current version?		The letter of Approval of the Host country and Annex I Country are pending.	CAR 1	OK
1.4. Was the letter submitted by the project participants or by the DNA directly?		The letter of Approval of the Host country and Annex I Country are pending.	CAR 1	OK

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
1.5. Are the letters of approval of the DNA's authentic for the proposed CDM project activity? <i>Please indicate how this has been verified (e.g. review of the original document and interview with the DNA)</i>	VVM 47	The letter of Approval of the Host country and Annex I Country are pending.	CAR 1	OK
2. PARTICIPATION				
2.1. Are the PP's listed in a tabular form in section A.3 of the PDD?	VVM 52	Yes, all the project participants are listed in a tabular form in Section A.3 of the PDD.	OK	OK
2.2. Is the listed information in the table consistent with the contact details provided in Annex I of the PDD?	VVM 52	Yes, the listed information for project participants in A.3 Table is consistent with contact details provided in Annex I.	OK	OK
2.3. Has the participation of each PP been approved by at least one party involved, either in a letter of approval or in a separate letter?	VVM 52	The letter of Approval of the Host country and Annex I Country are pending.	CAR 1	OK
2.4. Please review whether any other entities other than those approved as project participants are included in these sections of the PDD. Only actual project participants should be listed here		No entity other than the two project participants is included in Section A.3 or Annex I of the PDD.	OK	OK
3. PROJECT DESIGN DOCUMENT (PDD)				
3.1. Was the PDD prepared in accordance with the latest template and guidance from the EB? <i>Please refer also to http://cdm.unfccc.int/Reference/PDDs_Forms/PDDs/index.html</i>	VVM 55	Yes, the PDD format is in accordance with the latest template and guidance from EB.	OK	OK
3.2. Is the PDD in accordance with the applicable CDM requirements for completing PDD's and is the PDD duly completed? <i>Please refer also to http://cdm.unfccc.int/Reference/Guidclarif/pdd/index.html</i>	VVM 56	Yes, PDD is duly completed in accordance with the latest guidelines for completing simplified PDD (version 05).	OK	OK

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4. PROJECT DESCRIPTION				
4.1. Does the PDD contain a clear description of the project activity that provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation? <i>Please specify and provide a brief description.</i>	VVM 58	Based on document review and on-site inspection, the project utilizes landfill gas collected from an existing landfill to generate electricity. The existing landfill, Luohe Municipal Waste Sanitary Landfill (referred to as the Landfill), started operation in 2004 and has no LFG collection utility. However, CAR 2, CL2, were raised.	CAR 2 CL 2	OK OK
4.2. Does the information provided on the location of the project activity allow for a clear identification of the site(s)?		Yes, based on document review and on-site inspection, the project locates within Luohe City, Henan Province. However, CL 1 was raised.	CL 1	OK
4.3. How is it ensured and/or demonstrated that the project proponents are entitled to implement the project at this site (ownership, licenses, contracts)		The project proponent, Shanghai BCCY New Power Industry Co., Ltd.	OK	OK

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etc.)?		consigned the study and reporting of Feasibility Study Report (FSR) and EIA and got approvals respectively from relevant government authorities. The validators have checked and hereby confirm that all documents mentioned above are in the name of Shanghai BCCY New Power Industry Co., Ltd., which demonstrate that it is entitled to implement and has ownership of the project.		
4.4. Is the required form for the indication of projected emission reductions correctly applied (please refer to section A.4.4. (for large scale) or A.4.3. (for small scale) in the PDD)?		The table of emission reduction in Section 4.3. of published PDD is in the required form according to latest PDD guideline.	OK	OK
4.5. Are the figures provided consistent with other data presented in the PDD?		Yes, the figures in A.4.3. Regarding emission reduction is consistent with information in other parts of PDD, i.e. B.6.	OK	OK
4.6. Is public funding from an Annex I country used by the project?		It is stated in PDD that no public funding from Annex I country is involved in the project. According to FSR, all investment is equity, with no loan/fund involved.	OK	OK
4.7. If public funding is granted was a written confirmation from the relevant Annex I country DNA provided with the content that such funding does not result in a diversion of official development assistance (ODA)?		Not applicable.	N/A	N/A

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4.8. Is the information concerning the diversion of ODA provided in Section A.4.5. (for large scale) or A.4.4. (for small scale) of the PDD consistent with Annex 2?		Yes, the information concerning public funding and the diversion of ODA provided in Section A.4.4 is consistent with Annex 2 of published PDD.	OK	OK
4.9. Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max 7 years with potential for 2 renewals or fixed crediting period of max. 10 years)?		Yes, the assumed crediting time is clearly and reasonably defined as fixed crediting period of 10 years.	OK	OK
4.10. Please specify whether the current project is in existing facilities or utilizing existing equipments, as well as falls within one of the following categories for which a physical site inspection is mandatory and indicate the date of the site visit: ➤ Large Scale Projects ➤ Non-bundled small scale projects with emission reductions exceeding 15,000 tonnes per year; ➤ Bundled small scale projects, each with emission reductions not exceeding 15,000 tonnes per year; in such case the number of physical site visits may however be based on sampling, if the sampling size is appropriately justified through statistical analysis.	VVM 60	The proposed project is a new facility implemented on existing landfill. It falls within the category of Non-bundled small scale project with emission reductions exceeding 15,000 tonnes per year. A physical site inspection was done on 24 and 27 Jan. 2010.	OK	OK
4.11. In case a site inspection has been conducted, does the description in the PDD reflect the proposed CDM activity?		The description in PDD generally reflects the nature of the CDM activity. However, there are some inconsistencies and issues. Refer to CAR2 , CL 3, CL 2, CL 9.	CAR2 CL 2 CL 3 CL 9	OK OK OK OK
4.12. Were designs, feasibility study reports (FSR) or comparisons to equivalent projects available for review? Is the project description consistent with them?	VVM 62	According to Chinese project categorization for application		

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		procedure, the project follows into the group that Feasibility Study Report would be completed and has been approved by relevant government authority and is available for review. The project description is in general consistent with FSR, except that: CL 2 and CL 9.	CL 2 CL 9	OK OK
4.13. If no physical site inspection was undertaken how the project description was assessed for appropriateness and what is the outcome?	VVM 62	Not applicable, since physical site inspection was undertaken.	N/A	N/A
4.14. In case the CDM project activity involves the alteration of an existing installation or process are the differences between the project activity and the pre-project situation clearly defined in the project description?	VVM 63	Not applicable. According to document review, on-site inspection and interview, there has been no LFG collection and utilization facility onsite and the proposed project is a new project without alteration of existing installation.	N/A	N/A
4.15. Are the CDM project activity process flow charts, illustrative descriptions or comparable documents available and do they contribute to a better understanding of the project activity?		Yes, illustrative descriptions are in Section A.4.2. and process flow charts are in FSR.	OK	OK
5. APPLICABILITY OF BASELINE AND MONITORING METHODOLOGY				
5.1. Does the PDD clearly state the latest and valid version of the methodology (ies) and the tools? Is the methodology or any tool correctly quoted? <i>(Please compare the methodology or any tools applied with the actual text of the applicable version of the methodology or tools and review whether e.g. the most current version was applied, all elements were considered,</i>	VVM 69	The published PDD clearly states the application of the latest and valid version of methodologies: - AMS-III. G. Version 06 "Landfill	OK	OK

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<i>etc.).</i>		Methane Recovery", - AMS-I.D. Version 15 "Grid Connected Renewable Electricity Generation" and methodology tools: - "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site" Version 04, - "Tool to calculate the emission factor for an electricity system" Version 02.		
5.2. Please list all applicability criteria of the approved methodology or any other tool or other methodology component referred to therein.	VVM 70	The applicability criteria of AMS-III.G. Version 06 are: 1. This project category comprises measures to capture and combust methane from landfills (i.e., solid waste disposal sites) used for disposal of residues from human activities including municipal, industrial, and other solid wastes containing biodegradable organic matter. 2. The recovered methane from the above measures may also be utilised for the following applications instead of flaring or combustion:	OK	OK

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		<p>(a) Thermal or electrical energy generation directly; or</p> <p>(b) Thermal or electrical energy generation after bottling of upgraded biogas; or</p> <p>(c) Thermal or electrical energy generation after upgrading and distribution using one of the following options:</p> <p style="padding-left: 40px;">(i) Upgrading and injection of biogas into a natural gas distribution grid with no significant transmission constraints; or</p> <p style="padding-left: 40px;">(ii) Upgrading and transportation of biogas via a dedicated piped network to a group of end users; or</p> <p>(d) Hydrogen production.</p> <p>3. If the recovered methane is used for project activities covered under paragraph 2 (a), that component of the project activity shall use a corresponding category under type I.</p> <p>4. If the recovered methane is used for project activities covered under paragraph 2 (b) or 2 (c) relevant provisions in AMS III.H related to upgrading of biogas, bottling of biogas, injection of biogas into a</p>		

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		<p>natural gas distribution grid and transportation of biogas via a dedicated piped network shall be used.</p> <p>5. If the recovered methane is used for project activities covered under paragraph 2 (d) that component of the project activity shall use corresponding methodology AMS III.O.</p> <p>6. Measures are limited to those that result in aggregate emission reductions of less than or equal to 60 kt CO₂ equivalent annually from all type III components of the project activity.</p> <p>The applicability criteria of AMS-I.D. Version 15 are:</p> <p>1. It comprises of renewable energy generation units that supply electricity to and/or displace electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit.</p> <p>2. Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to</p>		

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		<p>apply this methodology:</p> <ul style="list-style-type: none"> • The project activity is implemented in an existing reservoir with no change in the volume of reservoir; • The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m²; • The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m². <p>3. If the unit added has both renewable and non-renewable components (e.g., a wind/diesel unit), the eligibility limit of 15 MW for a small-scale CDM project activity applies only to the renewable component. If the unit added co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.</p> <p>4. Combined heat and power (co-generation) systems are not eligible</p>		

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		<p>under this category.</p> <p>5. In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.</p> <p>6. Project activities that seek to retrofit or modify an existing facility for renewable energy generation are included in this category. To qualify as a small-scale project, the total output of the modified or retrofitted unit shall not exceed the limit of 15 MW.</p> <p>The applicability criteria of "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site" Version 5.1.0 are:</p> <p>1. Baseline emission calculation of methane from waste that would in the absence of the project activity be disposed at solid waste disposal sites (SWDS).</p>		

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		<p>2. The solid waste disposal site where the waste would be dumped can be clearly identified.</p> <p>3. Not applicable to stockpiles.</p> <p>4. Not applicable to hazardous wastes.</p> <p>The applicability criteria of "tool to calculate the emission factor for an electricity system" (EF tool) Version 02 is:</p> <p>This tool determines the CO₂ emission factor for the displacement of electricity generated by power plants in an electricity system.</p>		
<p>5.3. Please review and assess whether the project activity meets these criteria <i>(Please clearly describe the steps taken to assess the information provided by the PDD against these criteria, e.g. validating the documentation referred to in the PDD and by verifying that its content is correctly quoted and interpreted in the PDD)</i></p>	VVM 70	<p>PDD section B.2. contains justification of the applicability criteria for methodologies and methodology tools applied:</p> <p>AMS-III.G Version 06:</p> <p>For criteria 1: The project captures LFG from municipal waste landfill and combusts collected LFG to generate electricity, thus it fulfils the criteria. This is confirmed through on-site inspection and interview with the</p>	CAR 3	OK

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		<p>project owner.</p> <p>For criteria 2: The recovered methane from municipal waste landfill is only used for combustion to generate electrical energy. There is no upgrading, distribution or hydrogen production involved. Thus it fulfils the criteria. This is confirmed through on-site inspection and interview with the project owner.</p> <p>For criteria 3: the project falls to 2 (a) and AMS-I.D. is used for the component of electricity generation. Thus it fulfils the criteria.</p> <p>For criteria 4: not applicable since the project falls to 2 (a).</p> <p>For criteria 5: not applicable since the project falls to 2 (a).</p> <p>For criteria 6: according to published PDD, the baseline emission under type III component varies in the range would not reach 60 kt CO₂ equivalent annually.</p> <p>AMS-I.D Version 15:</p> <p>For criteria 1: The project is a landfill gas power project supplying electricity to the Central China Power Grid and</p>		

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		<p>displacing electricity generated by fossil fuel power plants in it. Thus it fulfils the criteria. This is confirmed through document review (FSR) and national grid classification background information.</p> <p>For criteria 2: not applicable, since the project is not hydropower plant.</p> <p>For criteria 3: not applicable, since the project only has renewable unit and does not co-fire fossil fuel. This is confirmed through document review (FSR), on-site inspection and interview with project owner.</p> <p>For criteria 4: the project does not involve in co-generation, thus it fulfils the criteria. This is confirmed through document review (FSR), on-site inspection and interview with the project owner.</p> <p>For criteria 5: not applicable, since the project is a new project and does not involve in capacity addition of existing renewable facility. This is confirmed through document review (FSR) and on-site information.</p> <p>For criteria 6: Not applicable, since the project is a new project and does</p>		

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		<p>not involve in retrofit or modification of existing facility. This is confirmed through document review (FSR) and on-site information.</p> <p>Moreover, the largest installed capacity of the project is 1.5 MW, below 15 MW, thus fulfils the criteria of small scale project Type I.</p> <p>“Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site” Version 04:</p> <p>For criteria 1: the project collects LFG, which contains methane, generated from waste that is disposed at solid waste disposal site, Luohe landfill. Thus it fulfils the criteria. This is confirmed through document review (FSR, EIA), on-site inspection and interview with the project owner and landfill operator.</p> <p>For criteria 2: the solid waste disposal site where the waste is dumped is Luohe landfill, which is sited in Luohe City. Thus it fulfils the criteria. This is confirmed through document review (FSR, EIA, and), on-site inspection</p>		

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		<p>and interview with the landfill operator.</p> <p>For criteria 3: Luohe landfill, which the project captures LFG from, is a municipal waste sanitary landfill, not stockpile. Thus it fulfils the criteria. This is confirmed through document review (FSR, EIA) and on-site interview with the landfill operator.</p> <p>For criteria 4: Luohe landfill, which the project captures LFG from, only treats municipal waste, with not hazardous waste involved. Thus it fulfils the criteria. This is confirmed through document review (FSR, EIA) and on-site interview with the landfill operator.</p> <p>EF tool Version 02: The project supplies electricity to Central China Power Grid and displaces electricity generated by power plants in this electricity system. Thus is fulfils the criteria. However, CAR 3 was raised.</p>		
5.4. Please check whether comparable information is available from other sources and cross check with the PDD in order to assess the applicability of the methodology.	VVM 70	As discussed in the above, the applicability of the methodology are	OK	OK

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		assessed.		
5.5. Is the project activity expected to result in emissions other than those allowed by the methodology?	VVM 70	The project will not result emissions other than allowed by methodology.	OK	OK
5.6. Is the project activity a small scale project activity? <i>(If not please continue with question 5.12., if yes please answer also the specific small-scale questions 5.7. to 5.11.)</i>		Yes, according to published PDD, the project is a small scale project activity.	OK	OK
5.7. Does the project activity qualify within the thresholds of the three possible types of small scale project activities? Does it include more than one component; for example, a type III methane recovery component activity and a type I electricity component activity?	VVM 134	The project utilizes LFG collected from landfill to generate electricity. It comprises of both Type I and Type III components. For Type I, the largest installed capacity of this project is 1.5 MW, within the threshold of 15MW. For Type III, the aggregate emission reductions of the proposed project is less than 60 kt CO ₂ equivalent annually from all type III components of the project activity.	OK	OK
5.8. Does the project activity conforms to one of the approved small-scale categories and applies the relevant tool or methodology. Are the small-scale methodologies applied in conjunction with the general guidance to the methodologies, which provides guidance on equipment capacity, equipment performance, sampling and other monitoring-related issues?	VVM 134	The project utilizes LFG collected from landfill to generate electricity. Thus it falls into both Type I and Type III categories. AMS-I.D Version 15 and AMS-III.G Version 06 are applied for component I and III respectively. The methodologies tools applied are "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site"	CAR 3	OK

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		Version 04 and “tool to calculate the emission factor for an electricity system” Version 02. Small scale PDD guideline is applied. However, CAR 3 was raised.		
5.9. Is the project activity not a debundled component of a large-scale project, in accordance with the rules defined in appendix C of the simplified modalities and procedures for small-scale CDM project activities?	VVM 134	The project activity is a LFG collection and utilization project located at Luohe MSW Landfill in Luohe City. through background investigation, the project activity is not a debundled component of a large-scale project.	OK	OK
5.10. Is an assessment of the environmental impacts of the proposed CDM project activity required by the host Party? If so, is the EIA available and in compliance with the regulations? Please specify how this requirement has been verified (e.g. review of local regulations, interviews with local authorities).	VVM 134	Yes, EIA of this project is required by the Chinese regulation. EIA of this project is available and is in compliance with the regulation. This is confirmed through document check (EIA, EIA approval).	OK	OK
5.11. Please indicate if the proposed small-scale project activity meets the requirements of the simplified modalities and procedures for small-scale CDM project activities?	VVM 132	As discussed above, the proposed project meets the requirements of the simplified modalities and procedures for small-scale CDM project activities	OK	OK
5.12. Final conclusion: Based on the assessment of 5.1. to 5.11. is the baseline and monitoring methodologies selected by the PP in compliance with the methodologies previously approved by the EB?	VVM 65	As discussed above, the baseline and monitoring methodologies selected by the PP are in compliance with the methodologies previously approved by the EB	OK	OK

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6. PROJECT BOUNDARY				
6.1. Please describe the project boundary of the selected baseline methodology.		In compliance with the methodology, the project boundary is defined as the physical, geographical site of the landfill where the gas is captured and destroyed/used., including LFG collection system, power generation system, auxiliary equipment, etc. and Central China Power Grid which the generated electricity will be supplied to. Central China Power Grid consists of Henan province, Hubei province, Hunan province, Jiangxi province, Sichuan province and Chongqing municipality.	OK	OK
6.2. Is the delineation of the project boundary in the PDD correct and does it meet the requirements of the selected baseline methodology? <i>(Please indicate how this requirement has been assessed, e.g. based on comparison of PDD and physical settings)</i>	VVM 78	Yes, the definition of project boundary is in compliance with the methodology. However, CL 6 was raised.	CL 6	OK
6.3. Have all sources and GHG's required by the methodology been included within the project boundary? <i>(Please list the sources and GHG's and confirm for each that they are included)</i>	VVM 78	For small scale project it is not required to list in PDD the sources and GHGs in project boundary.	N/A	N/A
6.4. Is a flow diagram included in the PDD which provides a clear understanding of all sources and GHG?		For small scale project it is not required to include in PDD a flow diagram of sources and GHGs in project boundary.	N/A	N/A
6.5. Does the methodology allow PP's to choose whether a source or gas is to	VVM 78	The methodology does not allow	N/A	N/A

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be included within the project boundary? <i>Please indicate the gases.</i>		choice of source or gas to include in the project boundary.		
6.6. How was this choice been justified by the PP and is the justification reasonable? <i>(Please list the justification for each choice, present a comment whether it seems reasonable and provide information how the assessment was conducted e.g. assessment of supporting documentation, etc.)</i>		N/A	N/A	N/A
7. BASELINE IDENTIFICATION				
7.1. Are there any procedures in the methodology to identify the most reasonable baseline scenario? <i>(Please list them and review whether they were applied correctly)</i>	VVM 81	Baseline is explicitly prescribed in methodology AMS-III.G and AMS-I.D for component I and III respectively.	OK	OK
7.2. Does the applied methodology require the use of tools to establish the baseline scenario? <i>(If yes please list them and review whether they were applied correctly)</i>	VVM 81	No, the applied methodology does not require using tools to establish baseline scenario.	N/A	N/A
7.3. In case of any inconsistencies between the methodology and a tool please note that the guidance of the methodology supersedes the tool and review whether the PP has correctly applied this principle correctly.	VVM 81	N/A	N/A	N/A
7.4. If the methodology requires to consider several alternative scenarios to identify the most reasonable baseline scenario which were considered by the PP?	VVM 82	N/A	N/A	N/A
7.5. Are the scenarios considered reasonable and justified? Please indicate how this requirement has been assessed. (following 7.4)	VVM 82	Yes, the baseline scenario, as prescribed by the methodology, is reasonable.	OK	OK
7.6. Were any reasonable alternative scenarios excluded? If so please list them and validate why they are excluded. (following 7.4)	VVM 82	N/A	N/A	N/A
7.7. Please describe how the validation of baseline scenario determination is	VVM 83	The selected methodologies already	OK	OK

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done and describe the findings, with details of the assessments regarding the reasonableness, correctiveness and appropriateness of: a) assumptions, calculations and rationales used for determining the baseline scenario; b) documents and sources quoted and interpreted in PDD for baseline determination; c) information provided in the PDD for baseline determination, compared to information from other verifiable and credible sources, such as local expert opinion if available.		prescribe baseline scenario and the baseline scenario in PDD is in accordance with it. This has been validated through document check		
7.8. Have all applicable CDM requirements been taken into account in the identification of the baseline scenario for the proposed CDM project activity (including "relevant national and/or sectoral policies and circumstances")? <i>(Please list the considered requirements and comment respectively and refer to EB 22, Annex 3 before answering the question)</i>	VVM 84	N/A, since the selected methodologies already prescribe baseline scenario.	N/A	N/A
7.9. Does the PDD contain description of the technology that would be employed in the absence of the CDM project activity?	VVM 85	Not required since baseline is prescribed by methodology.	N/A	N/A
7.10. Does the PDD contain description of the activities that would take place in the absence of the CDM project activity?	VVM 85	Not required since baseline is prescribed by methodology.	N/A	N/A
7.11. In case the grid-factor was applied ex-ante to determine the baseline emissions and/or the project emission, please review whether this grid-factor is still valid.		Grid-factor is applied ex-ante to determine the baseline emission. The factor referenced in B.4. is valid at the time of validation. Please refer to 8 for details in grid-factor calculation.	OK	OK
7.12. Final conclusion: Does the PDD provide a verifiable description of the identified baseline scenario? <i>(Please provide and specify a statement)</i>	VVM 85	Yes, the baseline scenario is explicitly prescribed by the applied methodology and the PDD provides verifiable description of the identified	OK	OK

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		<p>baseline scenario: For methane destroying: The situation where, in the absence of the project activity, biomass and other organic matter are left to decay within the project boundary and methane is emitted to the atmosphere. Baseline emissions shall exclude methane emissions that would have to be removed to comply with national or local safety requirement or legal regulations.</p> <p>For electricity generation: Product of electricity energy baseline expressed in kWh of electricity produced by the renewable generating unit multiplied by an emission factor. Combined margin (CM) is adopted for emission factor.</p>		
8. ALGORITHMS AND/OR FORMULAE USED TO DETERMINE EMISSION REDUCTIONS				
8.1. What are the parameters applied in the PDD to determine emission reductions? Are all the required ex-ante parameters and equations included in the PDD as required by the applied methodology?	VVM 89	<p>The ex-ante parameters applied to calculate ex-ante emission reduction are indicated in published PDD Section B.6.2 as:</p> <p>W_x; ϕ; OX; F; MCF; DOC_j; k_j; $FC_{i,y}$; $NCV_{i,i}$; $EF_{CO2,i}$; EG_y; $F_{i,j,y}$; $OXID_i$; D_{CH4}, Internal use rate of power plant;.</p>		

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		<p>Besides, $MD_{reg,y}$, which are also used to calculate ex-ante emission reduction, is included in B.7.1 rather than B.6.2, since for actual emission reduction calculation it will be monitored.</p> <p>However, CL 5 and CL 7 were raised.</p> <p>Baseline emission comes from two parts:</p> <ol style="list-style-type: none"> 1. Destroy of methane. <p>Equations in "Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site" Version 04 are applied and included in PDD.</p> <ol style="list-style-type: none"> 2. Displacement of grid electricity. <p>This part of baseline emission is the net supplied electricity multiplied by the emission factor.</p> <p>The emission factor is calculated according to the EF tool. Simple OM method and method in a deviation (http://cdm.unfccc.int/UserManagement/FileStorage/6POIAMGYOEDOTK)</p>	CL5 CL 7	OK OK

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		<p>W25TA20EHEKPR4DM) for BM is applied.</p> <p>According to methodology AMS-III.G, project emission caused by power consumption should be accounted. However, since the electricity consumption has already been deducted from electricity generation to get the net electricity supply, which is used in the calculation of baseline emission brought by electricity displacement, project emission can be considered as zero.</p> <p>Also, since there is no technology or equipment transferred from another project activity, according to the methodologies, leakage is zero.</p> <p>Relevant equations in the applied methodologies and methodology tools are included in PDD.</p>		
8.2. Is an Excel file with detailed emission reduction calculation in a reproducible format (i.e. indicating the formulae applied and properly linked) provided by the PP's?		<p>Excel file with detailed emission reduction calculation in a reproducible format has been provided by PP.</p> <p>Grid emission factor is indicated as a</p>	OK	OK

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION		Draft Concl.	Final Concl.
		<p>value in the ER sheet. Excel file with detailed emission reduction calculation has not been submitted.</p> <p>However, it is to be noted that the calculation of emission factor applied in the PDD is from Chinese DNA's latest publication dated 2nd July 2009 (http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2333.pdf) and the result is the same. Excel file with detailed calculation for OM and doc file with detailed calculation for BM are also available on China DNA's website.</p>			
<p>8.3. Have the parameters in the PDD in comparison with those in the selected approved methodology been correctly applied? Please complete the following table for each parameter.</p> <p>(Please apply the table for each parameter listed in 8.1; tables can be copied and pasted or deleted, according to the number of parameters.</p> <p>For each parameter, below the table please specify how each requirement was validated, with list of any other data sources used to verify the data and parameters used in the equations)</p>		Parameter Checklist	Yes / No		
		Parameter	W _x		
		Title in line with methodology?	N		
		Data unit correctly expressed?	N		
		Appropriate description of parameter?	N		
		If ex-ante determined, are data sources and assumptions appropriate and calculations correct?	N		

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION		Draft Concl.	Final Concl.
		If monitored, is the estimation reasonable?	N/A	OK	OK
		Parameter Checklist	Yes / No		
		Parameter	φ		
		Title in line with methodology?	Y		
		Data unit correctly expressed?	N/A		
		Appropriate description of parameter?	Y		
		If ex-ante determined, are data sources and assumptions appropriate and calculations correct?	Y		
		If monitored, is the estimation reasonable?	N/A		

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION		Draft Concl.	Final Concl.
		Parameter Checklist	Yes / No		
		Parameter	OX		
		Title in line with methodology?	Y		
		Data unit correctly expressed?	N/A		
		Appropriate description of parameter?	Y		
		If ex-ante determined, are data sources and assumptions appropriate and calculations correct?	Y		
		If monitored, is the estimation reasonable?	n/a		

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION		Draft Concl.	Final Concl.
		Parameter Checklist	Yes / No		
		Parameter	F		
		Title in line with methodology?	Y		
		Data unit correctly expressed?	N/A		
		Appropriate description of parameter?	Y		
		If ex-ante determined, are data sources and assumptions appropriate and calculations correct?	Y		
		If monitored, is the estimation reasonable?	n/a		

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION		Draft Concl.	Final Concl.
		Parameter Checklist	Yes / No		
		Parameter	MCF		
		Title in line with methodology?	Y		
		Data unit correctly expressed?	N/A		
		Appropriate description of parameter?	Y		
		If ex-ante determined, are data sources and assumptions appropriate and calculations correct?	Y		
		If monitored, is the estimation reasonable?	n/a		

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION		Draft Concl.	Final Concl.
		Parameter Checklist	Yes / No		
		Parameter	DOC _j		
		Title in line with methodology?	Y		
		Data unit correctly expressed?	N/A		
		Appropriate description of parameter?	Y		
		If ex-ante determined, are data sources and assumptions appropriate and calculations correct?	Y		
		If monitored, is the estimation reasonable?	n/a		

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION		Draft Concl.	Final Concl.
		Parameter Checklist	Yes / No		
		Parameter	k _j		
		Title in line with methodology?	Y		
		Data unit correctly expressed?	N/A		
		Appropriate description of parameter?	Y		
		If ex-ante determined, are data sources and assumptions appropriate and calculations correct?	Y		
		If monitored, is the estimation reasonable?	n/a		

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION		Draft Concl.	Final Concl.
		Parameter Checklist	Yes / No		
		Parameter	FC _{i,y}		
		Title in line with methodology?	Y		
		Data unit correctly expressed?	Y		
		Appropriate description of parameter?	Y		
		If ex-ante determined, are data sources and assumptions appropriate and calculations correct?	Y		
		If monitored, is the estimation reasonable?	n/a		

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION		Draft Concl.	Final Concl.
		Parameter Checklist	Yes / No		
		Parameter	NCV _i		
		Title in line with methodology?	N		
		Data unit correctly expressed?	Y		
		Appropriate description of parameter?	Y		
		If ex-ante determined, are data sources and assumptions appropriate and calculations correct?	Y		
		If monitored, is the estimation reasonable?	n/a		

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION		Draft Concl.	Final Concl.
		Parameter Checklist	Yes / No		
		Parameter	EF _{Co2,i}		
		Title in line with methodology?	N		
		Data unit correctly expressed?	Y		
		Appropriate description of parameter?	Y		
		If ex-ante determined, are data sources and assumptions appropriate and calculations correct?	Y		
		If monitored, is the estimation reasonable?	n/a		

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION		Draft Concl.	Final Concl.
		Parameter Checklist	Yes / No		
		Parameter	EG _y		
		Title in line with methodology?	Y		
		Data unit correctly expressed?	Y		
		Appropriate description of parameter?	Y		
		If ex-ante determined, are data sources and assumptions appropriate and calculations correct?	Y		
		If monitored, is the estimation reasonable?	n/a		

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION		Draft Concl.	Final Concl.
		Parameter Checklist	Yes / No		
		Parameter	Fuel oxidation factor		
		Title in line with methodology?	N/A		
		Data unit correctly expressed?	Y		
		Appropriate description of parameter?	Y		
		If ex-ante determined, are data sources and assumptions appropriate and calculations correct?	Y		
		If monitored, is the estimation reasonable?	n/a		

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION		Draft Concl.	Final Concl.
		Parameter Checklist	Yes / No		
		Parameter	Internal use rate of power plant		
		Title in line with methodology?	N/A		
		Data unit correctly expressed?	Y		
		Appropriate description of parameter?	Y		
		If ex-ante determined, are data sources and assumptions appropriate and calculations correct?	Y		
		If monitored, is the estimation reasonable?	n/a		

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION		Draft Concl.	Final Concl.
		Parameter Checklist	Yes / No		
		Parameter	CAP _{i,j,y}		
		Title in line with methodology?	N/A		
		Data unit correctly expressed?	Y		
		Appropriate description of parameter?	Y		
		If ex-ante determined, are data sources and assumptions appropriate and calculations correct?	Y		
		If monitored, is the estimation reasonable?	n/a		
		Please note that since a deviation of BM calculation is applied due to no data available for plant specific generation and fuel consumption in China, the selection of parameters and parameter titles in PDD have some differences with the applied methodology and methodology tool. Some parameters indicated in the methodology tool are not applied			

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.				
		<p>while some parameters not included in the methodology tool are applied. These are all assessed as reasonable and necessary.</p> <p>Chinese DNA publishes standard EF calculation procedure based on methodology and relevant deviation each year for all relevant projects to follow.</p> <p>The validators hereby confirm that the calculation approach and result in the published PDD of this project is in compliance with the standard EF calculation approach and result published by Chinese DNA on 2nd July 2009, which is the latest at the time of GSP.</p> <p>Below are the parameters monitored, which are used in emission reduction calculation:</p>						
		<table><tr><td>Parameter Checklist</td><td>Yes / No</td></tr><tr><td>Parameter</td><td>LFG_{captu}</td></tr></table>	Parameter Checklist	Yes / No	Parameter	LFG _{captu}		
Parameter Checklist	Yes / No							
Parameter	LFG _{captu}							

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION		Draft Concl.	Final Concl.
		Title in line with methodology?	N/A		
		Data unit correctly expressed?	N		
		Appropriate description of parameter?	Y		
		If ex-ante determined, are data sources and assumptions appropriate and calculations correct?	N/A		
		If monitored, is the estimation reasonable?	N/A		
		Parameter Checklist	Yes / No		
		Parameter	LFG _{electr} icity,y		
		Title in line with methodology?	N/A		
		Data unit correctly expressed?	N/A		
		Appropriate description of parameter?	Y		
		If ex-ante determined, are	N/A		

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION		Draft Concl.	Final Concl.
		data sources and assumptions appropriate and calculations correct?			
		If monitored, is the estimation reasonable?	N/A		
		Parameter Checklist	Yes / No		
		Parameter	W _{CH4}		
		Title in line with methodology?	N/A		
		Data unit correctly expressed?	N/A		
		Appropriate description of parameter?	Y		
		If ex-ante determined, are data sources and assumptions appropriate and calculations correct?	N/A		
		If monitored, is the estimation reasonable?	N/A		
		Parameter Checklist	Yes / No		
		Parameter	T		
		Title in line with	N/A		

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION		Draft Concl.	Final Concl.
		methodology?			
		Data unit correctly expressed?	Y		
		Appropriate description of parameter?	Y		
		If ex-ante determined, are data sources and assumptions appropriate and calculations correct?	N/A		
		If monitored, is the estimation reasonable?	N/A		
		Parameter Checklist	Yes / No		
		Parameter	P		
		Title in line with methodology?	N/A		
		Data unit correctly expressed?	N/A		
		Appropriate description of parameter?	Y		
		If ex-ante determined, are data sources and assumptions appropriate and calculations correct?	N/A		
		If monitored, is the estimation reasonable?	N/A		

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION		Draft Concl.	Final Concl.
		Parameter Checklist	Yes / No		
		Parameter	EG _y		
		Title in line with methodology?	N		
		Data unit correctly expressed?	Y		
		Appropriate description of parameter?	Y		
		If ex-ante determined, are data sources and assumptions appropriate and calculations correct?	N/A		
		If monitored, is the estimation reasonable?	N		
8.4. In case the methodology provides the selection of different options for equations or parameters, has an adequate justification been provided and were the correct equations and parameters used in accordance with the methodology?	VVM 89	For grid emission factor calculation, Simple OM method and method in a deviation (http://cdm.unfccc.int/UserManageme		OK	OK

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		<p>nt/FileStorage/6POIAMGYOEDOTK W25TA20EHEKPR4DM) for BM is applied, with reasonable justifications. These are all in compliance with the latest and valid EF tool.</p> <p>For connected electricity system, weighted average operating margin emission rate is selected.</p> <p>Also, the validators confirm that the calculation approach and result in the published PDD of this project is in compliance with the standard EF calculation approach and result published by Chinese DNA on 2nd July 2009, which is the latest at the time of GSP.</p>		
8.5. Are the formulae required for the determination of leakage emissions correctly presented, enabling a complete identification of parameter to be used and / or monitored?		Not applicable. Since the technology and the equipments are not transferred from other sites, according to the methodology, leakage is zero.	N/A	N/A
8.6. Please review and recalculate any equations and indicate whether the calculations are correct. Please provide findings.		Through review and recalculating the equations, CAR 4, CL 4 and CL 5 were raised.	CAR 4 CL 4 CL 5	OK OK OK
9. ADDITIONALITY OF TH PROJECT ACTIVITY				
9.1. If required by methodology, check whether the latest version of the additionality tool is applied and confirm whether all steps are correctly		Not applicable, since the methodologies do not require using	N/A	N/A

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
applied.		additionality tool		
9.2. Please describe how the reliability and credibility of all data, rationales, assumptions, justifications and documentation provided by the project participant to support the demonstration of additionality is assessed and validated, e.g. using local knowledge, sectoral and financial expertise and considering other sources of information for cross checks.	VVM 93	<p>In accordance to the Appendix A to B of the UNFCCC's Simplified Modalities and Procedures for Small-scale CDM Project Activities, the additionality of this project is demonstrated through investment barrier.</p> <p>Benchmark analysis is chosen for investment barrier demonstration.</p> <p>Based on "Interim Rules on Economic Assessment of Electric Engineering Retrofit Projects", which is a current valid national guidance of investing in the power industry in China and is widely used by landfill gas utilization projects, the post-tax project IRR benchmark of this project is defined as 8%. This is assessed as appropriate.</p> <p>Key financial parameters for IRR calculation are listed in PDD. It is indicated that all are from Feasibility Study Report. For the detailed assessment of financial parameters please refer to the annex of this questionnaire.</p> <p>According to published PDD and</p>		

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		<p>relevant IRR sheet, the calculated post-tax IRR without CDM is negative, below the benchmark, which indicates the financial unattractiveness and the resulting investment barrier of this project. With CDM help, the IRR becomes 11.13% according to published PDD, showing that CDM is able to help overcome the investment barrier which prevents the project from implementation.</p> <p>Four parameters (total investment, annual O&M cost, feed-in tariff and annual operation hours) are selected as important indicator for sensitivity analysis, the result of which shows that even when the selected indicators vary in a range of 10%, the IRR is still negative, below benchmark. Moreover, the extent for them to increase/decrease in order to get IRR reach benchmark is calculated. All these analysis shows that IRR of this project is not likely to reach benchmark.</p> <p>The validation of additionality demonstration is carried out by means of document review, background research, using local</p>		

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		<p>knowledge as well as sectoral and financial expertise.</p> <p>Value applied of the parameters are checked with regard to the data source indicated (FSR).</p> <p>Other relevant documents are also reviewed for cross check. For the list of documents, please refer to the "References" of this report.</p> <p>However, during the whole assessment, the following findings are raised and needs to be closed out: CAR 4, , CL4, CL 5 were raised.</p> <p>According to Interim method of Renewable energy prices and cost-sharing management ^{/REP/}, issued by National Development and Reform Commission on 04/01/2006, the electricity feed-in tariff of defined renewable power projects including LFG electricity-generation projects would be the standard feed-in tariff of desulfurized coal-fired power plants in 2005 added by a subsidy of 0.25 RMB/kWh.</p>	<p>CAR 4</p> <p>CL 4</p> <p>CL 5</p>	<p>OK</p> <p>OK</p> <p>OK</p>
9.3. Are any tools and documents provided by the EB to demonstrate the additionality of the proposed CDM project activities relevant and have they been correctly considered and applied? <i>(Please list and specify the</i>	VVM 94	No, since the methodologies applied are not relevant to any tools or documents provided by EB for	N/A	N/A

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
<i>findings)</i>		additionality demonstration.		
9.4. Are any specific complementary or alternative requirements included in the approved CDM methodology and have they been correctly considered and applied? Please list and specify the findings.	VVM 94	No, the applied methodologies do not have any specific complementary or alternative requirements for additionality demonstration.	N/A	N/A
9.5. Prior consideration of the clean development mechanisms (EB 49 Annex 22)				
9.5.1. Is the start date of the project activity, reported in the PDD, in accordance with the latest version of the "Glossary of CDM terms"? http://cdm.unfccc.int/Reference/glossary.html	VVM 96	The start of the project activity indicated in published PDD is not correct. CAR 5 was raised.	CAR 5	OK
9.5.2. Is the project activity, in accordance with the guidance from the EB, a new project activity (project activities with start date at or after 02 August 2008) or an existing project activity (project activities with starting date before 02 August 2008)?	VVM 98	The project start date according to published PDD is after 02 August 2008, thus it is categorized into new project facility.	OK	OK
9.5.3. In case there is a new project activity (start date at or after 02 August 2008) and for which PDD has not been published for global stakeholder consultation or a new methodology is proposed to the EB before the project activity start date, please ensure by means of confirmation from the UNFCCC secretariat that the PP had informed the Host Party DNA and the UNFCCC secretariat by submitting the standardized form F-CDM-prior consideration within 6 months of project start date. <i>(Please document the result of the query)</i>	VVM 99, EB 48 Annex 61	Notification of prior consideration of CDM to host country DNA was signed by China DNA on 23/10/2009. Upon searching UNFCCC website, it is confirmed that the Notification of prior consideration of CDM to UNFCCC was received on 15/12/2009, within 6 months of project start date.	OK	OK

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
<p>9.5.4. If there is an existing project activity (project activities with start date before 02 August 2008) for which the start date is prior to the date of publication of the PDD for global stakeholder consultation please verify through document review that PP's prior consideration:</p> <p>Please assess the fulfilment of following requirements:</p> <ul style="list-style-type: none"> ➤ Evidence that must indicate that 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 project. Evidence to support this would include, inter alia, minutes and/or notes related to the consideration of the decision by the Board of Directors, or equivalent, other project participant, to undertake the project as a proposed CDM project activity. ➤ Reliable evidence from project participants that must indicate that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation. Evidence to support this should include, inter alia, contracts with consultants for CDM/PDD/methodology services, Emission Reduction Purchase Agreements or other documentation related to the sale of the potential CERs (including correspondence with multilateral financial institutions or carbon funds), evidence of agreements or negotiations with a DOE for validation services, submission of a new methodology to the CDM Executive Board, publication in newspaper, interviews with DNA, earlier correspondence on the project with the DNA or the UNFCCC secretariat. 	VVM 100	<p>The project is a new project activity. CDM consideration before project start, as well as the actions taken to secure CDM status in parallel with project implementation, is described in detail in PDD. An event time table including milestones of project implementation and CDM consideration is provided in PDD. However, CAR 4 was raised.</p>	CAR 4	OK
9.6. Identification of alternatives				
9.6.1. Does the PDD identify credible alternatives to the project activity in order to determine the most realistic baseline scenario, unless the applied approved methodology prescribes the baseline scenario and no further analysis is required?	VVM 103	This project is a small scale project and the applied methodology does not require identification of	N/A	N/A

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		alternatives. Baseline is prescribed by methodologies.		
9.6.2. Does the list of alternatives given in the PDD ensures that: <ul style="list-style-type: none"> ➤ The list of alternatives includes as one of the options that the project activity is undertaken without being registered as a proposed CDM project activity? ➤ The list contains all plausible alternatives which can be considered to be viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity? ➤ The alternatives comply with all applicable and enforced legislation? 	VVM 104	Not applicable.	N/A	N/A
9.6.3. In case the PDD argues that specific laws are not enforced in the country or region: Is evidence available concerning that statement?		Not applicable.	N/A	N/A
9.7. Investment Analysis				
9.7.1. Has the investment analysis been used to demonstrate the additionality of the proposed CDM project? <i>(If not please continue with question 9.8)</i>	VVM 106	Yes, investment analysis is used to demonstrate additionality.	OK	OK
9.7.2. Which approach is chosen for investment analysis of the proposed CDM project activity and is it appropriate? <ul style="list-style-type: none"> a. The proposed CDM project activity would produce no financial or economic benefits other than CDM-related income, and there is at least one alternative which is less costly than the proposed CDM project activity (simple cost analysis); b. The proposed CDM project activity is less economically or financially attractive than at least one other credible and realistic alternative (comparison analysis); c. The financial returns of the proposed CDM project activity would be insufficient to justify the required investment (benchmark analysis). <i>Describe why the selected analysis approach is appropriate under consideration of potential revenues and costs, potential project alternatives</i>	VVM 107	Benchmark analysis is chosen. it is appropriate, since the project gets revenue from power sale as well as CDM, and the baseline to compare with is not an investment option.	OK	OK

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<i>and potential available benchmark values.</i>				
9.7.3. Is an Excel file with detailed calculation of investment analysis indicators available? Are all formulas used in the analysis readable and all relevant cells viewable and unprotected?		Yes, an Excel file of IRR calculation is provided, with detailed calculation of investment analysis indicators available. The source of data is also provided.	OK	OK
9.7.4. Please describe how the accuracy of financial calculations carried out for any investment analysis is validated: <ul style="list-style-type: none"> ➤ Are all input values used valid and applicable at the time of investment decision by the PP according to the available evidence and expertise in relevant accounting practices (such as feasibility reports, public announcements and annual financial reports related to the proposed CDM project activity and the project participants), with crosschecks against third-party or publicly available sources, such as invoices or price indices? ➤ Are the computations carried out and documented by the project participants correct? 	VVM 109	<p>All input values used are from draft FSR, which was completed in Sep. 2008, in which CDM is considered and recommend. The CDM board meeting was held on 21 Sep.2008. The time between is short enough. The project start date is on 3 Aug. 2009. The final FSR got approved on 31 Jul.2009. The financial data in chapter 9 are the same as that in the draft FSR. Thus the input values used are valid and applicable both at the time of investment decision and at the time of project start.</p> <p>Other sources are also used for cross-checking the parameter values. Please see the attached Assessment of Financial parameters table for details.</p> <p>CAR 4, CL 4 and CL 5 are raised during the validation of parameter values.</p>	<p>CAR 4</p> <p>CL 4</p> <p>CL 5</p>	<p>OK</p> <p>OK</p> <p>OK</p>

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
<p>9.7.5. In cases where the PP's rely on values from Feasibility Study Reports (FSR) that are approved by national authorities for proposed project activities, describe the means to validate the following requirements:</p> <ul style="list-style-type: none"> ➤ The FSR has been the basis of the decision to proceed with the investment in the project, i.e. that the period of time between the finalization of the FSR and the investment decision is sufficiently short for the DOE to confirm that it is unlikely in the context of the underlying project activity that the input values would have materially changed; ➤ The values used in the PDD and associated annexes are fully consistent with the FSR, and where inconsistencies occur the DOE should validate the appropriateness of the values; ➤ On the basis of its specific local and sectoral expertise, confirmation is provided, by crosschecking or other appropriate manner, that the input values from the FSR are valid and applicable at the time of the investment decision. 	VVM 111	<p>The investment analysis is based on values from draft Feasibility Study Report, which serves as data source for investment analysis.</p> <p>-Draft FSR was completed in Sep. 2008, with CDM revenue included.</p> <p>-The Board Meeting for CDM decision held on 21 Sep. 2008.</p> <p>- Final FSR was completed in Jun. 2009. It considers CDM revenue to enhance project financial attractiveness and is the basis of the decision to proceed with the investment in the project. The project approval certificate, which is based on information in FSR, was issued by Henan Province Development and Reform Commission on 31 Jul. 2009. Thus the period of time between the finalization of the FSR and the investment decision is sufficiently short for the DOE to confirm that it is unlikely in the context of the underlying project activity that the input values would have materially changed.</p> <p>- All input values used are from FSR.</p>	<p>CAR 4</p> <p>CL 4</p> <p>CL 5</p>	<p>OK</p> <p>OK</p> <p>OK</p>

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		- Cross-checking of parameters using local and sectoral knowledge is conducted. CAR 4, CL 4, CL 5 raised regarding total investment. Refer to the attached Assessment of Financial Parameters table for details.		
9.7.6. Are the type of benchmark (if applicable) chosen (local commercial lending rates or weighted average costs of capital for project IRR; required/expected returns on equity for equity IRR) and the type of financial indicator calculated (e.g. project IRR, equity IRR, etc.) suitable to each other?	VVM 110	The type of indicator chosen in investment analysis is post-tax project IRR. According to Interim Rules on Economic Assessment of Electric Engineering Retrofit Projects, issued by the State Power Corporation of China in 2003, post-tax project IRR benchmark of projects in power industry, 8%, is correctly chosen as benchmark for the project. It is concluded that the type of benchmark and type of financial indicator are suitable to each other. however, CL 5 was should closed out first.	CL 5	OK
9.7.7. In case the project activity could also be developed by an entity other than the project participant, is the benchmark based on publicly available data sources which can be clearly validated? <i>(Such data sources may include local lending and borrowing rates ,equity indices, or benchmarks determined by relevant national authorities. The DOE's validation of such benchmarks shall also include its opinion of the</i>		There had been no restriction that the project activity can only be developed by Shanghai BCCY New Power Industry Co., Ltd. The benchmark 8% for post-tax project IRR is for power industry,	CL 5	OK

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
<i>suitability of the benchmark applied in the context of the underlying project activity)</i>		without any specific relation to the project owner. Data source of the chosen benchmark is official financial calculation guidelines (Interim Rules on Economic Assessment of Electric Engineering Retrofit Projects), which is publicly available. Through document check and background investigation it is confirmed that the benchmark application is appropriate. However, CL 5 was should closed out first.		
9.7.8. In cases that internal company benchmarks/expected returns are applied, is it verified that there is only one possible project developer and, either the internal company benchmarks/expected returns have been used for similar projects with similar risks developed by the same company or, if the company is brand new, have been used for similar projects in the same sector in the country/region?		Not applicable, since the project uses sectoral benchmark. However, CL 5 was should closed out first.	CL 5	OK
9.7.9. Are the risk premiums applied in determining the benchmark reflect the risks associated with the project type or activity?		Not applicable.	N/A	N/A
9.7.10. Is it reasonable to assume that no investment would be made at a rate of return lower than the benchmark? (For example, assessing previous investment decisions by the project participants involved and determining whether the same benchmark has been applied or if there are verifiable circumstances that have led to a		It is assessed as reasonable to assume that no investment would be made for the project at a post-tax IRR lower than benchmark 8% as prescribed in FSR, unless there are	CL 5	OK

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
<i>change in the benchmark)</i>		other beneficial incentives available to make the IRR reach benchmark. However, CL 5 was should closed out first.		
9.7.11. If a fair value for the project assets in the end of the assessment period is included, assess whether it is calculated in accordance with the local accounting regulations where available or international best practice. <i>(State the accounting regulations applied for calculating the fair value for the project assets in the end of the assessment period and describe why these are applicable under the project specific circumstances. Describe potential mismatches between regulations and the approach applied for calculating the fair value)</i>		According to published PDD and the IRR calculation sheet related, the period for investment analysis of this project is 15 years, and the project assets depreciate throughout the period with a residue rate 5% at the end. Based on document review, this calculation approach is consistent with FSR. However, CL 5 was should closed out first.	CL 5	OK
9.7.12. Does the financial indicator calculation include adding back of the depreciation and other non-cash related items to taxable profits?		Yes, recovered depreciation residue and recovered circulation fund would be added back to taxable profits at the end year of investment analysis. However, CL 5 was should closed out first.	CL 5	OK
9.7.13. In case of project activities for which implementation ceases after the commencement and where implementation is recommenced due to		Not applicable, since the project is a new project and there is no	N/A	N/A

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consideration of the CDM, does the investment analysis reflect the economic decision making context at point of the decision to recommence the project?		implementation ceasing involved.		
9.7.14. If project IRR is chosen: Are the costs of financing expenditures (loan repayments and interests) excluded from the calculation of project IRR?		Project IRR is chosen and loan repayment and interests are excluded from the calculation of project IRR. Actually the FSR estimates that all investment comes from equity and interview with the project owner confirms it. No loan is involved.	CL 5	OK
9.7.15. If project IRR is chosen and a post-tax benchmark is applied, is the actual interest payable taken into account in the calculation of income tax, with an reasonable interest rate?		Not applicable. The FSR estimates that all investment comes from equity and interview with the project owner confirms it. No loan is involved.	N/A	N/A
9.7.16. If equity IRR is chosen: Is the part of the investment costs which is financed by equity considered as net cash outflow? Is the part of investment costs which is financed by debt excluded in net cash outflow?		Not applicable.	N/A	N/A
9.7.17. Are the results of variation of variables that constitute more than 20% of either total project costs or total project revenues clearly presented in PDD and reproducible with spreadsheet? Are the ranges of variation (eg. 10%) deemed appropriate in the context of the specific project circumstances?		Four variables are chosen on latest PDD for sensitivity analysis: -total Investment; -feed-in tariff; -annual O&M cost. -annual operation hours Investment of fixed assets is the costs	CL 5	OK

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
		<p>for project construction.</p> <p>Feed-in tariff impact on the total project revenue.</p> <p>Annual O&M cost is the annual total cost in operational period.</p> <p>Thus the selection of variables meets the requirement of constituting more than 20% of total project costs or project revenue.</p> <p>Possibility of 10% variation of the selected variables as well as their consequences on project IRR is discussed in B.5. Besides, critical analysis is also done for investment and annual electricity output, which shows that in order to make the IRR reach benchmark, the selected variable needs to increase/ decrease largely which is impossible in context of project situation and current policy frame.</p> <p>However, CL 5 was should closed out first.</p>		
9.7.18. Overall, is the investment analysis in accordance with the latest version of the "Guidelines on the Assessment of Investment Analysis" as provided by the EB (EB Report 51, Annex 58) and other relevant guidance including the latest guidelines on plant load factors "guidelines for the reporting and	VVM 108	CAR 4, CL5 are raised and needs to be closed out.	CL 4 CAR 5	OK

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
validation of plant load factors"?				
9.8. Barrier Analysis				
9.8.1. Has the barrier analysis been used to demonstrate the additionality of the proposed CDM project? <i>(If not please continue with question 9.9)</i>	VVM 113	At GSP stage, the barrier analysis is chosen, however, PP has changed to apply benchmark analysis. CL 5 was raised.	CL 5	OK
9.8.2. What barriers are identified and described in PDD to demonstrate additionality?		Not applicable.	N/A	N/A
9.8.3. Does any issue considered in the barrier analysis have a clear direct impact on the financial returns of the project activity and thus shall be assessed by investment analysis? <i>(Please note that such issues are defined in this context as those issues whose impacts can be expressed in monetary terms with reasonable certainty. But this does not refer to:</i> ➤ <i>Risk related barriers, for example risk of technical failure, that could have negative effects on financial performance, or</i> ➤ <i>Barriers related to the unavailability of sources of finance for the project activity.)</i>	VVM114	Not applicable.	N/A	N/A
9.8.4. To assess the barrier analysis apply the following two-step process: a. Please assess whether the barriers are real: Please assess the available evidence and/or undertake interviews with relevant individuals (including members of industry associations, government officials or local experts if necessary) to determine whether the barriers listed in the PDD exist. <i>(Review that existence of barriers is substantiated by independent sources of data such as relevant national legislation, surveys of local conditions and national or international statistics. If existence of a barrier is substantiated only by the opinions of the project participants,</i>	VVM 115	Not applicable.	N/A	N/A

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<p><i>this shall not be considered to be adequately substantiated. To demonstrate that a barrier is real it has to be supported by sufficient evidence on the basis of sectoral or local expertise)</i></p> <p>b. Do the barriers prevent the implementation of the project activity but not the implementation of at least one of the possible alternatives?</p> <p><i>(Please note, that not all barriers present an insurmountable hurdle to a project activity being implemented. By applying local and sectoral expertise to judge whether a barrier or set of barriers would prevent the implementation of the proposed CDM project activity and would not equally prevent implementation of at least one of the possible alternatives, in particular the identified baseline scenario)</i></p>				
9.8.5. Is it sufficiently demonstrated that CDM alleviates the identified barriers that prevent the proposed project activity from occurring?		Not applicable.	N/A	N/A
9.8.6. Overall, is the barrier analysis in compliance with the latest version of "Guidelines for objective demonstration and assessment of barriers (EB50, Annex 13)"?	VVM 113	Not applicable.	N/A	N/A
9.9. Common Practise Analysis				
9.9.1. Is common practice required by the methodology applied by the proposed project activity to demonstrate additionality? <i>(If not please continue with question 10)</i>		Not required by the methodology.	N/A	N/A
9.9.2. Is the proposed project activity first-of-its-kind? If so, please specify how this statement is substantiated.	VVM 117	Not applicable.	N/A	N/A
9.9.3. In case the project activity is not first of its kind, is the geographical scope (e.g. the defined region) of the common practice analysis appropriate for the assessment of common practise related to the project activity's technology or industry type? Please consider that for certain technologies the relevant region for assessment will be local and for others it may be transnational / global. If a region other than the entire host country is	VVM 118	Not applicable.	N/A	N/A

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chosen, please assess the explanation why this region is more appropriate. <i>(Please specify how the geographical scope of the common practice analysis has been validated)</i>				
9.9.4. Was an assessment concerning the existence of other similar projects undertaken? Does this include official sources and was local and industry expertise used to determine to what extent similar and operational projects (e.g., using similar technology or practice), other than CDM project activities, exist in the defined region? <i>(Please specify the findings and indicate how the findings were validated e.g. review of the relevant resources listed above)</i>	VVM 118	Not applicable.	N/A	N/A
9.9.5. If similar and operational projects, other than CDM project activities, are already “widely observed and commonly carried out” in the defined region, what are essential distinctions between the proposed CDM project activity and the other similar activities? <i>(Please specify how the essential distinctions between the proposed CDM project activity and any similar projects that are widely observed and commonly carried out were assessed)</i>	VVM 118	Not applicable.	N/A	N/A
9.9.6. Final Conclusion: Based on the assessment of questions 9.1. to 9.9.5. is the proposed project activity additional?		Not applicable.	N/A	N/A
10. MONITORING PLAN				
10.1. Does the PDD include a monitoring plan?	VVM 120	Yes, the PDD includes a monitoring plan.	OK	OK
10.2. Does the monitoring plan comply with the approved methodology? <i>(Please verify that all necessary parameters are included, clearly described and that the means of monitoring described in the plan complies with the requirements of the methodology)</i>	VVM 121	Yes, the monitoring plan complies with the applied methodology. All necessary parameters are included and clearly described according to	OK	OK

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		methodology requirements.		
10.3. Are the monitoring arrangements described in the monitoring plan feasible within the project design? <i>(Please check by review of the documents, interviews with relevant personnel, project plans and any physical site inspection of the proposed CDM project activity this requirement and document the findings)</i>	VVM 121	Yes, the monitoring arrangements described in the monitoring plan are feasible within the project design. However, CL 8 was raised.	CL 8	OK
10.4. Are the means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified?	VVM 121	Yes, the means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures are sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified.	OK	OK
10.5. Final Conclusion: Based on the assessment of the requirements 10.1 to 10.4 is the monitoring plan in accordance with the applied monitoring methodology?		The monitoring plan is in accordance with the applied monitoring methodology.	OK	OK
11. LOCAL STAKEHOLDER CONSULTATION				
11.1. Were relevant stakeholders invited by the PP's to comment on the proposed CDM project activity prior to the publication of the PDD on the UNFCCC website?	VVM 126	Yes, comments of local stakeholders were invited by means of questionnaire in Sep. 2009, which is prior to the publication of PDD on UNFCCC website.	OK	OK
11.2. 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?		No, stakeholder consultation process is not required by regulations/laws in China.	OK	OK

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
11.3. Have appropriate media been used to invite comments by local stakeholders?		Yes, questionnaires were sent to the stakeholders to invite comments.	OK	OK
11.4. Is the summary of the received comments complete? <i>(Please specify how this requirement was verified)</i>	VVM 127	Yes, the summary of received comments is provided in E.2 of PDD.	OK	OK
11.5. Have the PP's taken due account of any comments received and have they described this process in the PDD?	VVM 127	Stakeholder questionnaire indicates some concerns regarding possible negative impact of the project, i.e. noise and safety ensurance. This concern and the relevant due account is described in E.3.	OK	OK
12. ENVIRONMENTAL IMPACTS				
12.1. Have the PP's submitted an analysis of environmental impacts of the project activity? If those impacts are considered significant by the project participants or the host Party is an Environmental Impact Assessment (EIA) generated? <i>Please specify how this requirement was validated (e.g. document review, interview with local authorities, and review of local regulations).</i>	VVM 130	Yes, PP has submitted the approved Environment impact assessment report. The impact of this project is not considered significant by EIA. This is confirmed by document review and interview with official from local Environment Protection Bureau.	OK	OK
12.2. Were transboundary environmental impacts identified in the analysis?		There is no transboundary environment impact according to the EIA.	OK	OK
12.3. Will the project create any adverse environmental effects?		According to EIA the impacts of the project is not considered as significant and the adverse effects are controllable.	OK	OK

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CHECKLIST QUESTION / VVM REQUIREMENT	Source	MEANS AND FINDING OF VALIDATION	Draft Concl.	Final Concl.
12.4. Have the identified environmental impacts been addressed in the project design sufficiently?		Yes, identified environment impacts are not considered as significant and are addressed by EIA.	OK	OK
12.5. Does the project comply with environmental legislation in the host country?		Yes, the project has got EIA approval and complies with environment legislation in the host country.	OK	OK

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Resolution of Corrective Action and Clarification Requests including list of Forward Action Requests

Description of Finding (CAR, CL, FAR) <i>Describe the finding in a transparent manner i.e. state clearly what is required and why; address the context (e.g. section)</i>	Date <i>(dd/mm/yyyy)</i>	Project Participants Response <i>This section shall be filled by the PP. The finding shall be addressed with suitable arguments and evidence</i>	Date <i>(dd/mm/yyyy)</i>	GLC Assessment <i>The assessment shall include how the finding is closed i.e. how it is found that the response is assessed to be appropriate and meeting the specific requirement of the finding. In case the response is not satisfactory, additional response and DOE assessments (#2, #3, etc.) shall be sought.</i>	Date <i>(dd/mm/yyyy)</i>
CAR 1 On page 4 section A.3, The PP is requested to provide the Letter of Approvals (LoAs) issued by China and Germany together with the MoC countersigned by both parties to the DOE before submitting the request of registration.	31/01/ 2010	The LoA is not available at present.	14/05/2010	LOAs are still pending.	12/06/2010
CAR 1(continuation)	12/06/2010	LoA of Chinese DNA is provided to GLC	27/07/2010	The LoA issued by Chinese DNA with the title of the project activity has been checked as valid. Please provide the LoA issued by Germany together with the MoC in later response.	08/08/2010
CAR 1 (continuation)	08/08/2010	MoC and Germany LoA are provided	10/02/2011	The two LoAs and MoC are provided, both are assessed as valid.	08/07/2011
CAR 2 On page 6, section A4.2 the PDD states the table 1 which includes the specification of the gas engines, but the parameter---lifetime of gas engines was not included in the table 1.	31/01/ 2010	Lifetime of gas engine is 15 years, and the statement from engine producer is submitted to GLC.	14/05/2010	OK. The lifetime of gas engines was included in revised PDD.	12/06/2010

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The PP shall indicate the lifetime of the gas engines and provide related evidence.					
CAR 3 On page 8 section B.1, it is stated that “Tool to calculate the emission factor for an electricity system” (version 01.1) has been applied in the proposed project, but the new version of this tool is version 2. The PP shall apply version 2 of the “Tool to calculate the emission factor for an electricity system” instead of version 1.1.	31/01/ 2010	The version of the “Tool to calculate emission factor for an electricity system” has been changed into version 2 in the revised PDD (version 03).	14/05/2010	OK. The version of “Tool to calculate emission factor for an electricity system” has been correctly applied in PDD.	12/06/2010
CAR 4 On page 12, section timeline of milestone of the CDM consideration. The PP shall provide detailed background information of each event concerning the CDM. Furthermore the PP shall elaborate in detail the individual events regarding the project owner becoming aware of CDM including the internal decision to proceed with further assessments. In addition the meeting minutes of the Board meeting dated September 2008 states that Project Owner considered to apply for CDM due to lower IRR. However, according to the provided timeline in the PDD the FSR was completed after the Board meeting. Thus the	31/01/ 2010	In 07/2008, the project owner signed the contract with Henan Zhengzhou Electrical Design Institute for feasibility study of the proposed project. At 21/09/2008, the project owner held up board meeting and the board members decided to introduce CDM to Luohe Landfill gas (LFG) recovery to power project due to the investment barriers shown by the lower IRR without CDM revenue. The result of IRR came from the draft FSR which was available before the board meeting. In order to further assess the CDM feasibility of the proposed project, the project owner	14/05/2010	PP mentioned that the result of low IRR came from the draft FSR which was available before the board meeting. Please provide the draft FSR to DOE for validation. Please indicate in the PDD when the CDM consultancy agreement was signed.	12/06/2011

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<p>PP shall clarify the basis for the decision of the Board and shall provide relevant evidence.</p> <p>The PP shall include the date of signing equipment contract.</p>		<p>consulted CDM related entities and buyers.</p> <p>At 06/2009, Oasis, consultant company for the proposed project, conducted first on-site visit of the landfill site. Then the project owner got contact with UPM Umwelt-Projekt-Management GmbH through Oasis. After nearly 4 months negotiation, the ERPA was signed between project owner and UPM at 15/10/2009.</p> <p>At 06/2009 the final FSR to apply PDRC approval with consideration of CDM benefits has been finished.</p> <p>At 31/07/2009 the FSR was approved by Henan Development and Reform Commission, which marks that the project is approved by the government and the construction of the project is allowed.</p> <p>At 03/08/2009, the construction contract has been signed and the construction work started.</p> <p>At 09/09/2009, the project owner signed engine purchase contract with provider, Jinan Diesel engine CO., Ltd. The date will be added to the revised PDD (version 03) and the contract will provide to GLC for</p>			
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		<p>validation.</p> <p>In order to collect the comments of relevant stakeholders on the proposed project in terms of environmental, social and other aspects, at 12/09/2009 the project owner placed a notice on the local newspaper to call for attention and the public participating for the stakeholder meeting, which was held at 23/09/2009. During the stakeholder meeting, the introduction of the proposed project and CDM were given to the involved stakeholders, questions raised by the stakeholders have been answered and questionnaires concerning environmental, social issues were handed out and filled before the meeting closed.</p> <p>According to EB 49 Annex 22, for project activities with starting date on or after 02 August 2008, the PP must inform a Host Party DNA and the UNFCCC secretariat within 6 months of the project activity start date for their intention to seek CDM status. Therefore, the project owner informed Chinese DNA, NDRC, for prior consideration of CDM at 16/10/2009 and got the confirmation from NDRC at 23/10/2009. An informing email was also sent to secretariat at 15/12/2009. The start date of the project is</p>			
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		03/08/2009, so both of the dates that DNA and secretariat were informed are within 6 months range.			
CAR 4(continuation)	12/06/2010	The draft FSR is provided to GLC and the date when CDM consultancy agreement was signed is added in revised PDD.	27/07/2010	<p>1, Please explains why the value of electricity generation and its calculation process are not available in the draft FSR, and also explain how the IRR can be calculated under this condition.</p> <p>2, It is found that on page 46 of draft FSR and page 48 of the FSR, the expected emission reduction of the project is indicated, and the value is the same. In the FSR, the emission reduction is calculated in chapter 4.1.4. However, no analysis or calculation on emission reduction has been conducted in draft FSR, the PP is requested to clarify where and how the emission reduction in draft FSR come from and other information(CER revenue, IRR) related with emission reductions in draft FSR.</p> <p>3, Why financial sheets are totally absent in the draft FSR and the FSR. Such as Profit & Loss, Loan& Payment, and IRR cash flow sheet?</p>	08/08/2010
CAR 4(continuation)	08/08/2011	1.the FA spreadsheet of the proposed project which was made by DI during compiling FSR (draft and final) contains equations on how yearly electricity	10/02/2011	<p>OK.</p> <p>1, The calculation of electricity generation has been clearly indicated in the PP's response. All the parameters are directly from FSR and</p>	24/03/2011

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		<p>production was calculated, the process is as follows:</p> <ul style="list-style-type: none"> ○ First 8 years, the annual electricity production is $2.0 \times 6,500 \times 0.9 = 11,700 \text{ MWh/a}$ ○ Subsequent 7 years, the annual electricity production is $1.5 \times 6,500 \times 0.9 \times 0.9 = 10,530 \text{ MWh/a}$ <p>0.9 in 1) means full load factor, it is stated at chapter 4 of FSR (draft page 16 and final page 18) that the full load capacity of engine (500GF-NK) is 450kW and the plate capacity is 500kW, so the full load rate is 90%;</p> <p>The second 0.9 in 2) is used for considering decline of engine capacity and gas production after 8 years operation. The situation is explained in the statement of DI which was provided to GLC at September 9th.</p> <p>2. The detailed ER calculation process has been added into the final FSR at page 19, table 4-5 according to project owner's requirement and in favour of CDM, it is estimated that the total ER of 10 years is 45,010 tons and the average ER of 40,000 tons was used in FA to calculate IRR.</p>		<p>the evidence from design institute.</p> <p>2, According to PP's response, there is no detailed ER calculation in draft FSR, but in final FSR, the ER was calculated based on the discussion between design institute and PP. GLC accepted this approach.</p> <p>3, The financial sheet was not attached in FSR, but the financial sheet(excel version) was provided to GLC.</p>	
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		3. The original Chinese spreadsheet with all sheets is provided to GLC, as well as the translated FA spreadsheet.			
CAR 5 On page 42, section C.1 The stated starting date of the project activity is not correct. The PP is requested to revise the project starting date and the reason based on EB 41 paragraph 67, in addition the PP shall provide evidence for the starting date.	31/01/ 2010	In light of glossary of CDM terms and EB 41 paragraph 67, the start date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins. For the proposed CDM project activity, construction contract was signed at 03/08/2009, and engine purchasing contract was signed at 09/09/2009. So the start date should be the date that construction contract was signed, i.e. 03/08/2009.	14/05/2010	Please make relevant statement in Section C1.1 in the PDD and provide the construction contract as well as engine purchasing contract to DOE. The engine purchasing contract has not been submitted to DOE, please provide it.	12/06/2010
CAR 5(continuation)	12/06/2010	The statement is added into revised PDD. The contract is provided as required.	27/07/2010	OK. Revision is made.	08/08/2010
CL 1 Concerning PDD page 4, section A.4.1.4 the PP shall clarify whether the stated geographical coordinates reflect the landfill site – or the power generation site location.	31/01/ 2010	The geographical coordinates stated at section A.4.1.4 are refers to the power generation site. In addition, the coordinates will be adjusted into longitude 113°59'59"E and latitude 33°30'20" N, which was determined by mobile GPS device during on-site validation, in the revised PDD (version 03).	14/05/2010	OK. The geographical coordinates are clear.	12/06/2010
CL 2 On page 6, section A.4.1.4. the PP states that	31/01/ 2010	The flare was considered in the feasibility	14/05/2010	OK.	12/06/2010

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<p>“The technologies adopted in the proposed project include a gas collection system, a gas pre-treatment system, gas engines, a transmitting system, a monitoring system and if needed a flare system.” However, in the following section (B5, B6 and B7), it is also stated that the flare system had been considered in the proposed project in the PDD. The PP shall clarify whether the project activity will comprise a flaring system or not.</p>		<p>study, which was at an early stage of project design. The first version of PDD considered the possibility for installation of flare in the future and the possible project emission could be brought by flare. After clarification, flare will not be installed for project activity in the future at real situation, therefore the revised PDD (version03) will exclude all content concerning flare to reflect real situation.</p>			
<p>CL 3 On page 10, section B.4, PDD states that “the item 5.15 of GB 16889-2008 states that landfill sites with designed acceptance capacity larger than 2.5 million tonnes and depth higher than 20 meter should construct LFG utilization facilities or flare to destruct methane.” According to this statement, the PP shall clarify and provide evidence whether the installation of a landfill gas recovery system is legally required or not.</p>	31/01/ 2010	<p>According to the FS of landfill site (page 3), the designed acceptance capacity of Luohe landfill is 2.4 million tonnes and the height is 27 meters, the situation only meets one condition of the GB 16889-2008, that is, it is not legally required by the standard to install gas utilization facilities or flare to destruct methane for luohel landfill site.</p> <p>The FSR of landfill site is submitted to GLC and assessed as valid.</p>	14/05/2010	<p>On page 10 of PDD version 3, PP said “However, the mandatory requirements in those documents are not systematically enforced in China.” This is not consistent with the previous explanation on CL 4, please revise accordingly.</p>	08/08/2010
<p>CL 3 (continuation)</p>	08/08/2010	<p>The sentence has been deleted at revised PDD (version 05)</p>	10/02/2011	<p>OK.</p>	24/03/2011
<p>CL 4 According to the FSR “it is estimated that only 60% of the landfill gas LFG generated in the landfill can be captured and collected”. The PP</p>	31/01/ 2010	<p>It is a common practice that LFG generated from landfill can't be fully captured. Firstly, it is because of the covering situation</p>	14/05/2010	<p>OK. A statement issued by the FSR design institute has provided with the mentioned reasons based on local</p>	12/06/2010

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shall provide the background of how the FSR has estimated this amount.		<p>in china, like other landfill site, luohu landfill has regular soil cover, which is permeable for gas.</p> <p>Secondly, given the reality that some wells or their accessories may be impaired by irregular sedimentation of the landfill site or by accumulation of leachate at the bottom of the wells or lower parts of connecting pipes, the utilization efficiency of the wells is estimated to be 85%.</p> <p>Thirdly, there are also other factors which affect the recovery rate of LFG, such as the density of gas wells and leakage of the pipes.</p> <p>Taken all of the above factors into consideration. Luohe FSR estimates only 60% of LFG generated in the landfill can be captured and collected.</p>		experience. This is assessed as appropriate.	
<p>CL 5</p> <p>On page 12, section B5, The PP claims that technological barriers prevent the realization of the project activity without the benefits of CDM. The PP shall provide evidence that the benchmark of 10% as given in Guideline 3 from Annex 13, EB 50 is appropriate and justified. Furthermore the PP shall provide the reasons why 92.76% of landfills are not installed with landfill gas collection and recovery equipment.</p>	31/01/ 2010	<p>Due to the difficulty of accessing to relevant evidential documents for technology barrier in China, PP resorts to investment barrier to assess the additionality of the proposed project in PDD (version 03) and the relative key figures used in the investment barrier analysis will be provided to GLC.</p>	14/05/2010	<p>For investment analysis, the PP should provide key figures for financial analysis, IRR worksheet, ect. and relevant evidence.</p> <p>Furthermore, according to the VVM (version 1.1), criteria 109, 111 and 112(a) and (c), the PP shall provide evidence for the total investment, operation and maintenance costs, electricity feed-in tariffs, amount of electricity generation and income tax.</p>	12/06/2010

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CL 5(continuation)	12/06/2010	IRR spreadsheet is provided to GLC. Please see attached Annex I below for more explanation.	27/07/2010	<p>1, Through checking the emission reduction sheet (ER sheet) provided by PP, the emission reduction is calculated from 2010 to 2020, not 2011 to 2020. Please revise the emission reduction in PDD and ER sheet accordingly.</p> <p>2, Please add unit in IRR calculation sheet.</p> <p>3, Please describe how the average annual O& M cost is calculated and clarify why it is not consistent with FSR. In addition, the annual O& M cost in PDD is not consistent with that in IRR sheet, please make correct revision.</p> <p>4, The circulating fund in IRR sheet is not consistent with that in PDD, and it is not added back at the last year as required by EB 51, annex 58. Revision is requested.</p> <p>5, Please provide the calculation process of average annual electricity (11,154MWh) and indicated its page of data source in PDD. Meanwhile, please provide cross-check evidence to assess the average annual</p>	08/08/2010

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				<p>electricity.</p> <p>6, The feed-in tariff is not consistent with FSR, it is 0.58RMB/KWh (Excl. VAT) in FSR, and 0.58RMB/KWh (Incl. VAT) in PDD. Please clarify with supporting evidence.</p> <p>7, Please provide the VAT document, which stated the preferential regulation as VAT will be drawback as mentioned in the FSR. In addition, the calculation of VAT and income tax should based on the regulation on FSR, please revise the IRR calculation sheet.</p> <p>8, PP have submitted a tariff letter Yu Fa Gai Jia Guan Han[2010]144 released by Henan Province Development and Reform Commission on 11 May 2010, however, the mentioned installation capacity is not consistent with the proposed project, please clarify if this tariff letter is applicable for the proposed project with supporting evidence.</p> <p>9, When is the project supposed to put into delivery? Please provide the latest investment status and main contracts with sum amount pages to DOE for validation.</p> <p>10, For O& M cost as stated in Annex I below, please provide the cooperation</p>	
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			<p>contract signed between PP and JESMO to DOE.</p> <p>11, Please provide the statement from engine supplier for the operation hours of engines as mentioned in Annex I below to DOE.</p> <p>12, Please provide cross-check evidence other than FSR to DOE to assess the appropriateness of annual O & M cost, for example, the experienced figure of 0.07RMB/KWh for maintenance of equipments as mentioned in Annex I below.</p> <p>13, For the annual average electricity generation, please clarify the appropriate of coefficient of 0.9 for the last 7 years, and justification on the calculation method is requested.</p> <p>14, Why there is no City maintenance & construction tax plus surtax for education expenses in FSR and IRR sheet?</p> <p>15, The annual electricity generation applied in PDD and emission reduction sheet are different, please explain why.</p> <p>16, Please complete the table on page 33, some data are missing.</p> <p>17, Please provide the source of the value of CERs (40000t CO₂e/y) in IRR calculation sheet.</p>	
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CL 5(continuation)	08/08/2010	<ol style="list-style-type: none"> 1. the ER spreadsheet has been revised into reasonable crediting date. 2. The units have been added into IRR spreadsheet. 3. The annual O&M cost is the sum of rent paid to the landfill management body, maintenance of gas collection system, maintenance of mechanical equipments, salary and welfare, overhaul, other fee and maintenance of the equipments, and average annual O&M cost is calculated by the sum of annual O&M cost for each year dividing 15 years. The value has been revised in PDD (version 05) The figures are different at FSR and FA, because that the annual O&M cost of normal operation year stated in FSR contains depreciation, and depreciation was listed separately in FA 4. Circulating fund (2 million) has been claimed back at cross check FA spreadsheet. The result is still lower than the benchmark. 5. In FSR of the proposed project, the quantity of electricity is calculated based 	10/02/2011	<p>OK.</p> <p>The revised ER sheet and IRR sheet are provided by PP, so the 1 and 2 are closed.</p> <p>The annual O&M cost has been broken down to do an analysis, the statement from PP is accepted by GLC, and the circulating fund is indicated in financial analysis. Furthermore, the evidence of tariff and electricity generation was provided to GLC.</p> <p>When project owner started to do the CDM consideration, the VAT exemption policy was not issued at that time, therefore, the VAT exemption was not considered into the IRR calculation.</p> <p>PDRC issued the letter according to the current installed capacity, once the capacity is increased, the PP will apply for changes for the letter.</p> <p>And all the other evidence was provided to GLC.</p>	24/03/2011

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		<p>on total installed engine capacity (2 MW), operation hours and full load factor of engine, which is 90%(page 19 of final FSR), it also take into consideration of possible decreasing of gas production for last 7 year during 15 operation years (FA spreadsheet).</p> <p>The calculation is as follow:</p> <ul style="list-style-type: none"> ○ First 8 years, the annual electricity production is $2*6,500*0.9=11,700$ MWh/a ○ Subsequent 7 years, the annual electricity production is $2*6,500*0.9*0.9=10,530$ MWh/a <p>The average annual electricity generation is: $(11,700*8+10,530*7)/15=11,154$ MWh/a</p> <p>6. When compiling FSR, the feed-in tariff was estimated based on national and provincial regulations, which are Yu Fa Gai Jia Guan [2005]499 Hao and FA Guai Jia Ge [2006]7 Hao. The regulations said that the standard feed-in tariff for desulfuration generator of Henan is 0.336 yuan/kwh and the renewable electricity enjoys subsidy of 0.25yuan/kwh. So overall feed-in tariff of proposed project was estimated to be</p>			
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		<p>0.58 (includes VAT).</p> <p>The two regulations and statement of DI are submitted to GLC for validation</p> <p>7. when draft FSR was made at September 2008, the valid VAT regulation is Cai Shui [2001]198 Hao which was jointly issued by Ministry of Finance (MoF) and State Administration of Taxation (SAT) at 2001, it says that the electricity from Municipal solid waste incineration can enjoy the refund of VAT;</p> <p>MoF and SAT issued the updated regulation (Cai Shui [2008] 156 Hao) with more specific requirements on project which can apply such beneficial regulation, such as the portion of waste for incineration can't be less than 80% of total fuel, in December 2008;</p> <p>At December 2009, MOF and SAT issued the supplementary announcement (Cai Shui [2009] 163 Hao) on Cai Shui [2008] 156 Hao and added that the electricity or thermal energy produced by biogas which is generated from fermentation of waste can also enjoy VAT refund.</p>			
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		<p>The final FSR was finished at June, 2009 and approval of FSR was gotten at September 2009, which means that till the FSR was approved by the government, there is no regulation available for landfill gas to power project enjoying VAT refund.</p> <p>The documents of Cai Shui [2001]198 Hao, Cai Shui [2008] 156 Hao, Cai Shui [2009] 163 Hao have been provided to GLC.</p> <p>Concerning income tax issue, when FSR was compiled, DI referred to the notice of Guo Fa [1996] 36 Hao (Paragraph1.3 of Chapter 1 in FSR). The notice explains how to define comprehensive utilization of resources and the preferential income tax should refer to Cai Shui Zi [1994] 001Hao.</p> <p>Cai Shui Zi [1994] 001Hao states that the enterprise which uses waste water, waste gas and waste residues as main raw material for production can enjoy tax reduce or tax free for 5 years.</p> <p>However, it is only suitable for following</p>			
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		<p>three conditions:</p> <ul style="list-style-type: none">○ Besides producing the main products, the enterprise also produces things which are made from by-products of its own factory, and the income of such things can enjoy 5-year tax free.○ Enterprise uses bulk gangue, slag or fly ash as the main raw materials to produce construction goods, the incomes of construction goods can enjoy 5-year tax free.○ The new enterprise which is established for treating and handling waste resources produced from other enterprises and included in the catalogue of comprehensive utilization of resources, the income of such enterprise can enjoy tax reduce or tax free for 1 year. <p>As proposed project meets no condition listed above, it can't enjoy the preferential income tax for 5 years free, and the raw material (landfill gas) of the proposed project is not included in catalogue of comprehensive utilization of resources, so it can not enjoy tax reduce or tax free for 1 year either.</p>			
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		<p>Guo Fa [1996] 36 Hao can be found at http://www.newenergy.org.cn/html/0062/2006215_7622.html</p> <p>Cai Shui Zi [1994] 001 Hao can be found at http://www.js-n-tax.gov.cn/Page/StatuteDetail.aspx?StatuteID=1266</p> <p>Catalogue of comprehensive utilization of resources can be found at http://www.sdpc.gov.cn/hjbh/t2005071140096.htm</p> <p>the catalogue was updated at 2008, it can be found at http://www.chinatax.gov.cn/n480462/n480513/n480902/8084132.html</p> <p>Both old and new catalogue don't include landfill gas.</p> <p>8. PDRC issued the letter according to the current installed capacity, once the capacity is increased, the PP will apply for changes for the letter. No paper document is available, but the telephone interview of PDRC official who knows the regulation can be arranged if needed.</p> <p>9. The lists of main contracts and copies of the contracts are sent to GLC, plus the list of costs items which have happened</p>			
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		<p>so far is submitted to GLC.</p> <p>10. The cooperation contract signed between PP and JESMO is provided to GLC as required.</p> <p>11. The statement is provided as required.</p> <p>12. The cross-check evidences for 0.07 RMB/kWh of maintenance cost, maintenance cost of gas wells and landfill use fee are submitted to GLC, the name of the documents are Cooperation Contract, Agreement of Technically Ensuring Normal Operation and Cost Breakdown of Gas Well Construction. The cross check evidence for salary is submitted also submitted to GLC.</p> <p>13. A statement for DI is submitted to GLC, as explained by DI, considering after years of operation, the engine performance as well as gas production will be drop down, so in the last 7 years, the electricity amount multiple factor 0.9 to reflect the situation, the factor is an experienced figure from DI.</p> <p>14. It is a mistake for not considering the City Maintenance & Construction tax and surtax of education expenses in the FA. In order to correct the mistake, a cross-check FA with consideration of the two taxes was made. The cross-check</p>			
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		<p>FA is submitted to GLC for validation.</p> <p>15. The electricity generation in emission reduction sheet has been revised in consistent with FSR. The revised ERS is submitted to GLC</p> <p>16. The table on page 33 has been completed in revised PDD (version 05)</p> <p>The source is added into IRR calculation sheet.</p>			
<p>CL 6</p> <p>On page 21, section B6.1 the PP states that "Since only the net amount of electricity exported to the CCPG would count for the source of baseline emission, project emissions of the proposed project due to the electricity consumption during the crediting period is 0." which is not consistent with the diagram in B3. The PP shall clarify whether the emissions resulting from the electricity taken from the grid were considered in the baseline scenario.</p>	31/01/ 2010	<p>According to the project design of the proposed project, the electricity for on-site auxiliary equipments will be supplied by gas engines directly when gas engines are running, the left electricity will be sent to the grid. In another word, only net amount of electricity will be exported to the grid, which already excludes self-consumption electricity of the proposed project.</p> <p>If the gas engines stopped during the situations like malfunction, overhaul and etc, the electricity for on-site auxiliary equipments will be supplemented by the grid. That's why the electricity imported from grid by the proposed project activity is considered in the diagram of B 3.</p> <p>As the time of engine's malfunction and</p>	14/05/2010	OK	12/06/2010

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		<p>overhaul should be very short and the frequency should be very low during the operation, the emission from this source which accounts for project emission is not taken into consideration during ex-ante estimation. Nevertheless, the electricity consumption due to this source will be monitored during crediting period, when engine malfunction and overhaul did happen the project emission from this source will be counted in the monitoring reports as stated in the PDD (version 02).</p> <p>The solid arrow line for this source is changed into dash arrow line in the diagram B.3 to distinguish it from common situation in the revised PDD (version 02).</p>			
<p>CL 7</p> <p>On page 26, Section B6.2, the PP shall provide evidence for the stated climatic conditions concerning parameter kj</p>	31/01/ 2010	<p>The data of mean annual temperature, mean annual precipitation and potential evapotranspiration gotten from Henan Provincial Meteorological Bureau are provided to GLC.</p>	14/05/2010	OK.	12/06/2010
<p>CL 8</p> <p>On page 39, section B7.2, the PP shall indicate in Figure 4 where the landfill gas pre-treatment system will be located.</p>	31/01/ 2010	<p>The landfill gas pre-treatment system is located after the main collection pipe and before the gas flow meter which determines the total volume of LFG sent into the engines. The location of the gas pre-treatment system is identified at Figure 4 of</p>	14/05/2010	<p>As PP mentioned that there are four meters for four engines, respectively. Hence, please revise Figure 4 of section B7.2.</p>	12/06/2010

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		section B7.2 in revised PDD (version 03).			
CL 8(continuation)	12/06/2010	The meters and relevant statement is added in revised PDD.	27/07/2010	OK.	08/08/2010
CL 9 According to Annex 3 on page 50, the PP shall clarify why the plastic is not a component of the landfill.	31/01/ 2010	It is the translation error, for constitution of waste, the FSR states components of glass, metal <i>etc</i> take up to 37% of the waste, which contains materials other than wood, paper and cardboard, kitchen waste, textile and garden waste, i.e. the plastic is included in this category.	14/05/2010	OK.	12/06/2010

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Appendix B: assessment of financial parameters

Parameter	Value applied	Unit	Source	Source for cross-check	Means and finding of validation
Average annual electricity	11,154 (for 15 years)	MWh	/3/	/45/ /50/	<p>According to FSR, the annual electricity is calculated as load (MW) * Operation hours (h) * full load factor of engine (%).</p> <p>The operation hours is 6500h, a statement from the generator manufacture further address such value is reasonable. The full load factor of engine is 0.9. This coefficient is estimated by the designed institute of FSR. However, even if 1 is applied, project IRR is still negative.</p> <p>Therefore, for the first 8 years, the annual electricity is $2.0\text{MW} \times 6,500 \times 0.9 = 11,700\text{MWh}$.</p> <p>However, based on estimation of FSR, the load rate of engine of the project will be decreased according to decreasing of LFG amount, a decreasing load rate of engine of 90% is applied for the last 7 years. Such Decreasing Load Rate of engine is provided by the design institute of FSR according to host country knowledge.</p> <p>Therefore, for the subsequent 7 years, the annual electricity is calculated as load (MW) * Operation hours (h) * full load factor of engine (%) * Decreasing load rate of engine (%), which equals to $2.0\text{MW} \times 6,500 \times 0.9 \times 90\% = 10,530\text{MWh}$.</p> <p>The average annual electricity for 15 years operation is thus calculated as $(11,700\text{MWh} \times 8 + 10,530\text{MWh} \times 7) / 15 = 11,154\text{MWh}$.</p> <p>Regarding to the net electricity generated $EL_{\text{grid},y}$, the calculation is as follows:</p> <p>For the first 8 years:</p>

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Parameter	Value applied	Unit	Source	Source for cross-check	Means and finding of validation
					<p>$EL_{grid,y} = \text{load (MW)} * \text{Operation hours (h)} * \text{full load factor of engine(\%)} * (1 - \text{self-consumption rate (\%)})$</p> <p>For the subsequent 7 years: $EL_{grid,y} = \text{load (MW)} * \text{Operation hours (h)} * \text{full load factor of engine(\%)} * (1 - \text{self-consumption rate (\%)}) * \text{Decreasing load rate of engine (\%)}$</p> <p>The self-consumption rate is 10%, which is assessed as reasonable according to local knowledge. The landfill will be closed at the end of 2018, and the generated LFG will be decreasing afterwards.</p> <p>In all, the load factors of the proposed project are determined ex-ante by a third party contracted by the project participants (in this case, the qualified design institute Henan Zhengzhou Electric Design Institute) this is assessed as in compliance with Guidelines for the reporting and validation of plant load factors Version 01 ^{/43/}.</p> <p>This calculation approach is assessed as appropriate.</p> <p>Sensitivity analysis is done for annual operational hours, which reflects the identical variation as annual net electricity within variation range -10% to +10%. This range is default range for sensitivity analysis for feasibility study. Project IRR is always negative when annual operation hours varies within this range. The project IRR reaches benchmark only if annual operational hours or annual net electricity increases to 124%, which is too large to happen.</p> <p>Thus the estimation of feed in electricity is assessed as reasonable.</p>
Benchmark	8	%	/31/	/31/	<p>The value is derived from Interim Rules on Economic Assessment of Electric Engineering Retrofit Projects ^{/31/}, a current valid national guidance of investing in the power industry in China widely used by landfill gas utilization projects.</p>

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Parameter	Value applied	Unit	Source	Source for cross-check	Means and finding of validation																												
					<p>Based on local knowledge and background investigation it is verified that the Interim Rules is still valid at the time of validation.</p> <p>Also, it is assessed as reasonable to assume that no investment would be made for projects at a post-tax IRR lower than benchmark 8% as prescribed in Interim Rules. According to sectoral and local expertise, government authority (normally the development and reform commission at a certain administrative level) would not approve the project if its IRR is lower than official benchmark, unless there are other beneficial incentives available to compensate.</p> <p>It is confirmed that the benchmark applied is suitable to the project.</p>																												
Total Investment	2800	10 ⁴ RMB	/3/	/46/ /47/	<p>The value of total investment of the project is from FSR.</p> <p>The value of total investment is 2800 * 10⁴ RMB.</p> <p>The unit investment of the project is calculated to be 14000 RMB/kW.</p> <p>14 registered landfill to electricity projects in China whose capacity and investment information is available (information based on UNFCCC website) are used for cross-check:</p> <table><tr><th>UNFCCC Ref.</th><th>Investment (RMB)</th><th>Maximum Capacity (MW)</th><th>Unit investment (RMB/kW)</th></tr><tr><td>176</td><td>37,500,000</td><td>2</td><td>18750</td></tr><tr><td>1406</td><td>46,660,000</td><td>5</td><td>9332</td></tr><tr><td>1505</td><td>30551262</td><td>3.85</td><td>7935.392727</td></tr><tr><td>1661</td><td>29884470</td><td>3.3</td><td>9055.9</td></tr><tr><td>1664</td><td>13,000,000</td><td>2</td><td>6500</td></tr><tr><td>1732</td><td>46,775,000</td><td>2.5</td><td>18710</td></tr></table>	UNFCCC Ref.	Investment (RMB)	Maximum Capacity (MW)	Unit investment (RMB/kW)	176	37,500,000	2	18750	1406	46,660,000	5	9332	1505	30551262	3.85	7935.392727	1661	29884470	3.3	9055.9	1664	13,000,000	2	6500	1732	46,775,000	2.5	18710
UNFCCC Ref.	Investment (RMB)	Maximum Capacity (MW)	Unit investment (RMB/kW)																														
176	37,500,000	2	18750																														
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Parameter	Value applied	Unit	Source	Source for cross-check	Means and finding of validation																																
					<table><tr><td>1745</td><td>65,700,000</td><td>3</td><td>21900</td></tr><tr><td>1906</td><td>41,821,120</td><td>3</td><td>13940.37333</td></tr><tr><td>1909</td><td>19,065,240</td><td>1.5</td><td>12710.16</td></tr><tr><td>2278</td><td>31,310,000</td><td>3.5</td><td>8945.714286</td></tr><tr><td>2513</td><td>28,280,000</td><td>1.35</td><td>20948.14815</td></tr><tr><td>2810</td><td>44,360,000</td><td>3.192</td><td>13897.24311</td></tr><tr><td>2816</td><td>16,770,000</td><td>1.04</td><td>16125</td></tr><tr><td>2892</td><td>18,647,600</td><td>0.975</td><td>19125.74359</td></tr></table> <p>The unit cost of the 14 projects is from 6500 to 21900 RMB/kW. The proposed project's unit investment 14000 RMB/kW is well within the range. Thus it is concluded to be within reasonable range, after comparison with registered landfill projects in China.</p> <p>The statistics of already happened cost have been provided, which includes detailed cost for equipment and construction contracts^{/46/}, power transmission cost and land compensation cost as well as administrative fee^{/47/}, etc. The main contracts have been checked by GLC. The already happed cost takes up about 76% of total investment.</p> <p>Sensitivity analysis is done for total investment within variation range -10% to +10%. This range is default range for sensitivity analysis for feasibility study. The analysis shows that IRR is always below benchmark when the variation is from -10% to +10%; it will reach benchmark only if total investment decreases by 28%. However, this is not possible due to the case that the actual investment by the time of validation calculated from contract values has already been more than 76% of FSR estimation.</p> <p>In conclusion, the value is validated as reasonable and appropriate.</p>	1745	65,700,000	3	21900	1906	41,821,120	3	13940.37333	1909	19,065,240	1.5	12710.16	2278	31,310,000	3.5	8945.714286	2513	28,280,000	1.35	20948.14815	2810	44,360,000	3.192	13897.24311	2816	16,770,000	1.04	16125	2892	18,647,600	0.975	19125.74359
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2810	44,360,000	3.192	13897.24311																																		
2816	16,770,000	1.04	16125																																		
2892	18,647,600	0.975	19125.74359																																		
Electricity tariff (VAT Incl.)	0.58	RMB/kWh	/3/	/53/	<p>The electricity tariff 0.58RMB/kWh including VAT is from FSR, but the source is not clear. GLC hence investigate the national and regional policy with reference to Fagai Jiage[2006] 7-Interim method of Renewable energy prices and cost-sharing management, issued by National Development</p>																																

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Parameter	Value applied	Unit	Source	Source for cross-check	Means and finding of validation
					<p>and Reform Commission on 04 Jan. 2006, according to which the electricity feed-in tariff of defined renewable power projects including LFG electricity-generation projects would be the standard feed-in tariff of desulfurized coal-fired power plants in 2005 added by a subsidy of 0.25 RMB/kWh. The subsidy can be enjoyed for 15 years.</p> <p>According to Yu Fagai Jiaguan[2005]449, a document issued by Henan Province Price Bureau, the standard feed-in tariff of newly operated desulfurized coal-fired power plants in is 0.336 RMB/kWh. Based on this, the feed-in tariff of the proposed project would be $0.336 + 0.25 = 0.586$ RMB/kWh (Incl. VAT). Such value is a little higher than that in FSR and has been cross-checked into IRR calculation as well. The result is still below the benchmark.</p> <p>Sensitivity analysis is done for total static investment within variation range -10% to +10%. This range is default range for sensitivity analysis for feasibility study. The analysis shows that IRR is always below benchmark when the variation is from -10% to +10%. To make IRR reaches benchmark, feed-in tariff needs to increase by 24%, which is unlikely to happen.</p> <p>Overall the estimation of feed in electricity tariff is assessed as reasonable.</p>
Annual O&M costs	234.9	10 ⁴ RMB	/3/	/46/ /47/	<p>The O&M consists of maintenance of gas engine system, maintenance for gas well, maintenance for other mechanical equipments, salary & welfare, overhaul and land use fee as well as other costs.</p> <p>The maintenance of gas engine system is 819,000 RMB/yr, calculated as annual electricity generation multiplied by the rate 0.07 RMB/kWh. The maintenance for gas well is 210,000 RMB/yr. The maintenance of other mechanical equipments is 50,000 RMB/yr.</p> <p>The salary & welfare is 630,000 RMB/yr. Salary is calculated as the number of ordinary employee (15) multiplied by respective average annual salary (35,000 RMB/person) and welfare (20% of annual total salary). The value of annual salary is</p>

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Parameter	Value applied	Unit	Source	Source for cross-check	Means and finding of validation
					<p>assessed as appropriate and conservative according to local knowledge.</p> <p>Payment for land use is 350,000 RMB/yr. The overhaul fee is 40,000 RMB/yr. The other costs are 250,000 RMB/yr.</p> <p>Average O&M cost in the period of investment analysis is calculated to be 3,490,000 RMB/yr, which is about 1.2% of total investment. This can be considered as reasonable.</p> <p>Sensitivity analysis is done for O&M cost within variation range -10% to +10%. This range is default range for sensitivity analysis for feasibility study. The analysis shows that IRR is always below benchmark when O&M cost vary within this range. When the O&M cost decreases by 53%, IRR will reach benchmark, which is unlikely to happen.</p> <p>Thus the annual O&M cost is assessed as reasonable.</p>
Value Added Tax	17	%	/3/	/48/	<p>In 2001, Ministry of finance of China (MoF) issued a document ("Cai Shui [2001]198 Hao") to indicate that the electricity from Municipal solid waste incineration would enjoy the VAT exemption which means VAT would not be levied.</p> <p>In September 2008, the institute made the draft FSR for Jiyuan LFG project. In this draft FSR, it indicated the project would enjoy the VAT exemption policy, but the institute did not use this policy to calculate the IRR.</p> <p>In December 2008, MoF issued a document ("Cai Shui [2008]156 Hao") to give the further explanation to "Cai Shui [2001]198 Hao". In this document, it said that the project which the portion of waste for incineration is more than 80% of total fuel will enjoy the VAT exemption policy.</p> <p>In June 2009, the institute issued the final FSR for Jiyuan LFG project.</p>

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Parameter	Value applied	Unit	Source	Source for cross-check	Means and finding of validation
					<p>In July 2009, the final FSR got the approval from Henan Development and Reform Commission.</p> <p>In December 2009, MoF issued a document ("Cai Shui [2009]163 Hao") to give the further explanation to "Cai Shui [2008]156 Hao". It said that the LFG project will enjoy the VAT exemption policy.</p> <p>At the time of CDM decision was made on 21 Sept 2008 after the draft FSR came out, the PP did not aware if the VAT exemption would be actually applied to the proposed project, so the VAT exemption was not considered in IRR calculation. However, at the time of validation by GLC, as the proposed project will definitely enjoy this policy in future based on the new requirements as stated above, GLC requested the PP to do a re-IRR calculation, which took the VAT exemption into consideration, and the IRR is still lower than the benchmark.</p>
Income tax rate	25	%	/3/	/49/	The value is in compliance with People's Republic of China Enterprise Income Tax Law published in 2007.
Depreciation residue value	5	%	/3/	/31/	The depreciation residue value is from FSR and widely used in similar projects.
Installed capacity	2.0	MW	/3/	/5/	The capacity is from FSR and consistent with on-site inspection.
Project Lifetime	15	year	/3/	/5/	It is from FSR and is assessed as reasonable.

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ANNEX B: CERTIFICATES OF COMPETENCE

Validation Report

GLC Report No. 031.001, Rev. 08



Certificate



Name : Mr. Ruifeng Li (B.Eng.)
Certificate No. : 008

This document certifies that Mr. Ruifeng Li, citizen of China, is assigned as CDM assessment team leader, validator/verifier and expert by Germanischer Lloyd Certification GmbH.

Mr. Ruifeng Li fulfils GLC's competence requirements to validate and verify CDM projects within the following sectoral scopes and technical areas.

CDM Sectoral Scope (SS) and Technical Area (TA)	Validity date:
SS 1: Energy Industries (renewable / non-renewable sources)	
TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar	
TA 1.2: Energy generation from renewable energy sources	
SS 2: Energy Distribution	
TA 2.1: Electricity distribution	
TA 2.2: Heat distribution	
SS 3: Energy Demand	
TA 3.1: Energy demand	
SS 7: Transport	
TA 7.1: Transport	
SS 10: Fugitive Emissions from Fuels	
TA 10.1: Mining and mineral processes (excluding those included in TA 10.2)	
TA 10.2: Oil and gas industry, coal mine methane recovery and use	
SS 13: Waste Handling and Disposal	
TA 13.1: Waste handling and disposal	2009-09-03
TA 13.2: Animal waste management	

Hamburg 2011-03-17
Date


GLC Management

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GLC Report No. 031.001, Rev. 08



Certificate



Name : Mr. Nuno Barbosa (Dipl.)
Certificate No. : 018

This document certifies that Mr. Nuno Barbosa, citizen of Portugal and resident of Brazil, is assigned as CDM expert by Germanischer Lloyd Certification GmbH.

Mr. Nuno Barbosa fulfils GLC's competence requirements to validate and verify CDM projects within the following sectoral scopes and technical areas.

CDM Sectoral Scope (SS) and Technical Area (TA)	Validity date:
SS 1: Energy Industries (renewable / non-renewable sources)	
TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar	2011-03-14
TA 1.2: Energy generation from renewable energy sources	
SS 2: Energy Distribution	
TA 2.1: Electricity distribution	
TA 2.2: Heat distribution	
SS 3: Energy Demand	
TA 3.1: Energy demand	
SS 7: Transport	
TA 7.1: Transport	
SS 10: Fugitive Emissions from Fuels	
TA 10.1: Mining and mineral processes (excluding those included in TA 10.2)	
TA 10.2: Oil and gas industry, coal mine methane recovery and use	
SS 13: Waste Handling and Disposal	
TA 13.1: Waste handling and disposal	2011-03-14
TA 13.2: Animal waste management	

Hamburg 2011-03-17
Date


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Validation Report

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Certificate



Name : Ms. Yanwei Chen (M.Sc.)
Certificate No. : 011

This document certifies that Ms. Yanwei Chen, citizen of China, is assigned as CDM assessment team leader, validator/verifier and expert by Germanischer Lloyd Certification GmbH.

Ms. Yanwei Chen fulfils GLC's competence requirements to validate and verify CDM projects within the following sectoral scopes and technical areas.

CDM Sectoral Scope (SS) and Technical Area (TA)	Validity date:
SS 1: Energy Industries (renewable / non-renewable sources)	
TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar	
TA 1.2: Energy generation from renewable energy sources	
SS 2: Energy Distribution	
TA 2.1: Electricity distribution	
TA 2.2: Heat distribution	
SS 3: Energy Demand	
TA 3.1: Energy demand	
SS 7: Transport	
TA 7.1: Transport	
SS 10: Fugitive Emissions from Fuels	
TA 10.1: Mining and mineral processes (excluding those included in TA 10.2)	
TA 10.2: Oil and gas industry, coal mine methane recovery and use	
SS 13: Waste Handling and Disposal	
TA 13.1: Waste handling and disposal	
TA 13.2: Animal waste management	

Ms. Yanwei Chen fulfils GLC's competence requirements to validate financial analysis of CDM project activities.

Validity date:
2009-11-06

Hamburg 2011-03-17
Date


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Validation Report

GLC Report No. 031.001, Rev. 08



Certificate



Name : Mr. José Emilio Moreno (Dipl.-Ing.)

Certificate No. : 016

This document certifies that Mr. José Emilio Moreno, citizen of Spain, is assigned as CDM assessment team leader, validator/verifier and expert by Germanischer Lloyd Certification GmbH.

Mr. José Emilio Moreno fulfils GLC's competence requirements to validate and verify CDM projects within the following sectoral scopes and technical areas.

CDM Sectoral Scope (SS) and Technical Area (TA)	Validity date:
SS 1: Energy Industries (renewable / non-renewable sources)	
TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar	2010-09-25
TA 1.2: Energy generation from renewable energy sources	2010-10-22
SS 2: Energy Distribution	
TA 2.1: Electricity distribution	
TA 2.2: Heat distribution	
SS 3: Energy Demand	
TA 3.1: Energy demand	2011-03-20
SS 7: Transport	
TA 7.1: Transport	
SS 10: Fugitive Emissions from Fuels	
TA 10.1: Mining and mineral processes (excluding those included in TA 10.2)	
TA 10.2: Oil and gas industry, coal mine methane recovery and use	
SS 13: Waste Handling and Disposal	
TA 13.1: Waste handling and disposal	
TA 13.2: Animal waste management	

Hamburg 2011-03-20
Date

M. Waleo
GLC Management

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Code: DC-GHG 009_E, Rev. 03
Date: 2011-04-27; Tris

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Validation Report

GLC Report No. 031.001, Rev. 08



Certificate



Name : Mr. Markus Weber (Dipl.)
Certificate No. : 001

This document certifies that Mr. Markus Weber, citizen of Germany, is assigned as CDM assessment team leader, validator/verifier and expert by Germanischer Lloyd Certification GmbH.

Mr. Markus Weber fulfils GLC's competence requirements to validate and verify CDM projects within the following sectoral scopes and technical areas.

CDM Sectoral Scope (SS) and Technical Area (TA)	Validity date:
SS 1: Energy Industries (renewable / non-renewable sources)	
TA 1.1: Thermal energy generation from fossil fuels and biomass including thermal electricity from solar	
TA 1.2: Energy generation from renewable energy sources	
SS 2: Energy Distribution	
TA 2.1: Electricity distribution	
TA 2.2: Heat distribution	
SS 3: Energy Demand	
TA 3.1: Energy demand	
SS 7: Transport	
TA 7.1: Transport	
SS 10: Fugitive Emissions from Fuels	
TA 10.1: Mining and mineral processes (excluding those included in TA 10.2)	
TA 10.2: Oil and gas industry, coal mine methane recovery and use	
SS 13: Waste Handling and Disposal	
TA 13.1: Waste handling and disposal	2008-12-15
TA 13.2: Animal waste management	

Hamburg 2011-03-17
Date


GLC Management

Germanischer Lloyd Certification
Code: DC-GHG 009_E, Rev. 03
Date: 2011-04-27; Tris

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