# Validation Report

**The World Bank**
**Prototype Carbon Fund**

## VALIDATION OF THE CDM-PROJECT:

## DURBAN LANDFILL-GAS-TO-ELECTRICITY PROJECT – MARIANNHILL AND LA MERCY LANDFILLS

REPORT NO. 213663

**2006, November 27**

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| **Subject:** | Validation of a CDM Project |
| **Executing Operational Unit:** | TÜV SÜD Industrie Service GmbH<br>Carbon Management Service<br>Westendstr. 199 - 80686 Munich<br>Federal Republic of Germany |
| **Client:** | The World Bank<br>1818 H Street N.W.<br>Washington D.C. 20433 - USA |
| **Contract approved by:** | Bernhard Grimm |
| **Report Title:** | Validation of the CDM Project: Durban Landfill-gas-to-electricity project – Mariannhill and La Mercy Landfills |
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**Summary:**

The Certification Body ”Climate and Energy” of TÜV SÜD Industrie Service GmbH has been ordered by The World Bank to perform a validation of the above mentioned project.

Using a risk based approach; the validation of this project has been performed by document reviews and on-site inspection, audits at the locations of the project and interviews at the offices of the project developer and the project owner.

In summary, it is TÜV SÜD´s opinion that the “Durban Landfill-gas-to-electricity project – Mariannhill and La Mercy Landfills”, as described in the revised project design document of May 2006, meets all relevant UNFCCC requirements for the CDM, set by the Kyoto Protocol, the Marrakech Accords and relevant guidance by the CDM Executive Board and that the project furthermore meets all relevant host country criteria and correctly applies the baseline and monitoring methodology AM0010.

Hence, TÜV SÜD will recommend this project for registration as CDM project activity by the CDM Executive Board.

Prior to the submission of this validation report to the CDM Executive Board, TÜV SÜD will have to receive the written approval of the DNA of involved parties, including confirmation by the DNA of South Africa that the project assists in achieving sustainable development.

Additionally the assessment team reviewed the estimation of the projected emission reductions. We can confirm that the indicated amount of emission reductions of 481,833 tonnes $CO_{2e}$ over a crediting period of seven years, resulting in a calculated annual average of 68,833 tonnes $CO_{2e}$, represent a reasonable estimation using the assumptions given by the project documents.

| | | |
|---|---|---|
| Work carried out by: | Werner Betzenbichler (project manager)<br>Dr. Albert Geiger (ghg auditor trainee)<br>Charl du Toit (local expert, environmental auditor) | Internal Quality Control by:<br>Michael Rumberg |

## Abbreviations

| | |
|---|---|
| **CAR** | Corrective Action Request |
| **CDM** | Clean Development Mechanism |
| **CER** | Certified Emission Reduction |
| **CR** | Clarification Request |
| **DNA** | Designated National Authority |
| **DOE** | Designated Operational Entity |
| **DSW** | Durban Solid Waste |
| **EB** | Executive Board |
| **EIA / EA** | Environmental Impact Assessment / Environmental Assessment |
| **ER** | Emission reduction |
| **GHG** | Greenhouse gas(es) |
| **KP** | Kyoto Protocol |
| **MP** | Monitoring Plan |
| **NGO** | Non Governmental Organisation |
| **PCF** | Prototype Carbon Fund |
| **PDD** | Project Design Document |
| **PPA** | Power purchase agreement |
| **SABS** | South African Bureau of Standardization |
| **TÜV SÜD** | TÜV SÜD Industrie Service GmbH |
| **UNFCCC** | United Nations Framework Convention on Climate Change |
| **VVM** | Validation and Verification Manual |

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# 1 INTRODUCTION

## 1.1 Objective

PCF has commissioned TÜV SÜD Industrie Service GmbH (TÜV SÜD) to validate the CDM Project Durban Landfill-gas-to-electricity project – Mariannhill and La Mercy. The validation serves as design verification and is a requirement of all CDM projects. The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is a requirement for all CDM projects and is 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 and the CDM rules and modalities as agreed in the Bonn Agreement and the Marrakech Accords.

## 1.2 Scope

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. TÜV SÜD has, based on the recommendations in the Validation and Verification Manual employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

The validation is 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.

TÜV SÜD has been provided with an early draft PDD in January 2003. Based on this documentation a document review and a fact finding mission in form of an on-site audit has taken place. Afterwards the client decided to revise the PDD several times according to established regulations and submitted a new methodology for approval in the context of this specific project. The further PDD version was submitted for publishing in the global stakeholder process in September 2005. It serves as the basis for the assessment presented herewith. In May 2006 a revised final PDD has been submitted in which all open issues and clarification requests have been resolved by the project developer by submitting additional or corrected information. That changes are not considered to be significant with respect to the qualification of the project as a CDM project based on the two main objectives of the CDM to achieve a reduction of anthropogenic GHG emissions by sources and to contribute to sustainable development. Hence no repetition of the public stakeholder process has taken place.

Studying the existing documentation belonging to this project, it was obvious that the competence and capability of the validation team has to cover at least the following aspects:

- Knowledge of Kyoto Protocol and the Marrakech Accords
- Environmental and Social Impact Assessment
- Skills in environmental auditing (ISO 14000, EMAS)
- Quality assurance
- Technical aspects of waste management
- Methane capturing systems

- Energy generation
- Monitoring concepts
- Political, economical and technical conditions in host country

According to these requirements TÜV SÜD has composed a project team in accordance with the appointment rules of the TÜV certification body "climate and energy":

The validation team was consisting of the following three experts:

| | | |
|---|---|---|
| Mr. Werner Betzenbichler | (project manager, GhG auditor) | TÜV SÜD |
| Dr. Albert Geiger | (GHG auditor trainee) | TÜV SÜD |
| Mr. Charl du Toit | (local expert, ISO1400 auditor) | local environmental expert |

**Mr. Werner Betzenbichler** is head of the department Carbon Management Service of TÜV SÜD and head of the "Certification Body for Climate and Energy" and expert for conventional energy generation, renewable energy, energy expansion planning and familiar with the recent version of CDM and JI criteria as necessary for the implementation of Art. 6 and Art. 12 of the KP. Since 2000 he has been working in the international climate change and emission trading business as a verifier.

**Dr. Albert Geiger** is geologist and expert for waste management and land-filling activities at the department "Environmental Service" in the head office of TÜV SÜD. Being a trainee for qualifying as ghg-auditor he has already been involved in several CDM activities in Latin America and Africa.

**Mr. Charl du Toit** is environmental auditor was formerly engaged by TÜV SÜD's Johannesburg office. He is familiar with local laws and regulations and the assessment of technical installations. He assisted Mr. Betzenbichler during the on-site inspections and by evaluating documents.

The audit team covers the above mentioned requirements as follows:

- Knowledge of Kyoto Protocol and the Marrakech Accords (Betzenbichler / Dr. Geiger)
- Environmental and Social Impact Assessment (all)
- Skills in environmental auditing (all)
- Quality assurance (Betzenbichler / du Toit)
- Technical aspects (Betzenbichler / Dr. Geiger)
- Monitoring concepts (Betzenbichler / Dr. Geiger)
- Political, economical and technical conditions in host country (du Toit)

In order to have an internal quality control of the project, a team of the following persons has been composed by the certification body "climate and energy":

- Michael Rumberg (deputy head of certification body "climate and energy")

## 1.3 GHG Project Description

The project consists of an enhanced collection system (Marianhill) or of a new collection system (La Mercy) of landfill gas at two landfill sites of the municipality of Durban and the use of the recovered gas to produce electricity. The produced electricity will be fed into the municipal grid and replace electricity that the municipal electric company is currently buying from other suppliers. The project will be implemented on the Mariannhill and the La Mercy landfill sites.

The project is expected to start operation in February 2006.

# 2 METHODOLOGY

The project assessment aims at being a risk based approach and is based on the methodology developed in the Validation and Verification Manual (for further information see www.vvmanual.info), an initiative of all Applicant Entities, which aims to harmonize the approach and quality of all such assessments.

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

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

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

The completed validation protocol is enclosed in Annex 1 to this report.

| ***Validation Protocol Table 1: Mandatory Requirements*** | | | |
|---|---|---|---|
| ***Requirement*** | ***Reference*** | ***Conclusion*** | ***Cross reference*** |
| *The requirements the project must meet.* | *Gives reference to the legislation or agreement where the requirement is found.* | *This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the Validation report.* | *Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent Validation process.* |

| ***Validation Protocol Table 2: Requirement checklist*** | | | | |
|---|---|---|---|---|
| ***Checklist Question*** | ***Reference*** | ***Means of verification (MoV)*** | ***Comment*** | ***Draft and/or Final Conclusion*** |
| *The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in seven different sections. Each section is then further subdivided. The lowest level constitutes a checklist question.* | *Gives reference to documents where the answer to the checklist question or item is found.* | *Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.* | *The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.* | *This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question (See below). **Clarification** is used when the validation team has identified a need for further clarification.* |

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

**Figure 1 Validation Protocol Tables**

## 2.1 Review of Documents

The project design document submitted by the Client and additional background documents related to the project design and baseline were reviewed. A complete list of all documents reviewed is attached as annex 2 to this report.

## 2.2 Follow-up Interviews

In the period of January 29 to 31, 2003 TÜV SÜD performed interviews on-site with project stakeholders to confirm selected information and to resolve issues identified in the first document review. By several telephone conferences interviews have been made with the project management and project development team of PCF. The main topics of the interviews are summarised in Table 1.

**Table 1 Interview topics**

| Interviewed organisation | Interview topics |
|---|---|
| The Department of Environmental Affairs and Tourism, Pretoria, South Africa | ▪ Host country criteria<br>▪ Environmental legislation<br>▪ Environmental impacts<br>▪ Stakeholder process<br>▪ Approval by the host country |
| Durban Solid Waste Ltd. | ▪ Project design<br>▪ Technical equipment<br>▪ Baseline determination<br>▪ Additionality<br>▪ Crediting period<br>▪ Monitoring plan<br>▪ Environmental impacts<br>▪ Stakeholder process<br>▪ Metering system, calibration, power supply<br>▪ Electricity system<br>▪ Flare efficiency and safety equipment |
| PCF | ▪ Project design<br>▪ Baseline determination<br>▪ Additionality<br>▪ Crediting period<br>▪ Monitoring plan<br>▪ Environmental impacts<br>▪ Stakeholder process |

## 2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation was to resolve the requests for corrective actions and clarification and any other outstanding issues which needed to be clarified for TÜV SÜD`s positive conclusion on the project design. The Corrective Action Requests and Clarification Requests raised by TÜV SÜD were resolved during communication between the client and TÜV SÜD. To guarantee the transparency of the validation process, the concerns raised and responses that have been given are summarised in chapter 3 below and documented in more detail in the validation protocol in annex 1.

# 3 VALIDATION FINDINGS

In the following sections the findings of the validation are stated. The validation findings for each validation subject are presented as follows:

1) The findings from the desk review of the final project design document and the findings from interviews during the follow up visit are summarised. A more detailed record of these findings can be found in the Validation Protocol in annex 1.

2) Where TÜV SÜD had identified issues that needed clarification or that represented a risk to the fulfilment of the project objectives, a Clarification or Corrective Action Request, respectively, have been issued. The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in annex 1. The validation of the project resulted in two Corrective Action Requests and one Clarification Request.

3) Where Clarification or Corrective Action Requests have been issued, the exchanges between the Client and TÜV SÜD to resolve these Clarification or Corrective Action Requests are summarised.

4) The final conclusions for validation subject are presented.

The validation findings relate to the project design as documented and described in the final project design documentation dated 2006-05-04

## 3.1 Project Design

### 3.1.1 Discussion

As mentioned above the purpose of the project is to reduce methane emissions from waste disposing activities at two landfills and furthermore to reduce greenhouse gas emissions from fossil fuel fired power plants by replacing energy generation by firing the methane captured from the landfills in own generator sets. The surplus of electricity being generated will be fed into the grid.

The project also contributes to the sustainable development by generating new jobs.

The design engineering does reflect current good practices. The design has been professionally developed. Subsequently the project got approval by the relevant authorities. The project itself does apply state of the art equipment. Regarding the employed technology, there is no requirement to change the existing technology as a result of running out of life-time of the existing technical equipment. There are no significant indications that the technology used to implement the project could be substituted during the envisaged operational lifetime of the project activity (21 years) and in particular in the first crediting period until 2013.

The first crediting period is 2006 – 2013, with the intention for renewal. The operational lifetime of the project is 21 years.

The project is in line with relevant legislation of the South Africa. The funding for the project does not lead to a diversion of official development assistance as according to the information obtained by the audit team ODA does not contribute to the financing of the project.

The starting date as well as the operational lifetime are clearly defined and also handled in a reasonable manner. The first crediting period is with 7 years clearly defined.

### 3.1.2 Findings

Outstanding issue:

The recent PDD is stating that the project, which is managed by the World Bank's Prototype Carbon Fund (PCF) will determine the Annex-I-participation before submission for registration. The Annex-I-participant should be indicated by a revised PDD at that time.

Response:

By submitting a revised PDD version it has been confirmed that The Nether-lands are considered as project participant. A letter of approval has been forwarded to the DOE by email.

Outstanding issue:

A final written approval is not yet available, but the South African Government has been involved from the early beginning at this PCF activity. A letter of approval has to be submitted before submission for registration.

Response:

-

Clarification Request #1:

Evidence has been provided during the on-site visit in 2003 that the project is already in a detailed planning stage, what would also deliver a potential starting date. By the PDD the project participants are using the date of expected installation of equipment in 2006. By that the project may only have a starting data of the crediting period after registration. The project participants should clarify whether this approach is due to their own intention.

Response:

A revised PDD has been submitted using a starting date of the project activity being on November 30, 2002.

Corrective Action Request #1:

The project does not use the format for tables presenting emission reduction estimations in chapters A.4.4.1 and E.6. as requested by the EB guidance.

Response:

A revised PDD has been submitted using tables in the requested format.

### 3.1.3 Conclusion

The requests indicated above are considered as being resolved.

Prior to the submission of this validation report to the CDM Executive Board, TÜV SÜD will have to receive the written approval of the DNA of involved parties, including confirmation by the DNA of South Africa that the project assists in achieving sustainable development.

## 3.2 Baseline and Additionality

### 3.2.1 Discussion

As long as there is no obligation by law or safety reasons it is obvious that the collection of methane from landfills is additional. On the other hand its use for electricity generation might overcome investment barriers if the return for electricity sales will provide reasonable income for the project owner. This aspect is discussed by the applied methodology AM0010. a stepwise approach has been specifically developed for this project in Durban and is correctly used by the recent PDD version. The project itself meets all applicability criteria as given by AM0010.

The several steps used to determine the relevant baseline scenarios and the financial incentives for implementing each scenario are consistently applied. The underlying data (e.g. costs of energy generation, costs of energy from the grid, gas capture by existing wells) have been verified during the assessment process.

### 3.2.2 Findings

None

### 3.2.3 Conclusion

The projects baseline and additionality is in line with requirements.

## 3.3 Monitoring Plan

### 3.3.1 Discussion

A detailed “Monitoring Plan” has been submitted as attachment to the PDD. This monitoring plan details the aspects on monitoring as provided by chapter D of the PDD. It correctly reflects the requirements on the determination of all parameter to be monitored continuously as well as aspects on maintenance and quality assurance. The monitoring plan is appropriate, traceable and transparent.

As baseline methane emissions are monitored directly, there are no further risks concerning an overestimation of the baseline.

Uncertainty and possibility of monitoring errors are addressed and discussed plausible in the project documents.

Amendment due to the Request for Review:

Caused by a Request for Review the project participants decided to change the monitoring chapter (chapter D) and to amend details on monitoring in annex 4 instead of the submitted separate annex. The revised PDD is completely including all parameter and all title (identifiers) as given by the approved methodology. The version number and date remained unchanged due to the fact that the Letter of Approval refers to the original version. The revision is deemed to be more editorial and is improving the suitability and transparency of the presentation of project design. The amendments and changes (names of identifiers) are in compliance with the requirements.

### 3.3.2 Findings

None

### 3.3.3 Conclusion

The projects monitoring plan is line with approved methodology AM0010.

## 3.4 Calculation of GHG Emissions

### 3.4.1 Discussion

The prediction of baseline methane emissions is based on an appropriate model documented by a report submitted during this validation. All input parameter are based on verifiable data for the real situation on site.

The emission factor for electricity generation is taken from the annual report of the local grid operator as accepted by the methodology. Nonetheless the indication is considered to be rather rough indicating only two numbers and therefore having an implicit inaccuracy of more than 1 %.

### 3.4.2 Findings

Corrective Action Request #2:

Conservative assumptions have been used for determining the emission reductions from the methane capture activities, whereas for calculating the emission reduction by the electricity generation a rather rough indication of 0.90 kg $CO_2$/kWh has been applied to, as it is given by the grid operator's annual report. As this factor having only two numbers implies some uncertainty at least 0.895 $CO_2$/kWh should be used for determining the emission reductions in a conservative way. This will also be closer to the factor provided by a further registered CDM project in South Africa applying AMS-I.D. although AM0010 is not requiring the same approach.

Response:

A revised PDD has been submitted.

### 3.4.3 Conclusion

The project will result in a reduction of GHGs. The calculated estimation of prospective emission reductions, stated with 481,833 tonnes CO2 totally within the first crediting period of seven years seems to be realistic.

## 3.5 Environmental Impacts

### 3.5.1 Discussion

An Environmental Impact Assessment has been submitted to the responsible national authorities.

The PDD is claiming that the project will have no negative environmental impacts. This point of view can be followed as the project does not change the land-filling activities themselves but treats methane which has to be seen as a "by-product".

Nonetheless the municipality decide to give approval only for the first two years on a provisional base obliging the operator to conduct a further air quality impact assessment during that period.

### 3.5.2 Findings

None

### 3.5.3 Conclusion

The project is in line with national and regional law. The project fulfils the requirements of the UNFCCC.

## 3.6 Comments by Local Stakeholders

### 3.6.1 Discussion

A local stakeholder process was performed as required by national regulations. According to the requirements a committee including all potential stakeholder groups was invited to comment the project. The project had to undergo a so-called appeal process, which is finally resolved. This process is reflected in the environmental obligations mentioned above.

### 3.6.2 Findings

None

### 3.6.3 Conclusion

The project is in compliance with the CDM requirements.

# 4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

TÜV SÜD published the project documents on UNFCCC website and on its own website from 15th September 2005 for 30 days and invited comments by Parties, stakeholders and non-governmental organisations. No comments were received.

# 5 VALIDATION OPINION

TÜV SÜD has performed a validation of the Durban Landfill-gas-to-electricity project – Mariannhill and La Mercy, on the basis of UNFCCC criteria and host country criteria, 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 subsequent decisions by the CDM Executive Board.

The review of the project design documentation and the subsequent follow-up interviews have provided TÜV SÜD with sufficient evidence to determine the fulfilment of stated criteria. In our opinion, the project meets all relevant UNFCCC requirements for the CDM under the condition that a written Letter of Approval will be issued by involved parties. By the time we will receive the approvals TÜV SÜD will recommend the project for registration by the CDM Executive Board.

By collecting methane from two landfills and displacing fossil fuel-based electricity in principal with electricity generated from that source, the project results in reductions of $CO_2$ emissions that are real, measurable and give long-term benefits to the mitigation of climate change. An analysis as provided by the applied methodology demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented as designed, the project is likely to achieve the estimated amount of emission reductions.

Additionally the assessment team reviewed the estimation of the projected emission reductions. We can confirm that the indicated amount of emission reductions of 481,833 tonnes $CO_{2e}$ over a crediting period of seven years, resulting in a calculated annual average of 68,833 tonnes $CO_{2e}$, represent a reasonable estimation using the assumptions given by the project documents.

The validation is based on the information made available to us and the engagement conditions detailed in this report. The validation has been performed using a risk based approach as described above. The only purpose of this report is its use during the registration process as part of the CDM project cycle. Hence, TÜV SÜD can not be held liable by any party for decisions made or not made based on the validation opinion, which will go beyond that purpose.

Munich, 2006-11-27

Javier Castro
Certification Body “Climate and Energy”
TÜV SÜD Industrie Service GmbH

Munich, 2006-11-27

Werner Betzenbichler
Project Manager

# Appendix A: Validation Protocol

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

| REQUIREMENT | REFERENCE | CONCLUSION | Cross Reference / Comment |
|---|---|---|---|
| 1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3 | Kyoto Protocol Art.12.2 | Outstanding issue<br><br>þ | The recent PDD is stating that the project, which is managed by the World Bank's Prototype Carbon Fund (PCF) will determine the Annex-I-participation before submission for registration. The Annex-I-participant should be indicated by a revised PDD at that time.<br><br>By submitting a revised PDD version it has been confirmed that The Netherlands are considered as project participant. A letter of approval has been forwarded to the DOE by email. |
| 2. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof | Kyoto Protocol Art. 12.2, Marrakesh Accords, CDM Modalities §40a | þ | Table 2, Section A.3 |
| 3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC | Kyoto Protocol Art.12.2. | þ | Table 2, Section E.4.1 |
| 4. The project shall have the written approval of voluntary | Kyoto Protocol | Outstanding | A final written approval is not yet |

| REQUIREMENT | REFERENCE | CONCLUSION | Cross Reference / Comment |
|---|---|---|---|
| participation from the designated national authorities of each party involved | Art. 12.5a, Marrakesh Accords, CDM Modalities §40a | issue | available, but the South African Government has been involved from the early beginning at this PCF activity. A letter of approval has to be submitted before submission for registration. |
| 5. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change | Kyoto Protocol Art. 12.5b | þ | Table 2, Section E |
| 6. Reduction in GHG emissions shall be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity | Kyoto Protocol Art. 12.5c, Marrakesh Accords, CDM Modalities §43 | þ | Table 2, Section B.2 |
| 7. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance | Marrakech Accords | þ | According to the information obtained by the audit team ODA does not contribute to the financing of the project. |
| 8. Parties participating in the CDM shall designate a national authority for the CDM | Marrakech Accords, CDM Modalities §29 | þ | South Africa has a designated national authority for the CDM. |
| 9. The host country shall be a Party to the Kyoto Protocol | Marrakech Accords, CDM Modalities §30 | þ | South Africa has approved the Kyoto Protocol |
| 10. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received | Marrakech Accords, CDM Modalities §37b | þ | Table 2, Section G |
| 11. Documentation on the analysis of the environmental impacts of the project activity, including transboundary im- | Marrakech Accords, CDM Modalities | þ | Table 2, Section F |

| REQUIREMENT | REFERENCE | CONCLUSION | Cross Reference / Comment |
|---|---|---|---|
| pacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out. | §37c | | |
| 12. Baseline and monitoring methodology shall be previously approved by the CDM Methodology Panel | Marrakech Accords, CDM Modalities §37e | þ | Table 2, Section B.1.1 and D.1.1 |
| 13. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP | Marrakech Accords, CDM Modalities §37f | þ | Table 2, Section D |
| 14. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available | Marrakech Accords, CDM Modalities, §40 | þ | TÜV SÜD published the project documents on UNFCCC website and on its own website from 15th September 2005 for 30 days and invited comments by Parties, stakeholders and non-governmental organisations |
| 15. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances | Marrakech Accords, CDM Modalities, §45c,d | þ | Table 2, Section B.2 |
| 16. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force majeure | Marrakech Accords, CDM Modalities, §47 | þ | Table 2, Section B.2 |
| 17. The project design document shall be in conformance with the UNFCCC CDM-PDD format | Marrakech Accords, CDM Modalities, | **CAR 1** | The final PDD is in conformance with the CDM Project Design Document |

| REQUIREMENT | REFERENCE | CONCLUSION | Cross Reference / Comment |
|---|---|---|---|
| | Appendix B, EB Decisions | | which is in effect as of July 1, 2004.<br><u>Corrective Action Request #1:</u><br>The project does not use the format for tables presenting emission reduction estimations in chapters A.4.4.1 and E.6. as requested by the EB guidance. |

**Table 2 Requirements Checklist**

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| ***A. General Description of Project Activity***<br>*The project design is assessed.* | | | | | |
| **A.1. Project Boundaries**<br>*Project Boundaries are the limits and borders defining the GHG emission reduction project.* | | | | | |
| A.1.1. Are the project's spatial (geographical) boundaries clearly defined? | | DR, I | The project comprises the two landfills named "La Mercy" and "Mariannhill" located in the municipality of eThikwini, formerly known as Durban, South Africa. The site is clearly indicated by the PDD, which allows for proper identification. | þ | þ |
| A.1.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined? | | DR, I | Yes. | þ | þ |
| **A.2. Technology to be employed** | | | | | |
| A.2.1. Does the project design engineering reflect current good practices? | | DR, I | Yes, the project design engineering does reflect current good practices. The technology to be employed is already well experienced by it application in other countries, whereas there is limited use in developing | þ | þ |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| | | | countries. | | |
| A.2.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country? | | DR, I | Yes, see above. | þ | þ |
| A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period? | | DR, I | There are no significant indications that the technology used to implement the project could be substituted during the envisaged first crediting period. | þ | þ |
| A.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period? | | I | Yes, but training requirements for the operation of the gas capture equipment and the electricity generation equipment is clearly addressed by the project development activities. | þ | þ |
| A.2.5. Does the project make provisions for meeting training and maintenance needs? | | I | Yes, see above. | þ | þ |
| **A.3. Contribution to Sustainable Development**<br>*The project's contribution to sustainable development is assessed.* | | | | | |
| A.3.1. Is the project in line with relevant legislation and plans in the host country? | | DR, I | Yes, there is no regulation concerning methane emissions besides safety requirements for avoiding explosive concentrations. | þ | þ |
| A.3.2. Is the project in line with host-country specific CDM requirements? | | DR, I | Yes. | þ | þ |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
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| A.3.3. Is the project in line with sustainable development policies of the host country? | | DR, I | Yes, the project is in line with the CDM criteria as given by the South African DNA. | þ | þ |
| A.3.4. Will the project create other environmental or social benefits than GHG emission reductions? | | DR, I | Yes, besides reducing odours from land filling activities the project will create new jobs. | þ | þ |
| ***B. Project Baseline***<br>*The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.* | | | | | |
| **B.1. Baseline Methodology**<br>*It is assessed whether the project applies an appropriate baseline methodology.* | | | | | |
| B.1.1. Is the baseline methodology previously approved by the CDM Methodology Panel? | | I, DR | Yes, the project applies to AM0010 which is derived from a new methodology submission from the project participants. | þ | þ |
| B.1.2. Is the baseline methodology the one deemed most applicable for this project and is the appropriateness justified? | | I, DR | The methodology has explicitly been developed for this kind of projects (see above). | þ | þ |
| B.1.3. Does the project meet the applicability criteria of the applied methodology? | | I, DR | The methodology has explicitly been developed for this kind of project, hence all applicability criteria are met. | þ | þ |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| **B.2. Baseline Determination**<br>*The choice of baseline will be validated with focus on whether the baseline is a likely scenario, whether the project itself is not a likely baseline scenario, and whether the baseline is complete and transparent.* | | | | | |
| B.2.1. Is the application of the methodology and the discussion and determination of the chosen baseline transparent? | | DR | Yes, application of the methodology and the discussion and determination of the chosen baseline is transparent and performed in a conform manner by the PDD. | þ | þ |
| B.2.2. Has the baseline been determined using conservative assumptions where possible? | | DR | Corrective Action Request #2:<br>Conservative assumptions have been used for determining the emission reductions from the methane capture activities, whereas for calculating the emission reduction by the electricity generation a rather rough indication of 0.90 kg $CO_2$/kWh has been applied to, as it is given by the grid operator's annual report. As this factor having only two numbers implies some uncertainty at least 0.895 should be used for determining the emission reductions in a conservative way. This will also be closer to the factor provided by a further registered CDM project in South Africa applying AMS-I.D. although AM0010 is not requiring the same approach. | **CAR 2** | þ |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| B.2.3. Has the baseline been established on a project-specific basis? | | DR | The baseline was determined due to the project-specific situation (region, relevant grid, baseline wells etc.). | þ | þ |
| B.2.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations? | | I, DR | Yes, see also A.3.1 | þ | þ |
| B.2.5. Is the baseline determination compatible with the available data? | | I, DR | Baseline emissions for methane destructions will be monitored directly. The baseline data for the grid factor is retraceable. | þ | þ |
| B.2.6. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios? | | DR | Yes as this methodology has been developed explicitly for this kind of project. | þ | þ |
| B.2.7. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario (e.g. through (a) a flow-chart or series of questions that lead to a narrowing of potential baseline options, (b) a qualitative or quantitative assessment of different potential options and an indication of why the non-project option is more likely, (c) a qualitative or quantitative assessment of one or more barriers facing the proposed project activity or (d) an indication that the project type is not common practice in the proposed area of implementation, and not required by a Party's legislation/regulations)? | | DR | Yes, the methodological approach is correctly applied by chapter B.2. of the PDD | þ | þ |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| B.2.8. Have the major risks to the baseline been identified? | | I, DR | As baseline emissions are monitored directly, there are no further risks on an overestimation of the baseline. | þ | þ |
| B.2.9. Is all literature and sources clearly referenced? | | DR | Yes. | þ | þ |
| ***C. Duration of the Project/ Crediting Period***<br>*It is assessed whether the temporary boundaries of the project are clearly defined.* | | | | | |
| C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable? | | I, DR | Yes.<br>Clarification Request #1:<br>Evidence has been provided during the on-site visit in 2003 that the project is already in a detailed planning stage, what would also deliver a potential starting date. By the PDD the project participants are using the date of expected installation of equipment in 2006. By that the project may only have a starting data of the crediting period after registration. The project participants should clarify whether this approach is due to their own intention. | **CR1** | þ |
| C.1.2. Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max. two x 7 years or fixed crediting period of max. 10 years)? | | DR | Yes, the crediting period is 7 years (2006/02/01 – 2013/01/31) with the intention for renewal. | þ | þ |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| C.1.3. Is it assured that in case the start of the crediting period is before the registration of the project that the project activities starting date falls in the period between 1 January 2000 and the registration of the first clean development mechanism project? | | I, DR | See CR1 | See CR1 | þ |
| ***D. Monitoring Plan***<br>*The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed.* | | | | | |
| **D.1. Monitoring Methodology**<br>*It is assessed whether the project applies an appropriate baseline methodology.* | | | | | |
| D.1.1. Is the monitoring methodology previously approved by the CDM Methodology Panel? | | DR | Yes, the project applies to AM0010 which is derived from a new methodology submission from the project participants. | þ | þ |
| D.1.2. Is the monitoring methodology applicable for this project and is the appropriateness justified? | | DR | Yes, see above. | þ | þ |
| D.1.3. Does the monitoring methodology reflect good monitoring and reporting practices? | | DR | Yes. | þ | þ |
| D.1.4. Is the discussion and selection of the monitoring methodology transparent? | | DR | Yes. | þ | þ |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| **D.2. Monitoring of Project Emissions**<br>*It is established whether the monitoring plan provides for reliable and complete project emission data over time.* | | | | | |
| D.2.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period? | | DR, I | Yes, a detailed "Monitoring Plan" has been submitted as attachment to the PDD. This monitoring plan details the aspects on monitoring as provided by chapter D of the PDD. It correctly reflects the requirements on the determination of all parameter to be monitored continuously as well as aspects on maintenance and quality assurance. | þ | þ |
| D.2.2. Are the choices of project GHG indicators reasonable? | | DR, I | Yes | þ | þ |
| D.2.3. Will it be possible to monitor / measure the specified project GHG indicators? | | DR, I | Yes | þ | þ |
| D.2.4. Will the indicators give opportunity for real measurements of achieved emission reductions? | | DR, I | Yes | þ | þ |
| D.2.5. Will the indicators enable comparison of project data and performance over time? | | DR, I | Yes | þ | þ |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| **D.3. Monitoring of Leakage**<br>*It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.* | | | | | |
| D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage? | | DR, I | Not applicable | þ | þ |
| D.3.2. Have relevant indicators for GHG leakage been included? | | DR, I | Not applicable. See also comment above. | þ | þ |
| D.3.3. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage? | | Dr, I | See comment above. | þ | þ |
| D.3.4. Will it be possible to monitor the specified GHG leakage indicators? | | Dr, I | See comment above. | þ | þ |
| **D.4. Monitoring of Baseline Emissions**<br>*It is established whether the monitoring plan provides for reliable and complete project emission data over time.* | | | | | |
| D.4.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining baseline emissions during the crediting period? | | DR, I | Yes, see comment under D.2.1. | þ | þ |
| D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable? | | DR, I | Yes, see above. | þ | þ |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| D.4.3. Will it be possible to monitor the specified baseline indicators? | | DR, I | Yes, see above. | þ | þ |
| **D.5. Monitoring of Sustainable Development Indicators/ Environmental Impacts**<br>*It is checked that choices of indicators are reasonable and complete to monitor sustainable performance over time.* | | | | | |
| D.5.1. Does the monitoring plan provide the collection and archiving of relevant data concerning environmental, social and economic impacts? | | DR, I | Yes, due to the monitoring plan the operator is obliged to monitor and report the following parameter.<br>Ø Local vegetation<br>Ø Protection of biodiversity<br>Ø Waste recycling | þ | þ |
| D.5.2. Is the choice of indicators for sustainability development (social, environmental, economic) reasonable? | | I, DR | Yes, the choice is reasonable for landfill project and exceeds the standard seen by comparable CDM projects, where in most cases no further parameter are monitored. | þ | þ |
| D.5.3. Will it be possible to monitor the specified sustainable development indicators? | | I, DR | Yes | þ | þ |
| D.5.4. Are the sustainable development indicators in line with stated national priorities in the Host Country? | | I, DR | Yes | þ | þ |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| **D.6. Project Management Planning**<br>*It is checked that project implementation is properly prepared for and that critical arrangements are addressed.* | | | | | |
| D.6.1. Is the authority and responsibility of project management clearly described? | | I, DR | Yes. | þ | þ |
| D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described? | | DR, I | See “Monitoring Plan” | þ | þ |
| D.6.3. Are procedures identified for training of monitoring personnel? | | DR, I | Training is addressed by the mentioned document. | þ | þ |
| D.6.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions? | | DR, I | The project operator is obliged by PCF to develop a management and operational system. This system should include also such procedures. | þ | þ |
| D.6.5. Are procedures identified for calibration of monitoring equipment? | | DR, I | Calibration is addressed by the mentioned document. Reference is made to the South African Bureau of Standardization (SABS). | þ | þ |
| D.6.6. Are procedures identified for maintenance of monitoring equipment and installations? | | DR, I | Yes, see also above. | þ | þ |
| D.6.7. Are procedures identified for monitoring, measurements and reporting? | | Dr, I | Yes | þ | þ |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| D.6.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation) | | DR, I | Yes | þ | þ |
| D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties? | | DR, I | Yes | þ | þ |
| D.6.10. Are procedures identified for review of reported results/data? | | DR, I | Yes. | þ | þ |
| D.6.11. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable? | | DR, I | Yes | þ | þ |
| D.6.12. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally? | | Dr, I | Yes. | þ | þ |
| D.6.13. Are procedures identified for corrective actions in order to provide for more accurate future monitoring and reporting? | | Dr, I | The project operator is obliged by PCF to develop a management and operational system. This system should include also such procedures. | þ | þ |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
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| ***E. Calculation of GHG Emissions by Source***<br>*It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.* | | | | | |
| **E.1. Predicted Project GHG Emissions**<br>*The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.* | | | | | |
| E.1.1. Are all aspects related to direct and indirect GHG emissions captured in the project design? | | DR, I | Yes. | þ | þ |
| E.1.2. Are the GHG calculations documented in a complete and transparent manner? | | DR | Yes, the prediction is based on an appropriate model document by a report submitted during this validation. All input parameter are based on verifiable data for the real situation on site. | þ | þ |
| E.1.3. Have conservative assumptions been used to calculate project GHG emissions? | | DR | Yes, as far as assumptions are used for the projections. | þ | þ |
| E.1.4. Are uncertainties in the GHG emissions estimates properly addressed in the documentation? | | DR, I | Yes. | þ | þ |
| E.1.5. Have all relevant greenhouse gases and source categories listed in Kyoto Protocol Annex A been evaluated? | | DR, I | Yes. | þ | þ |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| **E.2. Leakage**<br>*It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed.* | | | | | |
| E.2.1. Are potential leakage effects beyond the chosen project boundaries properly identified? | | Dr, I | Not applicable | þ | þ |
| E.2.2. Have these leakage effects been properly accounted for in calculations? | | DR, I | See above. | þ | þ |
| E.2.3. Does the methodology for calculating leakage comply with existing good practice? | | DR, I | See above. | þ | þ |
| E.2.4. Are the calculations documented in a complete and transparent manner? | | DR, I | See above. | þ | þ |
| E.2.5. Have conservative assumptions been used when calculating leakage? | | DR, I | See above. | þ | þ |
| E.2.6. Are uncertainties in the leakage estimates properly addressed? | | DR, I | See above. | þ | þ |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| **E.3. Baseline Emissions**<br>*The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.* | | | | | |
| E.3.1. Have the most relevant and likely operational characteristics and baseline indicators been chosen as reference for baseline emissions? | | DR, I | Yes, the prediction is based on an appropriate model document by a report submitted during this validation. All input parameter are based on verifiable data for the real situation on site. | þ | þ |
| E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions? | | DR | Yes, see above | þ | þ |
| E.3.3. Are the GHG calculations documented in a complete and transparent manner? | | DR | Yes | þ | þ |
| E.3.4. Have conservative assumptions been used when calculating baseline emissions? | | DR | Yes | þ | þ |
| E.3.5. Are uncertainties in the GHG emission estimates properly addressed in the documentation? | | Dr | Yes | þ | þ |
| E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions? | | Dr | Yes | þ | þ |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| **E.4. Emission Reductions**<br>Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations. | | | | | |
| E.4.1. Will the project result in fewer GHG emissions than the baseline scenario? | | DR, I | Yes | þ | þ |
| ***F. Environmental Impacts***<br>*Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.* | | | | | |
| F.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described? | | DR, I | Yes, it is sufficiently described by the PDD. | þ | þ |
| F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved? | | DR, I | Yes. An Environmental and Social Indicator Assessment has been required by the municipality, which is in charge to approve such activities. | þ | þ |
| F.1.3. Will the project create any adverse environmental effects? | | DR, I | The PDD is claiming that the project will have no negative environmental impacts. This point of view can be followed as the project does not change the land-filling activities themselves but treats methane which has to be seen as a “by-product”.<br>Nonetheless the municipality decide to give approval only for the first two years on a | þ | þ |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
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| | | | provisional base obliging the operator to conduct a further air quality impact assessment during that period. | | |
| F.1.4. Are transboundary environmental impacts considered in the analysis? | | DR, I | The nature of the project allows to exclude transboundary impacts. | þ | þ |
| F.1.5. Have identified environmental impacts been addressed in the project design? | | DR | Yes, by the “Monitoring Plan”. | þ | þ |
| F.1.6. Does the project comply with environmental legislation in the host country? | | DR, I | Yes. | þ | þ |
| ***G. Stakeholder Comments***<br>*The validator should ensure that a stakeholder comments have been invited and that due account has been taken of any comments received.* | | | | | |
| G.1.1. Have relevant stakeholders been consulted? | | | The project was discussed by a Monitoring Committee, which is a body established by all parties interested and/or affected by proposed projects, which includes stakeholders, and meets on a regular basis. The installation of such a committee is required by the municipality as well as national legislation. | þ | þ |
| G.1.2. Have appropriate media been used to invite comments by local stakeholders? | | DR | See above | þ | þ |

| CHECKLIST QUESTION | Ref. | MoV* | COMMENTS | Draft Concl | Final Concl |
|---|---|---|---|---|---|
| G.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws? | | DR, I | Yes, see above. | þ | þ |
| G.1.4. Is a summary of the stakeholder comments received provided? | | DR | The PDD includes a summary. | þ | þ |
| G.1.5. Has due account been taken of any stakeholder comments received? | | DR | There has been an appeal process, which resulted in monitoring obligations for the project participants. | þ | þ |

## Table 3 Resolution of Corrective Action and Clarification Requests

| Draft report clarifications and corrective action requests by validation team | Ref. to checklist question in tables 1 and 2 | Summary of project owner response | Validation team conclusion |
|---|---|---|---|
| Corrective Action Request #1:<br>The project does not use the format for tables presenting emission reduction estimations in chapters A.4.4.1 and E.6. as requested by the EB guidance. | Table 1 16. | A revised PDD has been submitted using tables in the requested format. | þ |
| Corrective Action Request #2:<br>Conservative assumptions have been used for determining the emission reductions from the methane capture activities, whereas for calculating the emission reduction by the electricity generation a rather rough indication of 0.90 kg $CO_2$/kWh has been applied to, as it is given by the grid operator's annual report. As this factor having only two numbers implies some uncertainty at least 0.895 $CO_2$/kWh should be used for determining the emission reductions in a conservative way. This will also be closer to the factor provided by a further registered CDM project in South Africa applying AMS-I.D. although AM0010 is not requiring the same approach. | B.2.2. | A revised PDD has been submitted. | The revised PDD is using the conservative figure for the grid factor as requested by the CAR. The issue is considered to be resolved<br>þ |

| | | | |
|---|---|---|---|
| <u>Clarification Request #1:</u><br>Evidence has been provided during the on-site visit in 2003 that the project is already in a detailed planning stage, what would also deliver a potential starting date. By the PDD the project participants are using the date of expected installation of equipment in 2006. By that the project may only have a starting data of the crediting period after registration. The project participants should clarify whether this approach is due to their own intention. | C.1.1. | A revised PDD has been submitted using a starting date of the project activity being on November 30, 2002 . | The starting date is in line with the situation seen during the on-site visit.<br>þ |

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# Appendix B: Information Reference List

| Reference No. | Document or Type of Information |
|---|---|
| 1. | On-site interviews at The Department Environmental Affairs and Tourism, Pretoria , South Africa, by auditing team of TÜV Süddeutschland performed on January 29, 2003<br>Auditing team: Werner Betzenbichler, TÜV SÜD<br>Albert Geiger, TÜV SÜD<br>Interviewed persons: Kelebogile Shirley Moroka, Principal Environmental Officer, Global Climate Change<br>Clive R Turner, Technical Consultant, Climate Change and Ozone Layer Directorate<br>Lwazikazi Tyani, Project Manager |
| 2. | On-site interviews at landfill office of Durban Solid Waste, Durban, South Africa, by auditing team of TÜV Süddeutschland performed on January 30 - 31, 2003<br>Auditing team: Werner Betzenbichler, TÜV SÜD<br>Albert Geiger, TÜV SÜD<br>Charl du Toit, freelance auditor<br>Interviewed persons: Lindsay Strachan, Durban Solid Waste, Project Manager<br>Quentin Hurt, Ecoserv, Consultant<br>Jon Pass, Wilson & Pass Inc., Consultant<br>Paul de Mattos, Agaricus Trading, Representative of equipment manufacturer |
| 3. | Telephone conferences and interviews with PCF project management team at several dates<br>Interviewed persons: Johannes Heister, PCF<br>Noreen Beg, PCF<br>Sandra Greiner, PCF<br>Ron Chronowski, PCF |
| 4. | www.unfccc.int - web-page of UNFCCC |
| 5. | AM0010, vers.1: “Landfill gas capture and electricity generation projects where landfill gas capture is not mandated by law” |
| 6. | Calculation of emission reduction projections for the landfill gas methane collection system provided by Enviros Consulting Limited |

| Reference No. | Document or Type of Information |
|---|---|
| | (Jan 03 and May 06) |
| 7. | Appeal Decision on the case EIA/4367 (Mariannhill) and EIA/4368 (La Mercy) signed by Prof. Ndabandaba, Minister for Agriculture and Environmental Affairs, Kwazulu-Natal, 2005-11-23 |
| 8. | International Waste Congress and Exhibition of the IWMSA – Volume 11, Proceedings: Volume II, 2002 |
| 9. | Landfill Waste Statistics for Durban Metro Landfills, 2002, prepared by Durban Solid Waste |
| 10. | Caterpillar, data sheets to various gas engine generation sets, Febr. 2003 |
| 11. | ESKOM Environmental Report 2003 |
| 12. | PDD: Durban Landfill-gas-to-electricity project, January 2003 |
| 13. | Baseline Study: Durban Landfill-gas-to-electricity, January 2003 |
| 14. | Monitoring Plan: Durban Landfill-gas-to-electricity, January 2003 |
| 15. | PDD: Durban Landfill-gas-to-electricity project – Mariannhill and La Mercy Landfills, Version 2005-09-10 |
| 16. | Durban La Mercy and Mariannhill - Landfill Gas to Electricity; Monitoring Plan; Sept. 2005 |
| 17. | PDD: Durban Landfill-gas-to-electricity project – Mariannhill and La Mercy Landfills, Version 2006-05-04 |
| 18. | Durban ERs LM and MH March06.xls - Calculation spreadsheets for the emission reduction projections |
| 19. | LoA from The Netherlands, 10 November 2005 |