



RINA


VALIDATION OPINION FOR RENEWAL OF THE CREDITING PERIOD


Final

**“Bandeirantes Landfill Gas to Energy Project
(BLFGE)”
in
Brazil**

**Validation Opinion N° 2010-BQ-06-MD
Revision No. 1.2**

VALIDATION OPINION FOR RENEWAL OF THE CREDITING PERIOD

Project Title: "Bandeirantes Landfill Gas to Energy Project (BLFGE)"		Country: Brazil	CDM Registration Reference N°: 0164	
Client: Biogás Energia Ambiental S.A.		Client contact: Mr. Antônio Carlos Delbin		
Report No.: 2010-BQ-06-MD		Revision: 1.2	Date of this report: 03/04/2012	
Approved by:  Roberto Cavanna			Date of approval: 04/04/2012	
Methodology				
Number: ACM0001	Version: Version 11 of 28/05/2009	Title: "Consolidated baseline and monitoring methodology for landfill gas project activities"	Scale Large	SS(s): 13
<p>RINA Services S.p.A. (RINA), commissioned by Biogás Energia Ambiental S.A. , performed the validation for renewal of the crediting period for the registered project activity "Bandeirantes Landfill Gas to Energy Project (BLFGE)" in Brazil.</p> <p>In conclusion, it is RINA's opinion that the project meets the requirements for the renewal of the crediting period stated in the "Procedures for renewal of the crediting period of a registered CDM project activity" (Annex 29 version 06 of EB 63) and the approved methodology ACM0001 "Consolidated baseline and monitoring methodology for landfill gas project activities" Version 11 of 28/05/2009 . The original baseline of the 2nd crediting period is confirmed to be still valid.</p> <p>Hence RINA requests that the renewal of the crediting period of the project activity "Bandeirantes Landfill Gas to Energy Project (BLFGE)" in Brazil.</p>				

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Work verified by:  Laura Severino	Keywords: Climate Change, Kyoto Protocol, Clean Development Mechanism, Validation

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Abbreviations

BE	Baseline Emissions
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM M&P	CDM Modalities and Procedures
CER(s)	Certified Emission Reduction(s)
CETESB	Companhia Ambiental do Estado de São Paulo
CH ₄	Methane
CL	Clarification Request
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CRT	Coordination and Technical Control Staff
DAIA	Departamento de Avaliação de Impacto Ambiental
DCI	Certification Division of RINA Services Spa
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EIA	Environmental Impact Assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG(s)	Greenhouse gas(es)
GWP	Global Warming Potential
IPCC	Intergovernmental Panel on Climate Change
LoA	Letter of Approval
MoV	Means of Verification
MP	Monitoring Plan
MR	Monitoring Report
NGO	Non-governmental Organization
ODA	Official Development Assistance
PDD	Project Design Document
PE	Project Emissions
PP(s)	Project Participant(s)
Ref.	Document Reference
RINA	RINA Services Spa
SMA	Secretaria do Meio Ambiente
SS(s)	Sectoral Scope(s)
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual

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1 INTRODUCTION

Biogás Energia Ambiental S.A. has commissioned RINA to carry out the validation of the updated PDD version 1 of 10/06/2010 for the CDM project activity “Bandeirantes Landfill Gas to Energy Project (BLFGE)” project in Brazil for the renewal of the crediting period for this project. The first crediting renewable crediting period for the project ends on 22/12/2010.

This report summarizes the findings from the validation of the updated PDD of the project, performed on the basis of UNFCCC criteria for CDM, as well as criteria given by the “Procedure for renewal of the crediting period of a registered CDM project activity (Annex 29 version 06 of EB 63).

1.1 Objective

The objective of the Validation is to have an independent evaluation of the update PDD’s compliance with relevant UNFCCC requirements and host Party criteria to confirm that the original project baseline is still valid or has been updated taking into account of new data where applicable. In particular, the project’s baseline, monitoring plan and the project’s compliance with relevant UNFCCC requirements and host Party criteria are validated in order to confirm the correctness of the application of the approved baseline methodology ACM0001, Version 11 of 28/05/2009 for the determination of the continued validity of the baseline/or its update, and estimation of the emission reductions for the applicable crediting period from 23/12/2010 to 22/12/2017 reported for the “Bandeirantes Landfill Gas to Energy Project (BLFGE)” project in Brazil.

1.2 Scope

The validation scope is to review the updated PDD against the UNFCCC criteria for CDM.

UNFCCC criteria for CDM refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, and the subsequent decisions by the CDM Executive Board. This validation opinion is also to be seen in conjunction with the validation report and protocol submitted at the time of requesting registration of the project (DNV CDM Project Activity Registration and Validation Report Form 2005-0387 of 05/12/2005) /3/.

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

2 METHODOLOGY

Validation was conducted using RINA procedures in line with the requirements specified in the CDM M&P, the latest version of the CDM Validation and Verification Manual, and relevant decisions of the COP/MOP and the CDM EB and applying standard auditing techniques.

The validation consisted of the following three phases:

- * Document review;
- * Follow-up actions;
- * The resolution of outstanding issues and the issuance of the final validation report.

The following sections outline each step in more detail.

2.1 Document Review

The updated PDD version 3 of 01/03/2012 /1/, as well as previous version 2 of 28/04/2011 and version 1 of 10/06/2010 /1/, in particular the applicability of the methodology, the baseline determination, the starting date of the second crediting period, the monitoring plan, the emission reduction calculations provided in the form of a spreadsheet, ARCADIS Tetraplan S.A. CERs spreadsheet version 3 of

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08/07/2011 (*ERs Estimativas - BLFGE_rev_08072011.xls*), as well as previous version 2 of 09/05/2011 and version 1 of 01/08/2010 /9/, were assessed as part of the validation.

The following table lists the documentation that was reviewed during the validation.

/1/	ARCADIS Tetraplan S.A.: CDM-PDD for project activity "Bandeirantes Landfill Gas to Energy Project (BLFGE)" in Brazil, version 1 of 10/06/2010 (<i>BLFGE_PDD_form04_v03_2.pdf</i>), version 2 of 28/04/2011 (<i>BLFGE_PDD_form04_revised</i>) and version 3 of 01/03/2012 (<i>BLFGE_PDD_v03_03012012_clean.pdf</i>)
/2/	Econergy Registered PDD "Bandeirantes Landfill Gas to Energy Project (BLFGE)" in Brazil, version 2B of 16/10/2006 (<i>PDD_registered.pdf</i>)
/3/	Det Norske Veritas Certification AS - CDM Project Activity Registration and Validation Report Form 2005-0387, version 4 of 05/12/2005 (<i>Bandeirantes Validation Report and Protocol 2005 12 05.pdf</i>)
/4/	CDM Executive Board: Baseline and monitoring methodology ACM0001, "Consolidated baseline and monitoring methodology for landfill gas project activities", Version 11 of 28/05/2009 .
/5/	CDM Executive Board: Validation and Verification Manual, version 01.2 of 30/07/2010.
/6/	CDM Executive Board "Guidelines for completing the project design document (CDM-PDD) and the proposed new baseline and monitoring methodologies (CDM-NM)", version 7 of 02/08/2008.
/7/	CDM Executive Board - "Glossary of CDM Terms", version 5 of 19/08/2009.
/8/	CDM Executive Board: Procedures for Renewal of the crediting period of a registered CDM project activity, version 06.0.0 of 29/09/2011
/9/	ARCADIS Tetraplan S.A. CER's spreadsheet version 1 of 01/08/2010 (" <i>Cópia de ERs Estimativas - BLFGE (5).xls</i> "), version 2 of 09/05/2011 (<i>ERs Estimativas - BLFGE_rev_JJ090511.xls</i>) and version 3 of 08/07/2011 (<i>ERs Estimativas - BLFGE_rev_08072011.xls</i>).
/10/	Brazilian Government, Brazilian National Solid Waste Policy (PNRS) legislation nº 12.305 of 02/08/2010. http://www.planalto.gov.br/ccivil_03/_ato2007-2010/2010/lei/l12305.htm in Portuguese, accessed on 10/07/2011.
/11/	CETESB – Companhia de Tecnologia de Saneamento Ambiental, Operation License Nº 29004149 from 22/12/2008 valid until 31/05/2009 (<i>Licença de Operação p1 31_05_09.pdf</i> and <i>Licença de Operação p2 31_05_09.pdf</i>)
/12/	CETESB – Companhia de Tecnologia de Saneamento Ambiental, letter from 27/07/2009 explaining that the request for a new license is under review. (<i>carta CETESB 27.07.2009.jpg</i>)
/13/	FRAL CONSULTORIA LTDA., Waste Type Study "Caracterização dos Resíduos Sólidos Domiciliares do Município de São Paulo – Agrupamento Noroeste" of nov/dec/2008/jan/feb/2009" (<i>Caracterização Lixo CL-NO-4-080307.pdf</i>)
/14/	Prefeitura de São Paulo. Secretaria Municipal de Serviços – LIMPURB, Weight of waste in tons per type disposed into the landfill, of 1998 to 2007 (<i>DADOS PREFEITURA LIXO.xls</i>)
/15/	Biogas Energia Ambiental S.A., Monitoring table – Data of LFG/Methane destroyed in the flares and engines, of 2004-2006 (<i>Data Final 2004-2006.xls</i>)
/16/	Biogás Energia Ambiental S.A., Monitoring Screen of 05/08/2010 (<i>PrintScreen Ano de 2010.JPG</i>)
/17/	Sotreq, Table of Exported Energy of July/2007 (<i>Energia Exportada.xls</i>)
/18/	CDM Executive Board – Methodological tool "Tool to determine project emissions from flaring gases containing methane", Version 1 (EB 28 Meeting report-Annex 13), valid from 15/12/2006.
/19/	CDM Executive Board: "Tool to calculate baseline, project, and/or leakage emissions from electricity consumption", Version 1 of 16/05/2008.
/20/	CDM Executive Board: Methodological Tool "Emissions from solid waste disposal site", version

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	06.0.0 of 25/11/2011. .
/21/	CDM Executive Board: "Tool to calculate the emission factor for an electricity system", Version 2.2.1 of 29/09/2011.
/22/	Biogás Energia Ambiental S.A., Measurement equipments description of 02/03/2011(<i>Informação_FIRs.xlsx</i>)
/23/	Biogás Energia Ambiental S.A., Data recording procedures of 02/03/2011(<i>SGA IT 4.4.6-23 - Backup Sistema supervisorio.doc</i>)
/24/	UNFCCC Secretariat, E-mail of notification of request for renewal of crediting period of 24/06/2010 (<i>unfccc notification.jpg</i>)
/25/	Biogás Energia Ambiental S.A., Equipment Specification list of 17/12/2008 (<i>Equipamentos Usina-r1.xls</i>)
/26/	<i>Ministry of Science and Technology -: CO₂ emission factors from electric energy generation in Brazil's National Interconnected System – Baseline year 2009, in Portuguese :“Fatores de Emissão de CO₂ pela geração de energia elétrica no Sistema Interligado Nacional do Brasil - Ano Base 2009” http://www.mct.gov.br/index.php/content/view/303076.html#ancora,</i>
/27/	CDM Executive Board: DNA Comissão Interministerial de Mudança Global do Clima http://maindb.unfccc.int/public/country.pl?country=BR
/28/	CDM Executive Board: DNA Umweltbundesamt - Deutsche Emissionshandelsstelle http://maindb.unfccc.int/public/country.pl?country=DE
/29/	CDM Executive Board: DNA Ministry of Housing, Spatial Planning and the Environment http://maindb.unfccc.int/public/country.pl?country=NL
/30/	CDM Executive Board: DNA Federal Office for the Environment FOEN, Climate Unit http://maindb.unfccc.int/public/country.pl?country=CH .
/31/	CDM Executive Board:Methodological Tool “ Validity of the original/current baseline and to update the baseline at the renewal of a crediting period”, version 03.0.0 of 25/11/2011.

2.2 Follow-up actions

On 05/08/2010, RINA visited the Bandeirantes landfill to resolve questions and issues identified during the document review of the updated PDD related to the renewable crediting period 23/12/2010 to 22/12/2017.

The key personnel interviewed and the main topics of the interviews are summarized in the table below.

	Date	Name and Role	Organization	Topic
/a/	05/08/2010	Antonio Carlos Delbin Manager	Biogás Energia Ambiental S.A.	Landfill management Clarifications on establishment of baseline, monitoring plan and emission reduction calculations. Resources, training needs and procedures for operation and maintenance; Monitoring Plan / Records (backups); Maintenance program (calibration); Project boundaries; Additionality; - Baseline and project
/b/	05/08/2010	Cintia Philippi Salles consultant	Arcadis – Tetraplan S.A	
/c/	05/08/2010	Juliana Justi Pedott consultant	Arcadis – Tetraplan S.A	
/d/	05/08/2010	Tiago Nascimento Silva Technician	Biogás Energia Ambiental S.A.	
/e/	05/08/2010	Douglas Ramponi Schwangart	Biogás Energia Ambiental S.A.	

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		Technician		emissions; Emissions reductions calculations; - Environmental Licenses
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2.3 Resolution of outstanding issues

The objective of this phase of the validation was to resolve any outstanding issues which needed to be clarified prior to RINA's positive validation opinion for the renewal of the crediting period.

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2.4 Internal quality control

All the revisions of the validation report before being submitted to the client were subjected to an independent internal technical review to confirm that all validation activities had been completed according to the pertinent RINA instructions.

The technical review was performed by a technical reviewer(s) qualified in accordance with RINA's qualification scheme for CDM validation and verification.

2.5 Validation team and technical reviewer(s)

The validation team and the technical reviewer/s consist of the following personnel:

Role/Qualification	Last Name	First Name	Country
Team Leader CDM	Principe Branco Saettoni	Geisa Maria	Brazil
CDM Validator	Poll Herrmann	Lilian Cristine	Brazil
CDM Validator	De Lima Carvalho	Thaís	Brazil
Technical Reviewer	Valoroso	Rita	Italy
Technical Reviewer	Menon	Rekha	India

3 VALIDATION FINDINGS

The findings of the validation relate to the project design, as documented and described in the PDD version 3 of 01/03/2012 /1/ are stated in the following section.

3.1 Project activity details

Project UNFCCC reference	0164
Date of registration	20/02/2006
Title of the project activity	"Bandeirantes Landfill Gas to Energy Project (BLFGE)"
Methodology(ies)	ACM0001, Version 11 of 28/05/2009 , "Consolidated baseline and monitoring methodology for landfill gas project activities"
Renewable crediting period	From 23/12/2010 to 22/12/2017

3.2 Participation requirements

The project's host Party is Brazil and the Annex I Parties are Germany, Netherlands, Switzerland.

Brazil and Annex I countries Germany, Netherlands, Switzerland fulfil the requirements to participate in the CDM. They have ratified the Kyoto protocol and established a DNA as the participating requirements for CDM under the Kyoto Protocol. Brazil ratified the Kyoto Protocol on 23/08/2002 and established as DNA Comissão Interministerial de Mudança Global do Clima as per the UNFCCC website /27/; Germany has ratified the Kyoto Protocol on 31/05/2002 and established as DNA Umweltbundesamt - Deutsche Emissionshandelsstelle as per the UNFCCC website /28/. Netherlands has ratified the Kyoto Protocol on 31/05/2002 and established as DNA Ministry of Housing, Spatial Planning and the Environment as per the UNFCCC website /29/. Switzerland has ratified the Kyoto Protocol on 09/07/2003 and established as DNA Federal Office for the Environment FOEN, Climate Unit as per the UNFCCC website /30/.

The project participant(s) are Prefeitura municipal de São Paulo (Brazilian Public Entity) and Biogás Energia Ambiental S.A. (Brazilian Private Entity) from Brazil and KfW (German Private Entity), from Germany, Fortis Bank N.V./S.A. (Dutch Private Entity) from Netherlands and Mercuria Energy Trading

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SA (Swiss Private Entity) from Switzerland. The project participants are correctly listed in table A.3 of the PDD and the information is consistent with the contact details provided in Annex 1 of the PDD.

3.3 Application of latest approved version of a baseline and monitoring methodology.

The project was originally registered based on version 2 of the approved baseline and monitoring methodology ACM0001 "Consolidated baseline and monitoring methodology for landfill gas project activities" of 30/09/2005; the revised PDD, version 1 of 10/06/2010 /1/ applied Version 11 of 28/05/2009 of the same baseline and monitoring methodology /4/.

3.4 Assessment of the validity of the original/current baseline and to update the baseline at the renewal of a crediting period.

RINA assessed the validity of the original baseline scenario or its update applying the "The tool to assess the "Validity of the original/current baseline and to update the baseline at the renewal of crediting period" Annex 20 version 03.0.0 of EB 65. The following steps have been applied to evaluate whether the current baseline is still valid for the next crediting period from 23/12/2010 to 22/12/2017 and to update the baseline in case that the current baseline is not valid anymore for the next crediting period.

Step 1: assess the validity of the current baseline for the next crediting period.

Based on EB requirement, RINA has assessed the impact of new relevant national and/or sectoral policies and circumstances on the baseline, using the following Sub-steps.

Step 1.1: assess compliance of the current baseline with relevant mandatory national and/or sectoral policies.

According to the Política Nacional de Resíduos Sólidos (National Solid Waste Policy), of 02/08/2010/10/ there are no obligation regarding mandatory landfill gas capture or destruction due to safety issues or local environmental regulations nor obligation which promote the productive use of landfill gas such as those for the production of renewable energy, or those that promote the processing of organic waste.

Operation license from 22/12/2008 valid until 31/05/2009 /11/ for the energy production (Thermoelectric) is provided. PP also provided a letter from the environmental Agency (CETESB) from 27/07/2009 describing that the company requested already a new license /12/. The license issuance is still under evaluation process. For this issue **FAR 2** was raised.

The landfill was not included in the Brazilian incentive program to generate 3,300 MW of electricity from renewable sources (*PROINFA – Incentive Program of Renewable Sources* of 2002). Despite of achieving the goals, no landfill-gas-to-energy project was implemented due to the low price paid for the MWh produced.

Step 1.2: assess the impact of circumstances

The current baseline considers the continuation of the landfill's operation, with partial destruction of LFG collected via gas wells. As stated in the PDD, the landfill stopped receiving waste on 2007 and shall not receive waste anymore since that time. This information was checked through data from the Municipality of São Paulo./14/

Step 1.3: assess whether the continuation of the use of current baseline equipment(s) is technically possible.

The project is a Greenfield project, i.e. there were no baseline equipments as the baseline scenario is the continuation of the landfill's operation.. The project proponents did not undertake any investment

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before the end of the crediting period or due the availability of a new technology. Therefore the remaining technical lifetime of the current baseline equipment was not necessary to be assessed.

The lifetime of the project activity is defined as 21 years (project's starting date = 23/12/2003), the same defined for the first crediting period, and so the remaining lifetime is compatible with the second crediting period (ending at 22/12/2017).

The project counts with 2 flares (Flare F100 and Flare F200). An exclusive flow meter (FIR700) was installed to measure the flow at flare F200, according with the methodology requirements, which recommends one flow-meter for each flare.

To comply with this requirements of ACM0001, an auxiliary pipeline was installed to drive part of the gas collected exclusively to the Flare F200 (this gas flow was measured by the flow-meter FIR700) and the control valve between the two flares was closed.

Step 1.4: assessment of the validity of the data and parameters.

The parameters and data presented by project participants are in line with the applied baseline methodology. According to Version 11 of ACM0001, no leakage needs to be accounted.

Emission reduction were estimated from 2010 to 2017 using the already disposed waste until 2007.

The current baseline considers the continuation of the landfill's operation, with total emission of the landfill gas generated to the atmosphere. As stated into the PDD, the landfill stopped receiving waste on 2007 and shall not receive waste anymore since that time. However, in the beginning of the validation of the renewal of the crediting period, there was a possibility of the reopening of the landfill, which is not likely to happen anymore. During the first verification it should be verified that the landfill has not received waste since 2007, from the date it was closed. **FAR 1**

Emission reductions were estimated using the emission factor of the operating margin (0.2476 tCO₂/MWh) and of the built margin for 2009 (0.0794 tCO₂e/MWh) available at CIMGC (Brazilian DNA) web-site (<http://www.mct.gov.br/index.php/content/view/74689.html>), resulting in a grid emission factor of 0.121 tCO₂e/MWh.

The adjustment factor (AF) was updated resulting in a percentage of 19.11%. PP maintains the AF percentage of 20%, applied for the 1st crediting period in order to be conservative.

Annex 3 of the PDD included information about the grid emission factor calculation; the methane estimative and the electricity and is accordingly to the ER calculation spreadsheet.

According to the steps above discussed, there is no need to update the current baseline

3.5 Monitoring

The project applies the approved monitoring methodology ACM0001 "Consolidated baseline and monitoring methodology for landfill gas project activities" Version 11 of 28/05/2009 /4/. The selected monitoring methodology is applicable to the registered project activity.

3.5.1 Monitored data for project emission

Project Emission related to the amount of methane not destroyed in the flares are being considerate. A value of 90% flare efficiency was applied for the purpose of ERs estimations. The project emissions for electricity consumption from captive diesel generator (backup) will be used in emergency purposes. The monitored parameters related to this project emissions are listed as follows:

1. **PE_{Flares, y}** (tCO_{2e}) Project emissions from flaring of the residual gas stream in year y. Calculated as per the Version 01 of the Tool to determine project emissions from flaring gases containing methane;
2. **Operation of the energy plant** (hours) - Readings from the run-time meter installed at each engine;
3. **PE_{ec, y}** - Project emissions from electricity consumption by the project activity during the year y. Calculated as per Version 01 of the Tool to calculate baseline, project and/or leakage emissions from electricity consumption;
4. **fv_{i,h}** (%) - Volumetric fraction of component i in the residual gas in the hour h where *i* = CH₄, CO, CO₂, O₂, H₂, N₂;
5. **FV_{RG,h}** (m³/h) Volumetric flow rate of the residual gas in dry basis at normal conditions in the hour h;

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6. **T_{flare}** (°C) - Temperature in the exhaust gas of the flare;
7. **FC_{EDG, D, y}** (mass or volume unit) - Quantity of diesel fired in the emergency captive diesel generator in year y
8. **EG_{DG, y}** (MWh) - Quantity of electricity generated by the emergency captive diesel generator in year y;
9. **NCV_{D, t}** (GJ/mass or volume unit) - Average net calorific value of the diesel used in the period t;
10. **EF_{CO₂, t}** (CO₂/TJCO₂) emission factor of the diesel used in the period t;

3.5.2 Monitored data for leakage

The parameters and data presented by project participants are in line with the applied baseline methodology. According with Version 11 of ACM0001, no leakage needs to be accounted.

3.5.3 Monitored data for baseline emissions

The monitoring methodology is based on direct measurement of the amount of landfill gas captured and destroyed at two flares (F100 and F200) and the electricity generating at 24 generators divide into two groups of 12 generators. The monitoring plan provides for continuous measurement of the quantity and quality of LFG flared. The main variables that need to be determined are the quantity of methane actually captured ($MD_{project,y}$), quantity of methane flared ($MD_{flared,y}$), the quantity of methane used to generate electricity ($MD_{electricity,y}$), and the total quantity of methane generated ($MD_{total,y}$).

The project activity also measures the energy generated by use of LFG ($EL_{LFG,y}$). The monitored parameters for baseline emissions are listed as follows:

1. **LFG_{Total, y}** (m³) - Total amount of landfill gas captured at Normal Temperature and Pressure. Continuous measurements from the flow-meters FIR100 and FIR700;
2. **LFG_{Flare, y}** (m³) - Total amount of landfill gas flared at Normal Temperature and Pressure. Continuous measurements from the flow-meters FIR200 and FIR700;
3. **LFG_{Electricity, y}** (m³) - Amount of landfill gas combusted in the generators at Normal Temperature and Pressure. from the 4 flow-meters installed (tags FIR300, FIR400, FIR500 and FIR600);
4. **w_{CH₄,y}** (%) - Methane fraction in the landfill gas. Continuous measurement using a certified gas analyzer. The analyzer (A100) will measure the methane content directly. The supervisory system makes records of instant methane concentration every 5 minutes;
5. **EL_{LFG, y}** (MWh) - Net amount of electricity generated using LFG. Continuous measurements from the electricity meter;
6. **CE_{F_{elec},BL,y}** (tCO₂e/MWh) - Carbon emission factor of electricity for 2009.(=EF -Electricity Baseline Emission Factor for 2009)
7. **EF_{OM}**, tCO₂e/MWh - Emission Factor of the Operating Margin for 2009;
8. **EF_{BM}**, tCO₂e/MWh - Emission Factor of the Built Margin of 2009;
9. Emission reductions were estimated using the emission factor of the operating margin (0.2476 tCO₂/MWh) and of the built margin for 2009 (0.0794 tCO₂e/MWh) available at CIMGC (Brazilian DNA) web-site (<http://www.mct.gov.br/index.php/content/view/74689.html>), resulting in a grid emission factor of 0.121 tCO₂e/MWh.

3.5.4 Estimation of the GHG emissions for the renewal crediting period

The project is expected to result in an annual average of 250,268 tCO₂ during the 7 years renewable crediting period starting from 23/12/2010 to 22/12/2017. The emission reductions were calculated by subtracting the project emissions from the baseline emissions. The estimations can be replicated using the data and parameter values provided in the PDD version 3, dated 01/03/2012/1/ and Emission Reductions calculation spreadsheet, version 3 of 08/07/2011 /9/. In summary, the GHG calculations are complete and transparent and their accuracy has been verified.

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4 VALIDATION OPINION

RINA Service Spa (RINA) has performed a validation of the updated PDD for the project activity “Bandeirantes Landfill Gas to Energy Project (BLFGE)” in Brazil, CDM Registration Reference N° 0164. The validation of the updated PDD has performed for the 2nd renewal crediting period (from 23/12/2010 to 22/12/2017) and is based on the information made available to us.

RINA has performed this validation on the basis of the following documents:

- Procedures for renewal of the crediting period of a registered CDM project activity (EB63 Annex 29 of 29 September 2011);
- Clean Development Mechanism Validation and Verification version 01.2 of 30 July 2010;
- Approved baseline and monitoring methodology ACM0001 Version 11 of 28/05/2009 “Consolidated baseline and monitoring methodology for landfill gas project activities”.

It is RINA’s opinion that the project meets the requirements for the renewal of the crediting period stated in the “Procedures for renewal of the crediting period of a registered CDM project activity.

Hence RINA requests the renewal of the crediting period of the project activity “Bandeirantes Landfill Gas to Energy Project (BLFGE)” in Brazil.

São Paulo, 03/04/2012



Geisa Maria Principe Branco Saettoni
CDM Team Leader
RINA Brasil

Genova, 04/04/2012



Laura Severino
Authorized officer signing for the DOE
RINA Services S.p.A.

APPENDIX A

VALIDATION PROTOCOL

TABLE 1 REQUIREMENTS CHECKLIST

Checklist Question		Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
A. General Description of Project Activity						
A.1. Title of the project activity						
A.1.1.	Title of the project activity, version number and date of the PDD (section A.1).	/1/	DR	The title of project activity is “Bandeirantes Landfill Gas to Energy Project (BLFGE)”, as per the renewal crediting period PDD version 1 of 10/06/2010.		OK
A.1.2.	Does the project comply with the applicable requirements for completing the PDDs?	/1/ /6/	DR/CC	The PROJECT DESIGN DOCUMENT FORM (CDM PDD) - Version 03 is used. The PDD version 10/06/2010 has to be revised to comply with the “Guidelines for completing the project design document (CDM-PDD) and the proposed new baseline and monitoring methodologies (CDM-NM)”, version 7 of 02/08/2008”. Please refer to section B.6.3.4.	CL-8	OK
A.2. Description of the proposed project activity						
A.2.1.	Does the PDD contain an accurate description of the project activity and provide the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation? How was the design of the project assessed?	/1/ /6/	DR/CC	Yes, the BLFGE’s goal is to explore the gas produced in Bandeirantes landfill, using it to generate electricity. Verified during the site visit, that the project has 24 engines of 925kW capacity (total installed capacity equals to 22.2 MW) and two flares. The PDD contains a clearly description of the technical aspects implementation.		OK
A.2.2.	Does the project activity involve alteration of existing installations? If yes, have the differences between pre-project and post-project activity been clearly described in the PDD?	/1/	DR/CC	This is the renewal crediting period of the project activity. The project is already implemented.		OK
A.3. Project participants						
A.3.1.	Have the Parties and project participants involved in the project been listed in tabular form in Section	/1/	DR/CC	As per the PDD version 1, section A3, the project participants are:		

¹ MoV: DR document review, I interview, CC cross checking

Checklist Question	Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
A.3 and are they consistent with the information detailed in Annex 1 of the PDD?			<p>Brazil (host):</p> <p>*Prefeitura municipal de São Paulo (Brazilian Public Entity)</p> <p>*Biogás Energia Ambiental S.A. (Brazilian Private Entity)</p> <p>Germany:</p> <p>*KfW (German Private Entity)</p> <p>Netherlands</p> <p>*Fortis Bank N.V./S.A. (Dutch Private Entity)</p> <p>Switzerland:</p> <p>*Mercuria Energy Trading SA (Swiss Private Entity)</p> <p>Parties are not project participants.</p> <p>The name of “Prefeitura Municipal de São Paulo” was translated in Annex 1. PP is requested to use the same corporate name in both fields.</p>	CAR-1	
<p>A.3.2. Do all participating Parties fulfill the participation requirements as follows:</p> <p>(a) Party has ratified the Kyoto Protocol;</p> <p>(b) Party has a Designated National Authority;</p> <p>(c) The assigned amount has been determined.</p>	/1/	DR/CC	<p>-Brazil, has ratified the Kyoto Protocol on 23 August 2002 and established as DNA Comissão Interministerial de Mudança Global do Clima as per the UNFCCC website.</p> <p>-Germany has ratified the Kyoto Protocol on 31 May 2002 and established as DNA Umweltbundesamt - Deutsche Emissionshandelsstelle as per the UNFCCC website.</p> <p>-Netherlands has ratified the Kyoto Protocol on 31 May 2002 and established as DNA Ministry of Housing, Spatial Planning and the Environment as per the UNFCCC website.</p> <p>-Switzerland has ratified the Kyoto Protocol on</p>		OK

Checklist Question		Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
				09 July 2003 and established as DNA Federal Office for the Environment FOEN, Climate Unit as per the UNFCCC website.		
A.4. Technical description of the project						
A.4.1.	Is the project location clearly defined?	/1/	DR/CC	The geographical coordinates presented in the PDD version 1 (section A.4.1.4) are: latitude: 23°25'11.13" S and longitude: 45°45'21.69" W (confirmed in the Google Earth).		OK
A.4.2.	Does the project design engineering reflect current good practices? Would the technology result in a significantly better performance than any commonly used technologies in the host Country? Is any transfer of technology from any Annex I Party involved?	/1/ /25/	DR/CC /1	This project design engineering reflect current good practices by: 2) The use of biogas – a renewable energy source – to generate electricity, which is financially and socially desirable. 3) It aims to flare a great amount of methane that would be released to the atmosphere, which is socially and environmentally desirable. 4) It was the first landfill gas to energy project to be implemented in Brazil, that represents a great positive impact was brought by the initiative, which showed the technology for landfill gas capture and destruction – either through flaring only or through electricity generation – was proven. 5) The emission reduction revenues are shared (50:50) with the municipality of São Paulo, which invest the money from the CER's sale into the landfill's surrounding area, like the construction of public parks and squares, sewage collection, etc. 6) Many job positions were created during project implementation and operation, highlighting that some of them are low-skilled technical		OK

Checklist Question	Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion																																																		
			<p>positions, which contributes to a better income distribution.</p> <p>7) The state-of-the-art on LFG collection and power generation technology was transferred to the project, since most;</p> <p>8) The project is integrated with other economic sectors in the region, as regular maintenance and calibration is necessary in the facilities.</p> <p>The list of the equipments is provided below:</p> <table><tr><th>Equip</th><th>Manufacturer</th><th>Model</th><th>SN</th><th>Capacity</th></tr><tr><td>Blower 1</td><td>Aerzen</td><td>GM 130L</td><td>820230</td><td>4.250 N m3/h</td></tr><tr><td>Blower 2</td><td>Aerzen</td><td>GM 130L</td><td>820231</td><td>4.250 N m3/h</td></tr><tr><td>Blower 3</td><td>Aerzen</td><td>GM 130L</td><td>820232</td><td>4.250 N m3/h</td></tr><tr><td>Blower 4</td><td>Aerzen</td><td>GM 130L</td><td>820233</td><td>4.250 N m3/h</td></tr><tr><td>Blower 5</td><td>Hofstetter</td><td>Hofgas-Blower Unit Ready 2500</td><td>9118</td><td>2.500 Nm3h</td></tr><tr><td>FLARE 1</td><td>Hofstetter</td><td>Hofgas Efficiency 2500</td><td>9351</td><td>2.500 Nm3h</td></tr><tr><td>FLARE 2</td><td>Hofstetter</td><td>Hofgas Efficiency 2500</td><td>9351</td><td>2.500 Nm3h</td></tr><tr><td>MOTOR 1</td><td>Caterpillar</td><td>G3516</td><td>CSZ00652</td><td>925KW</td></tr><tr><td>MOTOR 2</td><td>Caterpillar</td><td>G3516</td><td>CSZ00653</td><td>925KW</td></tr></table>	Equip	Manufacturer	Model	SN	Capacity	Blower 1	Aerzen	GM 130L	820230	4.250 N m3/h	Blower 2	Aerzen	GM 130L	820231	4.250 N m3/h	Blower 3	Aerzen	GM 130L	820232	4.250 N m3/h	Blower 4	Aerzen	GM 130L	820233	4.250 N m3/h	Blower 5	Hofstetter	Hofgas-Blower Unit Ready 2500	9118	2.500 Nm3h	FLARE 1	Hofstetter	Hofgas Efficiency 2500	9351	2.500 Nm3h	FLARE 2	Hofstetter	Hofgas Efficiency 2500	9351	2.500 Nm3h	MOTOR 1	Caterpillar	G3516	CSZ00652	925KW	MOTOR 2	Caterpillar	G3516	CSZ00653	925KW		
Equip	Manufacturer	Model	SN	Capacity																																																			
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MOTOR 2	Caterpillar	G3516	CSZ00653	925KW																																																			

Checklist Question	Ref.	MoV ¹	Comments					Draft Conclusion	Final Conclusion
			MOTO R 3	Caterpillar	G3516	CSZ006 72	925KW		
			MOTO R 4	Caterpillar	G3516	CSZ006 44	925KW		
			MOTO R 5	Caterpillar	G3516	CSZ006 66	925KW		
			MOTO R 6	Caterpillar	G3516	CSZ006 68	925KW		
			MOTO R 7	Caterpillar	G3516	CSZ006 58	925KW		
			MOTO R 8	Caterpillar	G3516	CSZ006 64	925KW		
			MOTO R 9	Caterpillar	G3516	CSZ006 59	925KW		
			MOTO R 10	Caterpillar	G3516	CSZ006 51	925KW		
			MOTO R 11	Caterpillar	G3516	CSZ006 62	925KW		
			MOTO R 12	Caterpillar	G3516	CSZ006 57	925KW		
			MOTO R 13	Caterpillar	G3516	CSZ006 45	925KW		
			MOTO R 14	Caterpillar	G3516	CSZ006 46	925KW		
			MOTO R 15	Caterpillar	G3516	CSZ006 42	925KW		
			MOTO R 16	Caterpillar	G3516	CSZ006 43	925KW		
			MOTO R 17	Caterpillar	G3516	CSZ006 47	925KW		
			MOTO R 18	Caterpillar	G3516	CSZ006 54	925KW		
			MOTO R 19	Caterpillar	G3516	CSZ006 63	925KW		
			MOTO R 20	Caterpillar	G3516	CSZ006 71	925KW		

Checklist Question		Ref.	MoV ¹	Comments					Draft Conclusion	Final Conclusion
				MOTO R 21	Caterpillar	G3516	CSZ006 67	925KW		
				MOTO R 22	Caterpillar	G3516	CSZ006 48	925KW		
				MOTO R 23	Caterpillar	G3516	CSZ006 49	925KW		
				MOTO R 24	Caterpillar	G3516	CSZ007 64	925KW		
B. Application of a baseline and monitoring methodology										
B.1. Methodology applied										
B.1.1.	Does the project activity apply an approved methodology and the correct version?	/1/ /4/	DR	The registered PDD applied the methodology ACM0001,“Consolidated baseline and monitoring methodology for landfill gas project activities” version 2 of 30/09/2005. The methodology version was updated for the renewal of the crediting period to version Version 11 of 28/05/2009 .						OK
B.2. Applicability criteria of the methodology/tools										
B.2.1.	The project activity complies with the applicability criteria?	/1/ /4/	DR/I	This methodology is applicable to landfill gas capture project activities, where the baseline scenario is the partial atmospheric release of the gas and the project activities include the following situations: <div>1. <i>The captured gas is flared; and/or</i> The project installed flare(s) to destroy the surplus LFG collected, after the power plant comes into operation; 2. <i>The captured gas is used to produce energy (e.g. electricity/thermal energy).</i> The main objective of the project is to collect the LFG generated in the Bandeirantes Landfill and use it to generate electricity. No thermal energy will be generated.</div>						OK

Checklist Question	Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
			<p>3. The captured gas is used to supply consumers through natural gas distribution network.</p> <p>The capture gas is used to generate electricity and not to be sold to natural gas distribution grid network, therefore this condition is not applicable.</p>		
B.2.2. Is the selected baseline one of the baseline(s) described in the methodology and this hence confirms the applicability of the methodology?	/1/ /4/	DR/I	The methodology confirms the applicability of the methodology once the selected baseline is the partial atmospheric release of the gas. Please refer to section B.2.1		OK
B.3. Project boundary					
B.3.1. Is the project boundary clearly defined and in accordance with the applied methodology?	/1/ /4/ /6/	DR	As defined by the applied baseline methodology, the project boundary encompasses the site of the project activity where the gas is captured and destroyed/used and all the power generation sources connected to the grid to which the project activity is connected, that is the Sistema Interconectado Nacional – SIN (Brazilian Electric Grid).		OK
B.3.2. What are the project's system boundaries (components and facilities used to mitigate GHGs)?	/1/ /4/	DR/I	<p>Bandeirantes landfill is divided into 5 cells, named AS-1, AS-2, AS-3, AS-4 and AS-5. The landfill received waste from 1979 to 2007, when it was closed. An amount of more than 37 million tons of waste were disposed in the landfill's area. The collection system encompasses mostly the cells AS-4 and AS-5. During the on-site visit it was explained that the landfill can be reopened and start to receive waste again. PP is requested to explain which cell can be reopening and if this cell is included in the boundary.</p> <p>The degassing system as well the power plant is included into the project boundary. For the</p>	CL1	OK

Checklist Question	Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
			electricity generation, a total of 24 Caterpillar engines, nominal capacity of 925 kW, model 3516A were installed (achieving a total installed capacity equals to 22.2MW). The generated energy is sent to Eletropaulo's – the electricity distributor supplying São Paulo metropolitan region – grid. This electricity is not commercialized directly; it is supplied to Itau-Unibanco's branches over São Paulo state. The connection point between the project and the Brazilian National Grid is within the landfill's boundary.		
B.3.3. Which sources are identified for the project? Does the identified project boundary cover all possible sources linked to the project activity?	/1/ /4/	DR	<p>As defined in ACM0001 “Consolidated baseline and monitoring methodology for landfill gas project activities” Version 11 of 28/05/2009 , electricity may be consumed from the grid or generated onsite/offsite in the baseline scenario”.</p> <p>In the baseline scenario, electricity is consumed to operate the landfill and is assumed to be very small, compared with the project's consumption. For simplification, this source was excluded from baseline emissions.</p> <p>CH₄ is the major source of emissions in the baseline scenario, which is the continuation of the landfill's operation, with total emission of the landfill gas generated to the atmosphere.</p> <p>The other source is the Emissions from on-site electricity use due the emergency diesel - generator which was installed to supply electricity to the project in cases of grid supply interruption.</p> <p>PP is requested to explain whether the electricity is consumed from the grid or generated onsite/offsite in the baseline scenario and justify with figures why it was excluded from the baseline emissions.</p>	CL-2	OK

Checklist Question		Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
				Moreover, PP should inform the capacity of the diesel generator for back up.		
B.3.4.	Does the project involve other emissions sources not foreseen by the methodologies that may question the applicability of the methodology? Do these sources contribute by more than 1% to the estimated emission reductions of the project?	/1/	DR/I	There is no other emissions sources not foreseen by the methodology.		OK
B.4. Assessment of the validity of the original/current baseline and to update the baseline at the renewal of a crediting period (EB46 Report-Annex 11-Annex 1) <i>(assess the continued validity of the baseline and to update the baseline at the renewal of a crediting period, as required by paragraph 49 (a) of the modalities and procedures of the clean development mechanism)</i>						
B.4.1.	Step 1: Assess the validity of the current baseline for the next crediting period <i>The "Procedures for the renewal of the crediting period of a registered CDM project activity" approved by the CDM Executive Board require assessing the impact of new relevant national and/or sectoral policies and circumstances on the baseline.</i>	/1/ /8/	DR	RINA did not identify any new relevant national and/or sectoral policies and/or circumstances that might impact the original baseline of this project activity. The updated PDD should include and explain (approach) all the requirements of the "Tool to assess the validity of the original/current baseline and to update the baseline at the renewal of a crediting period" (Annex 1 of the "Procedures for renewal of the crediting period of a registered CDM project activity" / EB46-Annex 11)	GL-3	OK
B.4.1.1.	Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies <i>If the current baseline complies with all relevant mandatory national and/or sectoral policies which have come into effect after the submission of the project activity for validation or the submission of</i>	/1/ /8/ /10/ /11/ /12/	DR	According to the Política Nacional de Resíduos Sólidos (National Solid Waste Policy), of 02/08/2010 there are no obligation regarding mandatory landfill gas capture or destruction due to safety issues or local environmental regulations nor obligation which promote the productive use of landfill		OK

Checklist Question	Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
<p><i>the previous request for renewal of the crediting period and are applicable at the time of requesting renewal of the crediting period, go to Step 1.2.</i></p> <p><i>If the current baseline does not comply with relevant mandatory national and/or sectoral policies, then assess based on the examination of current practice in the country or region in which the policies apply, whether those policies are systematically not enforced and that non-compliance with those requirements is widespread in the country or region.</i></p> <p><i>If the current baseline is not in compliance with the relevant mandatory national and/or sectoral policies or if it cannot be shown that the policies are systematically not enforced and that non-compliance with those policies is widespread in the country or region, then the current baseline needs to be updated for the subsequent crediting period.</i></p>			<p>gas such as those for the production of renewable energy, or those that promote the processing of organic waste.</p> <p>Operation license from 22/12/2009 valid until 31/05/2009 /11/ for the energy production (Thermoelectric) is provided. PP also provided a letter from the environmental Agency (CETESB) from 27/07/2009 describing that the company requested already a new license, however it is still under review /12/.</p> <p>PP is requested to provide the valid operation license, since the requesting letter is from more than one year ago. Moreover, PP informed during the on-site visit that the landfill could be reopened and starting to receive waste again, once it is closed since 2007. PP is requested to inform if the license for the continuity of the landfill has been already issued or is in process of issuance and if another environmental study is necessary.</p>	CL4	
<p>B.4.1.2. Step 1.2: Assess the impact of circumstances</p> <p><i>Assess the impact of circumstances existing at the time of requesting renewal of the crediting period on the current baseline emissions, without reassessing the baseline scenario.</i></p> <p><i>If the new circumstances make a continued validity of the current baseline not plausible, then the current baseline needs to be updated for the subsequent crediting period.</i></p>	<p>/1/ /4/ /8/ /9/ /14/</p>	DR	<p>The current baseline considers the continuation of the landfill's operation, with total emission of the landfill gas generated to the atmosphere.</p> <p>The registered PDD mentions that the Waste disposition would have occurred till 2007 (and it would be closed), however on the renewable of the crediting period it was informed that geotechnical studies confirm that <i>the landfill can receive up to 26 million tons of additional waste which allows for a period of additional 20 years of waste disposal based upon an average daily disposal of 3,500 tons/day or 1,277,000 tons/year approximately. Estimative of additional waste were included in the CERs calculation from</i></p>	CAR-2	OK

Checklist Question	Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
			<p>2011.</p> <p>The PP shall assess whether the estimated additional Waste disposal would impact on the project's additionality.</p>		
<p>B.4.1.3. Step 1.3: Assess whether the continuation of the use of current baseline equipment(s) is technically possible <i>This Sub-step should only be applied if the baseline is the continuation of the current practice.</i></p> <p><i>Assess whether the remaining technical lifetime of the equipment that would have continued to be used in the absence of the project activity, as determined in the CDM-PDD or CDM-PDD-REN, exceeds the crediting period for which renewal is requested.</i></p> <p><i>If the remaining technical lifetime of the equipment is less than the end of the crediting period for which renewal is requested, then the current baseline needs to be updated for this crediting period.</i></p>	<p>/1/ /4/ /8/</p>	DR	<p>The baseline is the continuation of the current practice and there was no equipment that would have continued to be used in the absence of the project activity. Therefore the remaining technical lifetime of the current baseline equipment was not necessary to be assessed.</p> <p>The lifetime of the project activity is defined as 21 years (project's starting date = 23/12/2003), the same defined for the first crediting period, and so the remaining lifetime is compatible with the second crediting period (ending at 22/12/2017).</p>		OK
<p>B.4.1.4. Step 1.4: Assessment of the validity of the data and parameters</p> <p><i>Assess whether data and parameters that were only determined at the start of the crediting period and not monitored during the crediting period are still valid or whether they should be updated.</i></p> <p><i>Updates should be undertaken in the following cases:</i></p> <ul style="list-style-type: none"> <i>• Where IPCC default values are used, the values should be updated if any new default values have been adopted and published by the IPCC, for example, in guidelines for national GHG inventories, IPCC assessment report or special reports by the IPCC;</i> <i>• Where emission factors, values or emission benchmarks are used and</i> 	<p>/1/ /4/</p>	DR/CC	<p>The parameters and data presented by project participants are in line with the applied baseline methodology.</p> <p>According with Version 11 of ACM0001, no leakage needs to be accounted.</p> <p>Emission reduction were estimated using the already disposed waste and the forecast waste to be disposed in a already closed cell from 2011 to 2017.</p> <p>The registered PDD mentions that the Waste disposition would have occurred till 2007 (and it would be closed), however on the renewable of the crediting period it was informed that <i>geotechnical studies confirm that the landfill can receive up to 26 million</i></p>	CAR-2	OK

Checklist Question	Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
<p>determined only once for the crediting period, they should be updated, except if the emission factors, values or emission benchmarks are based on the historical situation at the site of the project activity prior to the implementation of the project and can not be updated because the historical situation does not exist anymore as a result of the CDM project activity.</p> <p>If any of the data and parameters that were only determined at the start of the crediting period and not monitored during the crediting period are not valid anymore, the current baseline needs to be updated for the subsequent crediting period.</p> <p>If the application of Steps 1.1, 1.2, 1.3 and 1.4 confirmed that the current baseline as well as data and parameters are still valid for the subsequent crediting period, then this baseline, data and parameters can be used for the renewed crediting period. Otherwise, proceed to Step 2.</p>			<p>tons of additional waste which allows for a period of additional 20 years of waste disposal based upon an average daily disposal of 3,500 tons/day or 1,277,000 tons/year approximately. Estimative of additional waste were included in the CERs calculation from 2011.</p> <p>The PP shall assess whether the estimated additional Waste disposal would impact on the project's additionality.</p>		
<p>B.4.2. Step 2: Update the current baseline and the data and parameters</p> <p><i>This step is only applicable if any of the Steps 1.1, 1.2, 1.3 and/or 1.4 showed that the current baseline needs to be updated.</i></p>					
<p>B.4.2.1. Step 2.1: Update the current baseline <i>Update the current baseline emissions for the subsequent crediting period, without reassessing the baseline scenario, based on the latest approved version of the methodology applicable to the project activity. The procedure should be applied in the context of the sectoral policies and circumstances that are applicable at the time of request for renewal of the crediting period.</i></p>	<p>/1/ /4/ /8/ /9/ /14/</p>	DR/CC	<p>The registered PDD mentions that the Waste disposition would have occurred till 2007 (and it would be closed), however on the renewable of the crediting period it was informed that <i>geotechnical studies confirm that the landfill can receive up to 26 million tons of additional waste which allows for a period of additional 20 years of waste disposal based upon an average daily disposal of 3,500 tons/day or 1,277,000 tons/year approximately. Estimative of additional waste</i></p>	CAR-2	OK

Checklist Question	Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
			<p>were included in the CERs calculation from 2011.</p> <p>The PP shall assess whether the estimated additional Waste disposal would impact on the project's additionality.</p> <p>PP is requested to provide the valid operation license, since the requesting letter is from more than one year ago. Moreover, PP informed during the on-site visit that the landfill could be reopened and starting to receive waste again, once it is closed since 2007. PP is requested to inform if the license for the continuity of the landfill has been already issued or is in process of issuance and if another environmental study is necessary.</p>	CL-4	
<p>B.4.2.2. Step 2.2: Update the data and parameters</p> <p><i>If the application of Step 1.4 showed that the data and/or parameter(s) that were only determined at the start of the crediting period and not monitored during the crediting period are not valid anymore, project participants should update all applicable data and parameters, following the guidance in Step 1.4.</i></p>	<p>/1/ /4/ /8/ /9/ /14/ /15/ /18/ /19/ /20/ /21/</p>	DR/CC	<p>The project counts with 2 flares (Flare F100 and Flare F200). An exclusive flow meter (FIR700) was installed to measure the flow at flare F200, according with the methodology requirements, which recommends one flow-meter for each flare.</p> <p>To comply with this requirement, an auxiliary pipeline was installed.</p> <p>Emission reductions were estimated using the emission factor of the operating margin for 2009 (0.2476 tCO₂/MWh) and the emission factor of the built margin of 2008 (0.1458 tCO₂/MWh) available at CIMGC (Brazilian DNA) web-site (http://www.mct.gov.br/index.php/content/view/74689.html) .</p> <p>PP is requested to revise calculations of the electricity baseline emission factor for 2009 updating the emission factor of the built margin with the data from 2009, since it is already available at Brazilian DNA website</p>	CAR-3	OK

Checklist Question	Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
			<p>(EB 51 para.89). The adjustment factor (AF) was updated resulting in a percentage of 18.09%. PP maintains the AF percentage of 20%, applied for the 1st crediting period in order to be conservative. PP is requested to correct the amount of methane generated in 2004 (MGPR,1) in the PDD (97,398,795 Nm³LFG), according to the ER calculation spreadsheet (101.778.551 Nm³LFG) for the calculation of the adjustment factor AF..</p>	CAR-4	
<p>B.4.2.3. Background information or documentation, including tables with time series data, documentation of measurement results and data sources are properly addressed?</p>	<p>/1/ /8/ /9/ /13/ /14/ /18/ /19/ /20/ /21/</p>	DR/CC	<p>Annex 3 included information about the emission factor calculation; the methane estimative and the electricity generation. The electricity generation estimative was included in Annex 3 and is accordingly to the ER calculation spreadsheet. PP is requested to revise calculations of the electricity baseline emission factor for 2009 updating the emission factor of the built margin with the data from 2009, since it is already available at Brazilian DNA website (EB 51 para.89).</p> <p>The values of BECH4, SWDS (tCO₂e/year), Total methane emissions (T;year), Total methane emissions (Nm³/year), Total LFG Emissions (Nm³/year) of 1979 to 2004 presented on the table of item 2. Methane Estimative in Annex 3 are not the same as that presented in the calculation spreadsheet. Moreover, the values of LFG presented in the table of item 3. Electricity generation from 2010 to 2017 are not the same as that presented in the calculation spreadsheet. PP is requested to correct the values presented in the tables of item 2. Methane Estimative and</p>	<p>CAR-3</p> <p>CAR-5</p>	OK

Checklist Question	Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
			3. Electricity generation in Annex 3 according to the values of the ER calculation spreadsheet.		
B.5. Calculation of GHG emission reductions					
B.5.1. Baseline emissions					
B.5.1.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /4/ /8/ /9/ /13/ /14/ /18/ /19/ /20/ /21/	DR/CC	<p>The project activity provides the CERS calculation as defined by the applied methodology ACM0001 “Consolidated baseline and monitoring methodology for landfill gas project activities” Version 11 of 28/05/2009 :</p> $BE_y = (MD_{project} - MD_{BL,y}) * GWP_{CH_4} + EL_{LFG} * CEF_{CH_4, BL,y} + ET_{LFG} * CEF_{CH_4, BL,y}$ <p>and,</p> $MD_{BL,y} = MD_{project,y} * AF$ <p>PP is requested to correct the amount of methane generated in 2004 (MGPR,1) in the PDD (97,398,795 Nm³LFG), according to the ER calculation spreadsheet (101.778.551 Nm³LFG) for the calculation of the adjustment factor AF..</p> <p>and:</p> $MD_{project,y} = MD_{flared,y} + MD_{electricity,y} + MD_{thermal,y} + MD_{PL,y}$ <p>Where:</p> $MD_{PL,y} = 0$ $MD_{thermal,y} = 0,$ <p>So that:</p> $MD_{flared,y} = (LFG_{flare,y} * w_{CH_4,y} * D_{CH_4}) - (PE_{flare,y} / GWP_{CH_4})$ <p>And:</p> $MD_{electricity,y} = LFG_{electricity,y} * w_{CH_4,y} * D_{CH_4}$ <p>PP is requested to revise calculations of the electricity baseline emission factor for 2009</p>	CAR-4	OK
				CAR-3	

Checklist Question	Ref.	Mov ¹	Comments	Draft Conclusion	Final Conclusion
			<p>updating the emission factor of the built margin with the data from 2009, since it is already available at Brazilian DNA website (EB 51 para.89).</p> <p>The Waste Type was based on the study from FRAL CONSULTORIA LTDA., “Caracterização dos Resíduos Sólidos Domiciliares do Município de São Paulo – Agrupamento Noroeste” of nov/dec/2008/jan/feb/2009” - to support the data about the weight fraction of the waste type j in the sample n collected during the year. However, this information was not found in Annex 3. PP is requested to include in Annex 3 information about the waste type to support data of weight fraction of waste type j (pn,j,x). Moreover, PP is requested to include information presented in the table of the file “DADOS PREFEITURA LIXO.xls” about the quantity of waste in tonnes disposed into the landfill from 1998 to 2007. In addition, the ER calculation spreadsheet used data from 2003. PP is requested to update the ER calculation spreadsheet with the recent data of weight fraction of waste type j.</p>	CAR-6	
B.5.1.2. Have conservative assumptions been used when calculating the baseline emissions and are the uncertainty estimates properly addressed?	/1/ /4/ /8/ /9/ /13/ /14/ /18/ /19/ /20/ /21/	DR/CC	PP is requested to update the PDD with the methodological tool “Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site” Version 4 valid from 02/08/2008 until 12/08/2010 to Version 5 (EB55 Annex 18) valid from 09/08/2010 onwards. PP applied collection efficiency for energy recovery of 85% and a transformer efficiency of 97% and an electric efficiency of 35%.	CAR-7	OK

Checklist Question	Ref.	Mov ¹	Comments	Draft Conclusion	Final Conclusion
			<p>PP correctly applied the value of the NCV of the LFG of 4,150Kcal/Nm³ for the ER calculation. However inside the PDD in item B.6.3 Ex-ante calculation of emission reductions: there is a reference of 4,120Kcal/Nm³ to the NCV of the LFG. PP is requested to revise the PDD accordingly</p> <p>The registered PDD mentions that the Waste disposition would have occurred till 2007 (and it would be closed), however on the renewable of the crediting period it was informed that <i>geotechnical studies confirm that the landfill can receive up to 26 million tons of additional waste which allows for a period of additional 20 years of waste disposal based upon an average daily disposal of 3,500 tons/day or 1,277,000 tons/year approximately.</i> Estimative of additional waste were included in the CERs calculation from 2011.</p> <p>The PP shall assess whether the estimated additional Waste disposal would impact on the project's additionality.</p>	<p>CAR-8</p> <p>CAR-2</p>	
B.5.2. Project emissions					
B.5.2.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	<p>/1/ /4/ /8/ /9/ /13/ /14/ /18/ /19/ /20/ /21/</p>	DR/CC	<p>Project Emission related to the amount of methane not destroyed in the flares are being considerate. A value of 90% flare efficiency was applied for the purpose of ERs estimations.</p> <p>Project emissions from electricity consumption from the diesel generator were not considered for the purpose of ERs estimating, as it will be used only during emergency situations.</p> <p>Project emissions from fossil fuel combustion (PEFC,j,y) is not included as monitored parameter.</p>	<p>GL-5</p>	OK

Checklist Question	Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
			The PDD states that there is a captive diesel generator (backup) inside of landfill that will be used for emergency purposes. The PP is requested to explain why the fossil fuel combustion is not included in the section B.7.1 of the PDD.		
B.5.2.2. Have conservative assumptions been used when calculating the project emissions and are the uncertainty estimates properly addressed?	/1/ /4/	DR/CC	See B.5.2.21	GL5	OK
B.5.3. Leakage					
B.5.3.1. Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /4/	DR/CC	According to the ACM0001, no leakage effects need to be accounted under this methodology		OK
B.5.3.2. Have conservative assumptions been used when calculating the leakage and are the uncertainty estimates properly addressed?	/1/ /4/	DR/CC	Not applicable.		OK
B.5.4. Emission reductions					
B.5.4.1. Has the methodology been correctly applied to calculate the emission reductions and can this be replicated by the data provided in the PDD and supporting files to be submitted for registration?	/1/ /4/ /8/ /9/ /13/ /14/ /17/ /18/ /19/ /20/ /21/	DR/CC	See B.5.1.1, B.5.1.2 and B.5.2.1	CAR-2 CAR-3 CAR-4 CAR-6 CAR-7 CAR-8	OK
B.5.5. Data and parameters that are available at validation and that are not monitored					
B.5.5.1. How were the parameters available at validation verified?	/1/ /4/ /8/	DR/CC	According to the ACM0001 "Consolidated baseline and monitoring methodology for landfill gas project activities", Version 11 of 28/05/2009 , the default values of the project		OK

Checklist Question	Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
	/9/ /13/ /14/ /17/ /18/ /19/ /20/ /21/		<p>activity, for the second crediting period, corresponds to the:</p> <ol style="list-style-type: none"> 1) Regulatory requirements relating to landfill gas; 2) GWP_{CH_4} - Global Warming Potential of CH_4 - IPCC = 21; 3) D_{CH_4} - Methane density = At standard temperature and pressure (0 degree Celsius and 1,013 bar) the density of methane is 0.0007168 tCH_4/m³CH_4; 4) $BE_{CH_4, SWDS, y}$ - Methane generation from the landfill in the absence of the project activity at year y. The table presented in the PDD is according to the ER calculation spreadsheet; 4. ϕ = Model correction factor to account for model uncertainties (0.9) Source of data used: "Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site"; 5. OX = Oxidation factor (reflecting the amount of methane from SWDS that is oxidized in the soil or other material covering the waste. The value of 0.1 was used, which corresponds to managed solid waste disposal sites that are covered with oxidizing material (soil); 6. F - Fraction of methane in the SWDS gas (volume fraction). A default value of 0.5 was used, as recommended by the IPCC; 7. DOC_f = Fraction of degradable organic carbon (DOC) that can decompose. A standard value of 0.5 was used, as recommended by the IPCC; 8. MCF = Methane correction factor. Value applied = 1. According to the "Tool to determine methane emissions avoided 		

Checklist Question	Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
			<p>from disposal of waste at a solid waste disposal site” Version 4, managed landfills should have controlled placement of waste (i.e., waste directed to specific deposition areas, a degree of control of scavenging and a degree of control of fires) and will include at least one of the following: (i) cover material; (ii) mechanical compacting; or (iii) leveling of the waste;</p> <p>9. DOC_j = Fraction of degradable organic carbon (by weight) in the waste type j Values applied: default values of the IPCC 2006 Guidelines for National Greenhouse Gas Inventories on wet basis was used (adapted from Volume 5, Tables 2.4 and 2.5);</p> <p>10. $W_{j,x}$ (T) - Total amount of organic waste prevented from disposal in year x (tons). Data of waste weight in tons disposed into the landfill from 1998 to 2007, was based on the municipality data “<i>DADOS PREFEITURA LIXO.xls</i>”.</p> <p>11. $\rho_{n,j,x}$ weight fraction of waste type j – The Waste Type was based on the study from FRAL CONSULTORIA LTDA., “Caracterização dos Resíduos Sólidos Domiciliares do Município de São Paulo – Agrupamento Noroeste” of nov/dec/2008/jan/feb/2009” - to support the data about the weight fraction of the waste type j in the sample n collected during the year. However, this information was not found in Annex 3. PP is requested to include in Annex 3 information about the waste type to support data of weight fraction of waste type j ($\rho_{n,j,x}$). Moreover, PP is requested</p>	CAR-6	

Checklist Question	Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
			<p>to include information presented in the table of the file “DADOS PREFEITURA LIXO.xls” about the quantity of waste in tonnes disposed into the landfill from 1998 to 2007. In addition, the ER calculation spreadsheet used data from 2003. PP is requested to update the ER calculation spreadsheet with the recent data of weight fraction of waste type j.</p> <p>PP is requested to revise PDD and include as monitored parameter the available parameters: the $W_{j,x}$ (T) - Total amount of organic waste prevented from disposal in year x (tons) and; the $pn_{j,x}$ - weight fraction of waste type j to the parameters to be monitored table, according to the “Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site” Version 4.</p> <p>12. k_j = Decay rate for the waste type j . Values applied: Default values of IPCC 2006 Guidelines for National Greenhouse Gas Inventories on wet basis and tropical climate ($T > 20^{\circ}\text{C}$) was used (adapted from Volume 5, Table 3.3);</p> <p>MDHist - Amount of methane destroyed historically for the previous year before the start of project activity and MGHist - Amount of methane generated historically for the previous year before the start of project activity was provided. Since, records of the amount of LFG measured were made available from 01/01/2004, PP is requested to</p>	CAR-9	

Checklist Question	Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
			include these parameters in the table of parameters not monitored.	CAR-10	
B.6. Monitoring plan					
B.6.1. Data and parameters monitored					
B.6.1.1. Does the monitoring plan described in the PDD comply with the requirements of the methodology?	/1/ /4/ /8/ /16/ /18/ /19/ /20/ /21/ /23/	DR/CC	The monitoring plan described in the PDD is in line with the methodology ACM0001 - “Consolidated baseline and monitoring methodology for landfill gas project activities”. The monitoring methodology is based on direct measurement of the amount of landfill gas captured and destroyed at two flares (F100 and F200) and the electricity generating at 24 generators divide into two groups of 12 generators. The monitoring plan provides for continuous measurement of the quantity and quality of LFG flared. The main variables that need to be determined are the quantity of methane actually captured $MD_{project,y}$, quantity of methane flared ($MD_{flared,y}$), the quantity of methane used to generate electricity ($MD_{electricity,y}$), and the total quantity of methane generated ($MD_{total,y}$). The project activity also measures the energy generated by use of LFG ($EL_{LFG,y}$). The project emissions for electricity consumption from captive diesel generator (backup) will be used as emergency purposes.		OK
B.6.1.2. Does the monitoring plan contain all necessary parameters and are they clearly described?	/1/ /4/ /16/ /18/ /19/ /20/ /21/ /23/	DR/CC	According to the ACM0001 - “Consolidated baseline and monitoring methodology for landfill gas project activities”, Version 11 of 28/05/2009 , the monitored parameters of the project activity, for the second crediting period, corresponds to: 1. LFG_{Total, y} (m³) - Total amount of landfill gas captured at Normal Temperature and Pressure. Continuous measurements		OK

Checklist Question	Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
			<p>from the flow-meters FIR100 and FIR700;</p> <p>2. LFG_{Flare, y} (m³) - Total amount of landfill gas flared at Normal Temperature and Pressure. Continuous measurements from the flow-meters FIR200 and FIR700;</p> <p>3. LFG_{Electricity, y} (m³) - Amount of landfill gas combusted in the generators at Normal Temperature and Pressure. from the 4 flow-meters installed (tags FIR300, FIR400, FIR500 and FIR600);</p> <p>4. PE_{Flares, y} (tCO_{2e}) Project emissions from flaring of the residual gas stream in year y. Calculated as per the Version 01 of the Tool to determine project emissions from flaring gases containing methane;</p> <p>5. w_{CH4,y} (%) - Methane fraction in the landfill gas. Continuous measurement using a certified gas analyzer. The analyzer (A100) will measure the methane content directly. The supervisory system makes records of instant methane concentration every 5 minutes;</p> <p>6. EL_{LFG, y} (MWh) - Net amount of electricity generated using LFG. Continuous measurements from the electricity meter;</p> <p>7. CEF_{elec, BL, y} (tCO_{2e}/MWh) - Carbon emission factor of electricity.</p> <p>8. EF_{OM}, tCO_{2e}/MWh - Emission Factor of the Operating Margin for 2009;</p> <p>9. EF_{BM}, tCO_{2e}/MWh - Emission Factor of the Built Margin of 2008;</p> <p>Emission reductions were estimated using the emission factor of the operating margin for 2009 (0.2476</p>		

Checklist Question	Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
			<p>tCO₂/MWh) and the emission factor of the built margin of 2008 (0.1458 tCO₂/MWh) available at CIMGC (Brazilian DNA) web-site (http://www.mct.gov.br/index.php/content/view/74689.html)</p> <p>PP is requested to revise calculations of the electricity baseline emission factor for 2009 updating the emission factor of the built margin with the data from 2009, since it is already available at Brazilian DNA website (EB 51 para.89).</p> <p>10. Operation of the energy plant (hours) - Readings from the run-time meter installed at each engine;</p> <p>11. PE_{ec, y} - Project emissions from electricity consumption by the project activity during the year y. Calculated as per Version 01 of the Tool to calculate baseline, project and/or leakage emissions from electricity consumption;</p> <p>Project emissions from fossil fuel combustion (PEFC,j,y) is not included as monitored parameter.</p> <p>The PDD states that there is a captive diesel generator (backup) inside of landfill that will be used for emergency purposes. The PP is requested to explain why the fossil fuel combustion is not included in the section B.7.1 of the PDD.</p> <p>12. fv_{i,h} (%) - Volumetric fraction of component i in the residual gas in the hour h where i = CH₄, CO, CO₂, O₂, H₂, N₂;</p> <p>13. FV_{RG,h} (m³/h) Volumetric flow rate of the residual gas in dry basis at normal conditions in the hour h;</p> <p>14. T_{flare} (°C) - Temperature in the exhaust</p>	<p>CAR-3</p> <p>CL-5</p>	

Checklist Question	Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
			<p>gas of the flare;</p> <p>15. FC_{ECDG, D, y} (mass or volume unit) - Quantity of diesel fired in the emergency captive diesel generator in year y</p> <p>16. EG_{DG, y} (MWh) - Quantity of electricity generated by the emergency captive diesel generator in year y;</p> <p>17. NCV_{D, t} (GJ/mass or volume unit) - Average net calorific value of the diesel used in the period t;</p> <p>18. EF_{CO2, t} (CO₂/TJCO₂) emission factor of the diesel used in the period t;</p> <p>According to the ACM0001 “Consolidated baseline and monitoring methodology for landfill gas project activities”, Version 11 of 28/05/2009 , PP is requested to include in the list of the monitored parameters the MG_{PR, y} (tCH₄) - Amount of methane generated during year y of the project activity, which should be estimated using the actual amount of waste disposed in the landfill as per the latest version of the “Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site”.</p> <p>According to the Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site, f - Fraction of methane captured at the SWDS and flared, combusted or used in another manner should be monitored. PP is requested to include f in the list of monitored parameters.</p>	<p>CAR-11</p> <p>CAR-12</p>	
B.6.1.3. Is the measurement equipment described? Is the accuracy of the measurement equipment addressed and deemed appropriate?	/1/ /4/ /22/	DR/CC	A description of the measurement equipment-flow meters (gas and electricity) and gas analyzer with the manufacturer name, serial		OK

Checklist Question	Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
Are the requirements for maintenance and calibration of measurement equipment described and deemed appropriate?			number, model, location, identification, range and error was provided by the PP. The gas analyzer is recalibrated every week against a standard certified gas cylinder, according with an internal procedure. As per the PDD the thermocouple will be replaced or calibrated every year. In the PDD is described that the calibration of the flow meters will be undertaken periodically according with the manufacturer's recommendation. However, the frequency of calibration is not described. PP is requested to provide the frequency of calibrations from the biogas flow meters and the electricity meter.	CL-6	
B.6.1.4. Is the monitoring frequency adequate for all monitoring parameters? Is it in line with the monitoring methodology?	/1/ /4/ /22/	DR/CC	Yes, see B.6.1.1 and B.6.1.2	CAR3 CAR11 CAR12 CL5 CL6	OK
B.6.1.5. Is the recording frequency adequate for all monitoring parameters? Is it in line with the monitoring methodology?	/1/ /4/ /22/ /23/	DR	PP provided a procedure of data recordings. However, the recording frequency, with exception to the wCH ₄ ,y (%) - Methane fraction in the landfill gas parameter, where the supervisory system makes records of instant methane concentration every 5 minutes, is not described. PP is requested to include the recording frequency to the monitored parameters	CL-7	OK
B.6.2. Monitoring of sustainable development indicators/ environmental impacts					
B.6.2.1. Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/1/	DR	Not applicable to the project activity.		OK
B.6.2.2. Does the monitoring plan provide for the collection	/1/	DR	Not applicable to the project activity.		OK

Checklist Question	Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
and archiving of relevant data concerning environmental, social and economic impacts?					
B.6.2.3. Are the sustainable development indicators in line with stated national priorities in the host country?	/1/	DR	Not applicable to the project activity.		OK
B.6.3. Management, quality assurance and quality control					
B.6.3.1. How it has been assessed that the monitoring arrangements described in the monitoring plan are feasible within the project design?	/1/	DR/I	Yes. This is the renewal of the crediting period. Monitoring plan is already implemented.		OK
B.6.3.2. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)?	/1/	DR/CC	See B.6.1.2, B.6.1.3 and B.6.1.5	CAR 3 CAR 11 CAR 12 CL 6 CL 7	OK
B.6.3.3. Are the data management and quality assurance and quality control procedures sufficient to ensure that the emission reductions achieved by/resulting from the project can be reported <i>ex post</i> and verified?	/1/	DR/CC	See B.6.1.2, B.6.1.3 and B.6.1.5	CAR 3 CAR 11 CAR 12 CL 6 CL 7	OK
B.6.3.4. Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, whichever occurs later?	/1/ /6/	DR/CC	As described into the monitored parameters list of the PDD all registrations will be kept for 2 years after the end of the crediting period. PP's shall revise the procedure according to the "Guidelines for completing the project design document (CDM-PDD)" (data monitored and required for verification and issuance are to be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later).	CL 8	OK
C. Duration of the project activity and crediting period					
C.1. Application for renewal of the crediting period					
C.1.1. Did project participants notified the secretariat, by email or through a dedicated web interface, of their	/1/ /24/	DR/CC	Yes. PP provided the e-mail from the UNFCCC secretariat confirming the		OK

Checklist Question	Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
intention to request a renewal of a crediting period of the registered CDM project activity by submitting an updated CDM-PDD and informing of their selection of a DOE, within nine to six months prior to the date of expiration of the current crediting period?			notification of the request for renewal of crediting period for the "Bandeirantes Landfill Gas to Energy Project (BLFGE)" of 24/06/2010 /24/. This is in accordance with the requirements of Procedures for renewal of the crediting period of a registered CDM project activity, version 5.		
C.2. Choice of crediting period.					
C.2.1. Is the chosen crediting period clearly defined (mentioned in years and months) and its starting date mentioned in the format <i>DD / MM / YYYY?</i> (<i>renewable crediting period of seven years with two possible renewals or fixed crediting period of 10 years with no renewal</i>)	/1/	DR/CC	A renewable crediting period of 7 years was selected (with the potential of being renewed once more), starting on 23/12/2010 (registered PDD-C.1 and UNFCCC web site).		OK
C.2.2. Are the total and annual estimated reductions (for the chosen crediting period) defined and presented in a (proper table) tabular format?	/1/	DR/CC	According to the renewal crediting period PDD, the total GHG emission reductions from the "Bandeirantes Landfill Gas to Energy Project (BLFGE)" are estimated to be 1,751,876 tCO ₂ e during the second renewable 7 years crediting period, resulting in an annual average emission reductions of 250,268 tCO ₂ e / year.		OK
D. Environmental Impact					
D.1.1. Has an analysis of the environment impacts of the project activity been undertaken? Is it clearly and sufficiently described in the PDD?	/1/ /10/ /11/ /12/	DR/CC	For the first crediting period a preliminary environmental report (RAP) was prepared, in accordance with state of São Paulo environmental legislation. This has been submitted to SMA for appraisal and questionings. After being analyzed by DAIA, a statement is forwarded to the developer, allowing it to proceed with the project and apply for the installation license. The last operation license is already expired. Operation license from 22/12/2009 valid until 31/05/2009 for the energy production (Thermoelectric) is provided. PP also provided a letter from the environmental Agency		OK

Checklist Question	Ref.	MoV ¹	Comments	Draft Conclusion	Final Conclusion
			<p>(CETESB) from 27/07/2009 describing that the company requested already a new license, however it is still under review.</p> <p>PP is requested to provide the valid operation license, since the requesting letter is from more than one year ago. Moreover, PP informed during the on-site visit that the landfill could be reopened and starting to receive waste again, once it is closed since 2007. PP is requested to inform if the license for the continuity of the landfill has been already issued or is in process of issuance and if another environmental study is necessary.</p>	GL-4	

TABLE 2 RESOLUTION OF CORRECTIVE ACTION REQUESTS AND CLARIFICATION REQUESTS

Corrective action and/ or clarification requests	Reference to Table 1	Response by project participants	Validation Conclusion
CAR 1 The name of “Prefeitura Municipal de São Paulo” was translated in Annex 1. PP is requested to use the same corporate name in both fields.	A.3.1	The name of the participant was corrected on Section A.3 and on Annex 1 to “Prefeitura Municipal de São Paulo (the Municipality of São Paulo)”, reflecting the project page at the UNFCCC-CDM website.	PP corrected the name to “Prefeitura Municipal de São Paulo” accordingly in Annex 1 of the PDD version 2. CAR 1 is closed.
CAR 2 The registered PDD mentions that the Waste disposition would have occurred till 2007 (and it would be closed), however on the renewable of the crediting period it was informed that <i>geotechnical studies confirm that the landfill can receive up to 26 million tons of additional waste which allows for a period of additional 20 years of waste disposal based upon an average daily disposal of 3,500 tons/day or 1,277,000 tons/year approximately</i> . Estimative of additional waste were included in the CERs calculation from 2011. The PP shall assess whether the estimated additional Waste disposal would impact on the project’s additionality.	B.4.1.2 B.4.1.4 B.4.2.1 B.5.1.2 B.5.4.1	As the reopening of the landfill is not likely to happen in the nearby future, Biogás decided to exclude the additional estimated amount of waste to be received from 2011-2017 from the calculation of ERs. If Biogás identifies that the landfill might receive waste, it will follow the relevant guidelines and procedures from the EB to address this issue. The PDD was revised considering that the landfill stopped receiving waste on 2007, and ERs calculations were updated accordingly.	PP clarified that the landfill is not likely to be reopened and updated the PDD and ER calculations spreadsheet accordingly. PP provided the updated ER calculation spreadsheet ERs Estimativas - <i>BLFGE_rev_JJ090511.xls</i> of 09/05/2011 where the waste acceptance from 2011 to 2017 was suppressed, as well from the revised PDD version 2 - <i>BLFGE_PDD_form04_revised</i> of 28/04/2011. (available parameter W_j - Total amount of organic waste prevented from disposal in year x) CAR 2 is closed.
CAR 3 PP is requested to revise calculations of the electricity baseline emission factor for 2009 updating the emission factor of the built margin with the data from 2009, since it is already available at Brazilian DNA website (EB 51 para.89).	B.4.2.2 B.4.2.3 B.5.1.1 B.5.4.1 B.6.1.2 B.6.1.4 B.6.3.2	The grid emission-factor was updated applying the most recent data available for the Build Margin, from 2009 (i.e. 0.0794 tCO ₂ e/MWh).	PP updated the emission factor accordingly to <i>Ministry of Science and Technology - CO₂ emission factors from electric energy generation in Brazil’s National Interconnected System – Baseline year 2009, in Portuguese: “Fatores de Emissão de CO₂ pela geração de energia elétrica no Sistema Interligado Nacional do Brasil - Ano Base 2009”</i> http://www.mct.gov.br/index.php/content/view/303076.html#ancora , and corrected PDD version 2 - <i>BLFGE_PDD_form04_revised</i> of 28/04/2011. and ER calculation

Corrective action and/ or clarification requests	Reference to Table 1	Response by project participants	Validation Conclusion
			spreadsheet ERs Estimativas - BLFGE_rev_JJ090511.xls of 09/05/2011 accordingly. CAR 3 is closed.
CAR 4 PP is requested to correct the amount of methane generated in 2004 ($MG_{PR,1}$) in the PDD (97,398,795 Nm^3LFG), according to the ER calculation spreadsheet (101.778.551 Nm^3LFG) for the calculation of the adjustment factor AF..	B.4.2.2 B.5.1.1 B.5.4.1	The amount of methane generated was corrected.	The PDD version 2 now states correctly the amount of methane generated according to the ER calculation spreadsheet (ERs Estimativas - BLFGE_rev_JJ090511.xls). CAR 4 is closed.
CAR 5 The values of $BE_{CH_4, SWDS}$ ($tCO_2e/year$), Total methane emissions ($T/year$), Total methane emissions ($Nm^3/year$), Total LFG Emissions ($Nm^3/year$) of 1979 to 2004 presented on the table of item 2. Methane Estimative in Annex 3 are not the same as that presented in the calculation spreadsheet. Moreover, the values of LFG presented in the table of item 3. Electricity generation from 2010 to 2017 are not the same as that presented in the calculation spreadsheet. PP is requested to correct the values presented in the tables of item 2. Methane Estimative and 3. Electricity generation in Annex 3 according to the values of the ER calculation spreadsheet.	B.4.2.3	The tables from Annex 3 were updated, addressing the correct values.	The PDD version 2 now provides the correct data and values according to the ER calculations spreadsheet (ERs Estimativas - BLFGE_rev_JJ090511.xls). CAR 5 is closed.
CAR 6 The Waste Type was based on the study from FRAL CONSULTORIA LTDA., “Caracterização dos Resíduos Sólidos Domiciliares do Município de São Paulo – Agrupamento Noroeste” of nov/dec/2008/jan/feb/2009” - to support the data about the weight fraction of the waste type j in the sample n collected during the year. However, this information was not found in Annex 3. PP is requested to include in Annex 3 information about	B.5.1.1 B.5.5.1 B.5.4.1	<ul style="list-style-type: none"> - A footnote was included in Annex 3 – Section 2, making reference to the waste characterization study. - The waste data from 1998-2007 were included in the “DADOS PREFEITURA LIXO.xls” file - The reference in the spreadsheet was corrected, to reflect the study made by 	PP included the source - FRAL CONSULTORIA LTDA, “Caracterização dos Resíduos Sólidos Domiciliares do Município de São Paulo – Agrupamento Noroeste” of nov-dez/2008 and jan-feb/2009” for waste type into the PDD version 2. Moreover, PP included information about the quantity of waste presented in the file “Dados Prefeitura Lixo”. PP is requested include the source

Corrective action and/ or clarification requests	Reference to Table 1	Response by project participants	Validation Conclusion
the waste type to support data of weight fraction of waste type j ($\rho_{n,j,x}$). Moreover, PP is requested to include information presented in the table of the file “ <i>DADOS PREFEITURA LIXO.xls</i> ” about the quantity of waste in tonnes disposed into the landfill from 1998 to 2007. In addition, the ER calculation spreadsheet used data from 2003. PP is requested to update the ER calculation spreadsheet with the recent data of weight fraction of waste type j.		FRAL Consultoria The waste composition from 2009 was applied and ERs were re-calculated. The PDD and the spreadsheet were updated accordingly.	of this data into the PDD PP changed the reference to <i>FRAL CONSULTORIA LTDA., Caracterização dos Resíduos Sólidos Domiciliares do Município de São Paulo – Agrupamento Noroeste – Quadrimestre nov/dez/2008/jan/fev/2009 – 2009</i> in the spreadsheet (<i>ERs Estimativas - BLFGE_rev_JJ090511.xls</i>) for type of waste from reference of 2003 to reference of 2009. However the data did not change from 2003 to 2009. PP is requested to update spreadsheet with data from 2009. CAR 6 remains open. RINA’s response on 20/10/2011 PP changed the data of Weight fraction of the waste type j in the sample n collected during the year x, with data from 2009 from the source of “ <i>FRAL CONSULTORIA LTDA., Caracterização dos Resíduos Sólidos Domiciliares do Município de São Paulo – Agrupamento Noroeste – Quadrimestre nov/dez/2008/jan/fev/2009 – 2009</i> ” in the spreadsheet. CAR 6 is closed.
CAR 7 PP is requested to update the PDD with the methodological tool “Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site” Version 4 valid from 02/08/2008 until 12/08/2010 to Version 5 (EB55 Annex 18) valid from 09/08/2010 onwards.	B.5.1.2 B.5.4.1	All references to the Tool were updated. It was applied the version 05.01.0 of the Tool to determine methane emission avoided from disposal of waste at a SWDS.	The PP is requested to apply the most recent version of Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site. CAR 7 remains open.

Corrective action and/ or clarification requests	Reference to Table 1	Response by project participants	Validation Conclusion
			<p>RINA's response on 20/10/2011 PP applied the latest version 05.01.0 of the Tool to determine methane emission avoided from disposal of waste at a SWDS and updated the PDD accordingly.</p> <p>CAR 7 is closed.</p>
<p>CAR 8 PP correctly applied the value of the NCV of the LFG of 4,150Kcal/Nm³ for the ER calculation. However inside the PDD in item B.6.3 Ex-ante calculation of emission reductions: there is a reference of 4,120Kcal/Nm³ to the NCV of the LFG. PP is requested to revise the PDD accordingly.</p>	<p>B.5.1.2 B.5.4.1</p>	<p>NCV from the LFG was corrected on section B.6.3</p>	<p>The PDD version 2 now provides the correct value of NCV from LFG.</p> <p>CAR 8 is closed.</p>
<p>CAR 9 PP is requested to revise PDD and include as monitored parameter the available parameters: the W_{j,x} (T) - Total amount of organic waste prevented from disposal in year x (tons) and; the p_{n,j,x} - weight fraction of waste type j to the parameters to be monitored table, according to the “Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site” Version 4.</p>	<p>B.5.5.1</p>	<p>The methodology ACM0001 - version 11 does not require to monitor these 2 parameters; according with the tool, “The methane destroyed by the project activity (MD_{project,y}) during a year is determined by monitoring the quantity of methane actually flared and gas used to generate electricity and/or produce thermal energy and/or supply to end users via natural gas distribution pipeline, if applicable, and the total quantity of methane captured” The reference to the tool is only to calculate the <i>ex-ante</i> methane generation from the landfill. Therefore, there is no need to include these 2 parameters as monitored parameters.</p> <p>As explained above, the methodology does not require the monitoring of these 2 parameters. The PP would like to reinforce that the “Tool” is only applied in the PDD to estimate the <i>ex-ante</i> emissions and, therefore, its monitoring parameters do not</p>	<p>PP is requested to include both parameters: W_{j,x} (T) - Total amount of organic waste prevented from disposal in year x (tons) and; the p_{n,j,x} - weight fraction of waste type j to the parameters to be monitored table since it is required by the “Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site” Version 05.1.0.</p> <p>CAR 9 remains open.</p> <p>RINA's response on 20/10/2011 The project should follow the monitored parameters of the methodology and related tools. However, once the landfill is not receiving waste anymore, this parameters do not need to be monitored.</p> <p>CAR 9 is closed.</p>

Corrective action and/ or clarification requests	Reference to Table 1	Response by project participants	Validation Conclusion
		need to be monitored.	
CAR 10 MDHist - Amount of methane destroyed historically for the previous year before the start of project activity and MGHist - Amount of methane generated historically for the previous year before the start of project activity was provided. Since, records of the amount of LFG measured were made available from 01/01/2004, PP is requested to include these parameters in the table of parameters not monitored.	B.5.5.1	As discussed with the DOE, the CAR is to provide the values of MD _{Project, 1} (Amount of methane destroyed by the project activity during the first year of the project activity) and MG_{PR, 1} (Amount of methane generated during the first year of the project activity (Nm³CH₄)). These parameters were included on Section B.6.2	PP included parameters the following parameters into the table of parameters not monitored from the PDD: MD _{Hist} - Amount of methane destroyed historically for the previous year before the start of project activity; MG _{Hist} - Amount of methane generated historically for the previous year before the start of project activity; in addition to MD _{Project, 1} - Amount of methane destroyed by the project activity during the first year of the project activity and MG _{PR, 1} - Amount of methane generated during the first year of the project activity. CAR 10 is closed.
CAR 11 According to the ACM0001 “Consolidated baseline and monitoring methodology for landfill gas project activities”, Version 11 of 28/05/2009 , PP is requested to include in the list of the monitored parameters the MG _{PR,y} (tCH ₄) - Amount of methane generated during year y of the project activity, which should be estimated using the actual amount of waste disposed in the landfill as per the latest version of the “Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site”.	B.6.1.2 B.6.1.4 B.6.3.2	Methodology ACM0001 – version 11 provides 2 options to estimate the destruction efficiency of the system used in the project activity: <ul style="list-style-type: none"> - Option 1: the destruction efficiency of the system is estimated once and remains fixed for the whole crediting period; or - Option 2: the destruction efficiency of the system is estimated every year. In Section B.6.1 from the PDD, the PPs stated that “Option 1 from Step 2 was applied”; therefore, there is no need to monitor the parameter MG _{PR,y}	PP justified that it is no need to monitor the required parameter once Option 1 for the estimation of the destruction efficiency was used. CAR 11 is closed.
CAR 12 According to the Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site, f - Fraction of methane	B.6.1.2 B.6.1.4 B.6.3.2	The methodology ACM0001 - version 11 does not require to monitor this parameter; according with the tool, “The methane destroyed by the project activity (MD _{project,y})	Once it is being applied the AF value of 20%, it is no need to monitor the “f” parameter.

Corrective action and/ or clarification requests	Reference to Table 1	Response by project participants	Validation Conclusion
captured at the SWDS and flared, combusted or used in another manner should be monitored. PP is requested to include f in the list of monitored parameters.		<p>during a year is determined by monitoring the quantity of methane actually flared and gas used to generate electricity and/or produce thermal energy and/or supply to end users via natural gas distribution pipeline, if applicable, and the total quantity of methane captured” The reference to the tool is only to calculate the <i>ex-ante</i> methane generation from the landfill. Therefore, there is no need to include this parameter as a monitored parameter.</p> <p>It was removed in the (ERs Estimatives - BLFGE_rev_JJ090511.xls) the comment “Value applied as the 5% from the Adjustment Factor will be discounted ahead” and to correct the AF value to 20%.</p>	<p>PP is requested to explain the comment for the parameter “f” in the ER calculation spreadsheet: (ERs Estimatives - BLFGE_rev_JJ090511.xls) “Value applied as the 5% from the Adjustment Factor will be discounted ahead” and to correct the AF value to 20%.</p> <p>CAR 12 remains open.</p> <p>RINA’s response on 20/10/2011 PP corrected the spreadsheet removing the required comment.</p> <p>CAR 12 is closed</p>
CL 1 During the on-site visit it was explained that the landfill can be reopened and start to receive waste again. PP is requested to explain which cell can be reopening and if this cell is included in the boundary.	B.3.2	<p>The expected waste receiving cells will be located in the sub-areas AS4 and AS5, plus an additional area belonging to the landfill.</p> <p>According with ACM0001 – version 11, the project boundary is the site of the project where the gas is captured and destroyed/used, what corresponds to the landfill area. Therefore, the sub-areas and the additional area belong to the project boundary. As discussed on CAR 2, the reopening of the landfill is not likely to happen in the nearby future.</p>	<p>PP clarified that the landfill will not be reopened and updated the PDD and ER calculations spreadsheet accordingly. PP provided the updated ER calculation spreadsheet ERs Estimatives - BLFGE_rev_JJ090511.xls of 09/05/2011 where the waste acceptance from 2011 to 2017 was suppressed, as well from the revised PDD version 2 - BLFGE_PDD_form04_revised of 28/04/2011 (available parameter W_j - Total amount of organic waste prevented from disposal in year x)</p> <p>CL 1 is closed.</p>
CL 2 PP is requested to explain whether the electricity is consumed from the grid or generated onsite/offsite in the baseline scenario and justify with figures why it was excluded from the	B.3.3	In the baseline scenario, the electricity used to operate the landfill was consumed from the grid. For the year 2003, 655 MWh were consumed, which corresponds to 0.8% of total estimated electricity generated in 2011	<p>According to the ER calculation spreadsheet Estimatives - BLFGE_rev_JJ090511.xls of 09/05/2011 the energy consumed internally (grid) is 169MWh since 2004 up to 2030. PP is</p>

Corrective action and/ or clarification requests	Reference to Table 1	Response by project participants	Validation Conclusion
baseline emissions. Moreover, PP should inform the capacity of the diesel generator for back up.		<p>and can be considered irrelevant; moreover, the exclusion of the electricity consumed in the baseline scenario reflects a conservative approach.</p> <p>The rated capacity of the generator is 125 kW (nameplate capacity, operating at 3 phases).</p> <p>The PP would like to clarify that in the final version of the PDD, the value 169MWh was replaced by 4,668 MWh/year, taken conservatively as the highest value of electricity consumed by the Degassing Station in a month and recorded by the power plant. The source of this value was provided to the DOE. The PP would also like to clarify that the energy consumed by the generator is not being considered.</p> <p>The PP would also like to clarify that the energy consumed by the generator is being considered in the calculation spreadsheet. (Please, take a look the column “V” and “W” from the datasheet 5. Results). All the information related to the consumption by the diesel generator are mentioned above.</p>	<p>requested to justify this consumption and to clarify if the energy consumed by the generator is also being considerate.</p> <p>CL 2 remains open.</p> <p>RINA’s response on 20/10/2011 PP is requested to include the energy consumed by the generator in the electricity consumed internally to be discounted in the calculation spreadsheet.</p> <p>CL 2 remains open</p> <p>RINA’s response on 06/11/2011 PP clarified the mistake that rather, the energy consumed by the generator is being considered in the calculation spreadsheet.</p> <p>CL 2 is closed.</p>
CL 3 The updated PDD should include and explain (approach) all the requirements of the “Tool to assess the validity of the original/current baseline and to update the baseline at the renewal of a crediting period” (Annex 1 of the “Procedures for renewal of the crediting period of a registered CDM project activity” / EB46-Annex 11)	B.4.1	The steps from Annex 1 of the “Procedures for renewal of the crediting period of a registered CDM project activity” was included on Section B.5.	PP included into the PDD Section B.5. the steps (1.1 to 1.4) as per the “Procedures for renewal of the crediting period of a registered CDM project activity” / EB46-Annex 11” and deemed reasonable. The final outcome is the current baseline still valid for the renewal of crediting period and the only parameter that needs to be updated is the electric grid emission-factor since the landfill is inline

Corrective action and/ or clarification requests	Reference to Table 1	Response by project participants	Validation Conclusion
			with the relevant local legislation and the . Assessment of the validity of the data and parameters indicated just the electric grid emission-factor to be updated, that is in line with the PDD. CL 3 is closed.
CL 4 PP is requested to provide the valid operation license, since the requesting letter is from more than one year ago. Moreover, PP informed during the on-site visit that the landfill could be reopened and starting to receive waste again, once it is closed since 2007. PP is requested to inform if the license for the continuity of the landfill has been already issued or is in process of issuance and if another environmental study is necessary.	B.4.1.1 B.4.2.1 D.1.1	The valid operational license was provided to the DOE. As the landfill was closed on 2007, no more environmental licences were issued. As presented on CAR 2, the landfill's reopening discussion was excluded from the PDD because it is not likely to happen in the nearby future. If the landfill intends to receive more waste, all necessary permits might have to be requested and approved by local authority. So far, no permits were issued because no requests were submitted.	PP informed and provided an email evidencing that the license is in process of issuance. The email from the Manager of CETESB (Environmental Agency of the State of São Paulo) states that the license issuance is in process of analysis by the Department of Air, Noises and Vibration (TABR) regarding the atmospheric emissions, however, regarding the issuance of carbon credits it is deemed in line with the legislation. CL 4 is closed.
CL 5 Project emissions from fossil fuel combustion ($PE_{FC,j,y}$) is not included as monitored parameter. The PDD states that there is a captive diesel generator (backup) inside of landfill that will be used for emergency purposes. The PP is requested to explain why the fossil fuel combustion is not included in the section B.7.1 of the PDD.	B.5.2.1 B.5.2.2 B.6.1.2 B.6.1.4	The monitoring of project emissions due to fossil fuel consumption was included in section B.7.1. The PP would like to clarify, from the above answer, that the monitoring of fossil fuel consumption was developed in accordance with the requirements from the “Tool to calculate baseline, project and/or leakage emissions from electricity consumption”, which does not require the monitoring of neither the density nor the average mass fraction of the fuel. This approach is analog to OPTION B from the tool to calculate emissions from fossil fuel combustion; therefore these 2 parameters will not be monitored.	PP included the Project emissions from fossil fuel combustion ($PE_{FC,j,y}$) as required. However, PP shall clarify whether the parameters $w_{C,i,y}$ - Weighted average mass fraction of carbon in fuel type i in year y and $\rho_{i,y}$ - Weighted average density of fuel type i in year y will be monitored according to the Version 02 of the Tool to calculate project or leakage CO2 emissions from fossil fuel combustion. If so, PP shall include these parameters to be monitored. CL 5 remains open. PP clarified that Option B is being used and therefore the parameters will not be monitored.

Corrective action and/ or clarification requests	Reference to Table 1	Response by project participants	Validation Conclusion
			CL 5 is closed
CL 6 In the PDD is described that the calibration of the flow meters will be undertaken periodically according with the manufacturer's recommendation. However, the frequency of calibration is not described. PP is requested to provide the frequency of calibrations from the biogas flow meters and the electricity meter.	B.6.1.3 B.6.1.4 B.6.3.2	<p>The calibration frequency of the flow-meters and electricity-meter were included in the revised PDD. Accuracy will be ensured through maintenance of the instruments, according with the manufacturer's specifications.</p> <p>Incontrol, the manufacturer of the flow-meters states that the regular maintenance shall be performed along with the instrument's calibration. HIRSA, the manufacturer of others flow-meters, states that specific recommendations for periodic inspection, cleaning, or testing procedures can't be made, but it rather recommends general guidelines for maintenance, which will be undertaken along with the instrument's calibration</p>	<p>PP included the information about the frequency for the required parameters, which is adopted a 5-years frequency. According to the methodology ACM0001 - version 11 flow meters should be subject to a regular maintenance and testing regime to ensure accuracy. PP shall clarify how it will be ensure accuracy as per the methodology ACM0001 - version 11</p> <p>CL 6 remains open.</p> <p>PP clarified that regular maintenance shall be performed with the instruments calibration besides the general guidelines for maintenance.</p> <p>CL 6 is closed.</p>
CL 7 PP provided a procedure of data recordings. However, the recording frequency, with exception to the $w_{CH_4,y}$ (%) - Methane fraction in the landfill gas parameter, where the supervisory system makes records of instant methane concentration every 5 minutes, is not described. PP is requested to include the recording frequency to the monitored parameters	B.6.1.5 B.6.3.2	As described on the first version of the PDD, the supervisory system makes records of the monitored data every 5-minutes (instant value of gas-flow and flare temperature) and every 1-hour (accumulated gas-flow and instant flare temperature)	<p>PP explained and updated the PDD accordingly. For each flow-meter, as described on the first version of the PDD the supervisory system makes records of instant gas-flow every 5 minutes and the accumulated gas-flow every hour. The PDD was updated regarding the T_{flare}, where for each flare, in the same way, the supervisory system makes records of instant temperature every 5 minutes and every hour</p> <p>CL 7 is closed</p>
CL 8 As described into the monitored parameters list of the PDD all registrations will be kept for 2 years after the end of the crediting period. PP's shall	A.1.2 B.6.3.4	The PDD was corrected to reflect that “All registrations will be kept for 2 years after the end of the crediting period or the last issuance of CERs for this project activity,	PP updated the PDD version 2 as required, where the registration will be kept for 2 years after the end of the crediting period or the last issuance of

Corrective action and/ or clarification requests	Reference to Table 1	Response by project participants	Validation Conclusion
revise the procedure according to the “Guidelines for completing the project design document (CDM-PDD)” (<i>data monitored and required for verification and issuance are to be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later</i>).		whichever occurs later”	CERs for this project activity, whichever occurs later. CL 8 is closed.
FAR 1 During the first verification it should be verified that the landfill has not receive waste since 2007, when it was closed.		By the time of the 1st verification, Biogas will inform the verifying DOE on whether Bandeirantes Landfill had received waste and proper documents will be provided if waste disposal is identified.	The PP has confirmed that the landfill wouldn't be reopen and incase reopened the same would be informed at the time of verification and relevant guidelines and procedures of EB would be followed. RINA has accepted the same. however the same to be verified during next verification.
FAR 2 PP is requested to provide the valid operation license for the activity of electric power production from biogas combustion.		By the time of the 1 st verification, Biogás will submit to the verifying DOE the proper environmental permits	Since the PP has committed itself to resolve the issue before next verification, we have accepted the same and however the same to be verified during next verification.



RINA

CERTIFICATO DI QUALIFICA QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra:
We declare that Mr/Mrs/Ms:

Geisa Maria Principe Branco Sættoni

è qualificato come¹:
is qualified as:

**CDM-TEC, CDM-VAL, CDM-VER, CDM-TL, VCS-VAL,
VCS-VER, VCS-TL, GS-VAL, GS-VER, GS-TL, SCS-VAL,
SCS-VER, SCS-TL, CDM-FIN-EXP**

per le seguenti aree tecniche:
for the following technical areas:

1.1, 1.2, 13.1

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.1	Thermal Energy generation from fossil fuels and biomass including thermal electricity from solar	1
1.2	Energy generation from renewable energy sources	1
13.1	Waste handling and disposal	13.1

in accordo alle istruzioni della Divisione Certificazione.
in accordance with the instructions of the Certification Division.

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	27-08-2009	-
1	25-03-2010	Annual revision
2	18-10-2010	Changes in certificate module
3	17-03-2011	Changes due to new accreditation standard
4	13-06-2011	Annual revision
5	02-08-2011	Changes due to EB 62 about complex TAs

Il Responsabile di Schema
Scheme Manager

Il Resp. Tecnico della Divisione
Head of CRT

¹ Legend:

VAL: Validator
VER: Verifier
TEC: Technical Expert
TL: Team Leader
FIN-EXP: Financial Expert
DET: Determiner

CDM: Clean Development Mechanism
VCS: Verified Carbon Standard
GS: Gold Standard
SCS: SocialCarbon Standard
JI: Joint Implementation

RINA Services S.p.A. è accreditato da UNFCCC, quale Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM, da VCSA per condurre la Validazione e la Verifica di Progetti VCS, da GS Foundation, per condurre la Validazione e la Verifica di Progetti GS, da Ecologica Institute per condurre la Validazione e la Verifica di rapporti SCS

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RINA

CERTIFICATO DI QUALIFICA QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra:
We declare that Mr/Mrs/Ms:

Lilian Cristine Poll Herrmann

è qualificato come¹:
is qualified as:

**CDM-TEC, CDM-VAL, CDM-VER, VCS-VAL, VCS-VER,
GS-VAL, GS-VER, SCS-VAL, CDM-FIN-EXP**

per le seguenti aree tecniche:
for the following technical areas:

13.1, 13.2, 15.2

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
13.1	Waste Handling and Disposal	13
13.2	Animal Waste Management	13
15.2	Animal Waste Management	15

in accordo alle istruzioni della Divisione Certificazione.
in accordance with the instructions of the Certification Division.

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	06-03-08	-
1	04-05-09	Annual revision
2	23-12-09	Changing to certificate module
3	27-04-10	Annual revision
4	18-10-10	Changes in certificate module
5	17-03-11	Changes due to new accreditation standard
6	13-06-11	Annual Revision
7	11-07-11	Changes due to updating of the qualification as verifier

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Scheme Manager

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RINA

CERTIFICATO DI QUALIFICA QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra:
We declare that Mr/Mrs/Ms:

Thais De Lima Carvalho

è qualificato come¹:
is qualified as:

**CDM-TEC, CDM-VAL, CDM-VER, CDM-TL, CDM-FIN-EXP,
VCS-VAL, VCS-VER, VCS-TL, GS-VAL, GS-VER, GS-TL,
SCS-VAL, SCS-VER, SCS-TL**

per le seguenti aree tecniche:
for the following technical areas:

1.1, 1.2, 13.1

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.1	Thermal Energy generation from fossil fuels and biomass including thermal electricity from solar	1
1.2	Energy generation from renewable Energy sources	1
13.1	Waste handling and disposal	13

in accordo alle istruzioni della Divisione Certificazione.
in accordance with the instructions of the Certification Division.

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	19-08-2009	-
1	14-12-2009	Changes in module structure
2	23-04-2010	Annual Revision
3	18-10-2010	Changes in certificate module
4	17-03-2011	Changes due to new accreditation standard
5	13-06-2011	Annual Revision
6	02-08-2011	Changes due to EB 62 about complex TAs
7	10-10-2011	Qualification extension to TA 13.1

Il Responsabile di Schema
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RINA Services S.p.A. is accredited by the UNFCCC, as Designated Operational Entity (DOE), to carry out Validation and Verification of CDM Projects, by the VCSA, to carry out Validation and Verification of VCS Projects, by the GS Foundation, to carry out Validation and Verification of GS Projects and by the Ecologica Institute, to carry out Validation and Verification of SCS Reports



RINA

CERTIFICATO DI QUALIFICA QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra:
We declare that Mr/Mrs/Ms:

Rita Valoroso

è qualificato come¹:
is qualified as:

**CDM-TEC, CDM-VAL, CDM-VER, CDM-TL, CDM-FIN-EXP
VCS-VAL, VCS-VER, VCS-TL
GS-VAL, GS-VER, GS-TL
SCS-VAL, SCS-VER, SCS-TL**

per le seguenti aree tecniche:
for the following technical areas:

1.2, 13.1

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.2	Energy generation from renewable Energy sources	1
13.1	Waste Handling and Disposal	13

in accordo alle istruzioni della Divisione Certificazione.
in accordance with the instructions of the Certification Division.

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	18-01-10	-
1	03-05-10	Annual Revision
2	18-10-10	Changes in certificate module
3	04-01-11	Removed TAs taken through the ETS/EPD verifications/validations
4	17-03-11	Changes due to new accreditation standard
5	14-07-11	Annual Revision

Il Responsabile di Schema
Scheme Manager

Il Resp. Tecnico della Divisione
Head of CRT

¹ Legend:

VAL: Validator
VER: Verifier
TEC: Technical Expert
TL: Team Leader
FIN-EXP: Financial Expert
DET: Determiner

CDM: Clean Development Mechanism
VCS: Verified Carbon Standard
GS: Gold Standard
SCS: SocialCarbon Standard
JI: Joint Implementation

RINA Services S.p.A. è accreditato da UNFCCC, quale Entità Operativa Designata (DOE), per condurre la Validazione e la Verifica di Progetti CDM, da VCSA per condurre la Validazione e la Verifica di Progetti VCS, da GS Foundation, per condurre la Validazione e la Verifica di Progetti GS, da Ecologica Institute per condurre la Validazione e la Verifica di rapporti SCS

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RINA

CERTIFICATO DI QUALIFICA QUALIFICATION CERTIFICATE

Si attesta che il sig./sig.ra:

Rekha Menon

We declare that Mr/Mrs/Ms:

è qualificato come¹:
is qualified as:

CDM-TEC, CDM-VAL, CDM-VER, CDM-TL, CDM-FIN-EXP, VCS-VAL, VCS-VER,
VCS-TL, GS-VAL, GS-VER, GS-TL, SCS-VAL, SCS-VER, SCS-TL

per le seguenti aree tecniche:
for the following technical areas:

1.2, 13.1

AREE TECNICHE TECHNICAL AREAS	DESCRIZIONE DELL'AREA TECNICA TECHNICAL AREA DESCRIPTION	SCOPO SETTORIALE SECTORAL SCOPE
1.2	Energy generation from renewable energy sources	1
13.1	Waste Handling and Disposal	13

in accordo alle istruzioni della Divisione Certificazione.
in accordance with the instructions of the Certification Division.

REVISIONE REVISION	DATA DATE	MOTIVAZIONI PER LA REVISIONE REASON FOR THE REVISION
0	06-03-2008	-
1	04-05-2009	Annual revision
2	14-12-2009	Changes in module structure
3	22-03-2010	Annual revision
4	18-10-2010	Changes in certificate module
5	17-03-2011	Changes due to new accreditation standard
6	06-06-2011	Annual Revision

Il Responsabile di Schema
Scheme Manager

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