VALIDATION REPORT

Biopar Soluções Ambientais LTDA.

Projeto de Gás de Aterro TECIPAR – PROGAT

SGS Climate Change Programme
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Project Title:	
Projeto de Gás de Aterro TECIPAR – PROGAT	
Organisation:	**Client:**
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Summary:

Biopar Soluções Ambientais LTDA has commissioned SGS to perform the validation of the project: Projeto de Gás de Aterro TECIPAR – PROGAT.

Methodology used: ACM0001 – Consolidated methodology for landfill gas project activities

Version and Date: version 9.1, 24/10/2008

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

The report is based on the findings of document reviews, the stakeholder consultation process and responses from the project participants to the findings raised in this report.

The report and the annexed validation protocol describes a total of 5 findings and 2 forward request which include:

- 4 Corrective Action Requests;
- 1 New Information Request; and 2 Forward Requests.

All findings have been closed out satisfactorily and the project will be recommended to the CDM Executive Board with a request for registration since the Letter of Approval provide by Brazilian DNA be received.

At time of the validation, no Letter of Approval from the host country had been provided. The Letter of Approval will be signed when the DNA of Brazil receive and analyse the validation report.

Subject:			
CDM Validation			
Validation Team:			
Fabian Gonçalves – Lead Assessor Thaís Carvalho – Local Assessor (trainee)			☒ No Distribution (without permission from the Client or responsible organisational unit) ☐ Limited Distribution ☐ Unrestricted Distribution
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Name: Date:			
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Abbreviations

ACM	Approved Consolidated Methodology
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reduction
DNA	Designated National Authority
DOE	Designated Operational Entity
ER	Emissions Reduction
FAR	Forward Action Request
IPCC	Intergovernmental Panel on Climate Change
IRR	Internal Rate of Return
NIR	New Information Request
PDD	Project Design Document
PE	Project Emission
PLC	Power Line Communications
PP	Project Participants
SGS	Société Générale de Surveillance
tCO_2/MWh	Tonnes of CO2 equivalent/ Mega Watt hour (unit)
UNFCCC	United Nations Framework Convention on Climate Change

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Annexes:

1. Validation Opinion

SGS United Kingdom Ltd has been contracted by Biopar Soluções Ambientais LTDA. to perform a validation of the project: Projeto de Gás de Aterro TECIPAR – PROGAT in Brazil.

The Validation was performed in accordance with the UNFCCC criteria for the Clean Development Mechanism (CDM) and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

SGS reviewed of the project design documentation, using a risk based approach and conducted follow-up interviews.

By installing a gas collection system in Ventura Landfill, in order to avoid the emission of methane to the atmosphere and generating electricity with total of 6.5 MW of installed capacity using the landfill gas, the project activity will result in reductions of greenhouse gas emissions that are real, measurable and give long-term benefits to the mitigation of climate change.

In our opinion, the project meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria. The project correctly applies methodology ACM0001 version 9.1. It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total emission reductions from the project are estimated to be 580,154 t of CO2e over a 7 year crediting period, averaging 82,879 t of CO2e annually. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved given the underlying assumptions do not change.

The project will hence be recommended by SGS for registration with the UNFCCC since the Letter of Approval provide by Brazilian DNA be received.

Signed on Behalf of the Validation Body by Authorized Signatory

Signature:

Name:

Date:

2. Introduction

2.1 Objective

Biopar Soluções Ambientais LTDA. has commissioned SGS to perform the validation of the project: Projeto de Gás de Aterro TECIPAR – PROGAT with regard to the relevant requirements for CDM project activities. The purpose of a validation is to have an independent third party assess the project design. In particular, the project's baseline, the monitoring plan (MP) and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Certified Emission Reduction (CER). UNFCCC criteria refer to the Kyoto Protocol criteria and the CDM rules and modalities and related decisions by the COP/MOP and the CDM Executive Board.

2.2 Scope

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

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

2.3 GHG Project Description

The report summarizes the results of the validation of Projeto de Gás de Aterro TECIPAR – PROGAT, performed on the basis of UNFCCC criteria. The validation has been performed as a desk review of the project documents presented by BIOPAR Soluções Ambientais Ltda. A site visit was carried out on 16th October 2008 in Ventura's landfill office. During the site visit, Tecipar, Multiambiente, Estre Ambiental and ARCADIS-Tetraplan personnel were interviewed.

The project activity involves the improvement of landfill gas collection and flaring, through the installation of an active recovery system in Ventura landfill, located in Santana de Parnaíba, São Paulo State, Brazil. The gas collected will be used to generate energy or will be flared.

Total amount of emission reductions estimated for the first crediting period is 580,154tCO_2e.

Baseline Scenario:

In the absence of the project activity the methane from the landfill would have been released to the atmosphere.

With-project scenario:

The methane will be collected and used in the electricity generation or will be flared.

Leakage:

As per methodology ACM0001 version 9.1 no leakage was identified for this project.

Environmental and social impacts:

The project is in line with host-country specific CDM requirements. It is expected that the project activity will help Brazil to fulfill its goals of promoting sustainable development. The contributions of the project activity for this were described in the PDD, and comprises, among others: environmental benefits (the methane will not be released to the atmosphere); social/income benefits and contribution to labor capacitating (training engineers and operators to the qualification level required by these new activities, increase salary).

The environmental aspects of the project were analyzed by the State Environmental Agency (CETESB) when it issued the license.

2.4 The Names and Roles of the Validation Team Members

Name	Role	Affiliate
Fabian Gonçalves	Lead Assessor	Brazil
Thaís Carvalho	Local Assessor (trainee)	Brazil

3. Methodology

3.1 Review of CDM-PDD and Additional Documentation

The validation is performed primarily as a document review of the publicly available project documents. The assessment is performed by trained assessors using a validation protocol.

A site visit is usually required to verify assumptions in the baseline.

The site visit was carried out on 16th October 2008 in Ventura landfill office. The project developers were interviewed by the Lead Assessor and Local Assessor.

The documents and evidences were confirmed on site visit. The results of this local assessment are summarized in Annex 1 to this report.

3.2 Use of the Validation Protocol

The validation protocol used for the assessment is partly based on the templates of the IETA / World Bank Validation and Verification Manual and partly on the experience of SGS with the validation of CDM projects. It serves the following purposes:

- it organizes, details and clarifies the requirements the project is expected to meet; and
- it documents both how a particular requirement has been validated and the result of the validation.

The validation protocol consists of several tables. The different columns in these tables are described below.

Checklist Question	Ref ID	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements are linked to checklist questions the project should meet.	Lists any references and sources used in the validation process. Full details are provided in the table at the bottom of the checklist.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (Y), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). New Information Request (NIR) is used when the validation team has identified a need for further clarification.

The completed validation protocol for this project is attached as Annex A.1 to this report

3.3 Findings

As an outcome of the validation process, the team can raise different types of findings

In general, where insufficient or inaccurate information is available and clarification or new information is required the Assessor shall raise a **New Information Request (NIR)** specifying what additional information is required.

Where a non-conformance arises the Assessor shall raise a **Corrective Action Request (CAR).** A CAR is issued, where:

I. mistakes have been made with a direct influence on project results;

II. validation protocol requirements have not been met; or

III. there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be verified.

The validation process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a NIR may result in a CAR. Information or clarifications provided as a result of an NIR may also lead to a CAR.

Observations may be raised which are for the benefit of future projects and future verification or validation actors. These have no impact upon the completion of the validation or verification activity.

A forward action request (FAR) is raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for renewal of crediting period.

Corrective Action Requests and New Information Requests are raised in the draft validation protocol and detailed in a separate form (Annex A.2). In this form, the Project Developer is given the opportunity to "close" outstanding CARs and respond to NIRs and Observations.

3.4 Internal Quality Control

Following the completion of the assessment process and a recommendation by the Assessment team, all documentation will be forwarded to a Technical Reviewer. The task of the Technical Reviewer is to check that all procedures have been followed and all conclusions are justified. The Technical Reviewer will either accept or reject the recommendation made by the assessment team.

4. Validation Findings

4.1 Participation Requirements

There is no Annex I Party involved at this time of the project activity.

Brazil is listed as the host Party. Brazil ratified the Kyoto Protocol on 23rd August 2002. (http://unfccc.int/files/essential_background/kyoto_protocol/application/pdf/kpstats.pdf).

At time of the validation, no Letter of Approval from the host country had been provided. The Letter of Approval will be signed when the DNA of Brazil receive and analyse the validation report.

4.2 Project Design

The title "Projeto de Gás de Aterro TECIPAR – PROGAT" identifies the unique CDM project activity. The description of the project is considered correct and transparent. The information provided is in compliance with the observed during the site visit. The project is not implemented yet. The equipments were bought but were not received at the time of site visit. It was provided by the PP a list of equipments and some pictures of the equipments (Ref.6).

Brazil is the only Party involved in the project.

The project participant is BIOPAR Soluções Ambientais Ltda., a Brazilian private entity. The project is located in Santana do Parnaíba, São Paulo state, Brazil.

The category is correctly identified: sectoral Scopes 13 – Waste Handling and Disposal.

The project involves the improvement of landfill gas collection and flaring, through the installation of an active recovery system. The gas captured will be used to generate energy or will be flared in order to destroy the methane contained in the landfill gas. The technology of capturing and flaring landfill gas applied by the project activity follows the common technology of its sector.

No public funding is being used for the project activity.

4.3 Eligibility as a Small Scale Project

Not applicable.

4.4 Baseline Selection and Additionality

The project uses the approved methodology ACM0001 – Consolidated methodology for landfill gas project activities, version 9.1. The methodology is applicable to the project because the baseline scenario is the release of the gas to the atmosphere and, in the project activity, the gas captured will be flared and/or used to generate electricity. The applicability criteria of the methodology are correctly described in the PDD.

The project boundaries encompass the Ventura landfill and the power generation sources connected to the Brazilian grid. The emissions sources described in the PDD are according to the required by methodology. The main emission source in the baseline is the emissions from decomposition of waste at the landfill site (CH4) and in the project activity, is the emission from on site electricity use (CO2) before the construction of the power plant.

The starting date of the project activity defined in the PDD version 1 (creation of the company BIOPAR) is not according to the clarified in the EB 41 *"the start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity. This, for example, can be the date on which contracts have been signed for equipment or construction/operation services required for the project activity. Minor pre-project expenses, e.g. the contracting of services /payment of fees for feasibility studies or preliminary surveys, should not be considered in the determination of the start date as they do not necessarily indicate the commencement of implementation of the project".* CAR 1 was raised.

In the revised PDD, the starting date of the project activity was changed to comply with EB 41. The evidence was provided and was found corrected. The starting date corresponds to the date when PP received a signed proposal for purchase of the equipments (dated 01/07/2008, Ref.9). Therefore, CAR 1 was closed out.

For the prior CDM consideration, the Social Contract for BIOPAR Soluções Ambientais, dated 17/01/2008, shows that it was created to exploit the landfill gas under the Kyoto Protocol rules. Also, the contract with SGS for validation was signed on 04/06/2008, before the starting date of the project activity. Moreover, during the validation assessment it was verified that the first local stakeholders' consultation occurred in June/2008.

For the baseline selection the step 1 of the Additionality Tool was used as requested by the methodology ACM0001 version 9.1.

Step 1: Identification of alternative scenarios:
The baseline scenario for the project corresponds to the scenario 1 (LFG1, P6): the atmospheric release of landfill gas or landfill gas is partially captured and subsequently flared. The electricity is obtained from the grid.
The following alternatives scenarios were discussed:

For the landfill gas the alternatives are:

-LFG1: The project activity (i.e. capture of landfill gas and its flaring and/or its use) undertaken without being registered as a CDM project activity - not applicable because the project is not financially attractive;

-LFG2: Atmospheric release of the landfill gas or partial capture of landfill gas and destruction to comply with regulations or contractual requirements, or to address safety and odor concerns.- applicable because without the project activity the LFG generated would continue to be emitted to the atmosphere;

For the power generation, the alternatives are:

P1: Power generated from landfill gas undertaken without being registered as CDM project activity- not applicable because the project is not financially attractive;

P2: Existing or construction of a new on-site or off-site fossil fuel fired cogeneration plant- not applicable because using fossil fuel is not the best alternative, once LFG is available and in abundance in the landfill. Moreover, BIOPAR Soluções Ambientais Ltda. core business is energetic use of the landfill gas

P3: Existing or construction of a new on-site or off-site renewable based cogeneration plant- not applicable because LFG can be fired directly to generate electricity and there is no need for heat in Aterro Ventura.

P4: Existing or construction of a new on-site or off-site fossil fuel fired captive power plant- not applicable because LFG can be fired directly to generate electricity and there is no need for heat in BIOPAR Soluções Ambientais Ltda.

P5: Existing or construction of a new on-site or off-site renewable based captive power plant- not applicable because BIOPAR Soluções Ambientais Ltda. has enough gas to generate more electricity than is consumed internally.

P6: Existing and/or new grid-connected power plants- applicable to the project activity. Electricity could be consumed from the grid if no power generation occurred.

The heat scenario was not analyzed because the project does not foreseen the heat generation/consumption.

All alternatives comply with local/national policies. The landfill has an authorization to operate, issued by the environmental authority. The authorization does not obligate the landfill to capture, destroy or use the gas produced.
In relation to the alternatives presented in the methodology, two alternatives were present.
The project activity be undertaken without being registered as a CDM project activity is not applicable since the CERs are the only source of revenues which amortizes the investments in the LFG collection system and electricity generation. The atmospheric release of the landfill gas or partial capture of landfill gas and destruction to comply with regulations or contractual requirements, or to address safety and odor concerns is applicable because without the project activity the LFG generated would continue to be emitted to the atmosphere and destroyed in an uncontrolled manner as there are no legal obligation to destroy the gas.

Step 2: Identify the fuel for the baseline choice of energy source. This is not applicable since no fossil fuel is consumed in the baseline.

Step 3 is presented below in the additionality discussion.

Step 4: the Step 2 and Step 3 of the additionality tool were used and the only alternative remaining, among those presented in *Step 1* is the BAU scenario.

The project uses the “Tool for the demonstration and assessment of additionality” version 5.02. This is the current version. The tool is correctly applied.
The steps of the Tool and the ones required by the methodology were followed. The additionality discussion is consistent with potential baseline scenarios.

Step 1 of the additionality tool is explained above.

For step 2, sub-step 2a (investment analysis) it was chosen option III - the benchmark analysis.

For sub-step 2b the investment analysis was done through the indicator IRR.

For sub-step 2c the calculation and comparison of financial indicator are presented below.
CAR 2 was raised to address some issues about the investment analysis:

-Data used (production hour) to calculate the energy generate in the project for the years 2015 and 2016 are different from the others years. Evidences should be provided to explain such difference.

-The year of the official benchmark used to compare the attractiveness of the project does not correspond to the year of the investment analysis (2008).

-The sensitivity analysis is not performed according to the guidance presented in the Tool for the demonstration and assessment of additionality, version 5.2.

To close out CAR 2 the following information and documents were verified:
-Ref.11-Business plan: it was corrected and the production hours (7,600 hours) are the same for all the years. The difference was due to a typing mistake.
-Ref.12- Historic data of the national treasure (Tesouro Nacional) used to calculate the Benchmark. Checked trough the web site (http://www.tesouro.fazenda.gov.br/tesouro_direto/download/historico/2008/historicoNTNF_2008.xls) that it was used the average of the indicator for the period 01/01/2008 to 30/06/2008, resulting in 13.35%. The national treasury bond was used because represents the low risk and long term investment indicator in Brazil.
-Ref.13- The revised sensitivity analysis was provided and is according to the required by the guidance.

Investment analysis;

For the alternative 1, continuation of the business as usual practice, no investment would be required.

For the alternative 2, flaring the landfill gas, the investment in the landfill gas system need to be done and there are no sources of income from the destruction of methane.

For the alternative 3, landfill gas collection and electricity generation, the IRR of the project was calculated and presented in the PDD. The data was validated as presented below:

- Verified that the benchmark used to compare the attractiveness of the project was the Brazilian treasury bonds. This is a low risk and long term investment indicator from the Brazilian National Treasury. The NTNF 010117 was used for comparison. This indicator is a treasury Government's bond, with pre-fixed remuneration and not indexed to any financial indicator, risk-free.

-Verified that the energy price is based on the PROINFA tariff, R$169/MWh (Ref.10, page 134) - the electricity generation is forecasted to start on 2015;

- The exchange rate of R$2.7/EUR applied in the analysis was confirmed through official data provided by Banco Central do Brasil website (http://www.bcb.gov.br/?english);

- Energy generation is based on the estimated total hour of production (7600h/year) and the available potency of the generators (Ref.11);

- The net income due to the electricity sale is calculated based on the energy price and electricity generation, starting with R$ 71.54/MWh;

- Verified the estimated operational costs and expenditures for the gas and electricity generation (Ref.11 and 13). The estimated data was provided and represents about thirteen per cent of the total investment;

- Verified the estimated investment in the first year considering the gas system and the equipments for the energy generation. The investment related to the energy generation continues until year 2017 because 7 engines will be installed depending on the amount of landfill gas collected. This is the maximum number of engines expected to be installed. The investments are correctly considered in the cash flow (Ref.11 and 13);

According to the data provided confirmed through references and estimated data, it was verified that the Internal Rate of Return of the project activity is undetermined (considered as 0. %), which is lower than the Benchmark of 13.35%. It demonstrated that the project activity is not financially attractive.

According to the alternatives presented in the PDD, the business as usual situation does not involve any kind of investment.

The situation where only flaring the landfill gas, no return will occur since the investment in a gas collection and flaring system is not a requirement. Only the income from the sale of CERs is expected. The IRR obtained is lower than the benchmark (government bond rates).

For sub-step 2d, the sensitivity analysis is presented below:

- Verified the sensitivity analysis where the main variables affecting the IRR were analyzed. The analysis considered the variation of +5% to +15%% in the price of the electricity (the only revenue of the project activity), and -5% to -15% in the CAPEX of the gas collection system, electricity generation and in the operational costs of the gas collection and electricity generation. The maximum IRR obtained in the sensitivity analysis was 1.437% (for a variation of +15% in the electricity price).

The result of the sensitivity analysis demonstrated that even varying -/+15% the IRR of the project activity is still lower than the benchmark selected.

The step 3, barrier analysis was presented in PDD version 1. However it was excluded in the revised PDD. PP decided to use the investment analysis to discuss the additionality of the project activity.

The step 4, common practice analysis is correctly applied and proved that the project activity is not a common practice scenario.

Sub-step 4a: Analyze other activities similar to the proposed project activity:
A national data from SNIS – Sistema Nacional de Informações sobre Saneamento, published in 2006 a consolidate data for landfills that use the LFG (Ref.15). From the 211 sites sampled, 17 have a final use to the LFG. Excluding those projects developed under the CDM (registered or published for GSC), the result is that 7 of them were implemented without the CDM, or 3.32% of the sample. Using more recent data from the UNFCCC web site it is possible to observe that there are more projects developed under CDM than the ones mentioned in the research, however regarding the project without CDM incentives the most recent data is the data from SNIS.
In Brazil, controlled landfill gas collection and destruction is not required by laws/regulations nor due to local environmental regulations, nor due to GHG emission reduction (the DNA informed that there is no national law which obligates the destruction of methane in landfills- Ref.7). Therefore most of the projects are developed under CDM, as it is the only source of revenue..

Sub-step 4b. Discuss any similar options that are occurring:

From the 7 projects presented in the SNIS research, 6 are public landfills and the project will be implemented in a private landfill.
In the PDD, each of similar landfill identified in sub-step 4a was discussed and the information provided in the PDD was confirmed by the validation team, as described below:

- São Leopoldo landfill is controlled by SL Ambiental SA and the LFG is used for leachate treatment. There is neither a flare nor power station at the landfill, as information available at the SL Ambiental website (http://www.solvi.com/sl/default.asp, <accessed on 26/06/2009>).
- Verified that the Cascavel landfill (http://www.cascavel.pr.gov.br/secom/detalhes.php?id0=15724 <accessed on 26/06/2009>) has a pilot project to collect and use the LFG to generate energy.
- Cuiabá landfill and Aterro Sanitario Municipal de Santa Bárbara'd'Oest had answered wrongly the research; it was confirmed that in both sites the LFG is burnt on the top of wells (Cuiabá- confirmed by interview through phone call with Mr. Luiz Antonio Chaparro; Sta Bárbara d'Oeste – confirmed from information available at the municipality website: http://www.santabarbara.sp.gov.br/v3/index.php?pag=pag_noticia&dir=noticias&id=27715 <accessed on 26/06/2009>).
- In the case of Juína landfill, it was also verified that it answered wrongly the research and the landfill does not have a LFG collection system (confirmed by interview through phone call with Mr Rogério Veronezi).
- In Goiania landfill, the flare was installed but it is not operating due to technical and operational problems (confirmed through interview by phone call with Mr. Welington H. de Oliveira).
- The CTR-Rio landfill was not implemented and does not have the environmental licenses approved by the environmental agency (http://www.inea.rj.gov.br/downloads/ata_audit_public_ctr.pdf <accessed on 26/06/2009>).

From the information provided above, it is confirmed that the projects presented in the SNIS research are not similar to the project activity or are developed under CDM incentives.

The final opinion of the financial analysis and common practice analysis is that the project activity complies with the "Tool for the demonstration of additionality" requirements and can be considered additional.

4.5 Application of Baseline Methodology and Calculation of Emission Factors

The PDD follows the requirements of the methodology and applicable methodological tools.

There will be project emission from flaring and from electricity consumption. These are calculated according to the "Tool to determine project emissions from flaring gases containing methane" and the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption", respectively. Also, in case of interruption of electricity supply from the grid, a diesel generator may be used. This will be monitored and discounted as project emission. Leakage is not applicable.

Data used to calculate adjustment factor was checked. The collection efficiency of passive system was checked on the document available in the web site: http://www.mnp.nl/ipcc/Archive/AR4FOD/ExpRevFOD/FODrev/FOD_AChapter10.doc (page 8); the efficiency of 50% of the methane destruction is from the Tool to determine project emissions from flaring gases containing methane, version 01; the number of wells were checked during site visit. The adjustment factor calculated was 3.7% and a conservative value of 5% will be used (the wells can be seen at the map presented on annex 3 of the PDD).
The grid emission factor will be calculated *ex post*, using data provided by Brazilian DNA.

CAR 3 was raised to address that the values presented for the parameter DOCj (Fraction of degradable organic carbon (by weight) in the waste type *j)* are not presented according to the required by the Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site, version 04.
In the revised PDD, this parameter was corrected and is in compliance with the tool. Therefore, CAR 3 was closed out.
After closing out CAR 3, parameters listed in section B.6.2 of the PDD that will remain fixed during the crediting period were verified and considered correct.

Data provided for the grid electricity emission factor is from official source, made available by Brazilian DNA. Data for the parameters GWP_{CH4} (Global Warming Potential of Methane) ϕ (Model correction factor to account for model uncertainties), OX (Oxidation factor (reflecting the amount of methane from SWDS that is oxidized in the soil or other material covering the waste), F (Fraction of methane in the SWDS gas), $DOC_{f,}$ (Fraction of degradable organic carbon (DOC) that can decompose) MCF (Methane correction factor), DOC_j (refer to CAR 3) $k_{j,}$ are from IPCC and are according to the required by the tools and methodology. The parameters W_j (Total amount of organic waste prevented from disposal in year *x)* and $p_{n,\,j,\,x}$ (Weight fraction of the waste type *j* in the sample *n* collected during the year *x)* are provided directly by the PP. DNA was contacted about the requirements relating to landfill gas projects (Ref.7).
Formulas presented in the PDD are correctly described and applied. The spreadsheet for the emission reduction calculation (Ref.14) provided during validation assessment was found correct.

The methane that would be released to the atmosphere will be destroyed in the project activity.

4.6 Application of Monitoring Methodology and Monitoring Plan

The following parameters will be monitored in the project activity:

-$LFG_{total,\,y}$ (Total amount of landfill gas captured)

-$LFG_{flares\,y}$ (Total amount of landfill gas sent to flares)

-$LFG_{electricity,\,y}$ (Amount of landfill gas sent to the power house)

-w_{CH4} (Methane fraction in the landfill gas)

-$EL_{LFG,\,y}$ (Net amount of electricity generated using LFG)

-Operation hours of the energy plant

-$PE_{Flare,\,y}$ (Project emissions from flaring of the residual gas stream in year y)

-$fv_{i,\,h}$ (Volumetric fraction of component i in the residual gas in the hour h

where *i* = CH4, CO, CO2, O2,H2, N2)

-$FV_{RG,h}$ (Volumetric flow rate of the residual gas in dry basis at normal conditions in the hour *h*)

-$t_{O2, h}$ (Volumetric fraction of O2 in the exhaust gas of the flare in the hour *h)*

-$fv_{CH4, FG, h}$ (Concentration of methane in the exhaust gas of the flare in dry basis at normal conditions in the hour *h)*

-T_{flare} (Temperature in the exhaust gas of the flare)

-EF (Emission Factor)

-$EC_{PJ, EG, y}$ (Electricity consumed from the grid, to operate the Gas Station)

-$TDL_{EG, y}$ (Average technical transmission and distribution losses for providing electricity to EG in year y)

-$FC_{ECDG, D, y}$ (Mass or volume unit)

-$EG_{DG, y}$ (Quantity of electricity generated by the emergency captive diesel generator in year *y)*

-$NCV_{D, t}$ (Average net calorific value of the diesel used in the period *t)*

-$EF_{CO2, e}$ (CO2 emission factor of the diesel used in the period *t)*

It is defined in the monitoring plan that all data related to the project will be kept for 2 years after the end of the crediting period.

CAR 4 was raised to address that data and parameters monitored presented in the PDD version 1 were not according to the required by the methodology. The following parameters were missing:

-$PE_{flare,y}$ (Project emissions from flaring of the residual gas stream in year y)

-$PE_{ec,y}$ (Project emissions from electricity consumption by the project activity during the year y).

Project emissions due the consumption of electricity (from the grid and from a captive diesel generator) were included in the revised PDD and are according to the required by the methodology and by the Tool to calculate baseline, project and/or leakage emissions from electricity consumption. Also, project emission from flaring of residual steam was included in the revised PDD. Therefore, CAR 4 was closed out.

NIR 5 was raised to address that in the PDD version 1, it was not established for the parameters $t_{O2,h}$ (Volumetric fraction of O2 in the exhaust gas of the flare in the hour *h)* and $fv_{CH4,FG,h}$ (Concentration of methane in the exhaust gas of the flare in dry basis at normal conditions in the hour *h)* that they will be in accordance with the required by the Tool to determine project emissions from flaring gases containing methane, version 01.
Table of the parameters $t_{O2,h}$ and $fv_{CH4,FG,h}$ were amended and are in compliance with requirements of the tool. Therefore, NIR 5 was closed out.

After closing out CAR 4 and NIR5, monitored parameters were verified and considered in compliance with the requirements of the methodologies and tool used.

The information provided in the PDD describes properly the implementation of the monitoring plan. The calibration will be done according equipments' specification. FAR 6 was raised: as the project is not implemented yet, it is requested to PP to prepare and implement procedures in order to assure data quality, including calibration procedures for equipments.

Data will be measured continuously ($LFG_{total, y}$, $LFG_{flares\ y}$, $LFG_{electricity, y,}$ w_{CH4}, $EL_{LFG, y}$, Operation hours of the energy plant, $EG_{DG, y}$**)** using calibrated meters, and monitored automatically via a PLC system. The level of uncertainty is low because the whole monitoring of the project will be made electronically via PLC system and backup will be made to avoid data be lost. Also, data related to the emission factor comes from official sources.

The project is not implemented yet. FAR 7 was raised to request the PP to provide before verification: the description of authority and responsibility of project management; the authority and responsibility for registration, monitoring, measurement and reporting data; procedures for training of monitoring personnel.

4.7 Choice of the Crediting Period

CAR 1 was raised regarding the starting date of the project activity. After closing out CAR 1, the starting date corresponds to the date when a proposal for purchase of equipment was signed (01/07/2008), Ref.9.

The crediting period to the project activity is 7 years. The period starts on 1st January 2009 or the date of registration, which occurs later. The expected operational lifetime of the project (21 years) is greater than the first crediting period.

4.8 Environmental Impacts

The environmental impacts were analyzed when the environmental agency (CETESB) issued the licenses.

The most recent licenses were checked:

- operation license for the landfill:

LO number 32002608, issued by CETESB on 05/12/2005, valid until 05/12/2010 (Ref.5a)

- operation license for the biogas plant:

LO number 32004609, issued by CETESB on 18/12/2008, valid until 18/12/2013 (Ref.5b)

4.9 Local Stakeholder Comments

The local stakeholder consultation followed the DNA Brazilian requirements (Resolution nº 7, 05 March 2008). The following stakeholders were contacted:

- Municipality of Santana de Parnaíba;

- Legislative Chamber of Santana de Parnaíba;

- CETESB (State Environmental Agency);

- Environmental State Secretariat;

- Brazilian NGO Forum;

- State Public Attorney;

- Federal Public Attorney;

- AVEMARE – Associação Vila Esperança de Materiais Recicláveis;

- SIEMACO – Sindicato dos Trabalhadores em Empresas de Prestação de Serviços de Asseio e Conservação e Limpeza Urbana de São Paulo;

- Rotary Clube de Santana de Parnaíba.

Note that Brazilian DNA requires the consultation of the Municipal Environmental Agency. However this entity was not identified by the PP and a written communication has to be sent to DNA.

Also, note that the first letters to the local stakeholders were sent in June/2008 in accordance with Brazilian Resolution number 1. Then, in order to comply with the Brazilian DNA resolution nº 7, new letters were sent in August/2008.

The letters (Ref.8a) and signed receipts (AR) (Ref.8b) were verified. Letters were sent in Portuguese and also, the PDD was made available in local language.

The NGO Forum stated that a 30-day period for comments is not enough to make a complete analysis of the project and suggest the adoption of Gold Standard sustainability criteria. The PP response was: "*As per Resolução nº7, the local stakeholder consultation process is open until the request for registration of the project activity, not being limited to a 30-day length. Concerning the Gold Standard criteria, BIOPAR Soluções Ambientais Ltda. answered that the verification process of CERs already takes into account sustainability criteria, as hiring and training of personnel and compliance with the environmental licence. However, BIOPAR Soluções Ambientais Ltda. compromises to analyze the possibility of the criteria adoption*".

Considering the evidences verified during the validation, the auditors concluded that the local stakeholders consultation was carried out adequately.

5. Comments by Parties, Stakeholders and NGOs

In accordance with sub-paragraphs 40 (b) and (c) of the CDM modalities and procedures, the project design document of a proposed CDM project activity shall be made publicly available and the DOE shall invite comments on the validation requirements from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available. This chapter describes this process for this project.

5.1 Description of How and When the PDD was Made Publicly Available

The Project Design Document for this project was made available on the SGS website http://cdm.unfccc.int/Projects/Validation/DB/O7LXRYICDY6UWTAIEGYKIZXMEM2SMO/view.html and was open for comments from 20/08/2008 until 18/09/2008. Comments were invited through the UNFCCC CDM homepage

5.2 Compilation of all Comments Received

Comment Number	Date Received	Submitter	Comment
0			

5.3 Explanation of How Comments Have Been Taken into Account

Not applicable.

6. List of Persons Interviewed

Date	Name	Position	Short Description of Subject Discussed
16/10/2008	Cristina A.U.B.S. Oliveira	Engineer-Multiambiente	Financial issues related to the project, environmental and quality management system; environmental impacts, technical issues, plant operation, project implementation, starting date.
	Marcelo A. de Mello	Director- Multiambiente	
	Robson A. Florentino	Technical Department	
	Bruno T. A. Caldas	Coordinator- Estre ambiental	
	Eduardo Cardoso Filho	Project manager- Arcadis Tetraplan	Validation process, findings, technical issues.
	José Juarez S. Araújo	Director- Tecipar	Financial issues related to the project, environmental licenses; environmental impacts, plant operation, project implementation, starting date

7. Document References

Category 1 Documents:

/1/ PDD: Projeto de Gás de Aterro TECIPAR – PROGAT.
Version 1, date 13/08/2008.
Version 2.1, date 05/01/2009.
Version 3, date 05/03/2009
Version 4, date 02/04/2009

/1a/ LoA

/1b/ MoC

/2/ ACM0001 – Consolidated methodology for landfill gas project activities, version 9.1

/3a/ Tool for the demonstration and assessment of additionality, version 05.2

/3b/ Tool to determine project emissions from flaring gases containing methane, version 01

/3c/ Tool to calculate baseline, project and/or leakage emissions from electricity consumption, version 01

/3d/ Tool for calculation of emission factor for electricity systems, version 01

/3e/ Tool to calculate project or leakage CO2 emissions from fossil fuel combustion, version 02

/3f/ Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site, version 04

Category 2 Documents:

/4/ Social contract, 17/01/2008.

/5a/ Operation License, nº 32003900, issued by CETESB on 08/01/2008, valid until 08/01/2013 (landfill)

/5b/ Installation license nº 32003440, issued by CETESB on 27/08/2008 (biogas plant)

/6/ List of equipments and pictures

/7/ DNA letter and response, 10/10/2008.

/8a/ Letters- local stakeholder consultation

/8b/ Receipts- local stakeholder consultation (AR)

/9/ Equipments proposal (evidence of starting date of the project activity), 01/07/2008.

/10/ Cadernos NAE- Proinfa Tariff

/11/ Business plan

/12/ National Treasure NTNF 010117 (from Portuguese Tesouro Nacional)

/13/ Cash-Flow TECIPAR 2009.04.20

/14/ CERs Estimatives – TECIPAR (v 04) 2009.04.20

/15/ http://www.snis.gov.br/arquivos_snis/5_DIAGNOSTICOS/5.2_Residuos_solidos/5.2.5_Diagnos

tico2006/RSD05_Planilhas.zip (Table RSD05_Up03); accessed on 26/06/2009.

/16/ http://www.solvi.com/sl/default.asp, <accessed on 26.06.2009>

/17/ http://www.santabarbara.sp.gov.br/v3/index.php?pag=pag_noticia&dir=noticias&id=27715 <accessed on 26/06/2009

/18/ http://www.cascavel.pr.gov.br/secom/detalhes.php?id0=15724 <accessed on 26/06/2009>

/19/ http://www.inea.rj.gov.br/downloads/ata_audit_public_ctr.pdf <accessed on 29/06/2009>

/20/ Phone call interviews: Mr. Wellington H. de Oliveira (+55 62 3524.1412; 26/06/2009); Mr. Luiz Antonio Chaparro (+55 65 3313.3051; 29/06/2009), Mr. Rogério Veronezi (+55 66 3566.2585, 29/06/2009)

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A.1 Annex 1: Local Assessment

This checklist is designed to provide confirmation of in-country data and information provided in the Project Design Document for Projeto de Gás de Aterro TECIPAR – PROGAT.

It serves as a "**reality check**" on the project that is completed by a local assessor from SGS Brazil.

Issue	Findings	Source/Means of Verification	Further Action / Clarification / Information Required?
Check the project participants	It was checked the social contract for BIOPAR.	Ref.4	No
Check project implementation chronogram, project planning with list of equipments, gas pipeline, etc. (equipments specification)	The project is not implemented yet. The equipments were bought but were not received. It was provided by the PP a list of equipments and some pictures of the equipments (Ref.6).	Site visit Interview Ref.6	No
Check the collection efficiency 60 %	A conservative value of 60% was used due the operational characteristics of the landfill.	Site visit Interviews	No
Check evidence of the data used to calculate the adjustment factor: Formula 4 of the PDD.	The collection efficiency of passive system was checked on the document available in the web site: http://www.mnp.nl/ipcc/Archive/AR4FOD/ExpRevFOD/FODrev/FOD_AChapter10.doc (page 8); the efficiency of methane destruction is from the Tool to determine project emissions from flaring gases containing methane, version 01; the number of wells were checked during site visit.	Site visit	No

Issue	Findings	Source/Means of Verification	Further Action / Clarification / Information Required?
Check the environmental license of the Ventura landfill	Checked the most recent licenses: • operation license for the landfill: LO number 32002608, issued by CETESB on 05/12/2005, valid until 05/12/2010 (Ref.5a) • operation license for the biogas plant: LO number 32004609, issued by CETESB on 18/12/2008, valid until 18/12/2013 (Ref.5b)	Ref.5a Ref.5b	No
Check regulatory requirements regarding information of the host country regulation (AF).	Brazilian DNA was contacted. Answer was sent saying that there is no federal obligation in Brazil that requests methane destruction in Brazilian landfills (Ref.7)	Ref.7	No
Check the stakeholder consultation (letters and AR)	Check the letters (Ref.8a) and receipts (Ref.8b). Letters were sent in Portuguese and also, the PDD was made available in local language. The stakeholder consultation followed the Brazilian DNA resolution number 7, 05 March 2008.	Ref.8a Ref.8b	No

A.2 Annex 2: Validation Protocol

Table 1 Participation Requirements for Clean Development Mechanism (CDM) Project Activities (Ref PDD, Letters of Approval and UNFCCC website)

Requirement	Reference	Comments	Conclusion
1. All Parties (listed in Section A3 of the PDD) have ratified the Kyoto protocol and are allowed to participate in CDM projects	Marrakech Accords, CDM Modalities §30	Brazil is listed as the non-Annex-I Party, has ratified the protocol on 23rd August 2002 and is allowed to participate http://maindb.unfccc.int/public/country.pl?country=BR	Y
2. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3 and be entered into voluntarily.	Marrakech Accords, CDM Modalities §29 and §30	There is no Annex I Party in this project.	Y
3. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof, and be entered into voluntarily	Marrakech Accords, CDM Modalities §29 and §30 Kyoto Protocol Art. 12.2, Marrakech Accords, CDM Modalities §40a	There is no letter of approval from DNA Brazil at this phase (just after submission of validation report).	Pending
4. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available	Marrakech Accords, CDM Modalities, §40	PDD publicly available: 20/08/2008-18/09/2008 http://cdm.unfccc.int/Projects/Validation/DB/O7LXRYICDY6UWTAIEGYKIZXMEM2SMO/view.html	Y

Requirement	Reference	Comments	Conclusion
5. The project design document shall be in conformance with the UNFCCC CDM-PDD format	Marrakech Accords, CDM Modalities, Appendix B, EB Decisions	It follows the CDM- PDD template version 03.1.	Y
6. The project participants shall submit a letter on the modalities of communication (MoC) before submitting a request for registration	EB-09 F_CDM_REG form	Letter of MoC is to be provided.	Pending
7. For AR projects, the host country shall have issued a communication providing a single definition of minimum tree cover, minimum land area value and minimum tree height. Has such a letter been issued and are the definitions consistently applied throughout the PDD?		NA	NA

Table 2 PDD

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
A. General Description of Project Activity					
A.1. Project Title					
A.1.1. Does the used project title clearly enable to identify the unique CDM activity?	Ref.1	DR	The title "Projeto de Gás de Aterro TECIPAR – PROGAT" identifies the unique CDM project activity (refer to the name of the company).	Y	Y
A.1.2. Are there an indication of a revision number and the date of the revision?	Ref.1	DR	Yes. Final PDD version 4, dated 02/04/2009	Y	Y
A.1.3. Is this in consistency with the time line of the project's history?	Ref.1	DR	Yes.	Y	Y
A.2. Description of the Project Activity					
A.2.1. Is the description delivering a transparent overview of the project activities?	Ref.1	DR	Yes. The project intends to capture the landfill gas generated at Ventura landfill and uses it to generate electricity and the remaining biogas will be flared.	Y	Y
A.2.2. Is all information provided in compliance with actual situation or planning?	Ref.1	DR Site visit	The project is not implemented yet. The equipments were bought but were not received (it was not possible to verify physically the equipment on-site). The other information was confirmed.	Y	Y
A.2.3. Is all information provided consistent with details provided in further chapters of the PDD?	Ref.1	DR	The information of the Section A.2 of the PDD is consistent with further chapters.	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
A.3. Project Participants					
A.3.1. Is the table required for the indication of project participants correctly applied?	Ref.1	DR	The table is correct applied. Brazil is the only Party involved in the project. The project participant is BIOPAR Soluções Ambientais Ltda., a Brazilian private entity.	Y	Y
A.3.2. Is all information provided in consistency with details provided by further chapters of the PDD (in particular annex 1)?	Ref.1	DR	The description of section A.3 is consistent with the information described in annex 1 of the PDD.	Y	Y
A.4. Technical Description of the Project Activity					
A.4.1. Does the information provided on the location of the project activity allow for a clear identification of the site(s)? Are the latitude and longitude of the site indicated (decimal points)	Ref.1	DR Site visit	Yes. The project is located in Santana do Parnaíba, São Paulo state. The geographical coordinates are: Latitude: 23º24'50" South Longitude: 46º57'37" West	Y	Y
A.4.2. Do the project participants possess ownership or licenses which will allow the implementation of the project at that site / those sites?	Ref.1 Ref.4	DR	Yes. Verified the social contract of BIOPAR and Operation Licenses issued by the environmental agency.	Y	Y
A.4.3. Is the category(ies) of the project activity correctly identified?	Ref.1 UNFCCC web site	DR	The category is correctly identified: • Sectoral Scope 1- Energy Industries • Sectoral scope 13 – Waste Handling and Disposal	Y	Y
A.4.4. Does the project design engineering reflect current good practices?	Ref.1	DR Site visit	Yes, the project involves the improvement of landfill gas collection and flaring, through the installation of an active recovery system. The gas collected will be used to generate energy and the remaining will be flared.	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
A.4.5. Does the description of the technology to be applied provide sufficient and transparent input to evaluate its impact on the greenhouse gas balance and is the explanation how the project will reduce greenhouse gas emission transparent and suitable?	Ref.1	DR Site visit	Yes, the project will capture the biogas that would be release to the atmosphere. The electricity supplied to the grid would be generated by the grid, which includes fossil fuel power plants.	Y	Y
A.4.6. Is all information provided in compliance with actual situation or planning as available by the project participants?	Ref.6	Site visit	The project is not implemented yet. The equipments were bought but were not received at the time of site visit. It was provided by the PP a list of equipments and some pictures of the equipments (Ref.6).	Y	Y
A.4.7. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	Ref.1	DR	The technologies applied by the project activity follows the common technology of its sector.	Y	Y
A.4.8. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	Ref.1	DR	The technologies applied in the project are not likely to be substituted.	Y	Y
A.4.9. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	Ref.1	DR	The project is not implemented yet. See FAR 7 bellow. FAR 7: As the project is not implemented yet it is requested the PP to provide before verification: • the description of authority and responsibility of project management; • the authority and responsibility for registration, monitoring, measurement and reporting data; procedures for training of monitoring personnel	FAR 7	FAR 7

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
A.4.10. Does the project make provisions for meeting training and maintenance needs?	Ref.1	DR Site visit	The project is not implemented yet. See FAR 7	FAR 7	FAR 7
A.4.11. Is a schedule available on the implementation of the project and are there any risks for delays?	Ref.1	DR Site visit	See section A.4.6	Y	Y
A.4.12. Is the table required for the indication of projected emission reductions correctly applied?	Ref.1	DR	Yes, the table follows the correct format.	Y	Y
A.5. Public Funding					
A.5.1. Does the information on public funding provided conform with the actual situation or planning as presented by the project participants?	Ref.1	DR	No public funding is being used for the project activity.	Y	Y
A.5.2. Is all information provided consist with details provided by further chapters of the PDD (in particular annex 2)?	Ref.1	DR	No public funding is being used for the project activity.	Y	Y
A.5.3. In case of public funding from Annex I Parties is it confirmed that such funding does not result in a diversion of official development assistance	Ref.1	DR	There is no Annex I Party participating in the project activity.	Y	Y
B. Baseline and Monitoring Methodology					
B.1. Choice and Applicability					
B.1.1. Is the baseline methodology previously approved by the CDM Methodology Panel?	Ref.1 Ref.2a	DR	The project uses the approved methodology ACM0001 – Consolidated methodology for landfill gas project activities, version 9.1; This is the current version.	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.1.2. Is the baseline methodology the one deemed most applicable for this project?	Ref.1	DR	Yes. The methodology is applicable to the project because the baseline scenario is the release of the gas to the atmosphere and, in the project activity, the gas captured will be flared and/or used to generate electricity.	Y	Y
B.1.3. Is the choice of the methodology correctly justified by the PDD and is the project in conformance with all applicability criteria of the applied methodology?	Ref.1	DR	Yes, the applicability criteria of the methodology are correctly described in the PDD. See section B.1.2 above.	Y	Y
B.2. Project Boundary					
B.2.1. Are all emission sources and gasses related to the baseline scenario, project scenario and leakage clearly identified and described in a complete manner?	Ref.1	DR	Yes, the emissions sources described in the PDD are according to the required by methodology. The main emission source in the baseline is the emissions from decomposition of waste at the landfill site (CH4) and in the project activity, is the emission from on site electricity use (CO2) before the construction of the power plant.	Y	Y
B.2.2. In case of grid connected electricity projects: Is the relevant grid correctly identified in accordance with EB guidance and the underlying methodology?	Ref.1	DR	Yes, it applies the grid defined by Brazilian DNA to calculate project emissions: a unique grid for Brazil.	Y	Y
B.2.3. Are the project's spatial boundaries (geographical) and the project's system boundaries (components and facilities used to mitigate GHGs) clearly defined?	Ref.1	DR	Yes. The project boundaries encompass the Ventura landfill and the power generation sources connected to the Brazilian grid.	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.3. Identification of the Baseline Scenario					
B.3.1. Does the PDD discuss the identification of the most likely baseline scenario? Does the PDD follow the steps to determine the baseline scenario required by the methodology and is the application of the methodology and the discussion and determination of the chosen baseline transparent?	Ref.1 Ref.2 Ref.3a	DR	Yes, it followed the required by the methodology and additionality tool. The baseline scenario for the project corresponds to the scenario 1: the atmospheric release of landfill gas or landfill gas is partially captured and subsequently flared. The electricity is obtained from the grid.	Y	Y
B.3.2. Does the application consider all potential realistic and credible baseline scenarios in the discussion taking into account relevant national and/or sectoral policies, macro-economic trends and political aspirations??	Ref.1	DR	Yes, the following alternatives were presented: -project without being registered as CDM project activity; -continuation of the landfill operation (BAU) -destruction of the LFG in flares -use of LFG to generate electricity -use of LFG in boilers to generate heat. All alternatives comply with local/national policies.	Y	Y
B.3.3. Is the choice of the baseline compatible with the available data?	Ref.1	DR	Yes.	Y	Y
B.3.4. Is conservativeness addressed in the way of identifying the baseline?	Ref.1 Ref.3a	DR	Yes, it followed the required by the tool.	Y	Y
B.3.5. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	Ref.1	DR	Yes, the baseline scenario identified is the continuation of the landfill operation (BAU).	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.4. Additionality					
B.4.1. Does the PDD clearly demonstrate the additionality using the approach as given by the methodology and by following all the required steps?	Ref.1 Ref.3a	DR	See section B.4.2.	Y	Y
B.4.2. In case of using the additionality tool: Is the 'Additionality Tool' used in the PDD latest version? If an earlier version has been used, do the changes impact the discussion in the PDD? Are all steps followed in a transparent manner?	Ref.1 Ref.3a	DR	The project uses the "Tool for the demonstration and assessment of additionality" version 5.02. This is the current version. The tool is correctly applied.	Y	Y
B.4.3. Is the discussion on additionality and the evidence provided consistent with the starting date of the project If the project has started before the validation is it discussed how the CDM was taken into account in the decision to go ahead with the project activity	Ref.1 Ref.3a Ref.4	DR	See CAR 1 on section C.1.1, related to the starting date of the project activity. The starting date corresponds to a signed equipments proposal dated 01/07/2008. For the prior CDM consideration, the Social Contract for BIOPAR Soluções ambientais, dated 17/01/2008, shows that it was created to exploit the landfill gas under the Kyoto Protocol. Also, the contract with SGS was signed on 04/06/2008, before the starting date of the project activity. Moreover, during the validation assessment it was verified that the first local stakeholders' consultation occurred on June/2008.	See CAR 1	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.4.4. Is the discussion on additionality consistent with the identification all potential realistic and credible baseline scenarios B.4.5. Do the identified alternative include technologies and practices that include outputs (e.g) cement or services comparable with the proposed CDM project activity	Ref.1 Ref.2 Ref.3a	DR	The steps of the Tool and the ones required by the methodology were followed. The additionality discussion is consistent with potential baseline scenarios.	Y	Y
B.4.6. If an investment analysis has been used, has it been shown that the proposed project activity is economically or financially less attractive than at least one other alternative without the revenue from the sale of CERs?	Ref.1 Ref.3a Ref.10 Ref.11 Ref.12 Ref.13	DR	CAR 2 was raised to address some questions about the investment analysis : -Data used (production hour) to calculate the energy generate in the project for the years 2015 and 2016 are different from the others years. Provide evidences why it is different. -The year of the official benchmark used to compare the attractiveness of the project does not correspond to the year of the investment analysis (2008). -The sensitivity analysis is not according to the guidance presented in the Tool for the demonstration and assessment of additionality, version 5.2. To close out CAR 2 the following information and documents verified: -Ref.11-Business plan: it was corrected and the production hours (7,600 hours) are the same for all the years. The difference was due to a mistake. -Ref.12- historic data of the national treasure (Tesouro Nacional) used to calculate the Benchmark. Checked that it was used the average of the indicator for the period 01/01/2008 to 30/06/2008, resulting in 13.35%. -Ref.13- The revised sensitivity analysis was provided and is according to the required by the guidance.	CAR 2	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			Financial analysis - Verified that the benchmark used to compare the attractiveness of the project was the treasury bonds. This is a low risk and long term investment indicator from the National Treasury. The NTNF 010117 was used for comparison. This indicator is a treasury Government's bond, with pre-fixed remuneration and not indexed to any financial indicator, risk-free. -verified that the energy price is based on the PROINFA tariff, R$/MWh (Ref.10, page 134); - the exchange rate of R$2.7/EUR was confirmed through official Banco Central do Brasil website (http://www.bcb.gov.br/?english); - Energy generation is based on the estimated total hour of production (7600h/year) and the available potency of the generators (Ref.11); - the net income due to the electricity sale is calculated based on the energy price and electricity generation, starting with R$ 71.54/MWh; - verified the estimated operational costs and expenditures for the gas and electricity generation (Ref.11 and 13). The estimated data was provided and represents about thirteen per cent of the total investment; - verified the estimated investment in the first year considering the gas system and the equipments for the energy generation. The investment related to the energy generation continues until year 2017 because 7 engines will be installed depending on the amount of landfill gas collected. This is the maximum number of		

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			engines expected to be installed. The investment are correctly considered in the cash flow (Ref.11 and 13); According to the data provided confirmed through references and estimated data the Internal Rate of Return of the project activity is 0.0%, which is lower than the Benchmark of 13.35%. The project activity is not financial attractive. According to the alternatives presented in the PDD, the business as usual situation does not involve any kind of investment. The situation where only flaring the landfill gas, no return will occur since the investment in a gas collection and flaring system is not a requirement. Only the income from the sale of CERs is expected. The IRR obtained is positive but much lower than the benchmark (government bond rates). Verified the sensitivity analysis where the main variables affecting the IRR were analyzed. The analysis considering the variation of +5% to +15%% in the price of the electricity (the only revenue of the project activity), and -5% to -15% in the CAPEX of the gas collection system, electricity generation and in the operational costs of the gas collection and electricity generation. The maximum IRR after sensitivity analysis is 1.437 %. The result of the sensitivity analysis was that even varying -/+15% the IRR is still lower than the Benchmark. The final opinion of the financial analysis is that		

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			the project activity attends the methodology and "Tool for the demonstration of additionality" requirements and can be considered additional.		
B.4.7. If a barrier analysis has been used, has it been shown that the proposed project activity faces barriers that prevent the implementation of this type of proposed project activity but would not have prevented the implementation of at least one of the alternatives?	Ref.1 Ref.3a	DR	The barrier analysis was presented in PDD version 1. However it was excluded in the revised PDD. PP decided to use the investment analysis to address additionality.	Y	Y
B.4.8. Has it been shown that the project is not common practice?	Ref.1 Ref.3a Ref.7	DR	Yes, the step 4, common practice analysis is correctly applied and proved that the project activity is not a common practice scenario. Sub-step 4a: Analyze other activities similar to the proposed project activity: A national data from SNIS – Sistema Nacional de Informações sobre Saneamento, publised in 2006 a consolidate data for landfills that use the LFG (Ref.15). From the 211 sites sampled, 17 have a final use to the LFG. Excluding those projects developed under the CDM (registered or published for GSC), the result is that 7 of them were implemented without the CDM, or 3.32% of the sample. Using more recent data from the UNFCCC web site it is possible to observe that there are more projects developed under CDM than the ones mentioned in the research, however regarding the project without CDM incentives the most recent data is the data from SNIS. In Brazil, controlled landfill gas collection and destruction is not required by laws/regulations nor due to local environmental regulations, nor due to GHG emission reduction (the DNA informed that there is no national law which	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			obligates the destruction of methane in landfills- Ref.7). Therefore, most of the projects are developed under CDM, as it is the only source of revenue. Moreover in Brazil, landfills are not common practice according to IBGE research (Diretoria de Pesquisas de População e Indicadores Sociais, Pesquisa Nacional de Saneamento Básico 2000). Sub-step 4b. Discuss any similar options that are occurring: From the 7 projects presented in the SNIS research, 6 are public landfills and the project will be implemented in a private landfill. São Leopoldo landfill is controlled by SL Ambiental SA and the LFG is used to leachate treatment. There is neither a flare nor power station at the landfill (http://www.solvi.com/sl/default.asp, <accessed on 26/06/2009>). Verified that the Cascavel landfill (http://www.cascavel.pr.gov.br/secom/detalhes.php?id0=15724 <accessed on 26/06/2009>) has a pilot project to collect and use the gas to generate energy. Cuiabá landfill and Aterro Sanitario Municipal de Santa Bárbara'd'Oest answered wrongly the research and the LFG is burnt on the top of wells (Cuiabá- interview through phone call with Mr. Luiz Antonio Chaparro; Sta Bárbara'd'Oeste: http://www.santabarbara.sp.gov.br/v3/index.php?pag=pag_noticia&dir=noticias&id=27715 <accessed on 26/06/2009>). Juína also answered wrongly the research and the landfill does not have a LFG collection system (interview through phone call with Mr Rogério Veronezi).		

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			In Goiania landfill, the flare was installed but it is not operating due to technical and operational problems (confirmed through interview by phone call with Mr. Welington H. de Oliveira). The CTR-Rio landfill was not implemented and does not have the environmental licenses approved by the environmental agency (http://www.inea.rj.gov.br/downloads/ata_audit_public_ctr.pdf <accessed on 26/06/2009>). According to the environmental license of the landfill (Ref.5a, 5b) and the letter from the DNA (Ref.7) there are no laws or regulations obligating the destruction of biogas in the landfill. All projects presented in the SNIS research are different from the project activity or are developed under CDM and cannot be compared with the project activity The final opinion of the financial analysis is that the project activity attends the methodology and "Tool for the demonstration of additionality" requirements and can be considered additional.		
B.4.9. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario	Ref.1 Ref.3a	DR	Yes. The baseline scenario is the continuation of current practice: landfill operation without the implementation of the project activity.	Y	Y
B.5. Application of the Baseline Methodology					
B.5.1. Has the approved methodology been applied correctly for determining **baseline emissions**?	Ref.1 Ref.2 Ref.3b -3f	DR	Yes, the PDD follows the required by the methodology and tools.	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.5.2. Has the approved methodology been applied correctly for determining **project emissions**?	Ref.1 Ref.3b Ref.3c	DR	See CAR 4 on section B.10.1. There will be project emission from flaring and from energy consumption. These are calculated according to the required by the tool to determine project emissions from flaring gases containing methane and tool to calculate baseline, project and/or leakage emissions from electricity consumption, respectively. Also, in case of energy from grid supply is interrupted, a generator may be used. This will be monitored and discounted as project emission.	See CAR 4	Y
B.5.3. Has the approved methodology been applied correctly for determining **leakage**?	Ref.1	DR	Leakage is not applicable.	Y	Y
B.5.4. Where applicable, has the approved methodology been applied correctly for the **direct calculation of emission reductions**	Ref.1 Ref.2 Ref.3b -3f	DR	All formulas presented in the PDD follows the required by the methodology and tools. ERy = BEy-PEy	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.5.5. Have all the methodological choices been explained, have they been properly justified and are they correct	Ref.1	DR Site visit	Yes, data used to calculate adjustment factor was checked. The collection efficiency of passive system was checked on the document available in the web site: http://www.mnp.nl/ipcc/Archive/AR4FOD/ExpRevFOD/FODrev/FOD_AChapter10.doc (page 8); the efficiency of methane destruction is from the Tool to determine project emissions from flaring gases containing methane, version 01; the number of wells were checked during site visit. The adjustment factor calculated was 3.7% and a conservative value of 5% will be used. (The wells can be seen at the map presented on annex 3 of the PDD). The grid emission factor will be calculated ex post, using data provided by Brazilian DNA.	Y	Y
B.5.6. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	Ref.1	DR	Yes, conservative value for AF was used. The emissions from flaring and the energy consumed (from the grid or from a diesel generator) in the project activity will be considered in the emission reduction calculation.	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.6. Ex-ante Data and Parameters Used					
B.6.1. Are the data provided in compliance with the methodology?	Ref.1	DR	CAR 3 was raised to address that the values presented for the parameter DOCj are not according to the required by the Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site, version 04. In the revised PDD, this parameter was revised and is in compliance with the tool. Therefore, CAR 3 was closed out. After closing out CAR 3, parameters listed in section B.6.2 of the PDD that will remain fixed during the crediting period were verified and considered correct.	CAR 3	Y
B.6.2. Is all the data derived from official data sources or replicable records and have these been correctly quoted?	Ref.1 Ref.7	DR	Yes, data provided for the emission factor is official, made available by Brazilian DNA and data for the parameters GWP_{CH4}, ϕ, OX, F, DOC_f, MCF, DOC_j, (See CAR 3) k_j, are from IPCC and are according to the required by the tools and methodology. The parameters W_j and $p_{n,j,x}$ are from PP. DNA was contacted about the requirements relating to landfill gas projects (Ref.7).	Y	Y
B.6.3. Is the vintage of the baseline data correct?	Ref.1	DR	Yes. Official data was used.	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.7. Calculation of Emissions Reductions					
B.7.1. Has the approved methodology been applied correctly for determining **emission reductions**?	Ref.1 Ref.2 Ref.3b -3f	DR	Yes, all formulas are correctly described in the PDD and are accordingly to the required by the methodology ACM0001 and applicable tools. The emission reductions will be calculated as follow: ERy= BEy- PEy. BEy= $(MD_{project,y} - MD_{BL,y}) * GWP_{CH4} + EL_{LFG,y} * CEF_{elect, BL,y}$ $PE = PE_{EC,y} + PE_{flare,y}$	Y	Y
B.7.2. Are the emission reduction calculations documented in a complete and transparent manner?	Ref.1 Ref.2 Ref.3b -3f Ref.14	DR	Yes, formulas presented in the PDD are correctly described and applied. The spreadsheet (Ref.14) provided during validation assessment was found correct.	Y	Y
B.7.3. Have conservative assumptions been used to calculate emission reductions?	Ref.1 Ref.2 Ref.3b -3f Ref.14	DR Site visit	Yes, data are from official sources and an adjustment factor was calculated in a conservative manner. The collection efficiency of passive system was checked on the document available in the web site: http://www.mnp.nl/ipcc/Archive/AR4FOD/ExpRevFOD/FODrev/FOD_AChapter10.doc (page 8); the efficiency of methane destruction is from the Tool to determine project emissions from flaring gases containing methane, version 01; the number of wells were checked during site visit. Moreover a conservative value of 60% of efficiency collection was used due the operational characteristics of the landfill	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.7.4. Is the projection based on provable input parameter?	Ref.1 Ref.14	DR Site visit	Yes, data from project participants were used. -Wj (Total amount of organic waste prevented from disposal in year x) -$p_{n,j,x}$ (Weight fraction of the waste type j in the sample n collected during the year x)	Y	Y
B.7.5. Is the projection based on same procedures as used for later monitoring or acceptable alternative models?	Ref.1	DR	The same procedures used to estimate the emission reduction will be used in the monitoring. (See FAR 6 related to the monitoring procedures).	Y	See FAR 6
B.7.6. Is the calculation of the emission reduction correct?	Ref.1 Ref.14	DR	Yes, the spreadsheet and PDD were found corrected.	Y	Y
B.8. Emission Reductions					
B.8.1. Will the project result in fewer GHG emissions than the baseline scenario?	Ref.1	DR	Yes, the methane that would be released to the atmosphere will be destroyed in the project activity.	Y	Y
B.8.2. Is the form/table required for the indication of projected emission reductions correctly applied?	Ref.1	DR	Yes, the table follows the correct format.	Y	Y
B.8.3. Is the projection in line with the envisioned time schedule for the project's implementation and the indicated crediting period?	Ref. 1	Site visit	Yes, at the time of site visit, the PP had bought equipments, but they had not arrived.	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.9. Monitoring Methodology					
B.9.1. Does the monitoring methodology provide a consistent approach in the context of all parameter to be monitored and further information provided by the PDD? Are all parameters and data that is available at validation consistent with the approved methodology	Ref.1 Ref.2 Ref.3b -3f	DR	After closing out CAR 3, CAR 4, and NIR 5, parameters that are available at validation and monitored parameters are according to the required by the methodology and tools. Also see FAR 6 related to the monitoring plan.	See CAR 3, CAR 4, NIR 5	See FAR 6
B.9.2. Does the monitoring methodology apply consistently the choice of the option selected for monitoring both of project and baseline emissions?	Ref.1 Ref.2 Ref.3b -3f	DR	Yes, the methodology is correctly applied.	Y	Y
B.10. Data and Parameters Monitored					
B.10.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the emission reductions within the project boundary during the crediting period?	Ref.1 Ref.2 Ref.3b Ref.3c Ref.3d Ref.3e Ref.3f	DR	All data related to the project will be kept for 2 years after the end of the crediting period. CAR 4 was raised to address that data and parameters monitored presented in the PDD version 1 are not according to the required by the methodology. It should include the parameters: -$PE_{flare,y}$ (Project emissions from flaring of the residual gas stream in year y) -$PE_{ec,y}$ (project emissions from electricity consumption by the project activity during the year y). Project emissions due to the consumption of electricity (from the grid and from a captive diesel generator) were included in the revised	~~CAR 4~~ ~~NIR 5~~	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			PDD and are according to the required by the methodology and tool to calculate baseline, project and/or leakage emissions from electricity consumption. Also, project emission from flaring of residual steam was included in the revised PDD. Therefore, CAR 4 was closed out. Also, NIR 5 was raised to address that in the PDD version 1, it was not established for the parameters $t_{O2,h}$ and $fv_{CH4,FG,h}$ that they will be in accordance with the required by the Tool to determine project emissions from flaring gases containing methane, version 01. Table of the parameters $t_{O2,h}$ and $fv_{CH4,FG,h}$ were amended and are in compliance with requirements of the tool. Therefore, NIR 5 was closed out. After closing out CAR 4 and NIR5, monitored parameters were verified and considered correct according to the methodologies and tool used.		
B.10.2. Are the choices of project GHG indicators reasonable and in conformance with the requirements set by the approved methodology applied?	Ref.1 Ref.2	DR	Yes, after closing out CAR 4 and NIR 5, data are according to the required by the methodology.	Y	Y
B.10.3. Will it be possible to determine the specified project GHG indicators?	Ref.1 Ref.2	DR	Yes, parameters are according to the required by the methodology.	Y	Y
B.10.4. Is the information given for each monitoring variable by the presented table sufficient to ensure the verification of a proper implementation of the monitoring plan?	Ref.1 Ref.2	DR	Yes. The information provided describes properly the implementation of the monitoring plan. The calibration will be done according equipments' specification. As the project is not implemented procedures will be available at the verification (See FAR 6)	See FAR 6	See FAR 6

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.10.5. Is the information given for each monitoring variable by the presented table sufficient to ensure the delivery of high quality data free of potential for biases or intended or unintended changes in data records?	Ref.1 Ref.2	DR	Yes, see section B.10.4 above.	See FAR 6	See FAR 6
B.10.6. Is the monitoring approach in line with current good practice, i.e. will it deliver data in a reliable and reasonably acceptable accuracy?	Ref.1	DR	Yes, data will be measured continuously, using calibrated meters, and monitored automatically via a PLC system.	Y	Y
B.10.7. Are all formulae used to determine project emission clearly indicated and in compliance with the monitoring methodology.	Ref.1	DR	See CAR 4 and its closure above.	See ~~CAR 4~~	Y
B.11. Quality Control (QC) and Quality Assurance (QA) Procedures					
B.11.1. Is the selection of data undergoing quality control and quality assurance procedures complete?	Ref.1	DR	The level of uncertainty is low because the whole monitoring of the project will be made electronically via PLC system and backup will be made to avoid data be lost. Also, data related to the emission factor comes from official source. See FAR 6 regarding the projects' procedures.	See FAR 6	See FAR 6
B.11.2. Is the belonging determination of uncertainty levels done correctly for each ID in a correct and reliable manner?	Ref.1	DR	Yes, it follows the required by the methodology and applicable tools (See NIR 5 and its closure).	See NIR 5	Y
B.11.3. Are quality control procedures and quality assurance procedures sufficiently described to ensure the delivery of high quality data?	Ref.1	DR	Yes, see section B.11.1	See FAR 6	See FAR 6
B.11.4. Is it ensured that data will be bound to national or internal reference standards?	Ref.1	DR	Not all parameters will be bound to national standards. Parameters are following the methodologies and applicable tools.	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.11.5. Is it ensured that data provisions will be free of potential conflicts of interests resulting in a tendency of overestimating emission reductions?	Ref.1	DR	Yes, see section B.11.1. In order to assure conservatism, the standard errors of each equipment will be subtracted from the readings.	See FAR 6	See FAR 6
B.12. Operational and Management Structure					
B.12.1. Is the authority and responsibility of project management clearly described?	B.7.2	DR	The project is not implemented yet. FAR 7 was open to request the PP to provide before verification: • the description of authority and responsibility of project management; • the authority and responsibility for registration, monitoring, measurement and reporting data; • procedures for training of monitoring personnel	FAR 7	FAR 7
B.12.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	B.7.2	DR	See section B.12.1 above	See FAR 7	See FAR 7
B.12.3. Are procedures identified for training of monitoring personnel?	B.7.2	DR	See section B.12.1 above	See FAR 7	See FAR 7
B.13. Monitoring Plan (Annex 4)					
B.13.1. Is the monitoring plan developed in a project specific manner clearly addressing the unique features of the CDM activity?	Ref.1	DR	As the project is not implemented yet, it is requested to the PP to provide before verification the procedures implemented to guarantee that the project will follow the required by methodology and tools in order to assure data quality, including calibration procedures for equipments.	FAR 6	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.13.2. Does the monitoring plan completely describes all measures to be implemented for monitoring all parameter required, including measures to be implemented for ensuring data quality?	Ref.1	DR	Yes. Main data will be recorded automatically and backup will be made. Also, manual records will be made. Meters will be calibrated according equipments specification. Regarding the procedures, see FAR 6 above.	See FAR 6	See FAR 6
B.13.3. Does the monitoring plan provide information on monitoring equipment and respective positioning in order to safeguard a proper installation?	Ref.1	DR	See FAR 6 above.	See FAR 6	See FAR 6
B.13.4. Are procedures identified for calibration of monitoring equipment?	Ref.1	DR	See FAR 6 above.	See FAR 6	See FAR 6
B.13.5. Are procedures identified for maintenance of monitoring equipment and installations?	Ref.1	DR	See FAR 6 above.	See FAR 6	See FAR 6
B.13.6. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	Ref.1	DR	Yes, data will be recorded automatically via PLC system (computer system) and also, manual records will be made.	Y	Y
B.13.7. Are procedures identified for dealing with possible monitoring data adjustments and missing data allowing redundant reconstruction of data in case of monitoring problems??	Ref.1	DR	Yes, there will be automatic and manual records of the main data.	Y	Y
B.13.8. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	Ref.1	DR	The project is not implemented, see FAR 6.	See FAR 6	See FAR 6
B.13.9. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	Ref.1	DR	The project is not implemented, see FAR 6	See FAR 6	See FAR 6
B.14. Baseline Details					
B.14.1. Is there any indication of a date when determine the baseline?	C.1.1	DR	Yes, 13/08/2008 and finished on 02/04/2009 (PDD version 4).	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.14.2. Is this in consistency with the time line of the PDD history?	C.1.1	DR	Yes.	Y	Y
B.14.3. Is all data required provided in a complete manner by annex 3 of the PDD?	C.1.1 Annex 3	DR	Yes. Annex 3 provides information about the Brazilian grid.	Y	Y
C. **Duration of the Project / Crediting Period**					
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	C.1.1 Ref.9	DR	Starting date of the project activity defined in the PDD version 1 (creation of the company BIOPAR) is not according to the clarified in the EB 41 *"the start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity. This, for example, can be the date on which contracts have been signed for equipment or construction/operation services required for the project activity. Minor pre-project expenses, e.g. the contracting of services /payment of fees for feasibility studies or preliminary surveys, should not be considered in the determination of the start date as they do not necessarily indicate the commencement of implementation of the project".* CAR 1 was raised. In the revised PDD, the starting date of the project activity was changed to comply with the clarified in EB 41. The evidence was provided and was found corrected. The starting date corresponds to a signed equipments proposal dated 01/07/2008. Therefore, CAR 1 was closed out.	CAR 1	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
C.1.2. Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max 7 years with potential for 2 renewals or fixed crediting period of max. 10 years)?	C.2.1	DR	Renewable crediting period (7 years).	Y	Y
C.1.3. Does the project's operational lifetime exceed the crediting period	C.1.2	DR	Yes, the operational life time exceeds the crediting period.	Y	Y
D. Environmental Impacts					
D.1.1. Does the project comply with environmental legislation in the host country?	Ref. Ref.5a Ref.5b	DR	The environmental impacts were analyzed when the environmental agency (CETESB) issued the licenses. The applicable licenses were checked: • operation license for the landfill: LO number 32002608, issued by CETESB on 05/12/2005, valid until 05/12/2010 (Ref.5a) • operation license for the biogas plant: LO number 32004609, issued by CETESB on 18/12/2008, valid until 18/12/2013 (Ref.5b)	Y	Y
D.1.2. Has an analysis of the environmental impacts of the project activity been sufficiently described?	Ref. Ref.5a Ref.5b	DR	It is included in the licensing process by the environmental agency. See section D.1.1 above	Y	Y
D.1.3. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	Ref. Ref.5a Ref.5b	DR	See section D.1.1 above	Y	Y
D.1.4. Will the project create any adverse environmental effects?	Ref. Ref.5a Ref.5b	DR	See section D.1.1 above	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
D.1.5. Are transboundary environmental impacts considered in the analysis?	Ref. Ref.5a Ref.5b	DR	See section D.1.1 above	Y	Y
D.1.6. Have identified environmental impacts been addressed in the project design?	Ref. Ref.5a Ref.5b	DR	See section D.1.1 above	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
E. Stakeholder Comments					
E.1.1. Have relevant stakeholders been consulted?	Ref.1 Ref.8a Ref.8b	DR	Yes. The following stakeholders were contacted: - Municipality of Santana de Parnaíba - Legislative Chamber of Santana de Parnaíba -CETESB (State Environmental Agency) - Environmental State Secretariat - Brazilian NGO Forum - State Public Attorney -Federal Public Attorney - AVEMARE – Associação Vila Esperança de Materiais Recicláveis -SIEMACO – Sindicato dos Trabalhadores em Empresas de Prestação de Serviços de Asseio e Conservação e Limpeza Urbana de São Paulo -Rotary Clube de Santana de Parnaíba Note that Brazilian DNA requires the consultation of the Municipal Environmental Agency. However this was not identified by the PP. Also, it was seen that the first letter to the local stakeholders were sent on June/2008 in accordance with Brazilian Resolution number 1. Then, in order to comply with the Brazilian DNA resolution nº 7, new letters were sent on August/2008.	Y	Y

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	Ref.1 Ref.8a Ref.8b	DR	Checked the letters (Ref.8a) and receipts (Ref.8b). Letters were sent in Portuguese and also, the PDD was made available in local language.	Y	Y
E.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	Ref.1	DR	The stakeholder consultation followed the Brazilian DNA resolution number 7, 05 March 2008.	Y	Y
E.1.4. Is the undertaken stakeholder process described in a complete and transparent manner?	Ref.1	DR	Yes.	Y	Y
E.1.5. Is a summary of the stakeholder comments received provided?	Ref.1	DR	Yes. The NGO Forum stated that a 30-day period for comments is not enough to make a complete analysis of the project and suggest the adoption of Gold Standard sustainability criteria.	Y	Y
E.1.6. Has due account been taken of any stakeholder comments received?	Ref.1	DR	Yes. The PP response was: "*As per Resolução nº7, the local stakeholder consultation process is open until the request for registration of the project activity, not being limited to a 30-day length. Concerning the Gold Standard criteria, BIOPAR Soluções Ambientais Ltda. answered that the verification process of CERs already takes into account sustainability criteria, as hiring and training of personnel and compliance with the environmental licence. However, BIOPAR Soluções Ambientais Ltda compromises to analyze the possibility of the criteria adoption*".	Y	Y

References

Reference ID	Title / Description	Comments
1	PDD: Projeto de Gás de Aterro TECIPAR – PROGAT. Version 1, date 13/08/2008. Version 2.1, date 05/01/2009. Version 3, date 05/03/2009 Version 4, date 02/04/2009	PDD: Projeto de Gás de Aterro TECIPAR – PROGAT.
2	ACM0001 – Consolidated methodology for landfill gas project activities, version 9.1	ACM0001 – Consolidated methodology for landfill gas project activities, version 9.1
3a	Tool for the demonstration and assessment of additionality, version 05.2	Tool for the demonstration and assessment of additionality, version 05.2
3b	Tool to determine project emissions from flaring gases containing methane, version 01	Tool to determine project emissions from flaring gases containing methane, version 01
3c	Tool to calculate baseline, project and/or leakage emissions from electricity consumption, version 01	Tool to calculate baseline, project and/or leakage emissions from electricity consumption, version 01
3d	Tool for calculation of emission factor for electricity systems, version 01	Tool for calculation of emission factor for electricity systems, version

		01
3e	Tool to calculate project or leakage CO2 emissions from fossil fuel combustion, version 02	Tool to calculate project or leakage CO2 emissions from fossil fuel combustion, version 02
3f	Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site, version 04	Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site, version 04
4	Social contract, 17/01/2008.	Evidence of CDM consideration
5a	Operation License, nº 32003900, issued by CETESB on 08/01/2008, valid until 08/01/2013 (landfill)	Operation License, nº 32003900
5b	Installation license nº 32003440, issued by CETESB on 27/08/2008 (biogas plant)	Installation license nº 32003440
6	List of equipments and pictures	List of equipments and pictures
7	DNA letter and response, 10/10/2008.	DNA letter and response, 10/10/2008.
8a	Letters- local stakeholder consultation	Letters- local stakeholder consultation
8b	Receipts- local stakeholder consultation (AR)	Receipts- local stakeholder consultation (AR)
9	Equipments proposal (evidence of starting date of the project activity), 01/07/2008.	Equipments proposal (evidence of starting date of the project activity)
10	Cadernos NAE- Proinfa Tariff	Used to calculate the projects' IRR
11	Business plan	Estimation of the electricity generation

12	National Treasure NTNF 010117 (from Portuguese Tesouro Nacional)	Benchmark reference
13	Cash-Flow TECIPAR 2009.04.20	Cash flow and sensitivity analysis
14	CERs Estimatives - TECIPAR (v 04) 2009.04.20	CERs calculation
15	http://www.snis.gov.br/arquivos_snis/5_DIAGNOSTICOS/5.2_Residuos_solidos/5.2.5_Diagnostico2006/RSD05_Planilhas.zip (Table RSD05_Up03); accessed on 26/06/2009.	Common practice analysis
16	http://www.solvi.com/sl/default.asp, <accessed on 26.06.2009>	Common practice analysis
17	http://www.santabarbara.sp.gov.br/v3/index.php?pag=pag_noticia&dir=noticias&id=27715 <accessed on 26/06/2009	Common practice analysis
18	http://www.cascavel.pr.gov.br/secom/detalhes.php?id0=15724 <accessed on 26/06/2009>	Common practice analysis
19	http://www.inea.rj.gov.br/downloads/ata_audit_public_ctr.pdf <accessed on 29/06/2009>	Common practice analysis
20	Phone call interviews: Mr. Wellington H. de Oliveira (+55 62 3524.1412; 26/06/2009); Mr. Luiz Antonio Chaparro (+55 65 3313.3051; 29/06/2009), Mr. Rogério Veronezi (+55 66 3566.2585, 29/06/2009)	Common practice analysis

A.3 Annex 3: Overview of Findings

Findings Overview

Findings from validation of Projeto de Gás de Aterro TECIPAR – PROGAT.
Each Table below represents a finding from the validation assessment. The findings are numbered consecutively, approximately in the order that they have been identified.
Description of Table:

Type	Findings are either New Information Requests (NIR) or Corrective Action Requests (CAR). CARs are items that must be addressed before a project can receive a recommendation for registration. NIRs may lead to the raising of CARs. Observations are included at the end and may or may not be addressed. They are primarily to act as signposts for the verifying DOE.
Issue	Details the content of the finding
Ref	Refers to the item number in the Validation Protocol
Response	Please insert response to finding, starting with the date of entry.

Rows for comments and further response will be appended to the table until the Findings has been addressed to the satisfaction of the Lead Assessor.
Please Note: This is an open list and more findings may be added as validation progresses.

Date:	20/10/2008			Raised by:	Thaís Carvalho/ Fabian Gonçalves		
No.:	1	Type:	CAR	Issue:	Starting date	Ref.:	C.1.1
Lead Assessor Comment:					Date: 20/10/2008		
Starting date of the project activity defined in the PDD version 1 (creation of the company BIOPAR) is not according to the clarified in the EB 41 *"the start date shall be considered to be the date on which the project participant has committed to expenditures related to the implementation or related to the construction of the project activity. This, for example, can be the date on which contracts have been signed for equipment or construction/operation services required for the project activity. Minor pre-project expenses, e.g. the contracting of services /payment of fees for feasibility studies or preliminary surveys, should not be considered in the determination of the start date as they do not necessarily indicate the commencement of implementation of the project".*							
Project Participant Response:					Date: 18/11/2008		
A proposal from Multiambiente to TECIPAR (one of the shareholders of the project), dated from 01/07/2008 presenting the costs of equipment delivery, was presented as an evidence. The starting date of the project activity was, thus, changed to 01/07/2008 in order to accomplish with the EB requirements.							
Acceptance and Close out by Lead Assessor:					Date:25/11/2008		
Information Provided: Revised PDD and evidence of starting date. Information Verified: Starting date of the project activity and its evidence.						Verified Document Reference: Ref.1, Revised PDD Ref.9	
Reasoning for not acceptance or acceptance and close out: The starting date of the project activity was changed in the PDD to comply with the clarified in EB 41. The evidence was provided and was found correct. Therefore, CAR 1 was closed out.							

Date:	20/10/2008			Raised by:	Thaís Carvalho/ Fabian Gonçalves		
No.:	2	Type:	CAR	Issue:	Investment analysis	Ref.:	B.4.6
Lead Assessor Comment:					Date: 20/10/2008		

For the investment analysis some questions need to be clarified: -Data used (production hour) to calculate the energy generate in the project for the years 2015 and 2016 are different from the others years. Provide evidences why it is different. -The year of the official benchmark used to compare the attractiveness of the project does not correspond to the year of the investment analysis (2008). -The sensitivity analysis is not according to the guidance presented in the Tool for the demonstration and assessment of additionality, version 5.2.	
Project Participant Response:	Date: 18/11/2008
- A mistake was made in the business plan and the operating hours of ALL YEARS were updated to 7,600 hours. - the Benchmark used to compare attractiveness of the project was changed to the average of the indicator, from 01/01/2008 to 30/06/2008, resulting in 13.35% - the sensitivity analysis was reviewed considering variations of 5%, 10% and 15% in the main variables which affect the project's IRR (CAPEX Gas, OPEX Gas, CAPEX Electricity, OPEX Electricity, Electricity Sale Price).	
Acceptance and Close out by Lead Assessor:	Date: 07/01/2008
Information Provided: Revised Business plan, historic data of national treasure, revised sensitivity analysis. Information Verified: Revised information and reference documents were checked.	Verified Document Reference: Ref.11 Ref.12 Ref.13
Reasoning for not acceptance or acceptance and close out: To close out CAR 2 the following information and documents verified: -Ref.11-Business plan: it was corrected and the production hours (7,600 hours) are the same for all the years. The difference was due to a mistake. -Ref.12- historic data of the national treasure (Tesouro Nacional) used to calculate the Benchmark. Checked that it was used the average of the indicator for the period 01/01/2008 to 30/06/2008, resulting in 13.35%. -Ref.13- The revised sensitivity analysis was provided and is according to the required by the guidance.	

Date:	20/10/2008			Raised by:	Thaís Carvalho/ Fabian Gonçalves		
No.:	3	Type:	CAR	Issue:	Data and parameters that are available at validation	Ref.:	B.6.1
Lead Assessor Comment:					Date: 20/10/2008		
The values presented for the parameter DOCj are not according to the required by the Tool to determine methane emissions avoided from disposal of waste at a solid waste disposal site, version 04.							
Project Participant Response:					Date: 18/11/2008		
Values of DOC_j were corrected in table from item B.6.2, in order to correspond to the values presented in the Tool.							
Acceptance and Close out by Lead Assessor:					Date: 25/11/2008		
Information Provided: Revised PDD Information Verified: Parameter DOCj					Verified Document Reference: Ref.1, Revised PDD		
Reasoning for not acceptance or acceptance and close out: The parameters DOCj was revised in the revised PDD and is in compliance with the tool. Therefore, CAR 3 was closed out.							

Date:	20/10/2008			Raised by:	Thaís Carvalho/ Fabian Gonçalves		
No.:	4	Type:	CAR	Issue:	Data and parameters monitored	Ref.:	B.10.1
Lead Assessor Comment:					Date: 20/10/2008		

Data and parameters monitored presented in the PDD version 1 are not according to the required by the methodology. It should include the parameters: -$PE_{flare,y}$ (Project emissions from flaring of the residual gas stream in year y) -$PE_{ec,y}$ (project emissions from electricity consumption by the project activity during the year y)	
Project Participant Response:	Date: 18/11/2008
$PE_{flare,\ y}$ and $PE_{ec,\ y}$ was included in the PDD – item B.7.1. Additionally, the formulae used to calculate the Project Emissions due to the consumption of electricity from the grid and from the captive diesel generator were included in the PDD – item B.6.1.	
Acceptance and Close out by Lead Assessor:	Date: 25/11/2008
Information Provided: Revised PDD Information Verified: Project emissions of the project activity.	Verified Document Reference: Ref.1, Revised PDD
Reasoning for not acceptance or acceptance and close out: Project emissions due to the consumption of electricity (from the grid and from a captive diesel generator) were included in the revised PDD and are according to the required by the methodology and tool to calculate baseline, project and/or leakage emissions from electricity consumption. Also, project emission from flaring of residual steam was included in the revised PDD. Therefore, CAR 4 was closed out.	

Date:	20/10/2008			Raised by:	Thaís Carvalho/ Fabian Gonçalves		
No.:	5	Type:	NIR	Issue :	Data and parameters monitored	Ref.:	B.10.1
Lead Assessor Comment:					Date: 20/10/2008		
In PDD version 1, it was not established for the parameters $t_{O2,h}$ and $fv_{CH4,FG,h}$ that they will be in accordance with the required by the Tool to determine project emissions from flaring gases containing methane, version 01.							
Project Participant Response:					Date: 18/11/2008		
The lines “Description of measurement methods and procedures to be applied:” were reviewed, in order to include the position of the sampling point.							
Acceptance and Close out by Lead Assessor:					Date: 25/11/2008		
Information Provided: Revised PDD Information Verified: The parameters $t_{O2,h}$ and $fv_{CH4,FG,h.}$					Verified Document Reference: Ref.1, Revised PDD		
Reasoning for not acceptance or acceptance and close out: Table of the parameters $t_{O2,h}$ and $fv_{CH4,FG,h}$ were amended and are in compliance with requirements of the tool. Therefore, NIR 5 was closed out.							

Date:	20/10/2008			Raised by:	Thaís Carvalho/ Fabian Gonçalves		
No.:	6	Type:	FAR	Issue :	Monitoring plan	Ref.:	B.13.1
Lead Assessor Comment:					Date: 20/10/2008		
As the project is not implemented yet, it is requested to the PP to provide before verification the procedures implemented to guarantee that the project will follow the required by methodology and tools in order to assure data quality, including calibration procedures for equipments.							
Project Participant Response:					Date: 18/11/2008		
For the variables **1. $LFG_{Tota,\ y}$** **2. $LFG_{Flare,\ y}$** **3. $LFG_{Electricity,\ y}$** **4. w_{CH4}** **9. $t_{O2,\ h}$** and **10. $fv_{CH4,\ FG,\ h}$** It was included in the line “QA/QC procedures to be applied:” that the calibration will be undertaken according with the manufacturer’s recommendations.							

Date:	20/10/2008			Raised by:	Thaís Carvalho/ Fabian Gonçalves		
No.:	7	Type:	FAR	Issue :	Operational and management structure	Ref.:	A.4.9
Lead Assessor Comment:					Date: 20/10/2008		
As the project is not implemented yet it is requested the PP to provide before verification: • the description of authority and responsibility of project management; • the authority and responsibility for registration, monitoring, measurement and reporting data; • procedures for training of monitoring personnel							
Project Participant Response:					Date: 18/11/2008		
All management and monitoring responsibilities, monitoring training and will be available at the first verification.							

A.4 Annex 4: Team Members Statements of Competency

Statement of Competence

Name: Fabian Goncalves SGS Affiliate: SGS Brazil

Status

- Product Co-ordinator ☒
- Operations Co-ordinator ☐
- Technical Reviewer ☐
- Expert ☐

	Validation	Verification
- Local Assessor	☒	☒
- Lead Assessor	☒	☒
- Assessor / Trainee Lead Assessor	☒	☒

Scopes of Expertise

1. Energy Industries (renewable / non-renewable)	☒
2. Energy Distribution	☐
3. Energy Demand	☐
4. Manufacturing	☒
5. Chemical Industry	☒
6. Construction	☐
7. Transport	☐
8. Mining/Mineral Production	☐
9. Metal Production	☐
10. Fugitive Emissions from Fuels (solid, oil and gas)	☐
11. Fugitive Emissions from Production and Consumption of Halocarbons and Sulphur Hexafluoride	☐
12. Solvent Use	☐
13. Waste Handling and Disposal	☒
14. Afforestation and Reforestation	☐
15. Agriculture	☐

Approved Member of Staff by: Siddharth Yadav Date: 18/10/2007

Statement of Competence

Name:Thaís de Lima Carvalho SGS Affiliate:Brazil

Status

- Product Co-ordinator ☐
- Operations Co-ordinator ☐
- Technical Reviewer ☐
- Expert ☐

	Validation	Verification
- Local Assessor	☒	☒
- Lead Assessor	☐	☐
- Assessor / Trainee Lead Assessor	☒	☒

Scopes of Expertise

1. Energy Industries (renewable / non-renewable) ☐
2. Energy Distribution ☐
3. Energy Demand ☐
4. Manufacturing ☐
16. Chemical Industry ☐
17. Construction ☐
18. Transport ☐
19. Mining/Mineral Production ☐
20. Metal Production ☐
21. Fugitive Emissions from Fuels (solid, oil and gas) ☐
22. Fugitive Emissions from Production and ☐

Consumption of Halocarbons and Sulphur Hexafluoride

23. Solvent Use ☐
24. Waste Handling and Disposal ☐
25. Afforestation and Reforestation ☐
26. Agriculture ☐

Approved Member of Staff by Siddharth Yadav Date: 10/02/2009