VALIDATION REPORT

EcoSecurities Group Plc

Lixo Zero Composting Project

SGS Climate Change Programme
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Project Title:	
Lixo Zero Composting Project	
Organisation:	**Client:**
SGS United Kingdom Limited	EcoSecurities Group Plc
Publication of PDD for Stakeholders Consultation	
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Summary:

EcoSecurities Group Plc has commissioned SGS to perform the validation of the project: Lixo Zero Composting Project.

Methodology used: AM0025 ("Avoided emissions from organic waste through alternative waste treatment processes")

Version and Date: Version 10.1, valid from 02/11/2007

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 describes a total of 17 findings which include:

- 7 Corrective Action Requests;
- 9 New Information Requests and
- 1 Forward Action Request/Observation.

All Corrective Action Requests and New Information Requests were closed out satisfactorily. The baseline and monitoring methodology as mentioned in approved methodology adopted for the proposed project activity and meets the relevant UNFCCC requirements for the CDM and relevant host country criteria.

Subject:			
CDM Validaion			
Validation Team:			
Fabian Gonçalves – Lead Assessor Talita Beck – Local Assessor (trainee)			
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Abbreviations

BNDES	Natcional Development Bank (from the portuguese 'Banco Nacional de Desenvolvimento)
BOD	Biochemical Oxygen Demand
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CERs	Certified Emission Reductions
COD	Chemical Oxygen Demand
COP	Conference of the Parties
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
EB	Executive Board
EMBRAPA	Empresa Brasileira de Pesquisa Agropecuária (Brazilian Agricultural Research Corporation)
ERs	Emission Reductions
FAR	Further Action Request (or Observation)
FEEMA	Fundação Estadual de Engenharia do Meio Ambiente (RJ State Environmental AgencyRegulators)
GHG	Green House Gas
I	Interview
LoA	Letter of Approval
MG	Minas Gerais State
MoC	Means of Communication
MOP	Meeting of the Parties
MP	Monitoring Plan
NIR	New Information Request
PDD	Project Design Document
PPs	Project Participants
QA	Quality Assurance
QC	Quality Control
SGS	Société Générale de Surveillance
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Validation and Verification Manual

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Annexes:

1. Validation Opinion

SGS United Kingdom Ltd has been contracted by EcoSecurities Group Plc to perform a validation of the project: Lixo Zero Composting Project, located 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.

The project activity consists in aerobically compost organic waste supplied by supermarkets, street markets and agro-product retailers in the areas near the Project Developer. This waste will be turned into organic fertilizers to be sold for use in organic agriculture. 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 AM0025 version 10.1. 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 467,759 t of CO2e over 7 years crediting period, averaging 66,823 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.

SGS will request the registration of the Lixo Zero Composting Project as a CDM project activity, once the written approval by the DNA of the participating Party and the confirmation by the DNA of Brazil that the project assists in achieving sustainable development has been received.

Signed on Behalf of the Validation Body by Authorized Signatory

Signature:

Name:

Date:

2. Introduction

2.1 Objective

EcoSecurities Group Plc has commissioned SGS to perform the validation of the project: Lixo Zero Composting Project 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 project activity involves the alternative treatment of waste which would otherwise be disposed of in landfill sites. The technology applied is the aerobic composting of waste, including the fact that the process does not generate methane.

There are no regulations obliging landfill gas capture and thus most landfills do not take any CH_4 emissions avoidance measures.

Furthermore, it states that the Project helps to fulfill the Host Country's sustainable development goals by preventing GHG emissions from waste that would have been disposed of at a landfill.

The contributions of the project to sustainable development are clearly listed on PDD.

2.4 The Names and Roles of the Validation Team Members

Name	Role	Affiliate
Fabian Gonçalves	Lead assessor	SGS Brazil
Talita Beck	Trainee Local assessor	SGS 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 8th May, 2008 in Lixo Zero Composting Project plant/office. The project developers were interviewed by the Lead Assessor and the trainee 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 organises, 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.

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

Brazil is the Host Party and has ratified the Kyoto Protocol on 23rd August 2002. http://maindb.unfccc.int/public/country.pl?country=BR . At the time of validation, no Letter of Approval from the host country had been provided. The Letter of Approval will be signed when the DNA of Brazil receives and analyse the validation report (this is the normal procedure with the Brazilian DNA).

United Kingdom is also a Party involved in this CDM project activity. United Kingdom has ratified the Kyoto protocol on 31st May 2002 and is listed as an 'Annexure- I' Party. http://maindb.unfccc.int/public/country.pl?country=GB. The LoA from the Annex 1 party is pending the host country LoA.

CAR1 was raised asking Project Participants to provide the modalities of communication (MoC) with the UNFCCC. The MoC with the signature of all Project Participants was subsequently sent. The Project name in the MoC is the same as in PDD (Ref. 28). **CAR 1 was closed out.**

4.2 Project Design

The project's objective is to reduce GHG emissions by providing an alternative treatment of organic waste which would otherwise be disposed of in landfill sites (the most applied treatment of waste in the host country). The implementation of the project activity is likely to provide a boost to composting technologies in the waste handling and disposal sectors helping the Host Country to fulfill its sustainable development goals. PDD section A.4.2 states that the Project falls under Sectoral Scope 13 'Waste Handling and Disposal'. The approved methodology AM0025 has been correctly applied. The website also states that this methodology also falls under scope 1. But this is not applicable to the waste treatment option of this project since it does not generate energy.

The technology applied is the aerobic composting of waste using an accelerated composting system and a new biocatalyst developed and patented by the host country (patents in Refs.15 and 16). In the plant, organic waste arrives at the site and it is first sorted, triturated and transported through the composting slot where mineral and other nutrients, as well as the biocatalyst, are added. The compost is then piled and the aeration is done by regularly turning the compost over with shovels and by blowing oxygen into the piles. The composting process is done in the open air but not exposed to wind or sun. The layout of the compost plant is provided in Ref.13.

The Project Participants estimated that the project would have an input of 500 tonnes per day of organic waste and that it would generate approximately 75,000 tonnes of product per year.

The PP informed during site visit that they used verbal contracts and technical knowledge to estimate this. Two NIRs were raised in relation to this issue:

NIR2 – It was required verifiable evidence of the data used in the estimation of the amount of waste input into the project (i.e. total amount of waste prevented from disposal) and the amount of different waste types at validation.

The PPs provided a statement made by the project developer with the history of the waste being delivered during the trials of the pilot plant and estimates of the amount of waste expected to be received which were also based on the plants capability (Ref.29 and personal communication).

The project developer also sent an email with an analysis of the process' bottle neck based on their experience during the tests done in the pilot plant (Ref.40). It was concluded from the analysis that the estimates of the project's capability of processing approximately 500tonnes per day, operating on a 2 shift basis, is reasonable. **NIR2 was closed out.**

NIR3 – It was required verifiable evidence to the data used in the estimation of the total amount of compost produced per year.

The relation of waste processed and compost produced used in the calculations of Mcompost,y were checked against estimates from the pilot plant data (Ref. 29). During the assessment of the answers to NIR2 and NIR3, the estimates for the waste processed were changed from 180,000 to 150,000. The PPs wanted to

present a more conservative estimate of the number of days of plant operation (500tonnes*300days). The estimative of the composting factor (amount of compost produced per tones of waste) has also increased after the assessment of the data of the pilot tests in the statement sent by the project developer (Ref.29). As a result of the data of these tests in the statement the conversion factor of waste to compost increased from approximately 50% to 60% (from 75,000 to 90,000).**NIR 3 was closed out once NIR2 was confirmed too.**

The plant's configurations are still being changed, however the Project activity's boundary was well identified in the PDD section B.3. It comprises emissions from on site fossil fuel consumption, on site electricity consumption from the grid and emissions from the composting process itself (N_2O and CH_4). The PPs justified to the validator during site visit the exclusion of the waste water treatment from the project boundary. They explained that these emissions are not accounted because it is an aerobic composting system where the production of waste effluent is kept to a minimum. Any waste effluent which is produced is treated on site. The effluent is settled for a few hours and decanted. The decanted water is sprinkled over the composting piles in order to provide the humidity required for optimum composting process. The sludge is also used in the compost process. The majority of the effluent is treated using this method, any excess water in extreme wheather situations is treated as requested by FEEMA and disposed of in the sewers. Because the water only stays for a few hours in the decanting tanks and the excess effluent is rare and stays only a few days in the water treatment tanks, the PPs stated that emissions from these source are negligible. The DOE has cross-referenced this information with a publication by IBAMA (Ref.45) which states that if simplified aerobic composting systems are well managed, the production of leachates is small.

The project design engineering reflects good practices, the technology is environmentally safe and has been granted license from the Environmental Regulators (Ref.8) and the compost generated from its activities has been awarded an attestation by Ecocert Brazil (http://www.ecocert.com – an international control and certification organization) with regards to its compost being appropriate for use in organic agriculture (Ref.12).

With regards to the Project's implementation schedules, the project is operating on pilot mode and waiting for the credits to start proper operations. It was envisaged that the first crediting period would start on 01/07/08.

CAR5 was raised to address the risk of delays, asking the PPs to provide a more realistic date for the starting of the crediting period. A revised version of the PDD was provided with a new date for the start of the crediting period (the earliest of 01/01/2009 or the date of registration of the PDD). **CAR5 was closed out.** Later a 3rd version of the PDD was produced and the starting date was changed again to the 01/03/2009 or the date of registration of the PDD.

Training requirements and maintenance procedures were asked to be implemented before the start of the crediting period. This was addressed by raising a FAR which was detailed in section B.13.1 of the Validation Protocol so it will be further explained in section 4.5 below.

The project uses the correct PDD template (version 3). The specific requirements were addressed under each header of the template.

4.3 Baseline Selection and Additionality

The baseline and monitoring methodology used is the approved methodology AM0025 "Avoided emissions from organic waste through alternative waste treatment processes" version 10.1. This methodology is valid from 02 November 2007 onwards and is active according to the UNFCCC website http://cdm.unfccc.int/methodologies/DB/K04K512KEMA2MRZ5MXGVIFDX7042C6/view.html

The PDD lists all items of the applicability criteria from the AM0025 which are applicable to the choice of treatment option a) a composting process in aerobic conditions.

The PDD states that the project meets all applicability criteria which are:

1) The project activity involves a composting process in aerobic conditions;
2) The produced compost is used as soil conditioner;
3) The proportions and characteristics of different types of organic waste processed in the project activity can be determined;
4) Waste handling in the baseline scenario, shows a continuation of current practice of disposing the waste in a landfill;

5) The project activity does not involve treatment of either industrial or hospital waste.

During site visit the following was evidenced:

1) In the pilot plant the composting process is carried out in open air, but not exposed to the wind or sun. The aeration is carried out by regularly turning the compost over with shovels and by blowing oxygen into the piles. The monitoring of this during project crediting period will be discussed in subsequent sections.

2) The produced compost in the pilot plant has been certified as organic and suitable for the application in agricultural production by Ecocert SA (Ref.12). During site visit the registration of the product within the Ministry of Agriculture, Cattle Raising and Supply was verified and describe it as soil conditioner (Ref.9). Furthermore the monitoring plan also includes the monitoring of the sales invoices which will contain records of the use of the compost (as refer in the PDD, section B.7.1, parameter Mcompost,y).

3) The characteristics of the waste delivered to site has been agreed with the suppliers i.e. food suppliers (Ref. 18 and Ref. 19 – these references are however confidential). This parameter is included in the monitoring plan and will be determined by weight measured by weighbridges and sampling of the waste (refer to parameters Aj,x and pn,j,x monitoring in PDD).

4) The identified baseline scenario is the continuation of current practices of disposing the waste in a landfill. The appropriateness of this will be assessed in subsequent sections of this document.

5) Contracts with waste suppliers was shown to the DOE as evidence that the project activity does not involve the treatment of either industrial or hospital waste (Ref.18 and Ref. 19 – these references are however confidential). The DOE has also verified the national and local laws for disposing of industry and hospital wastes (Ref. 48 and Ref. 49). These laws require industries and hospitals (respectively) to report the destiny of their waste in four copies (one to the generator of waste, one to the transporter, one to the receptor of the waste and one to FEEMA) and dispose dangerous/harmful wastes in predefined places.

With regards to the boundaries, the table 'Sources and gases included in the project boundary' (PDD pg. 8) excludes CO2 emissions from electricity consumption and thermal energy generation from the baseline. This is explained in PDD and is conservative.

CO2 emissions from thermal energy generation are also excluded from the baseline. The methodology states that this is only included if it is part of project activities. This is not the case in this project.

The table also excludes CO2 emissions from direct emissions from the waste treatment processes. The AM0025 states that CO2 emissions from decomposition of organic waste are not to be accounted.

CH4 emissions from waste water treatment were excluded from the table too. The PPs justified to the validator during site visit the exclusion of the waste water treatment from the project boundary. They explained that these emissions are not accounted because it is an aerobic composting system where the production of waste effluent is kept to a minimum. Any waste effluent which is produced is treated on site. The effluent is settled for a few hours and decanted. The decanted water is sprinkled over the composting piles in order to provide the humidity required for optimum composting process. The sludge is also used in the compost process. The majority of the effluent is treated using this method, any excess water in extreme weather situations is treated as requested by FEEMA and disposed of in the sewers. Because the water only stays for a few hours in the decanting tanks and the excess effluent is rare and stays only a few days in the water treatment tanks, the PPs stated that emissions from these source are negligible. The DOE has cros-sreferenced this information with a publication by IBAMA (Ref.45) which states that if simplified aerobic composting systems are well managed, the production of leachates is small.

Emission sources for leakage have been identified as CO2 emissions from increased transport and CH4 emissions from disposing the compost in landfills. The PPs do not forecast the latter will happen. However, the end use of the compost will be monitored as requested by methodology and dealt with as recommended by the methodology if needed (refer to PDD, page 20).

Section B.4, step 1a of the PDD considers the three alternatives for the disposal of the fresh waste in the absence of the project activity identified according to AM0025 as realistic alternatives.

1) Project activity without CDM
2) Continuation of current practices (disposal at a landfill without the capture of landfill gas)
3) Disposal of waste at a landfill where landfill gas is captured and flared.

Alternatives to power generation are not discussed because the project does not generate energy. Electricity is imported from the grid in the baseline and project scenarios. Heat is not needed in both scenarios. There was no evidence from the site visit that energy is produced in the project activity boundaries. There is also no evidence that heat is needed for the process.

In the process of choosing the alternatives, in Step 1b. the alternative of disposing of waste at a landfill where the landfill gas is captured has been wrongly excluded as a viable alternative because it complied with regulations. The non-implementation of this alternative as a consequence that there is no regulations enforcing it, and because otherwise this would not be applied due to financial reasons, should be discussed in the barrier analysis, hence **CAR 6 was raised.**

The exclusion of alternative 3 (disposing of landfill waste where the landfill gas is captured) was revised in the section B.4 in of the PDD. This alternative was discussed and it was excluded as a non-realistic alternative in section B.5. **CAR6 was closed out.**

Specific regulation about landfill gas capture has been searched extensively by the DOE and not found. The document in Ref. 25 (page 118), mentions the absence of a Brazilian regulation with specific principles and clear rules to waste management in the whole country. The only legislation found for the State of Rio de Janeiro about landfills was related to their impermeability (Ref. 26).

The PDD states that Step 2 of the methodology is not applicable. This section should explain why it is not applicable, so **NIR7 was raised.** The methodology AM0025 requires the identification of fuel for the baseline choice of energy source and it was explained in the revised PDD. It was informed that there is no production of electricity/heat in the project activity itself so no need to identify the baseline source. This is in accordance with the methodology AM0025 and **NIR7 was closed.**

CAR 8 was raised once the discussion of the Step 3 (Barrier Analysis) was not reflecting the order of analysis of alternatives used in the "Tool for demonstration and assessment of additionality" (i.e. use format with steps 3a and 3b, analyzing barriers that prevent the implementation of the proposed CDM activity – alternative 1 – and showing that the identified barriers would not prevent at least one of the alternatives separately in its respective sections). To address this issue, the discussion of Step 3 of the PDD was revised to comply with the "Tool". **CAR 8 was closed out.**

The evidences mentioned in the barrier analysis and requested in local checklist were:

1) Evidence that operational license was delayed due to the fact that technology was new and that this was a barrier in getting a loan from BNDES:

A copy of the request for the Operational License (in 2004) was provided during the site visit (Ref.20). The PP also provided a copy of the Operational License (Ref.8) issued in 2007.

The PP explained to the DOE that details of requirements for loans from the BNDES were in the banks website and that through there the DOE would be able to check that the Operational License from the Environmental Regulators are and issue in attaining a loan. **NIR 9** was raised asking details of the site of the BNDES so that requirements could be checked. The PP provided the website and also included it in the revised PDD. The information that environmental licenses are a pre-requisite to the financing from BNDES are in paragraph 16 of the link *http://www.bndes.gov.br/produtos/faq/bloco1.asp#perg16* (Ref.32).**NIR9 was closed out.**

2) Evidence that consumers tend to use fertilized soil as opposed to composting from companies with similar activities to the project activity:

The PPs explained that recycled products are less accepted than mineral fertilizers because they are associated with rubbish.

The DOE cross-referenced this statement with a document published by the Institute of Technological Research of São Paulo and CEMPRE (from the Portuguese "Compromisso Empresarial para Reciclagem" – Entrepreneurial Commitment to Recycling - Ref 24) which also states that the solution to this preference is to guarantee the quality of the product and of an adequate marketing. The PPs provided evidence of their campaign to change the impression on the issue. The evidence provided was a publication in one of the issues of the "Revista Organica" which explains the process of organic composting (Ref. 22). The article describes the process well and includes a paragraph which explains that the waste bypasses landfills.

Further to the argument of mineral fertilizers, they explained that in terms of organic fertilizers, the soils fertilized with animal manure are cheaper and for this reason consumers prefer them over the ones which utilize organic waste.

The DOE checked the statement made in the PDD page 12 that the fertilizers made from animal manure are cheaper than fertilizers made with the technology used by the client. This was evidenced in a small sample of prices via web searching (see https://www.mfrural.com.br/produtos.aspx?categoria3=255&nmop=Fertilizantes-Agricolas-Fertilizantes-Organicos-Outros last accessed on 31/07/2008, Ref. 23).

These data (i.e. market prices) should however be included in the PDD to strengthen the barrier analysis and to comply with the requirement of the "Tool" on the type of evidence required. **CAR 10 was raised** asking PP to provide and include in the PDD, relevant and referenced evidence (as per the latest version of the Tool for the demonstration and assessment of additionnality") that consumers tend to use soil fertilized with animal manure as opposed to composting from companies that use waste similar to the one used in the project activity.

The PPs explained in their answer to CAR10 that the evidence for the tendency of using fertilized soil with manure (or with some other compound) is not mainly financial, but cultural. Further evidence was provided to support this argument (Ref.31 – a text by EMBRAPA the Brazilian Agricultural Research Corporation). This evidence (which makes an analysis of the pros and cons of the composting of urban waste) states the main problems associated with composting of urban waste (as the poor quality of the residues used to make the compost and the poorly managed composting processes) and together with the statement in Ref. 24 (that says that the adoption of the organic compost by the agricultural industry is dependent on the gain of the confidence of a product which originates from waste) support the idea that the cultural perception to compost originated from waste is negative.

Furthermore, the PP also gave the number of composting stations presented in the common practice analysis as further evidence of that.

From the answer given by the PP to CAR10, the DOE accepted that the number of composting stations coupled with the text by EMBRAPA as an indication of cultural choices. However, it asked that this rationale, together with the reference provided (Ref.31), should also be included in the PDD so that the existence of this barrier can be demonstrated with the support of evidences. Furthermore, if the cultural, qualitative and prevailing practices are the issue, it is suggested that this issue be classified as such (i.e. a barrier other than investment). The PP changed the PDD to reflect the requests of the DOE. PDD Version 3 – 11 September 2008 was provided by the PP and analysed by the DOE. It was verified that it presented a more comprehensive analysis of the barrier and mentioned the relevant evidence. **CAR10 was closed out.**

The DOE has also found in the web page used to cross check market prices, another example of the same technology in use in Minas Gerais (Ref. 23). NIR 11 was raised to address this issue.

NIR 11– it is needed to clarify the statement made on page 5 of the PDD that "the technology proposed for the composting plant can be regarded as a new technology to the State of Rio de Janeiro, to the Southeast region and to Brazil". It was found that product of this technology is being commercialized in MG (also as organic) and once the reference from IPT (2000, Ref.24) of the PDD states that there are installations of the accelerated composting method in RJ as well as other Brazilian states (although many are not successful for different reasons). These issues were not discussed in the barrier analysis.

To clarify NIR11, a further page from the article issued by IPT (2000, page 117) was sent to the DOE (Ref.42). The information on this page was analyzed and it explains the process of accelerated composting sites. It does not mention however the use of biocatalysers. In this respect the technology of the Project Activity differs from the one explained in this reference.
The DOE has accepted, given the further explanation in Ref.43 (email from the PP) and Ref. 42, the statement "the technology proposed for the composting plant can be regarded as a new technology to the State of Rio de Janeiro, to the Southeast region and to Brazil" in the light of the following:
1) The process of the Project Activity uses a biocatalyser which further accelerates the process of composting plants, from approximately 45 days to approximately 72 hours, and this process is little diffused in the region and country (supported by Refs. 45 and 46);
2)The combination of the use of the biocatalyser, of the fact that the Project Activity is to use urban residues and that its proposal is to produce organic fertilizer makes the technology even less diffused.
However, it is not conservative to call the technology 'exclusive' or 'unique' given the evidence already discussed earlier and given the fact that the site of Bioexton also mentions the concessions given to 25 other

projects in Brazil. The PP has agreed to remove from the PDD any reference to the technology as being 'exclusive' to Lixo Zero, especially for the section where it discusses common practice. This was done in PDD version 3. **NIR 11 was closed out.**

3) Evidence of unforeseen expenses due to the fact that project developers were getting used to the new technology:

The PPs explained that there were extra costs due to the fact that the project developers were getting used to the technology but there is no evidence since they never actually wrote down an initial budget with expected expenditures. All they had was a balance of what their expenditures and investments were for the years of 2005 and 2006. These were later sent to the DOE (spreadsheets in Ref. 34).

The DOE has also checked the text mentioned in the PDD, page 13 that "one of the major barriers to operating composting plants in Brazil is the lack of management and/or operational know-how to conduct activities" in the reference provided (Ref. 24). The information is regarding lack of institutional, managerial and operational capacity to carry out activities.

The assumptions made supporting the continuation of current practices in the barrier analysis are supported by the figures given in the 4th paragraph of page 10 of the PDD. These figures have been checked against Ref. 6 and concur.

With regards to the additionality:

The PDD version 1 used Version 4 of the "Tool for the Demonstration and assessment of additionality". This was not the latest version of the tool at the time. CAR 12 was raised to address this issue.

CAR12 – it is required to use the latest version of the "Tool for the Demonstration and assessment of Additionality" (Version 5) and the version of the "Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site" to Version 3 as per EB39.

The changes to the additionality tool were mainly to do with type of evidences provided in the additionality analysis of the PDD (to do with sub-step 3b of the tool). These, however, have already been addressed in NIRs and CARs in the Identification of Baseline Scenario section since the PP uses barrier analysis for discussing additionality.

The changes in the investment analysis do not apply to the PDD since the PP does not use this option.

The changes to the "Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site" did not impact on this project's PDD.
During the validation process, there was other updating of the "Tools" required to be applied by the methodology. The 'Tool for the Demonstration and assessment of Additionality' changed to version 5.2, and the 'Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site' changed to version 4.
The DOE verified the contents of the revised PDD and confirmed that changes were done. **CAR12 was closed out.**

The PDD version 1 gave the beginning of the contractual negotiations with the consultants (EcoSecurities) as the starting date of the project (15/08/2006). During interviews with PPs, they explained that this was the date that PPs realized that the project could go ahead with the help of the carbon credits.

During site visit, the project participants informed that implementation of equipment in the pilot plant started in 2004. The request of the operational license was made in 2004 too (the form for this request was provided during site visit by the PPs – Ref.20). However, operations were delayed due to the fact that FEEMA took a long time to issue the operational license (Ref.8 for the Operational License emitted on 06/07/2007). According to PPs, the delay was due to the fact that FEEMA did not know the technology used in the project. Financial help was also delayed since the financing from the BNDES was dependent on the environmental licenses. The evidence for this, the requirements of the BNDES (Ref.32), has already been discussed at length above when NIR9 was explained. At this time the project developer almost went bankrupt. In 2006 they came into contact with EcoSecurities and decided that the project could continue only with the incentive of CO2 credits revenues.

When discussing this with the PPs, these emphasized the fact that the project would not go ahead if they did not receive the revenue expected from CDM carbon credits.

Considering that the project installation began in 2004 the following CAR and NIR were raised.

CAR13 – The starting date of the project activity is not reflecting the definition given in the EB33 paragraph 76 (i.e. 'the **earliest of** the dates at which the **implementation** or **construction** or **real action** of the project activity begins').

In the first response to the DOE the PP kept the opinion that the starting date of the project activity was the contractual negotiations between PPs. They provided the initial page of the contract and the page with the signatures of the PPs as evidence (Ref.33). The PPs also added to the PDD a timeline to better explain the chronology of the project development. The timeline presented can be seen on table 1 below;

Table 1: Timeline presented by PPs to support their response to the CAR about starting date of the project activity:

Event	Approximate Time	Explanation
Requesting Environmental Operational License	End 2004	The plant needed this license to start its operation. However, the installation of equipments was not finished. They needed money to buy equipments and even the equipments bought had problems when the technology was being tested.
End of Financial Resources	End 2005	As the company was not able to request financing, bankruptcy was a reality in this time. The many tests that the company needed to adapt the technology were consuming its already little resources.
Presented CDM possibilities	Mid 2006	Lixo Zero started considering possible CDM revenues as a way to guarantee their investment in the company. Meetings with EcoSecurities staff pointed out a positive sign for this intention.
Contract with EcoSecurities Signed	End 2006	After negotiations, the contract was signed. The installation of equipments, delayed in the past, could start again because now the project developer would have his investments returned.
Delays in Environmental license	Beginning 2007	More delays to get the environmental license led to consequent delays in CDM revenues, culminating in another wave of pessimism in the project developer.
Envirnomental License received	Mid 2007	Only at this time EcoSecurities could assure that the project was really going forward.
PDD development Starts	End 2007	After a thorough evaluation regarding additionality and real potential of emission reductions, EcoSecurities started developing the PDD. At this time financing request was not an option, because the company did not have any guarantees to give to BNDES in order to assure the payment.

From the chronology and the initial response given by the project developer to this CAR (Ref.29) the DOE came to the following conclusion:

- It is clear that the contract signed between the PPs is a real action in terms of alleviating its barriers and it can be considered as consideration of CDM. However, before this happened (in September 2006) the project developer must have had a construction permit and have started construction, since tests in the pilot plant were going on since 2004. This would therefore be the earliest of the dates first time around.

- On the other hand, as stated in Ref.29, the project tests ceased in 2007 due to difficulties in receiving the Operational License and started again after the project developer received this and after the resulting decision of EcoScurities to prepare a PDD. This would therefore be the earliest of the dates of second time round.

To clarify this issue, the PP presented the PDD version 3 with the revised date of the start of the project activity. They considered the date of the Operational License issued by FEEMA (which resulted in the decision of EcoSecurities to prepare the PDD), after the project had ceased in 2007, as the starting date.

The DOE accepted the date of the Operational License, 06/07/2007 (Ref.8), as the 'real action' date in the light of the barriers it faced (the ones already seen and evidenced in the PDD) and of the fact that the project ceased in early 2007 (as per project developer statement - Ref.29). Furthermore the reports of two accountants were received saying that the project was in financial difficulties and would cease in the circumstances it was found in 2005 and 2006 (this was provided as evidence of early CDM consideration – Ref.34). **CAR 13 was closed out.**

NIR14 – It is needed the evidence of CDM consideration and the evidence which made the Project Participants realize that the project could only carry on with the revenues of CDM carbon credits (i.e. that the project activity would stop if no CDM carbon credits revenue were not received).

A timetable was added to the PDD and was verified by the validator to better explaining the chronology of the project (see Table 1 above). Moreover, in order to evidence this timeline, a declaration from the project developer was provided to the validator (Ref.29), as well as accountants' reports stating the financial status of the company in the time of the decision-making (Ref.34). From the analysis of these documents and the site visit the following was concluded:

The project developer's declaration states that in 2004 and 2005 the plant operated as a pilot plant.

In 2006 the plant operated with great financial difficulty until May. With the onerous financial expenses and lack of environmental/operational license and therefore no receipt of waste residues, production was almost zero after May. In September 2006 the contract with EcoSecurities was signed and the credits were seen as the means to alleviate barriers for the beginning of full operations. Therefore the project developer invested more into the plant.

In May 2007 operations ceased since the project developer did not receive environmental/operational license and with no income there was no way to continue tests. In September 2007 the environmental/operational license was received and the project developer was able to secure more investment into the business and EcoSecurities started the development of PDD. New equipments were bought; these were however only received in May 2008. The company then initiated to repay the money borrowed.

During site visit there was no evidence that the plant is operating, only a few samples of the product.

The Balance sheets (provided with the accountants statements) were examined too. In 2005 the 'ativo' or investments were the same as the 'passivo' or money being borrowed into the company, and there was no income.

In 2006, the company had a little bit of income from sales (judging from the statement made by the project developer this is from the beginning of 2006 till May) but operational expenses were very high.

The first of the accountants' reports stated that bankruptcy of a company may happen through the excess of financial immobilised investment which in 2005 was 94% and in 2006 it was 76% (that is the 'ativo' or investment was represented by 94% and 76% of immobilised investments – i.e. equipments).

The second accountant states that bankruptcy is evident from the indices calculated. In the beginning of activities the company needed to, besides proceeding with some pre-operational expenses, increase its acquisition of equipments utilizing third party investments which translated into very low indices and consequently deficits that were delayed over the financial exercise. He concluded that the company is not able to generate its own financial resources as a consequence of that and that the indebtedness is likely to increase, as it will continue to need the ingress of external resources in order to make its operation viable.

From the documents presented to clarify NIR 14 and the observation in the site visit, it was accepted that CDM revenue will help the project overcome the difficulties which originated with the barriers identified.

The contract between Ambiental Lixo Zero and EcoSecurities were also verified. This is accepted as the evidence of CDM consideration. **NIR14 was closed out.**

The main barriers identified in the barrier analysis were economic, technological and other:

- That the operational license was delayed due to the fact that technology was new and that this was a barrier in getting a loan from BNDES

- That consumers tend to use fertilized soil as opposed to composting from companies with similar activities to the project activity.

- That one of the major barriers to operating composting plants in Brazil is the lack of management and/or operational know-how to conduct the activities.

The types of barriers were found to comply with the guidelines in the 'Tool for the demonstration and assessment of additionality' and AM0025. All of these barriers had supporting evidences provided and were checked by the DOE. The evidences for the barriers were already thoroughly discussed above in this section.

The barriers discussed have shown that composting plants, specially the ones that use biocatalyser and urban waste, face barriers that prevent their implementation but would not have prevented the business as usual situation (disposal of waste in a landfill site with no capture of landfill gas).

The common practice analysis supports this conclusion. First the composting plant was compared to other waste disposal practices in the same region. Later it was compared with other certified composting plants.

The common practice analysis has shown that the composting stations are not common practice in the region where the project is located. The data presented as evidence of this statement was shown in page 14 of version 1 of the PDD (page16 of PDD version 3) and has been crosschecked with the information provided in Ref.6.

If the fact that the composting plant in this project activity uses bio-catalysers (which further accelerates the process of composting plants, from approximately 45 days to approximately 72hours - Refs. 45 and 46) and urban waste to produce organic compost is taken into account, the DOE is of the opinion that this technology is even less diffused (Ref.56 has been checked and no other organic compost is certified by EcoCert in Rio de Janeiro and also searched extensively the web for other organic compost certified companies without success).

Summarizing, for the common practice analysis a universe of all waste treatment practices in Brazil and in the state of Rio de Janeiro were used. Later the PP wished to consider only the composting plants. However there are two other aspects to this projects which, at the same time differentiates it from the other composting plants, and that have to be included in the common practice analysis: one is the fact that the project is certified to produce organic compost and the second is the origin of the residues (urban organic waste) coupled with the fact that the technology used accelerated composting system. Therefore, besides the common practice analysis of the waste treatment practices, PP demonstrated that from the composting plants which are certified by EcoCert (which is a sample from the companies that have their product certified in Brazil) only two use organic waste to produce fertilizers in Brazil, and only Ambiental Lixo Zero, with its product Organosolo, utilizes the technology of accelerating composting system (verified description of the technologies on the table showing the composting companies certified by EcoCert).

Given the nature of the project, the aspects above can not be dissociated from each other in carrying out a common practice analysis.

With the information provided in the barrier and common practice analysis, it is concluded that the project activity is considered additional.

4.4 Application of Baseline Methodology and Calculation of Emission Factors

The formula used was examined down to its basic parameters for Baseline, Project and Leakage emissions during validation and was found to be applied according to the methodology AM0025 and applicable "Tools" (Ref.51, 54 and 57). The likely operational characteristics, scenarios, options and default values have also been taken into account and explained when choosing the formulae.

The reliability and credibility of the assumptions behind the choices have also been checked.

The ex-ante data and parameters in section B.6.2 of the PDD Version 3, used in the calculations are in compliance with the methodology and applicable tools. The parameters VFcons and EFfuel have been cross checked with the IPCC Guidelines 2006 Volume 2 (Ref.59), and the values used for fuel NCV and density have been confirmed from BEN 2006 (or the National Energetic Balance - Ref. 60).

The emission factor of the grid (CEFelec) used to calculate project emissions has been calculated ex-ante. The PPs have provided the spreadsheets with the emission factor calculated (Ref.53). The grid identified was the South, Southeast and Midwest. This was the grid used to calculate the BM and OM, and it was the correct grid identification for the data vintages available at the time of submission of the PDD to the DOE for validation (2005,2006 and 2007) and thus it is in accordance with the "Tool to calculate the emission factor for an electricity system" (ref 54).The calculations were based on official daily reports by the ONS (official sources).

The spreadsheets with the calculations of the emissions reductions have been checked against PDD, and methodology AM0025 and applicable tools; it is confirmed that the calculations for determining emission reductions comply with them all. The application of each equation for the calculation of ERs is documented in the PDD (Ref.41) and spreadsheets in a way that is it reproducible.

The parameters that are to be monitored and were used in the calculations of the ERs likely to be achieved (Ref.35 and Ref. 41) were checked against the methodology AM0025 and applicable tools. The figures used were checked for appropriateness and crosschecking with sources were done on risk based approach as per draft VVM (Ref.37, page 9). The estimates were verified against the sources and were found to be reasonable.

One of the parameters of greatest weight on the estimates of ERs is Wx (it is the amount of waste not going to landfill which is an important parameter in the calculation of MBy – avoided methane emissions). The estimation of this parameter, including its source, has already been extensively discussed previously (refer to NIR2 under section 4.2 of this report).

Another important estimated parameter discussed in section A.2.2 of PDD is Mcompost,y (this is the total production of compost in year y which is involved in the calculation of PEc,y – emissions from composting). Refer to NIR3 under section 4.2 of this report).

The calculation of the Adjustment Factor is explained in Annex 5 of the PDD. The information presented is clear and reproducible, and the parameters used in the calculation presented in the Table named "Data used to calculate the Adjustment Factor" have been crosschecked with the sources cited. The number of events shown in the table were crosschecked with the 'Pre-feasibility study for Landfill Gas recovery and Energy Production at the Gramacho Landfill – Rio de Janeiro, Brazil' (Ref.52) and the efficiencies stated were crosschecked with IPCC Guidelines 2006 Vol.5 Chapter 3, page 3.19. (Ref.21).

Leakage emissions from increased transportation Lty is also responsible for considerable emissions in the estimates for likely ERs. **NIR4 was raised** in order to clarify the estimates for this parameter. The PP explained that the distance used to estimate this parameter was an average distance taken from the most distant to closer customers. The DOE examined the contract which was shown as evidence of the average distances to where the compost is intended to go to (Ref.58). A radius of 250 km was found to be a reasonable estimate. The distance traveled to calculate leakage during the project will be monitored (parameter DTi,y – average distance traveled by vehicles compared to baseline). The distance between Gramacho Landfill and Ambiental Lixo Zero were also checked and were found to be of approximately 10 km. Considering the distances traveled in Rio de Janeiro and that the waste will either go to the composting plant or to the baseline scenario it is not considered a real change in transport emissions and thus the exclusion of that in Lt,y was accepted. **NIR4 was closed out.**

The estimates for electricity consumed from the grid (EGpj,ff,y) could not be crosschecked with the electricity invoices provided by the PP during the site visit (Ref.36) because the operation of the plant during the pilot period was erratic and energy consumed low. **NIR 15 was raised** to address this issue.
The PPs explained in the answer to NIR 15 that in order to provide estimative to the PDD, the installed capacity of equipments at 100% load factor, 24 hours a day, was used. This method of estimation is acceptable for the validation stage. The estimate was crosschecked with the estimates of a project already registered (Ref.61). The project which was used for comparison has a process capacity of 90tonnes of waste per hour using a load factor of 75% and considered the time of operation to be of approximately 13hrs/day. The project estimated the energy use at 1198.3 MWh/year, this is slightly less than the 2201.57 MWh/year estimated by PPs of this project. The value is higher due to the use of 24hrs operation. This has lead to a conservative estimate and thus accepted.
However, as stated by the project developer, the electricity supplier has an electricity meter installed at Ambiental Lixo Zero plant in order to monitor the electricity consumed, and this meter is maintained according to national standards. During verification this meter should be used to obtain the electricity consumed by the project and not an estimative value. The monitoring section of the PDD (version 3) was

updated to inform that this parameter will be measured by an electricity meter but it will be estimated by the total capacity of the plant if the meter could not be used. **NIR15 was closed out.**

Although it is not of great weight in the estimated ERs, the explanation of the estimates for the percentage of the waste that degrades under anaerobic conditions in the composting plant during year y (Sa,y) were also asked since the value of 100% seemed rather high. **NIR16 was raised.**

The PP explained that this parameter was misinterpreted at first, and set a new value of 2%. This data is also in the section of monitored parameters and therefore was compared to the same project used to test EGpj,ff,y. The project which has already been registered used an estimated value of 0% using the same method of aeration of compost pile in the plant. Since this estimate is a %, it does not depend on process capacity, and the value of 2% is therefore reasonable.

The section B.7.1 was revised (PDD, version 3) and it was clarified that this parameter is to be monitored by a standardised mobile gas detection unit (O2 mobile gas detectors measure this data directly) and guarantees the first applicability criteria of the project – that the process is done in aerobic conditions. **NIR 16 was closed out.**

The calculations in PDD and spreadsheets provided (Ref.35) were checked against the methodology AM0025 and applicable tools and found to be correct. According to these calculations the methane that would be released to the atmosphere in the absence of the project activity will be reduced.

4.5 Application of Monitoring Methodology and Monitoring Plan

A list of data and parameters that are not monitored throughout the crediting period but are determined only once was checked and were in accordance with approved methodology AM0025, applicable tools and references.

The contents of the tables in section B.7.1 of the PDD have been assessed (i.e. description of measurement methods, source of data and frequency of monitoring) in relation to methodology AM0025 and tools and they are sufficient to ensure the verification of a proper implementation of the monitoring plan.

The monitoring plan provides for the collection and archiving of the relevant data necessary for estimation or measuring of the emissions reduction within the project boundary during the crediting period. Data will be collected directly from the meters, scales, invoices, consolidated in reports and it will be cross checked against the spreadsheets and verification report.

QA/QC procedures are defined in the PDD and they follow the methodology AM0025 and applicable tools.

Meters will be maintained according to national standards. Scales will be maintained and calibrated according to manufacturer recommendations. Calculated data will follow the applicable tool. Documents will be maintained in the project site. It is expected that QA/QC will be implemented during verification. FAR 1 was raised with this purpose.

The responsibilities for data collection, data entry, preparation of monitoring report, archiving of data, calibration and maintenance of meters were described in the PDD annex 4. As the project is not implemented yet, the monitoring plan presented in Annex 4 and section B.7.2 of the PDD states that:

- data will be archived electronically and regularly; records will be kept to the full crediting period plus two years;
- meters will be calibrated and maintained according to manufacturer requirements;
- project staff will be trained regularly;
- procedures for calibration of monitoring equipment, maintenance, installations and record handling will be established;
- data will be collected and cross checked by project developer;

FAR 1 was raised to address the implementation of monitoring plan before verification. The measures described in section B.7.2 and Annex 4 of the PDD shall be implemented. Procedures regarding calibration of monitoring equipment, maintenance of monitoring equipment and installations, day-to-day records handling, training, monitoring adjustments, missing data allowing redundant reconstruction, project performance to guarantee the data shall be implemented and available in the first verification.

4.6 Choice of the Crediting Period

The starting date of the project activity is 06/07/2007 (issuance of Operation Environmental license that represents the real action).

The crediting period will start on 01/05/2009 or the date of registration, whichever is later. The assumed crediting period is of 7 years renewable at the end. The operational lifetime of the plant is 30 years, so the project's operational lifetime exceed the crediting period.

4.7 Environmental Impacts

The project has the Operation License issued on 06/07/2007 by FEEMA (Fundação Estadual de Engenharia do Meio Ambiente), number FE012996 (Ref. 8). The environmental impacts were assessed by the environmental agency FEEMA when issuing the operation license so that there are no expected adverse environmental effects from the Project activities.

4.8 Local Stakeholder Comments

The Local Stakeholders Consultation followed the requirements of the Brazilian DNA (Resolution number 1). The letters of invitation for local stakeholders' comments were sent by EcoSecurities on February 11th 2008. The letters sent out gave a weblink, an email address, a postal address and a telephone number for further information and comments. The comments were invited for a period of thirty days from the date of receipt of the letters by stakeholders. According to the delivery receipts (ARs , Ref.50), letters were received between the 12th and 13th of February 2008.

The following entities were invited to comment on project:

- Municipality of Duque de Caxias
- Legislative Chamber of Duque de Caxias
- State Environmental Agency (FEEMA)
- Municipal Environmental Secretariat
- Brazilian NGO Forum
- Federal Public Attorney
- Duque de Caxias Federation of Resident Associations
- Resident Association and Friends Pro Xerém

The letters were sent in local language and the delivery receipts were checked. No comments were received.

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/O909DSD2JNCMX8JJXDJQ6X4HS3MPOH/view.html* and was open for comments from 28-02-2008 until 28-03-2008. 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

No comments received.

6. List of Persons Interviewed

Date	Name	Position	Short Description of Subject Discussed
08/05/2008	Luis Felipe Kopp	Consultant/EcoSecurities	PDD, monitoring plan, additionality, environmental issues, local stakeholder.
	Flavyo Cunha	Project developer/Lixo Zero	Project implementation, monitoring issues, environmental issues, equipments.
	Thiago Viana	Project Manager/EcoSecurities	PDD, monitoring plan, additionality, environmental issues, local stakeholder.
	Fabio Soares	Project Engineer/Lixo Zero	Project implementation, monitoring issues.

7. Document References

Category 1 Documents (documents provided by the Client that relate directly to the GHG components of the project,):

/1/ Lixo Zero Composting Project PDD Version 1 – 20 December 2007 – Version of the PDD available for Global Stakeholder Consultation

/2/ Searching page of the UNFCCC site.

http://cdm.unfccc.int/Projects/Validation/index.html

/3/ Page of the UNFCCC with link to where the Project was displayed for Public Comments.

http://cdm.unfccc.int/Projects/Validation/DB/O909DSD2JNCMX8JJXDJQ6X4HS3MPOH/view.html

/4/ Page of the UNFCCC with scopes and their approved methodologies.

http://cdm.unfccc.int/DOE/scopes.html

Category 2 Documents (background documents used to check project assumptions and confirm the validity of information given in the Category 1 documents and in validation interviews):

/5/ AM0025 “Avoided emissions from organic waste through alternative waste treatment processes” , Version 10.1

/6/ Brazilian Institute for Geography and Statistics website

http://www.ibge.gov.br/home/estatistica/populacao/condicaodevida/pnsb/default.shtm

/7/ UNFCCC webpage with the history of the methodology

http://cdm.unfccc.int/methodologies/DB/K04K512KEMA2MRZ5MXGVIFDX7042C6/view.html

/8/ Operation License issued by FEEMA (the Environmental Regulators of the State of Rio de Janeiro)

Licença de Operação N°FE012996 – FEEMA – Governo do Estado do Rio de Janeiro

/9/ Soil Conditioner – Products Registration within the Ministry of Agriculture, Cattle Raising and Supply.

Registro de Produto de Números: RJ-77317 10001-5 and RJ-77317 10002-3 – Ministério da Agricultura, Pecuária e Abastecimento.

/10/ Soil Conditioner – Products Registration within the Ministry of Agriculture, Cattle Raising and Supply.

Registro do estabelecimento de Número: (EP) RJ-77317-4 – Ministério da Agricultura, Pecuária e Abastecimento.

/11/ Letter of Attorney from Ambiental LixoZero to Flávio de Araujo Cunha

Procuração da Ambiental Lixo Zero para Flavio de Araújo Cunha

/12/ Attestation by Ecocert to Ambiental Lixo Zero for the year 2007/2008

/13/ Layout of the Ambiental Lixo Zero composting plant

Lay-out 12 Maio 07

/14/ Bioexton Biotechnology Invoice

Nota Fiscal da Bioexton Biotecnologia

/15/ Webpage with patent number for Bioexton catalyst agent in Brazil

http://www.bioexton.com.br/nova/default.asp?controle=inpi

/16/ Webpage with patent number for Bioexton catalyst agent in the USA

http://www.bioexton.com.br/nova/default.asp?controle=uspto

/17/ Simplified Recycling and composting garbage plants

www.bvsde.paho.org/bvsaidis/resisoli/mexico/03064p04.pdf

/18/ Contract between Ambiental Lixo Zero and Multiambiental Coletas e Transportes Ltda - CONFIDENCIAL

Contrato Particular de Operações

/19/ Contract between Ambiental Lixo Zero and DEMAX – CONFIDENCIAL

Instrumento Particular de Contrato para Prestação de Serviços de Recebimento de Resíduos Orgânicos Destinados à Transformação em Fertilizantes Orgânicos

/20/ FEEMA's Request form for operational license

FEEMA – Sistema de Licenciamento de atividades poluidoras – Formulário de Requerimento

/21/ IPCC report used to estimate AF.

http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/5_Volume5/V5_3_Ch3_SWDS.pdf

/22/ Organic Magazine with publication about the process used by Ambiental Lixo Zero.

Revista Orgânica

/23/ Webpage with prices of different types of fertilizers found by DOE (last accessed 31/07/08)

https://www.mfrural.com.br/produtos.aspx?categoria3=255&nmop=Fertilizantes-Agricolas-Fertilizantes-Organicos-Outros

/24/ Municipal Waste: Manual of Integrated Management

Institute of Technological Research of São Paulo and CEMPRE (from the Portuguese Compromisso Empresarial para Reciclagem – Entrepreneurial Commitment to Recycling.

Lixo Municipal: Manual de Gerenciamento Integrado

/25/ Panorama of Solid Residues in Brazil – 2007 (from the Portuguese – Panorama dos Resíduos Sólidos no Brasil – 2007)

http://www.abrelpe.org.br/panorama_2007.php

/26/ Feema Web site with Landfill regulations in Rio

http://www.feema.rj.gov.br/legislacao.asp

/27/ Web page of UNFCCC with latest tools

http://cdm.unfccc.int/Reference/tools/index.html

/28/ MoC Lixo Zero 2008.05.26

/29/ Answer from Lixo Zero – Initial Questions for the Validation.pdf

Statement of the project developer with history of waste processed and compost produced during pilot project as well as future estimates of them.

Respostas Lixo Zero – Requisições Iniciais da Validação.pdf

/30/ Lixo Zero Composting Project PDD Version 2 – 21 May 2008

/31/ Agricultural use of composts of urban waste origen – benefits or indebtedness. pdf

Article by EMBRAPA talking about the risks of using solid waste as raw material for compost.

Uso agrícola de composto de lixo urbano – benefício ou prejuízo.pdf

/32/ Site with requirements for the financing of BNDES

http://www.bndes.gov.br/produtos/faq/bloco1.asp#perg16

/33/ Initial page and signatures of the contract between Ambiental Lixo Zero and EcoSecurities

Contract EcoSecurities-Lixo Zero – Signature and date pages

/34/ 2005-2006 Business Balances and Accountants' Analysis

/35/ Lixo Zero – calculator v2.1

/36/ Light Invoice

/37/ Validation and Verification Manual (Draft)

http://cdm.unfccc.int/public_inputs/2008/VVM/vvm.pdf

/38/ Google map webpage used to cross-reference the distance from Gramacho to the project site.

http://maps.google.com/

/39/ Fuel usage invoices

Auto Posto do Trabalho IV Ltda.

/40/ 2nd answer to NIR2

/41/ Lixo Zero Composting Project PDD Version 3 – 11 September 2008

/42/ Municipal Waste: Manual of Integrated Management (from the Portuguese 'Lixo Municipal: Manual de Gerenciamento Integrado')

Institute of Technological Research of São Paulo and CEMPRE (from the Portuguese Compromisso Empresarial para Reciclagem – Entrepreneurial Commitment to Recycling.
Página 117, Year 2000

/43/ Answer to NIR 11

/44/ Website with contact details of different offices of Ecosecurities.

http://www.ecosecurities.com/Footers/Contact_us/default.aspx

/45/ Composting (from the Portuguese Compostagem)

Document published by IBAMA (Instituto Brasileiro de Proteção ao Meio Ambiente) the Brazilian Environmental Regulators.

http://www.ibam.org.br/publique/media/Boletim5rs.pdf

/46/ Bioexton Webpage explaining its technology and giving the number of projects using the technology.

http://www.bioexton.com.br/nova/default.asp

/47/ SIMPLIFIED RECYCLING AND COMPOSTING GARBAGE PLANTS (USINAS SIMPLIFICADAS DE RECICLAGEM E COMPOSTAGEM DE LIXO)

From the National Health Foundation of the State of Great River of the North (FUNDAÇÃO NACIONAL DE SAÚDE - COORDENAÇÃO REGIONAL DO RIO GRANDE DO NORTE)

(http://www.bvsde.paho.org/bvsaidis/resisoli/mexico/03064p04.pdf

/48/ Government legislation requiring industry to describe in inventories technical information on quantity, characteristics and destiny given to their waste, amongst other things.

http://www.saniplanengenharia.com.br/Data/Feema_DZ-1310.R7.doc

/49/ ANVISA resolution about the management of residues from health services in Brazil

http://e-legis.anvisa.gov.br/leisref/public/showAct.php?id=13554

/50/ Letters, ARs and Post Office List of Clients and Ars corresponding numbers

/51/ 'Tool to determine project emissions form flaring gases containing methane'

http://cdm.unfccc.int/Reference/tools/ls/meth_tool06_v01.pdf

/52/ Pre-feasibility study for Landfill Gas recovery and Energy Production at the Gramacho Landfill – Rio de Janeiro, Brazil' (June, 2005)

http://www.bancomundial.org.ar/lfg/archivos/PrefeasibilityStudies/English/Gramacho_PreFeasibility_Study_English.pdf

/53/ Calculation spreadsheets of the EFgrid applied in the Project.

Cópia de BR- Grid EF SSECO – 2005 to 2007 Ex-ante

/54/ 'Tool to calculate the emission factor for an electricity system'

http://cdm.unfccc.int/Reference /tools/ls/meth_tool07_v01_1.pdf

/55/ 'Tool for the demonstration and assessment of additionality'

http://cdm.unfccc.int/Reference/tools/index.html

/56/ Ecocert Webpage with list of other certified projects

http://www.ecocert.com.br/projetos.php

/57/ 'Tool to determined methane emissions avoided from dumping waste at a solid waste disposal site'.

http://cdm.unfccc.int/Reference/tools/ls/meth_tool04_v04.pdf

/58/ CONFIDENCIAL – contract between Ambiental Lixo Zero and HORTIFRUTI.

Contrato de recebimento e destinação final dos resíduos orgânicos

/59/ IPCC page with value used for VFcons

http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_3_Ch3_Mobile_Combustion.pdf

/60/ National Energetic Balance 2006

Balanço Energético Nacional 2006 ano base 2005 (table 9 used as source of diesel density)

BEN 2006

/61/ Project 1316:Centro Industrial del Sur Organic Waste Project already registered as a CDM Project in the UNFCCC website.

http://cdm.unfccc.int/Project/DB/DNV-CUK1188545610.71/view

/62/ Latest guidelines for completing CDM - PDD

http://cdm.unfccc.int/Reference/Guidclarif/pdd/PDD_guid04_v07.pdf

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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 Lixo Zero Composting Project.

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?**
Section A3 of the PDD states that the UK is one of the Project Parties however, Annex 1 of the PDD (p42) states that Ireland is a Project Participant. The UK's DNA is DEFRA. http://cdm.unfccc.int/DNA/view.html?CID=225 last accessed on 18/04/2008. Ireland's DNA is the Environmental Protection Agency. http://cdm.unfccc.int/DNA/view.html?CID=105 last accessed on 18/04/2008. The correct DNA must be confirmed	United Kingdom of Great Britain and Northern Ireland is the correct DNA. The party involved is UK because this is where the President of EcoSecurities Group seats. The address for contact given in Annex 1 is Ireland and this address was confirmed in the MoC letter provided by the PPs.	Ref. 28 Means of Communication letter and Ecosecurities website (ref.40).	No.
Check MoC and that all project participants mentioned in section A3 and Annex 1 of the PDD have signed the MoC. Project name should be the same as PDD	MoC was subsequently sent. Project participants have signed the MoC and project name is the same as in PDD (see ref. 28).	Ref.28 and ref.40	No.

Issue	Findings	Source/Means of Verification	Further Action / Clarification / Information Required?
Check that location address is in accordance with section 4.1.4	The environmental Operational License states that the address of the Lixo Zero Composting Project is: Estrada Velha do Pillar 2037 – Parque Capivari – Duque de Caxias – Rio de Janeiro. This is the same address given in the PDD section 4.1.4.	Ref.8 Licença de Operação N°FE012996 – FEEMA – Governo do Estado do Rio de Janeiro	No.
Check Ambiental Lixo Zero Ltda. Ownership and Licenses to operate	The ownership was verified by checking the Letter of Attorney from Ambiental LixoZero to Flávio de Araujo Cunha as being the representative of the company. This letter was registered in a public notary office and mentions Ambiental Lixo Zero as a registered Brazilian Company under the CNPJ (Cadastro Nacional de Pessoas Jurídicas – National Registry of Juridical Persons) of number 04.946.964/0001-88. It also mentions its social contract with respective business partners registered at JUCERJ (Junta Comercial do Estado do Rio de Janeiro – Commercial Council for the State of Rio de Janeiro) under the number 0001417957.	Ref.11	No.
Check whether the technology is environmentally safe whether the implementation of the proposed technology might lead to any side effects – i.e. via Environmental Licenses, cerificates by Ecocert Brasil etc	The Environmental Operational License (ref.8) was checked and it is valid until 06 July 2012. The final product generated by project activities is also certified by Ecocert SA as organic (ref.12) Based on these certificates and the site visit the DOE concludes that the technology is environmentally safe.	Ref.8 and Ref.12	No.

Issue	Findings	Source/Means of Verification	Further Action / Clarification / Information Required?
Check details of how any effluent generated by the project activities (if any) will be treated.	The PPs justified to the validator during site visit the exclusion of the waste water treatment from the project boundary. They explained that these emissions are not accounted because it is an aerobic composting system where the production of waste effluent is kept to a minimum. Any waste effluent which is produced is treated on site. The effluent is settled for a few hours and decanted. The decanted water is sprinkled over the composting piles in order to provide the humidity required for optimum composting process. The sludge is also used in the compost process. The majority of the effluent is treated using this method, any excess water in extreme wheather situations is treated as requested by FEEMA and disposed of in the sewers. Because the water only stays for a few hours in the decanting tanks and the excess effluent is rare and stays only a few days in the water treatment tanks, the PPs stated that emissions from these source are negligible. The DOE has crossreferenced this information with a publication by IBAMA (Ref.45) which states that if simplified aerobic composting systems are well managed, the production of leachates is small.	Ref.45 and site visit	No.
Check whether all information provided is compliant with actual situation or planning as available by the project participants (technology applied, patent certificates and plants)	A demonstration of the application of the technology was performed during site visit to the DOE. Project participants also provided web-pages of patent certificates and a plant of the project site (see references 13, 15 and 16).	Refs. 13/15/16 and site visit	No.

Issue	Findings	Source/Means of Verification	Further Action / Clarification / Information Required?
Check that there is no new up and coming technology in the likely to substitute the technology applied in the project Check what other options are available in the market	The DOE has checked the description of the technology (as given during site visit, the PDD and the web site of the bio-catalyser manufacturer), and it is unlikely that a new technology for composting processes will substitute the project's one in the near future. Other options available in the market are simplified accelerated composting projects (which takes approximately 45 days as opposed to 72hrs, because they don't use the help of bio-catalysers in their bio-digesters - see ref. 42, 45 and 46). The DOE has extensively searched the internet and found that the simplified composting systems are a popular option due to their simplicity and low costs (i.e. ref. 47). Therefore the simplified composting system which uses bio-catalysers, which is a new technology, is unlikely to be substituted in the near future.	Refs. 1/42/45/46/47	No.
Check the training plan including training schedules, personnel required, costs involved, tech suppliers during the SV Check training and maintenance needs of the technology employed	There is no formal training schedules or planning of training and maintenance needs yet since the technology is still being tested and PPs are still learning how to use the technology themselves through trial and error (the plant has operated on and off on pilot mode). Furthermore, they are also still building and manufacturing equipment. The PPs stated that they are training their personnel on an informal basis as they build the plant and learn together.	Site visit	No.
Project implementation schedules to be checked.	There was no project schedule since the PPs are waiting on the registration of the project and the carbon credits to start with a schedule. However, during the site visit the PPs stated that they expect to start the project on the date of registration and now this is estimated to be on 01/05/2009.	Site visit	No.

Issue	Findings	Source/Means of Verification	Further Action / Clarification / Information Required?
Check financial data if available for any indication of public funding. If on site check for any signs of donor funding	There was no financial evidence of public funding or donor funding seen during site visit. The PPs later provided 2 spreadsheets with business balances for 2005 and 2006. These two spreadsheets were used by accountants to write statements about the bankruptcy stage of the business and in this only private capital from the two main partners of the company is seen (see ref.34).	Spreadsheets named Balanco_DRE_2005 and Balanco_DRE_2006, and accountants statements in folder Ref.34 2005-2006 Business Balances and Accountants' Analysis, and Site visit.	No.

Issue	Findings	Source/Means of Verification	Further Action / Clarification / Information Required?
Check that the first 3 applicability criteria of section B.2 of the PDD apply to the project activity by checking how it has been monitored so far (O_2 readings from composting process; invoices from sales of compost and the description of use on it; check how proportion of different types of waste are being monitored) Also check applicability criteria number 5 – that the type of waste involved in project activity is not from industry or hospitals	With regards to O2 (first applicability criteria in PDD section B.2), they have aerated the piles of compost with a specially made aerator and by turning the layers of compost. They were not measuring the O2 deficiency as yet. However they explained that this is part of the monitoring plan and it will be implemented and monitored as such. Applicability criteria 2 requires that produced compost be used as soil conditioner. During site visit the registration of the product within the Ministry of Agriculture, Cattle Raising and Supply was verified and describe it as soil conditioner (see ref.9). Furthermore the monitoring plan also includes the monitoring of the sale invoices which will contain records of the use of the compost (see PDD section B.7.1, parameter Mcompost,y). Applicability criteria 3 requires that the proportions and characteristics of different types of organic waste processed in the project activity can be determined. This parameter is included in the monitoring plan and will be determined by weight measured by weighbridges and sampling of the waste (see parameter Aj,x and pn,j,x monitoring in PDD). With regards to applicability criteria 5, the PPs declared that they do not intend to receive industrial or hospital waste. Furthermore, the Operational License (ref. 8) requires the PP to inform FEEMA (Rio de Janeiro's environmental regulator) to report the destiny of the waste received. The DOE has also verified the federal laws for disposing of industry and hospital wastes (see refs. 48 and 49). These laws require hospitals and industry to report their waste and dispose of dangerous/harmful wastes in predefined places.	Ref.1/8/9/48/49	No.

Issue	Findings	Source/Means of Verification	Further Action / Clarification / Information Required?
Properly name references in the table in section B4. p.9. Also check where the first ref in this table was used and get copies of contracts and information	The PP explained that the legislation reference can not be more specific since this is a general statement to explain that no legislation requires the burning of CH4 in landfill and to explain that all the baseline alternatives are in accord with local and national legislations. To list all these legislation texts here would mean to list all texts of current national and regional legislations. Copies of contracts were provided during validation. The explanation of how Contracts and Project Developers Information were used and the validity of these as evidences will be discussed in relevant sections of the Validation Protocol.	Site Visit	No.
Confirm during site visit that there is no need for heat in project activities.	The PP (Flávio de Araújo Cunha) explained that because it is an aerobic composting system, the heat is generated by the process itself. It was not evidenced during site visit the need for heat in the composting process (see plant ref.13). The literature also doesn't mention that simple composting processes need heat (see ref. 45).	Ref.13/45 and Site visit	No.
Check with PPs the assumption that only grid electricity would be used as source of power for both baseline and project scenarios.	There was no evidence that energy (power or heat generation) will be produced in the project (see plant ref.13) and therefore there was no need to identify a baseline scenario for those. NIR 7 was raised for this to be explained in the PDD. PDD was corrected later and NIR7 was closed out.	Ref.13/30	~~NIR7~~ No.
Review last paragraph of p10 of the PDD of Sub-step 1b. This substep is meant to be used to eliminate alternatives which don't comply with regulations and not exclude the ones which are consistent with regulations.	A CAR was raised for this during the site visit (CAR6). The PDD was subsequently changed to address the issue. CAR6 was closed. No issues remaining.	Ref.30	~~CAR6~~ NO

Issue	Findings	Source/Means of Verification	Further Action / Clarification / Information Required?
Please provide evidence that operational license was delayed due to the fact that technology was new and that this was a barrier in getting a loan from BNDES	A copy of the request for the Operational License made in 2004 was provided during the site visit (ref.20). The PP also provided a copy of the Operational License (ref.8) issued on 2007. The PP explained to the DOE that details of requirements for loans from the BNDES were in the banks website and that through there the DOE would be able to check that the Operational License from the Environmental Regulators are and issue in attaining a loan. NIR 9 was raised asking details of the site of the BNDES so that requirements could be checked. The website was provided (ref. 32) and the content of the website was verified. Paragraph 16 of the site specifies that environmental legislation, and therefore licenses, must be adhered to before one can request financing from the BNDES. NIR9 was closed out.	Refs. 8/20/32	~~NIR9~~ NO
Please provide evidence for the fact that consumers tend to use fertilized soil in Brazil as opposed to composting from companies.	The PPs explained that organic compost is not well seen in Brazil mainly because it is associated with rubbish. They provided evidence that they are trying to change this perception (a magazine with an article about how organic compost is produced – ref. 22) and also explained that this is one of the reasons why there are not that many composting sites in Brazil as shown in their common practice analysis. CAR 10 was raised to ask PPs to include more evidences and references of this assumption in the PDD. Ref.31 was provided and PDD was later changed (see PDD version 3 – ref.41) to explain the rationale further. CAR 10 was closed out.	Ref.1/22/31/41	~~CAR10~~ No.

Issue	Findings	Source/Means of Verification	Further Action / Clarification / Information Required?
Please provide evidence of unforeseen expenses due to the fact that project developers were getting used to the new technology	The PPs explained that there were extra costs due to the fact that the project developers were getting used to the technology but there is no evidence since they never actually wrote down a initial budget with expected expenditures. All they had was a balance of what their expenditures and investments were for the years of 2005 and 2006. These were later sent to the DOE (see spreadsheets in ref. 34).	Site visit	No.
Please provide evidence of the date of consideration of CDM	The PPs stated that the contract between Ecosecurities and Ambiental Lixo Zero is the evidence they have for consideration of CDM. This contract was not available at site visit so NIR 14 was raised. The initial page of the contract and the page with the signatures were later provided by Ecosecurities (ref.33) and the CAR was closed out.	Ref.33 and Site visit.	~~NIR14~~ No.
Please provide letters and ARs of local stakeholder consultation.	Letters written to stakeholders and ARs were provided to the DOE.	Ref.50	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 the Host Party and has ratified the Kyoto Protocol on 23rd August 2002. http://maindb.unfccc.int/public/country.pl?country=BR last accessed on 18/04/2008. United Kingdom has ratified the Kyoto protocol on 31st May 2002 and is listed as an 'Annexure- I' Party. http://maindb.unfccc.int/public/country.pl?country=GB last accessed on 18/04/2008.	OK
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	Section A3 of the PDD states that the UK is one of the Project Parties however, Annex 1 of the PDD (p42) states that Ireland is a Project Participant. The UK's DNA is DEFRA. http://cdm.unfccc.int/DNA/view.html?CID=225 last accessed on 18/04/2008. Ireland's DNA is the Environmental Protection Agency. http://cdm.unfccc.int/DNA/view.html?CID=105 last accessed on 18/04/2008. Correct DNA was checked during site visit and it is the UK's DEFRA. That is because the Project Participant's contact address is Ireland (see ref.28 MoC letter) but its head office is in the UK.	LoA from Annex 1 party pending (depends on the host country LoA.)

* MoV = Means of Verification, DR= Document Review, I= Interview

Requirement	Reference	Comments	Conclusion
		The letter of Approval from the DNA has not yet been obtained The LoA from annex 1 party is only issued once the LoA from the host country has been issued.	
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	No Letter of approval by host country (Brazil) has been submitted to the validator. The Brazilian DNA requires the Validation Report before issuing a LoA therefore this will remain pending until after the Validation Report is produced. Remember to send the Validation Report to the Brazilian DNA (Comissão Interministerial de Mudança Global do Clima. http://cdm.unfccc.int/DNA/view.html?CID=30 last accessed on 18/04/07). When LoA is obtained its content shall be checked including the project title as mentioned in PDD, authorisation to project participants, dates etc.	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	The PDD has been uploaded on the SGS website for comments and a link was provided on the UNFCCC website (http://cdm.unfccc.int/Projects/Validation/DB/O909DSD2JNCMX8JJXDJQ6X4HS3MPOH/view.html) from 28/02/2008 to 28/03/2008. No comments were received during that period.	OK

* MoV = Means of Verification, DR= Document Review, I= Interview

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	Version 03.1 of the PDD has been used and is in accordance with the last changes of the EB25. There is a difference to the text on section B.7.1 on row 6 of the tables of data and parameters used. The text in the PDD provided by project participants reads "Value of data applied for the purpose of calculating expected emission reductions in section B.6.3" while the text in the PDD in Annex 15 of the EB25 reads '…B.5'. This difference was accepted since the calculations for the expected emission reductions are actually on section B.6.3 and not B.5, which is the section containing the discussion on additionality.	OK
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	CAR1 – Please provide the letter confirming the modalities of communication with the UNFCCC. Ensure that all project participants mentioned in section A3 and Annex 1 of the PDD have signed the MoC. Project name should be the same as PDD. MoC was sent. Project participants have signed the MoC and project name is the same as in PDD (see ref. 28). CAR 1 was closed out.	~~CAR1~~ Ok
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?		Not applicable	OK

* MoV = Means of Verification, DR= Document Review, I= Interview

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?	1	DR/Internet	Yes the project title "Lixo Zero Composting Project" is clear and unique.	OK	Ok
A.1.2. Are there an indication of a revision number and the date of the revision?	1	DR	Yes, the first PDD mentions version number 1 and the date is 20 December 2007. The final PDD is version 3, dated 11/09/2008.	OK	Ok
A.1.3. Is this in consistency with the time line of the project's history?	1/3	DR/Internet	Yes, the date is before the PDD was web hosted for public comments.	OK	Ok

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
A.2. Description of the Project Activity					
A.2.1. Is the description delivering a transparent overview of the project activities?	1.	DR	The project activity involves the alternative treatment of waste which would otherwise be disposed of in landfill sites. The technology applied is the aerobic composting of waste and further details of this is given on section A.4.3, including the fact that the process does not generate methane. Section A2 of the PDD also states that there are no regulations obliging landfill gas capture and thus most landfills do not take any CH_4 emissions avoidance measures. Furthermore, it states that the Project helps to fulfill the Host Country's sustainable development goals by preventing GHG emissions from waste that would have been disposed of at a landfill. The contributions of the project to sustainable development are clearly listed on pages 2 and 3 of the PDD.	OK	Ok
A.2.2. Is all information provided in compliance with actual situation or planning?	1/ 18/19/2 9/37/40	DR/Sit e Visit	In this section of the PDD the PPs estimated that the project would have an input of 500 tonnes per day of organic waste and that it would generate approximately 75,000 tonnes of product per year. The DOE has checked the contracts between Ambiental Lixo Zero and Multiambiental Coletas e Tranportes, and Ambiental Lixo Zero and DEMAX (ref. 18 and 19). These documents did not show the amount of waste which would be	~~NIR2~~ OK ~~NIR3(pendin g closure of NIR2)~~ OK	Ok

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			delivered to Ambiental Lixo Zero. The PP informed during site visit that they used verbal contracts and technical knowledge to estimate this. NIR2 – provide verifiable evidence of the data used in the estimation of the amount of waste input into the project (i.e. total amount of waste prevented from disposal) and the amount of different waste types at validation. The PP provided a statement made by the project developer with history of the waste being delivered during the trials of the pilot plant and estimates of the amount of waste expected to be received which were also based on the plants capability (ref.29 and personal communication). We asked for evidence of the capacity of the installations (more specifically of the limiting equipment) in order to confirm the values estimated. NIR remains opened till specifications of the project's process capacity are sent to DOE. The project developer sent an email with an analysis of the process' bottle neck based on their experience during the test done in the pilot plant, although tests carried out were never recorded. The analysis showed that the project will have the capability of processing 500tonnes of residues operating on a 2 shift basis, per day. It also states that: • **Today** their shredder has the capacity to process 40 tonnes of waste per hour. This means that in two shifts (or 16hrs)		

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			they are able to process 640tonnes of waste per day. • That the bottle neck of the process is in the reception shredder and the conveyor belt. 1. The reception shredder has a installed capacity of 60m3/h (1ton = 0.60m3). 2. The conveyor belt where the residues are selected, accommodate today 10 operators, and the processing is estimated at 3 tonnes/person/hour. It is the intention of the project developer to change the configuration of the project to allow for a conveyor belt which will accommodate 25 operators. Given these values it can be said that: • Today the shredder has capacity to attend the estimated 500 tonnes of residues processed per day if 2 shifts per day are adopted. • Today the reception shredder has a installed capacity of 100tonnes/hour which means 1600tonnes/day and therefore would also attend to the estimated 500 tonnes of residues processed per day if a 2 shift day is adopted.		

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			• Today, the conveyor belt has the capacity to process 30 tonnes of residues per hour. This means 480 tonnes per day if the 2 shifts a day are considered. From the data provided, it is therefore concluded that: • The reception shredder is the least likely to be the process bottleneck; • The shredder and the conveyor belt and its capacity to accommodate operators are the projects bottle necks. Based on the draft VVM (ref.37) which states that "where data parameters will be monitored and hence only become available after validation of the project activity (e.g. measurements after the implementation of the project activity), the DOE should confirm that the emission reduction estimates provided in the PDD are reasonable", the DOE made a comparison of the project design plan of the PDD against the PPs' estimates described above (more specifically the project developer's estimates) and found that Wx estimates are reasonable. NIR was closed out. NIR3 – Provide verifiable evidence to the data used in the estimation of the total amount of compost produced per year. The relationship of waste processed and compost produced used in the calculations of Mcompost,y were checked against estimates from the pilot plant data (ref29). During the		

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			assessment of the answers to NIR2 and NIR 3, the estimates for the waste processed were changed from 180,000 to 150,000. The PPs wanted to present a more conservative estimate of the number of days of plant operation (500tonnes*300 days). The estimate of the composting factor (amount of comport produced per tonnes of waste) was also increased after the assessment of the data of the pilot tests, in the statement sent by the project developer (Ref.29). As a result of the data of these tests in the statement, the waste factor of the compost increased from approximately 50% to 60% (from 75,000 to 90,000). However, because the waste processing capacity of the project has not yet been confirmed, this NIR will remain opened until NIR2 is addressed. The waste capacity of the process plant has been confirmed as reasonable so NIR 3 is closed out.		
A.2.3. Is all information provided consistent with details provided in further chapters of the PDD?	1	DR	The information in section A.2. of the PDD is in accordance with all other sections of the PDD, in particular with sections A.4.3 and B.7.1. Please notice that calculations using stated values will be checked in subsequent sections of the protocol.	OK	Ok
A.3. Project Participants					
A.3.1. Is the table required for the indication of project participants correctly applied?	1	DR	Table A.3. is correctly applied	OK	Ok

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
A.3.2. Is all information provided in consistency with details provided by further chapters of the PDD (in particular annex 1)?	1	DR	The contact address given for the project participant in Annex 1 is Ireland. This address has been checked against the MoC (ref.28) and Ecosecurities website (ref.40). The party involved is UK because this is where the President of EcoSecurities Group seats.	OK	Ok
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)	1/8	DR/Site Visit/	The location described in section A.4 of the PDD is: Lixo Zero Composting Project takes place at the Ambiental Lixo Zero site in Estrada Velha do Pilar, 2037 – CEP: 25231-000 in the Neighbourhood of Parque Capivari, Xerém district, Municipality of Duque de Caxias in the State of Rio de Janeiro. The coordinates were given in section A.4.1.4 as 22°40'20"S and 43°17'58"W. Location/address to be confirmed during site visit. The location address was checked in the "Operation License" issued by FEEMA (The environmental regulator in Rio de Janeiro), see ref.8.	OK	Ok

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
A.4.2. Do the project participants possess ownership or licenses which will allow the implementation of the project at that site / those sites?	1/8	DR/Site Visti	Ownership and licenses authorizing Ambiental Lixo Zero Ltda. to implement and operate the project at that site must be verified during the validation site visit. Evironmental Operation License (Ref.8), Product Registrations (Ref.9), Establishment Registrations (Ref.10) and Power of Attorney from Lixo Zero to Mr Flavio de Araújo Cunha (the contact for Ambiental Lixo Zero shown on Annex 1 of registered PDD) were verified.	OK	Ok
A.4.3. Is the category(ies) of the project activity correctly identified?	1/4	DR/UNFCCC Website	PDD section A.4.2 states that the Project falls under Sectoral Scope 13 'Waste Handling and Disposal'. The approved methodology AM0025 has been used. This is in accord with the UNFCCC website: http://cdm.unfccc.int/DOE/scopes.html The website also states that this methodology also falls under scope 1. But this is not applicable to the waste treatment option of this project since it does not generate energy.	OK	Ok

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
A.4.4. Does the project design engineering reflect current good practices?	1	DR/Site Visit	According to section A.4.3 of the PDD, the implementation of the project activity is likely to provide a boost to composting technologies in the waste handling and disposal sectors. The technology is environmentally safe. It has been granted license from the Environmental Regulators (Ref.8) and the compost generated from its activities has been awarded an attestation by Ecocert Brazil (http://www.ecocert.com – an international control and certification organization) with regards to its compost being appropriate for use in organic agriculture (Ref.12).	OK	Ok
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?	1/5/45	DR/Site Visit	According to sections A.4.3, A.4.4 and B.3, the technology described involves an aerobic composting process with no resulting CH_4 emissions and which transforms organic residues and minerals into a stabilized form of organic matter utilized as fertilizer. The use of the technology described, if properly implemented, is likely to reduce green house gas emissions by avoiding the dumping of the waste (used for the production of the compost) into landfills and the subsequent production of methane from it. The production of any waste water and how this is disposed of is to be checked during site visit. The PPs justified to the validator during site visit the exclusion of the waste water treatment from the project boundary. They explained that these emissions are not accounted because it is an aerobic composting system where the	OK	Ok

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Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			production of waste effluent is kept to a minimum. Any waste effluent which is produced is treated on site. The effluent is settled for a few hours and decanted. The decanted water is sprinkled over the composting piles in order to provide the humidity required for optimum composting process. The sludge is also used in the compost process. The majority of the effluent is treated using this method, any excess water in extreme wheather situations is treated as requested by FEEMA and disposed of in the sewers. Because the water only stays for a few hours in the decanting tanks and the excess effluent is rare and stays only a few days in the water treatment tanks, the PPs stated that emissions from these source are negligible. The DOE has crossreferenced this information with a publication by IBAMA (Ref.45) which states that if simplified aerobic composting systems are well managed, the production of leachates is small.		
A.4.6. Is all information provided in compliance with actual situation or planning as available by the project participants?	1/13/15/16	DR/Site visit	It was possible to see from the pilot plant that the organic waste will arrive at the site and first sorted, triturated and transported through the composting slot where mineral and other nutrients, as well as the biocatalyst, will be added. The compost is then piled and the aeration is done by regularly turning the compost over with shovels and by blowing oxygen into the piles. The composting process is done in the open air but not exposed to wind or sun. Please see Ref. 13 for the layout of the compost plant. Receipts were collected which evidenced the	OK	Ok

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			use of the biocatalyst produced by Bioexton (see Ref.14). Patent number for the biocatalyst agent in Brazil of Feb/2000: PI9803631 http://www.bioexton.com.br/nova/default.asp?controle=inpi Patent number of the catalyst agent in the USA of May 13th 2003: 6.560.921 http://www.bioexton.com.br/nova/default.asp?controle=uspto		

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Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
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?	1/ 6/26	DR/IBGE website	According to PDD section B.5 the main technology used in the state of Rio de Janeiro, and in Brazil, for waste handling and disposal is landfill (p14 of PDD). It states that only 3% and 2.2% of the waste in Brazil and Rio de Janeiro are treated by composting respectively. The site referenced in the PDD with the data presented in the common practice analysis (http://www.ibge.gov.br/home/estatistica/populacao/condicaodevida/pnsb/default.shtm) was checked however the document in the internet is from 2000. This was clarified by PP via email. The year of the study is 2000 however the year of publication is 2002. These data was verified on table 110 of the document referenced. Specific regulation about landfill gas capture has been searched extensively by the DOE and not found. Ref. 25 p.118, mentions the absence of regulation with specific principles and clear rules to waste management in the whole country. The only legislation found in Rio about landfills was related to their impermeability (Ref. 26). Because there is little regulation to do with the burning of landfill gas in Brazil, it is the opinion of the DOE that composting would have a higher performance in terms of GHG emissions in Brazil if well implemented.	OK	Ok

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
A.4.8. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	1	DR/Site Visit	The project uses a mixture of open air composting system and a biocatalyst agent. It is not expected to change in the immediate future.	OK	Ok
A.4.9. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	1	DR/Site visit	The PDD mentions that training will be given on the new technology and monitoring activities however there are no details about these. There is no formal training schedules or planning of training and maintenance needs yet since the technology is still being tested and PPs are still learning how to use the technology themselves through trial and error (the plant has operated on and off on pilot mode). Furthermore, they are also still building and manufacturing equipment. The PPs stated that they are training their personnel on an informal basis as they build the plant and learn together. It seems from site visit that the mechanical aspects of operating the plant are not difficult, however this is not so with the catalyst used. A training schedule for that should be introduced before the crediting period starts in March 2009. See FAR 1 section B.13.1 below.	FAR 1	FAR 1
A.4.10. Does the project make provisions for meeting training and maintenance needs?	1	DR/Site visit	See FAR1 section B.13.1 below.	FAR 1	FAR 1

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Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
A.4.11. Is a schedule available on the implementation of the project and are there any risks for delays?	1	DR/Site Visit	Project implementation schedules to be checked during site visit. The project is operating on pilot mode and waiting for the credits to start proper operations. It is envisaged that the first crediting period will start on 01/07/08. CAR5 was raised: Provide a more realistic date for the starting of the crediting period. A new version of the PDD (Version 2 of the 21/05/2008 – Ref.30) was provided with a new date for the start of the crediting period (the earliest of 01/01/2009 or the date of registration of the PDD). The CAR was closed out. Later a 3rd version of the PDD was produced and the starting date was changed again to the 01/03/2009 or the date of registration of the PDD. After technical review the date has changed once again to 01/05/2009.	~~CAR5~~ OK	Ok
A.4.12. Is the table required for the indication of projected emission reductions correctly applied?	1	DR	Table for estimated amount of emission reductions (table 2 in section A.4.4 of the PDD) is correctly filled The calculations are to be checked from the spreadsheets and verified in subsequent sections (Section B.7).	OK	Ok

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Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
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?	1 and 11	DR/Site visit	Annex 2 of the PDD states that there is no Public Funding in the project Financial data for the project funding to be checked. No financial data was presented during site visit. The PPs presented a power of attorney document (Ref 11) which stated that the partners to the project were all private and from Brazil. Project Participants stated during interview that all funding were from the 3 private partners mentioned in Ref 11. No signs of donor funding have been evidenced during site visit.	OK	Ok
A.5.2. Is all information provided consist with details provided by further chapters of the PDD (in particular annex 2)?	1 and 11	DR/Site visit	The information that was provided was consistent with further chapters of the PDD	OK	Ok
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	1	DR/Site visit	There was no evidence of Public Funding from parties included in Annex I.	OK	Ok

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Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B. Baseline and Monitoring Methodology					
B.1. Choice and Applicability					
B.1.1. Is the baseline methodology previously approved by the CDM Methodology Panel?	1/ 7	DR/UNFCCC Website	Section B1 of the PDD states the use of the approved methodology AM0025 "Avoided emissions from organic waste through alternative waste treatment processes" version 10. This methodology is valid from 02 November onwards and is active according to the UNFCCC website http://cdm.unfccc.int/methodologies/DB/K04K512KEMA2MRZ5MXGVIFDX7042C6/view.html Last accessed on 05/06/08.	OK	Ok
B.1.2. Is the baseline methodology the one deemed most applicable for this project?	1/4	DR/UNFCCC website	Yes, the project does not fit into any other of the approved methodologies.	OK	Ok
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?	1/5/12/18/9/12/19/48/49	DR/Site Visit	Section B.2. of the PDD lists all items of the applicability criteria from the AM0025 which are applicable to the choice of treatment option a) a composting process in aerobic conditions. The PDD states that the project meets all applicability criteria which are: -The project activity involves a composting process in aerobic conditions -The produced compost is used as soil conditioner -The proportions and characteristics of	OK	Ok

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Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			different types of organic waste processed in the project activity can be determined -Waste handling in the baseline scenario, shows a continuation of current practice of disposing the waste in a landfill -The project activity does not involve treatment of either industrial or hospital waste The first 3 criteria will be monitored throughout the project and should be checked during validation and will be discussed in subsequent sections of this document. Item 4) will be examined during the assessment of how the baseline scenario was identified (section B.4. of the PDD) Check applicability criteria number 5 at site visit too. During site visit the following was evidenced: 1) In the pilot plant the composting process is carried out in open air, but not exposed to the wind or sun. The aeration is carried out by regularly turning the compost over with shovels and by blowing oxygen into the piles. The monitoring of this during project crediting period will be discussed in subsequent sections. 2) The produced compost in the pilot plant has been certified as organic and suitable for the application in agricultural production by Ecocert SA (see Ref12). During site visit the registration of the product within the Ministry of Agriculture, Cattle Raising and Supply was verified and		

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			describe it as soil conditioner (see ref.9). Furthermore the monitoring plan also includes the monitoring of the sale invoices which will contain records of the use of the compost (see PDD section B.7.1, parameter Mcompost,y). 3) The waste delivered to site has been agreed with the suppliers i.e. food suppliers (see references 18 and 19 – these references are however confidential). This parameter is included in the monitoring plan and will be determined by weight measured by weighbridges and sampling of the waste (see parameter Aj,x and pn,j,x monitoring in PDD). 4) The identified baseline scenario is the continuation of current practices of disposing the waste in a landfill. The appropriateness of this will be assessed in subsequent sections of this document. 5) Contracts with waste suppliers was shown to the DOE as evidence that the project activity does not involve the treatment of either industrial or hospital waste (Ref.18 and Ref. 19 – these references are however confidential). The DOE has also verified the national and local laws for disposing of industry and hospital wastes (Ref. 48 and Ref. 49). These laws require industries and hospitals (respectively) to report the destiny of their waste in four copies (one to the generator of waste, one to the transporter, one to the receptor of the waste and one to FEEMA) and dispose dangerous/harmful wastes in predefined places.		

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
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?	1/5/45	DR/Site Visit	The Table 'Sources and gases included in the project boundary' (PDD pg. 8) excludes CO2 emissions from electricity consumption and thermal energy generation from the baseline. This is explained in PDD and is conservative. CO2 emissions from thermal energy generation are also excluded from the baseline. The methodology states that this is only included if it is part of project activities. This is not the case in this project. The table also excludes CO2 emissions from direct emissions from the waste treatment processes. The AM0025 states that CO2 emissions from decomposition are not to be accounted. CH4 emissions from waste water treatment were excluded from the table too. The PPs justified to the validator during site visit the exclusion of the waste water treatment from the project boundary. They explained that these emissions are not accounted because it is an aerobic composting system where the production of waste effluent is kept to a minimum. Any waste effluent which is produced is treated on site. The effluent is settled for a few hours and decanted. The decanted water is sprinkled over the composting piles in order to provide the humidity required for optimum composting process. The sludge is also used in the compost process. The majority of the effluent is treated using this	OK	Ok

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Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			method, any excess water in extreme wheather situations is treated as requested by FEEMA and disposed of in the sewers. Because the water only stays for a few hours in the decanting tanks and the excess effluent is rare and stays only a few days in the water treatment tanks, the PPs stated that emissions from these source are negligible. The DOE has crossreferenced this information with a publication by IBAMA (Ref.45) which states that if simplified aerobic composting systems are well managed, the production of leachates is small. Emission sources for leakage have been identified as CO2 emissions from increased transport and CH4 emissions from disposing the compost in landfills. The PPs do not forecast the latter will happen. However, the end use of the compost will be monitored as requested by methodology and dealt with as recommended by the methodology if needed (PDD pg. 20).		
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?	5/53/54	DR/Site Visit	The PPs have provided the spreadsheets with the emission factor calculated (ref.53). The grid identified was the South, Southeast and Midwest. This was the grid used to calculate the BM and OM, and it was the correct grid identification for the data vintages available at the time of submission of the PDD to the DOE for validation and thus it is in accordance with the "Tool to calculate the emission factor for an electricity system' (ref 54). The project activity will use this for the calculation of its project emission. The project activity does not generate electricity.	OK	Ok

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
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?	1/5	DR/Site Visit	Section B.3 of the PDD clearly states the emission sources.	OK	Ok
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?	1/5/6/8/20/22/23/24/25/26/30/31/32/34/41/42/43/45/46	DR/Site Visit	Section B.4, step 1a of the PDD considers the three alternatives for the disposal of the fresh waste in the absence of the project activity identified by the AM0025 as realistic alternatives. Alternatives to power generation are not discussed because the project does not generate energy. Electricity is bought from the grid in the baseline and project scenarios. Heat is not needed in both scenarios. Both electricity and heat assumptions are to be checked during site visit. In Step 1b. the alternative of disposing of waste at a landfill where the landfill gas is captured has been wrongly excluded as a viable alternative because it complied with regulations. The non-implementation of this alternative because there is no regulations enforcing it, and because otherwise this would not be applied due to financial reasons, should be discussed in the barrier analysis - CAR 6 The exclusion of alternative 3 (disposing of landfill waste where the landfill gas is captured) was removed from section B.4 in version 2 of the PDD (ref.30). This alternative is now discussed and excluded as a non-realistic alternative in section B.5. CAR6 was closed out.	~~CAR6~~ ~~NIR7~~ ~~CAR8~~ ~~NIR9~~ ~~CAR10~~ ~~NIR11~~	Ok

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Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			Specific regulation about landfill gas capture has been searched extensively by the DOE and not found. Ref. 25 p.118, mentions the absence of regulation with specific principles and clear rules to waste management in the whole country. The only legislation found in Rio about landfills was related to their impermeability (Ref. 26), which supports the argument in page 10 of PDD. The PDD states that Step 2 is not applicable. This section should explain why it is not applicable. NIR7 was raised. The methodology AM0025 asks for the identification of fuel for the baseline choice of energy source and it is now explained in Version 2 of the PDD that there is no production of electricity/heat in the project activity itself so no need to identify the baseline source. This is in accordance with the methodology AM0025 so that NIR7 was closed. CAR 8– Change step 3 (Barrier Analysis) to reflect the order of analysis of alternatives used in the “Tool for demonstration and assessment of additionality” (i.e. use format with steps 3a and 3b, analyzing barriers that prevent the implementation of the proposed CDM activity – alternative 1 – and showing that the identified barriers would not prevent at least one of the alternatives separately in its respective sections). Step 3 of the PDD version 2 was changed to include steps 3a and 3b required by CAR8. CAR 8 was closed out. Evidences mentioned in the barrier analysis and		

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Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			requested in local checklist were: Evidence that operational license was delayed due to the fact that technology was new and that this was a barrier in getting a loan from BNDES A copy of the request for the Operational License made in 2004 was provided during the site visit (ref.20). The PP also provided a copy of the Operational License (ref.8) issued on 2007. The PP explained to the DOE that details of requirements for loans from the BNDES were in the banks website and that through there the DOE would be able to check that the Operational License from the Environmental Regulators are and issue in attaining a loan. NIR 9 was raised asking details of the site of the BNDES so that requirements could be checked. NIR9 – Provide the website which specifies that operational licenses are necessary for the financing by the BNDES (industry norm) The PP provided the website and also included it in version 2 of the PDD. The information that environmental licenses are a pre-requisite to the financing from BNDES are in paragraph 16 of the link http://www.bndes.gov.br/produtos/faq/bloco1.asp#perg16 – ref.32.NIR9 was closed out. Evidence that consumers tend to use fertilized soil as opposed to composting from companies with similar activities to the project activity. The PPs explained that recycled products are		

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			less accepted than mineral fertilizers because they are associated with rubbish. The DOE cross-referenced this statement with Ref 24 which also states that the solution to this preference is to guarantee the quality of the product and of an adequate marketing. They provided evidence of their campaign to change the impression on the issue. The evidence provided was a publication in one of the issues of the “Revista Organica” which explains the process of organic composting (see Ref. 22). The article describes the process well and includes a paragraph which explains that the waste bypasses landfills. Further to the argument of mineral fertilizers, they explained that in terms of organic fertilizers, the soils fertilized with animal manure are cheaper and for this reason consumers prefer them over the ones which utilize organic waste. The DOE checked the statement made in the PDD page 12 that the fertilizers made from animal manure was cheaper than fertilizers made with the technology used by the client . This was evidenced in a small sample of prices via web searching (see https://www.mfrural.com.br/produtos.aspx?categoria3=255&nmop=Fertilizantes-Agricolas-Fertilizantes-Organicos-Outros last accessed on 31/07/08 Ref. 23). This data (i.e. market prices) should however be included in the PDD to strengthen the barrier analysis and to comply with the requirement of		

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			the tool on the type of evidence required. CAR 10– Provide and include in the text of the analysis of the PDD, relevant and referenced evidence (as per the latest version of the Tool for the demonstration and assessment of additionnality" – i.e. market prices) that consumers tend to use soil fertilized with animal manure as opposed to composting from companies that use waste similar to the one used in the project activity. The PPs explained in their answer to CAR10 that the evidence for the tendency of using fertilized soil with manure (or with some other compound) is not mainly financial, but cultural. Further evidence was provided to support this argument (see ref.31 – a text by EMBRAPA the Brazilian Agricultural Research Corporation). This evidence (which makes an analysis of the pros and cons of the composting of urban waste) states the main problems associated with composting of urban waste (i.e. the poor quality of the residues used to make the compost and to poorly managed composting processes) and together with the statement in ref. 24 (that says that the adoption of the organic compost by the agricultural industry is dependent on the gain of the confidence of a product which originates from waste) support the idea that the cultural perception to compost originated from waste is negative. Furthermore, the PP also gave the number of composting stations presented in the common practice analysis as further evidence of that.		

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Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			From the answer given by the PP to the CAR, the DOE accepted that the number of composting stations coupled with the text by EMBRAPA as an indication of cultural choices. However, it asked that this rationale, together with the reference provided (ref.31), should also be included in the PDD so that the existence of this barrier can be demonstrated with the support of evidences. Furthermore, if the cultural, qualitative and prevailing practices are the issue, it is suggested that this issue be classified as such (i.e. a barrier other than investment). CAR remained opened. The PP changed the PDD to reflect the requests of the DOE. PDD Version 3 – 11 September 2008 (Ref.41) was provided by the PP and analysed by the DOE and has a more comprehensive analysis of the barrier and cites the relevant evidence (ref.31). CAR10 was closed out. The DOE has also found in the web page used to cross check market prices, another example of the same technology in use in Minas Gerais. Ref. 23. NIR 11–Explain the statement made on page 5 of the PDD that “the technology proposed for the composting plant can be regarded as a new technology to the State of Rio de Janeiro, to the southeast region and to Brazil” once the product of this technology is being commercialized in MG (also as organic) and once the reference from IPT (2000) – ref.24 - of the PDD states that there are installations of the accelerated composting		

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			method in RJ as well as other Brazilian states (although many are not successful for different reasons). Explain why this has not been discussed in the barrier analysis too. A further page from the IPT (2000) reference (p.117) was sent to the DOE (see ref.42). The information on this page was analysed and it explains the process of accelerated composting sites. It does not mention however the use of biocatalysers. In this respect the technology of the Project does differ from the one explained in this reference. The DOE has accepted, given the further explanation in ref.43 (email from the PP) and ref. 42, the statement "the technology proposed for the composting plant can be regarded as a new technology to the State of Rio de Janeiro, to the southeast region and to Brazil" in the light of the following: 1) the process of the Project activity uses a biocatalyser which further accelerates the process of accelerated composting plants, from approximately 45 days to approximately 72hours, and this process is little diffused in the region and country (supported by refs. 45 and 46) 2) the combination of the use of the biocatalyser, of the fact that the project proposal is to use urban residues and that its proposal is to produce organic fertilizer makes the technology even less difused. However, it is not conservative to call the technology 'exclusive' or 'unique' given the evidence already discussed earlier and given the fact that the site of Bioexton also mentions the		

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			concessions given to 25 other projects in Brazil. The PP has agreed to remove from the PDD any reference to the technology as being 'exclusive' to Lixo Zero, especially for the section where it discusses common practice. This was done in PDD version 3 (ref.41). NIR 11 is now closed out. Evidence of unforeseen expenses due to the fact that project developers were getting used to the new technology The PPs explained that there were extra costs due to the fact that the project developers were getting used to the technology but there is no evidence since they never actually wrote down a initial budget with expected expenditures. All they had was a balance of what their expenditures and investments were for the years of 2005 and 2006. These were later sent to the DOE (see spreadsheets in ref. 34). Therefore same as above. The DOE has also checked the reference made in the PDD, p.13 that "one of the major barriers to operating composting plants in Brazil is the lack of management and/or operational know-how to conduct activities" in the reference provided (Ref. 24). The information is regarding lack of institutional, managerial and operational capacity to carry out activities. The assumptions made supporting the continuation of current practices in the barrier analysis are supported by the figures given in the 4th paragraph of p.10 of the PDD. These figures		

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			have been checked against Ref. 6 and concur. There was no evidence from the site visit that energy is produced in the project activity boundaries. There is also no evidence that heat is needed by the process.		
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??	1/5/6	DR	All realistic scenarios are considered according to AM0025 and the 'Tool for the demonstration and assessment of additionality'	OK	Ok
B.3.3. Is the choice of the baseline compatible with the available data?	1/5/6/8/20/22/23/24/25/26/30/31/32/34/41/42/43/45/46	DR/Site Visit	All key assumptions were explained in the PDD and information sources referenced. All sources of information and crosschecks for the key assumptions were discussed in sections B.3.1 and B.3.2.	OK	Ok
B.3.4. Is conservativeness addressed in the way of identifying the baseline?	1/5/6/8/20/22/23/24/25/26/30/31/32/34/41/42/43/45/46	DR/Site Visit	The interpretation of available has been discussed in sections B.3.1 and B.3.2 too.	OK	Ok
B.3.5. Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	1/5/6/8/20/22/23/24/25/26/30/31/32/34/41/42/43/45/46	DR/Site Visit	The data available for the determination of the baseline scenario as well as the steps in methodology, conservativeness of assumptions have been discussed in sections B.3.1 and B.3.2. The DOE is of the opinion that the chosen baseline scenario is the most likely.	OK	Ok

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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?	1/27	DR	Yes, please refer to section B.4.2 below.	OK	Ok
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?	1/27/41	DR	The PDD version 1 uses Version 4 of the "Tool for the Demonstration and assessment of additionality". According to the UNFCCC webpage http://cdm.unfccc.int/Reference/tools/index.html, the latest version is Version 5. CAR12 – change the version of the "Tool for the Demonstration and assessment of Additionality" to Version5 and the version of the "Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site" to Version 3 as per EB39. The changes to the additionality tool are mainly to do with type of evidences provided in the additionality analysis of the PDD (to do with sub-step 3b of the tool). These, however, have already been addressed in NIRs and CARs in the Identification of Baseline Scenario section (B.3) of this document since the PP uses barrier analysis to test for additionality. The changes in the investment analysis don't apply to the PDD since the PP does not use this option. The analysis of the steps and transparency has also been covered in section B.3.	~~CAR12~~ OK	Ok

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			The changes to the "Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site" did not impact on this project's PDD. The DOE verified the contents of the PDD version 2 and confirmed that changes have been made. CAR12 was closed out. Later on both tools changed. The 'Tool for the Demonstration and assessment of Additionality' changed to version 5.2, and the 'Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site' changed to version 4. This was also corrected in the new PDD. Although these changes did not impact on the PDD, this has been changed in Version 3 of the PDD (ref.41) to show that it uses the latest version.		
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	1/29/30/33/41/34	DR/Site Visit	The PDD gives the beginning of the contractual negotiations with the consultants (EcoSecurities) as the starting date of the project (15/08/2006). It was explained during interviews with PPs that this was the date that PPs realized that the project could go ahead with the help of the carbon credits. During site visit, the project participants informed that implementation of equipment in the pilot plant started in 2004. The request of the operational license was made then, however operations were delayed due to the fact that FEEMA took a long time to issue the operational license because they did not know the technology used by the PPs. Financial help was	~~CAR13~~ ~~NIR14~~	Ok

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			delayed too since the financing from the BNDES was dependent on the licenses too. They almost went bankrupt. In 2006 they came into contact with EcoSecurities and decided that the project could continue only with the help of the credit revenues. When discussing this with the PPs, these emphasized the fact that the project would not go ahead if they did not receive the revenue expected from CDM carbon credits. Because the installation began in 2004 the following CAR and NIR were raised. CAR13 – Change the starting date of the project activity to reflect the definition given in the EB33 paragraph 76 (i.e. 'the **earliest of** the dates at which the **implementation** or **construction** or **real action** of the project activity begins'). In the first response to the DOE the PP kept the opinion that the start of the project activity was the contractual negotiations between PPs. They provided the initial page of the contract and the page with the signatures of the PPs as evidence. The PPs also added to the PDD version 2 a timeline to better explain the chronology of the project development. From the chronology and the initial response of the project developer to this CAR (ref.29) the DOE came to the following conclusion: It is clear that the contract signed between the PPs is a real action in terms of alleviating its barriers and it can be considered as consideration of CDM. However, before this		

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			happened (in September 2006) the project developer must have had a construction permit and have started construction, since tests in the pilot plant were going on since 2004. This would therefore be the earliest of the dates first time around. On the other hand the project tests ceased in 2007 (ref.29) because of the difficulties in receiving the Operational License and started again after the project developer received this and after the resulting decision of EcoScurities to produce a PDD. This would therefore be the earliest of the dates second time round. CAR 13 remained opened. The PP sent Version 3 of the PDD (ref.41) with the revised date of the start of the project activity. They considered the date of the Operational License issued by FEEMA (which resulted in the decision of EcoSecurities to produce the PDD), after the project had ceased in 2007, as the starting date. The DOE accepted this date as the 'real action' date in the light of the barriers it faced (the ones already seen and evidenced in the PDD) and given the fact that the project ceased in early 2007. Furthermore the reports of 2 accountants were received saying that the project was in financial difficulties and would cease in the circumstances it was found in 2005 and 2006 (this was provided as evidence of early CDM consideration – ref.34). CAR 13 was closed out. NIR14 – Provide the evidence of CDM		

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			consideration and the evidence which made the Project Participants realize that the project could only carry on with the revenues of CDM carbon credits (i.e. that the project activity would stop if no CDM carbon credits revenue were not received). A timetable was added to the PDD version 2 to better explaining the chronology of the project. Moreover, in order to evidence this timeline, a declaration from the project developer was provided to the validator, as well as accountants reports stating the financial status of the company in the time of the decision-making. The project developer's declaration states that in 2004 and 2005 the plant operated as a pilot plant. In 2006 the plant operated with great financial difficulty until May. With the onerous financial expenses and lack of environmental/operational license and therefore no receipt of waste residues, production was almost zero after May. In September the contract with EcoSecurities was signed and the credits were seen as the means to alleviate barriers for the beginning of full operations. Therefore the project developer invested more into the plant. In May 2007 operations ceased since the project developer did not receive environmental/operational license and with no income there was no way to continue tests. In September the environmental/operational license was received and the project developer was able to secure more investment into the		

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			business and EcoSecurities started development of PDD. New equipments were bought, these were however only received in May 2008. The company has now to initiate to repay the money borrowed. During site visit there was no evidence that the plant is operating, only a few samples of the product. The Balance sheets were examined too. In 2005 the 'ativo' or investments were the same as the 'passivo' or money being borrowed into the company, and there was no income. In 2006, the company had a little bit of income from sales (judging from the statement made by the project developer this is from the beginning of 2006 till May) but operational expenses were very high. The first of the accountants reports that bankruptcy of a company may happen through the excess of financial immobilised investment which in 2005 was 94% and in 2006 76% (that is the 'ativo' or investment was represented by 94% and 76% of immobilised investments – i.e. equipments). The second accountant states that bankruptcy is evident from the indices calculated. In the beginning of activities the company needed to, besides proceeding with some pre-operational expenses, increase its acquisition of equipments utilizing third party investments which translated into very low indices and consequently deficits that were delayed over the financial exercise. He concluded that the company is not able to generate its own financial resources as a		

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			consequence of that and that the indebtedness is likely to increase, as it will continue to need the ingress of external resources in order to make its operation viable. From the documents presented after this NIR and the observation in the site visit accepted that CDM revenue will help the project overcome the difficulties which originated with the barriers identified. The pages of the contract between Ambiental Lixo Zero and EcoSecurities were also verified. This is accepted as the evidence of CDM consideration. NIR14 was closed out.		

* MoV = Means of Verification, DR= Document Review, I= Interview

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	1	DR	Three alternatives to the baseline scenario were identified according. 1) Proposed project without CDM 2) Continuation of Current Practice (disposal in a landfill without capture of landfill gas) 3) Disposal of waste at a landfill where the landfill gas captured is flared Alternative 3 was identified but excluded in section B.5 of the PDD as non-realistic. The other two options are discussed in the assessment of the additionality. The alternatives discussed include technologies and practices that include outputs compared to the proposed CDM project activity (i.e. waste disposal).	OK	Ok
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?	1	DR	The PP did not use investment analysis.	OK	Ok
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?	1/5/6/55	DR	The main barriers identified in the barrier analysis were economic, technological and other: That the operational license was delayed due to the fact that technology was new and that this was a barrier in getting a loan from	OK	Ok

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Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			BNDES That consumers tend to use fertilized soil as opposed to composting from companies with similar activities to the project activity. That one of the major barriers to operating composting plants in Brazil is the lack of management and/or operational know-how to conduct the activities. The types of barriers were found to comply with the guidelines in the 'Tool for the demonstration and assessment of additionality' (ref.55) and AM0025. All of these barriers were discussed in section B.3.1. and supporting evidences were provided and checked by the DOE. Evidences found by research made by the DOE was also discussed in section B.3.1. The barriers discussed have shown that composting plants, specially the ones that use bio-catalyser and urban waste, face barriers that prevent their implementation but would not have prevented the business as usual situation (disposal of waste in a landfill site with no capture of landfill gas). The assumptions made supporting the continuation of current practices in the barrier analysis are supported by the figures given in the 4th paragraph of p.10 of the PDD. These figures have been checked against Ref. 6 and concur. With the information provided in the barrier analysis the project activity is considered additional.		

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.4.8. Has it been shown that the project is not common practice?	1/6/45/46/56	DR	First the composting plant was compared to other waste disposal practices in the same region. Later it was compared with other organic composting plants. The common practice analysis has shown that the composting stations are not common practice in the region where the project is located. The data presented as evidence of this statement was shown in P.14 of the PDD and has been crosschecked with ref.6. If the fact that the composting plant in this project activity uses bio-catalysers (which further accelerates the process of accelerated composting plants, from approximately 45 days to approximately 72hours - refs. 45 and 46) and urban waste to produce organic compost the DOE is of the opinion that this technology is even less difused (ref.56 has been checked and no other organic compost is certified by EcoCert in Rio de Janeiro and also searched extensively the web for other organic compost certifying companies without success). The common practice analysis was also discussed in section B.3.1.	OK	Ok

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Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.4.9. Is it demonstrated/justified that the project activity itself is not a likely baseline scenario	1/24/31	DR	Besides the fact that the licenses and therefore financing is an issue for the technology used (as shown in section B.3.1), it was demonstrated with various references already discussed in previous sections (i.e.B.3.1), but specially refs.24 and 31, that consumers tend to prefer mineral fertilizers due to cultural perception (organic compost are associated with rubbish). This coupled with the lack of know-how to conduct composting plants in the country (ref.24), and also the common practice analysis (which shows the small diffusion of composting plants and large diffusion of land fills) demonstrates that the project activity is not the likely baseline scenario.	OK	Ok

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Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.5. Application of the Baseline Methodology					
B.5.1. Has the approved methodology been applied correctly for determining **baseline emissions**?	1/5/57	DR	Baseline emissions were calculated according to AM0025 and the 'Tool to determined methane emissions avoided from dumping waste at a solid waste disposal site'. The formulae for the baseline in the methodology are: BEy = (MBy – MDreg,y)+BE_{EN},y BE_{EN},y (Baseline emissions from generation of energy displaced by the project activity in year y) is not accounted for since the project is not generating energy. MBy = $BE_{CH4,SWDS,y}$ of the 'Tool to determined methane emissions avoided from dumping waste at a solid waste disposal site'. MDreg,y = MBy * AF The calculation of AF was explained in annex 5.	OK	Ok

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Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.5.2. Has the approved methodology been applied correctly for determining **project emissions**?	1/5	DR	PEy= PEelec,y+PEfuel,on-site,y+PEc,y+PEa,y+PEg,y+PEr,y+PEi,y+PEw,y However, because the methodology deals with many different types of alternative waste processes (i.e.gasification to produce syngas and its use) only some of the parameters above apply. According to the DOE this parameters are: PEy= PEelec,y+ PEfuel,on-site,y+ PEc,y PEw,y is not accounted for reasons already explained in previous sections (see section B.2.1). The above formula is the one used in the PDD. $PEelec,y = EGpj,_{FFY} * CEFelec$ PEfuel,on-site,y = Fcons,y*NCVfuel*EFfuel $PEc,y = PEc,_{N2Oy} + PEC,_{CH4,y}$ $PEc,_{N2Oy} = Mcompost,y*EFc,_{N2O}*GWP_{N2O}$ $PEC,_{CH4,y} = MBcompost,y*GWP_{CH4}*Sa,y$ $MBcompost,y = MBy = BE_{CH4,SWDS,y}$ of the 'Tool to determined methane emissions avoided from dumping waste at a solid waste disposal site'. Sa,y = SOD,y / Stotal,y The formulas are all in accordance with methodology.	OK	Ok

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.5.3. Has the approved methodology been applied correctly for determining **leakage**?	1/5	DR	The methodology states that the baseline should be calculated as: Ly = Lt,y + Lr,y+ Ls,y Lr,y is the residual waste from anaerobic digester, the gasifier, the processing/combustion of RDF/stabilized biomass, or compost in case it is disposed of in landfills. This parameter therefore does not apply to the project activity. The destination of compost will be monitored by sale invoices (see PDD section B.7.1) to be sure that compost is not disposed of in landfills. Ls,y is the leakage emission from end use of stabilized biomass. This project does not involve the process of RDF/stabilized biomass as per PDD. The leakage in the project is therefore: Ly = Lt,y $L_{t,y} = \sum_{i}^{n} NO_{vehicles,i,y} * DT_{i,y} * VF_{cons,i} * NCV_{fuel} * D_{fuel} * EF_{fuel}$ All formulas described are in accordance to PDD.	OK	Ok
B.5.4. Where applicable, has the approved methodology been applied correctly for the **direct calculation of emission reductions**	1/5/57	DR	Ery = Bey – Pey – Ly This formula is correct and is applied according to the methodology and the methodology AM0025 and applicable tools.	OK	Ok

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	1/5/51/52/54/57	DR/Site Visit	All likely operational characteristics, scenarios, options and default values have been taken into account and explained when choosing the formulae for Baseline, Project and Leakage (see rationales above in the sections above – from B.5.1 to B.5.4). The reliability and credibility of the assumptions behind the choices have also been checked in the previous sections.	OK	Ok
B.5.6. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	1/41/58	DR/Site Visit	After the raising of NIR2 and NIR3, the uncertainties of the parameters Wx and Mcompost,y have been addressed in the PDD. NIR4 was also opened with regards to uncertainties of Lt,y. The PP explained that the distance used to estimate this parameter was an average distance taken from the most distant to closer customers. The DOE examined the contract which was shown as evidence of the average distances to where the compost is intended to go to (ref.58). The distance traveled to calculate leakage during the project will be monitored (parameter DTi,y) and this is explained in the PDD version 3. More details about NIR4 can be found in section B.7.4.	OK	OK
B.6. Ex-ante Data and Parameters Used					
B.6.1. Are the data provided in compliance with the methodology?	5/41/51/54/57	DR	All the data Provided in section B.6.2 of PDD version 3 is in compliance with the methodology AM0025 and the applicable tools (see references).	OK	Ok

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.6.2. Is all the data derived from official data sources or replicable records and have these been correctly quoted?	5/41/59/ 60	DR	All data in section B.6.2 are derived from official sources and are all correctly quoted in PDD version 3.	OK	Ok
B.6.3. Is the vintage of the baseline data correct?	5/41/51/ 54/57	DR	All the data vintages used have been checked against the requirements of the methodology AM0025 and the tools. The electricity EF data vintage has already been discussed in detail in section B.2.2.	OK	Ok
B.7. Calculation of Emissions Reductions					
B.7.1. Has the approved methodology been applied correctly for determining **emission reductions**?	41/5/35/ 51/54/5 5/57	DR	The PDD clearly states which equations are used for the calculation of Emission Reductions and this has already been discussed in detail in section B.5. The spreadsheets containing the calculations of the emissions reductions have been checked against PDD version 3, and methodology AM0025 and applicable tools and it is confirmed that the calculations for determining emission reductions comply with them all.	OK	Ok
B.7.2. Are the emission reduction calculations documented in a complete and transparent manner?	35/41	DR	The application of each equation for the calculation of ERs is documented in the PDD (ref.41) and spreadsheets in a way that is it reproducible.	OK	Ok
B.7.3. Have conservative assumptions been used to calculate emission reductions?	35/41	DR/Sit e Visit	Assumptions in the values used are conservative and have been checked and already discussed in previous sections (see sections A.2.2, B.2.1, B.2.2, B.3.1, B.5).	OK	Ok
B.7.4. Is the projection based on provable input	5/35/41/	DR/Sit	All the parameters that are to be monitored and	~~NIR4~~	Ok

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
parameter?	51/54/57	e Visit	were used in the calculations of the ERs likely to be achieved (see ref.35 and 41) were checked against the methodology AM0025 and applicable tools. All numbers used were checked for appropriateness and crosschecks with sources were done on risk based approach as per draft VVM (ref.37 p.9). All the estimates checked against sources were found to be reasonable. One of the parameters of greatest weight on the estimates of ERs is Wx (it is the amount of waste not going to landfill which is an important parameter in the calculation of MBy – avoided methane emissions). The estimation of this parameter, including its source, has already been extensively discussed in section A.2.2 (see also NIR2 of the findings). Another important estimated parameter discussed in section A.2.2 is Mcompost,y (this is the total production of compost produced in year y which is involved in the calculation of PEc,y). See also NIR3 of the findings. The calculation of the Adjustment Factor is explained in Annex 5 of the PDD. The information presented is clear and reproducible, and the parameters used in the calculation seen in the Table named “Data used to calculate the Adjustment Factor” have been crosschecked with the sources cited. The number of events shown in the table were crosschecked with the ‘Pre-feasibility study for Landfill Gas recovery and Energy Production at the Gramacho Landfill – Rio de Janeiro, Brazil’ (Ref.52) and the efficiencies stated were crosschecked with IPCC	~~NIR15~~ ~~NIR16~~ OK	

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			Guideliness 2006 Vol.5 Chapter 3, page 3.19. (Ref.21). Lty is also responsible for considerable emissions in the estimates for likely ERs. NIR4 was raised in order to clarify the estimates for this parameter. The PP explained that the distance used to estimate this parameter was an average distance taken from the most distant to closer customers. The DOE examined the contract which was shown as evidence of the average distances to where the compost is intended to go to (Ref.58). A radius of 250 km was found to be a reasonable estimate. The distance traveled to calculate leakage during the project will be monitored (parameter DTi,y – average distance traveled by vehicles compared to baseline). The distance between Gramacho Landfill and Ambiental Lixo Zero were also checked and were found to be of approximately 10 km. Considering the distances travelled in Rio and that the waste will either go to the composting plant or to the baseline scenario it is not considered a real change in transport emissions and thus the exclusion of that in Lt,y was accepted. NIR4 was closed out. EGpj,ff,y estimates could not be crosschecked with the electricity invoices provided by the PP during site visit (Ref.36) because the operation of the plant during the pilot period was erratic and energy consumed low. NIR 15 was raised to address this issue. The PPs explained in the answer to NIR 15 that In order to provide estimative to the PDD, the		

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			installed capacity of equipments at 100% load factor, 24 hours a day, was used. This method of estimation is acceptable for the validation stage. The estimate was crosschecked with the estimates of a project already registered (see ref.61). The project which was used for comparison has a process capacity of 90tonnes of waste per hour using a load factor of 75% and considered the time of operation to be of approximately 13hrs/day. The project estimated the energy use at 1198.3 MWh/year, this is slightly less than the 2201.57 MWh/year estimated by PPs of this project. The value is higher due to the use of 24hrs operation. This has lead to a conservative estimate and thus accepted. However, as stated by the project developer, the grid operator has an electricity meter installed at Ambiental Lixo Zero plant in order to monitor the electricity consumed, and this meter is maintained according to national standards. During verification this meter should be used to obtain the electricity consumed by the project and not an estimative value. NIR 15 will be closed out considering that this information will be updated in the monitoring section of the PDD. 12/09/08 The monitoring section of the PDD version 3 was updated to say that the parameter will be measured by the electricity meter but it will be estimated by the total capacity of the plant if the meter could not be used. NIR15 was closed out.		

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
			Although it is not of great weight the explanation of the estimates of Sa,y were also asked since the value of 100 seemed rather high. NIR16 was raised. The PP explained that this parameter was misinterpreted at first. This data is also in the section of monitored parameters and therefore was compared to the same project used to test EGpj,ff,y. The project which has already been registered used an estimated value of 0% using the same method of aeration of compost pile in the plant. Since this estimate is a %, it does not depend on process capacity, and the value of 2% is therefore reasonable. This NIR could be closed upon the removal of the word "(indirect)" (in the heading: source of data, under this parameter, section B.7.1) since this parameter is to be monitored by a standardised mobile gas detection unit (O2 mobile gas detectors measure this data directly) and guarantees the first applicability criteria of the project – that the process is done in aerobic conditions. NIR remained outstanding. The word '(indirect)' was removed from the heading: source of data, under this parameter, section B.7.1 in PDD version 3. NIR 16 was closed out.		
B.7.5. Is the projection based on same procedures as used for later monitoring or acceptable alternative models?	5/35/41/51/54/57	DR/Site Visit	The projections are based on same procedures as used for later monitoring or acceptable alternative models.	OK	Ok

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Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.7.6. Is the calculation of the emission reduction correct?	5/35/41/51/54/57	DR	All calculations have been thoroughly checked and are found to be correct.	OK	Ok
B.8. Emission Reductions					
B.8.1. Will the project result in fewer GHG emissions than the baseline scenario?	5/35/41/51/54/57	DR	Yes. According to the calculations which have been extensively checked against the methodology AM0025 and the applicable tools, the methane that would have been released to the atmosphere in the absence of the project activity will be reduced.	OK	Ok
B.8.2. Is the form/table required for the indication of projected emission reductions correctly applied?	35/41/62	DR	Yes the table is correctly applied.	Ok	Ok
B.8.3. Is the projection in line with the envisioned time schedule for the project's implementation and the indicated crediting period?	41	DR	Yes, the start date of the project activity is 06/07/2007. It is envisaged that the project will restart full operations as soon as the project is registered. The start of the crediting period is not until 01/05/2009 or the date of registration of the project activity as a CDM project.	Ok	Ok
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	5/41/51/54/57/59/60	DR	Data and parameters in section B.6.2 that are not monitored throughout the crediting period but are determined only once have been checked and are in accordance with approved methodology AM0025, applicable tools and references.	OK	Ok

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Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.9.2. Does the monitoring methodology apply consistently the choice of the option selected for monitoring both of project and baseline emissions?	5/41/51/54/57/59/60	DR	Monitoring methodology apply consistently the choice of the option selected for monitoring the project, baseline and leakage emissions.	OK	Ok
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?	5/41/51/54/57/59/60	DR	The monitoring plan provides for the collection and archiving of all relevant data necessary for estimation or measuring of the emissions reduction within the project boundary during the crediting period.	OK	Ok
B.10.2. Are the choices of project GHG indicators reasonable and in conformance with the requirements set by the approved methodology applied?	5/41/51/54/57/59/60	DR	The choices of project GHG indicators are reasonable and in conformance with the requirements set by the methodology AM0025	OK	Ok
B.10.3. Will it be possible to determine the specified project GHG indicators?	5/41/51/54/57/59/60	DR	It will be possible to determine the specified project GHG indicators.	OK	Ok
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?	5/41/51/54/57/59/60	DR	The contents of the tables in section B.7.1 of the PDD have been assessed (i.e. description of measurement methods, source of data and frequency of monitoring) in relation to methodology AM0025 and tools and they are sufficient to ensure the verification of a proper implementation of the monitoring plan.	OK	Ok
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?	41	DR	Data will be collected directly from the meters, scales, invoices, consolidated in reports and it will be cross checked against the spreadsheets and verification report.	Ok	Ok

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Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
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?	41	DR	Yes, the project is following the methodology and applicable tools.	Ok	Ok
B.10.7. Are all formulae used to determine project emission clearly indicated and in compliance with the monitoring methodology.	41	DR	Yes, already discussed in section B.5.	Ok	Ok
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?	41	DR	Yes, the QA/QC is defined in the PDD. The meters will be maintained according to national standards. Scales will be maintained and calibrated according to manufacturer recommendations. Calculated data will follow the applicable tool. Documents will be maintained in the project site. It is expected that QA/QC will be implemented during verification.	FAR 1	FAR 1
B.11.2. Is the belonging determination of uncertainty levels done correctly for each ID in a correct and reliable manner?	41	DR	See B.11.1	Ok	Ok
B.11.3. Are quality control procedures and quality assurance procedures sufficiently described to ensure the delivery of high quality data?	41	DR	Yes, the quality control and quality assurance follow the methodology and applicable tolls. Procedures are not implemented yet and should be available in the verification. See FAR 1 below.	FAR 1	FAR 1

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Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.11.4. Is it ensured that data will be bound to national or internal reference standards?	41	DR	Not all parameters will be bound to national standards. Parameters are following the methodology and applicable tools.	Ok	Ok
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?	41	DR	See B.11.1	Ok	Ok
B.12. Operational and Management Structure					
B.12.1. Is the authority and responsibility of project management clearly described?	41	DR	Yes, the authority and responsibility are clearly described in Annex 4 of the PDD.	Ok	Ok
B.12.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	41	DR	The responsibilities for data collection, data entry, production of monitoring report, archiving of data, calibration and maintenance described in the PDD annex 4.	Ok	Ok
B.12.3. Are procedures identified for training of monitoring personnel?	41	DR	No, see FAR 1 below.	FAR 1	FAR 1

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.13. Monitoring Plan (Annex 4)					

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.13.1. Is the monitoring plan developed in a project specific manner clearly addressing the unique features of the CDM activity?	41	DR	As the project is not implemented the monitoring plan presented in annex 4 and section B.7.2 of the PDD states that: - data will be archived electronically and regularly; - kept to the full crediting period plus two years; - will be calibrated and maintained according to manufacturer requirements; - project staff will be trained regularly; - procedures for calibration of monitoring equipment, maintenance, installations and record handling will be established; - data will be collected and cross checked by project developer; FAR 1 was raised to address the implementation of monitoring plan before verification. The measures described in section B.7.2 and Annex 4 of the PDD should be implemented. Procedures regarding calibration of monitoring equipment, maintenance of monitoring equipment and installations, day-to-day records handling, training, monitoring adjustments, missing data allowing redundant reconstruction, project performance to guarantee the data should be implemented and available in the first verification.	FAR 1	FAR 1

* MoV = Means of Verification, DR= Document Review, I= Interview

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?	41	DR	See B.13.1	FAR 1	FAR 1
B.13.3. Does the monitoring plan provide information on monitoring equipment and respective positioning in order to safeguard a proper installation?	41	DR	See B.13.1	FAR 1	FAR 1
B.13.4. Are procedures identified for calibration of monitoring equipment?	41	DR	See B.13.1	FAR 1	FAR 1
B.13.5. Are procedures identified for maintenance of monitoring equipment and installations?	41	DR	See B.13.1	FAR 1	FAR 1
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)	41	DR	See B.13.1	FAR 1	FAR 1
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??	41	DR	See B.13.1	FAR 1	FAR 1
B.13.8. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	41	DR	See B.13.1	FAR 1	FAR 1
B.13.9. Are procedures identified for project performance reviews before data is submitted for verification, internally or externally?	41	DR	See B.13.1	FAR 1	FAR 1

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
B.14. Baseline Details					
B.14.1. Is there any indication of a date when determine the baseline?	41	DR	Yes, according to PDD version 3, 23/10/2007.	Ok	Ok
B.14.2. Is this in consistency with the time line of the PDD history?	41	DR	Yes, the starting date of the project activity is 06/07/2007 and the baseline was determined on 23/10/2007.	Ok	Ok
B.14.3. Is all data required provided in a complete manner by annex 3 of the PDD?	41	DR	Yes.	Ok	Ok
***C.* Duration of the Project / Crediting Period**					
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	41	DR	Starting date of the project activity: 06/07/2007 (issuance of operation environmental license that represents the real action). The operational lifetime is 30 years.	Ok	Ok
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)?	41	DR	The crediting period will start on 01/05/2009 or the date of registration, whichever is later. Assumed renewable crediting period. First period 7 years.	Ok	Ok
C.1.3. Does the project's operational lifetime exceed the crediting period	41	DR	Yes.	Ok	Ok
D. Environmental Impacts					
D.1.1. Does the project comply with environmental legislation in the host country?	8/41	DR	Yes, the project has the operation license issued on 06/07/2007 by FEEMA (Fundação Estadual de Engenharia do Meio Ambiente), number FE012996.	Ok	Ok
D.1.2. Has an analysis of the environmental impacts of the project activity been sufficiently described?	8/41	DR	The environmental impacts were assessed by the environmental agency FEEMA when issuing the operation license.	Ok	Ok

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
D.1.3. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	8/41	DR	No, a complete environmental impact assessment is not required by the environmental agency (the assessment was performed by FEEMA and no additional assessment was required).	Ok	Ok
D.1.4. Will the project create any adverse environmental effects?	8/41	DR	Not expected any adverse environmental effects.	Ok	Ok
D.1.5. Are transboundary environmental impacts considered in the analysis?	8/41	DR	Transboundary environmental impacts were considered by the environmental agency FEEMA when issuing the operation license.	Ok	Ok
D.1.6. Have identified environmental impacts been addressed in the project design?	8/41	DR	No expected environmental impacts.	Ok	Ok

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
E. Stakeholder Comments					

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
E.1.1. Have relevant stakeholders been consulted?	41/50	DR	The Local Stakeholders Consultation followed the requirements of the Brazilian DNA (Resolution number 1). The letters of invitation for local stakeholders' comments were sent by EcoSecurities on February 11th 2008. The letters sent out gave a weblink, an email address, a postal address and a telephone number for further information and comments. The comments were invited for a period of thirty days from the date of receipt of the letters by stakeholders. According to ARs (Ref.50), letters were received between the 12th and 13th of February 2008. The following entities were invited to comment on project: • Municipality of Duque de Caxias • Legislative Chamber of Duque de Caxias • State Environmental Agency (FEEMA) • Municipal Environmental Secretariat • Brazilian NGO Forum • Federal Public Attorney • Duque de Caxias Federation of Resident Associations • Resident Association and Friends Pro Xerém The letters were sent in local language and the delivery receipts were checked. No comments were received.	Ok	Ok

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref. ID	MoV*	Comments	Draft Concl	Final Concl
E.1.2. Have appropriate media been used to invite comments by local stakeholders?	41/50	DR	Yes, verified the letters sent in local language and the delivery receipts.	Ok	Ok
E.1.3. If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	41/50	DR	Yes, it followed the requirements of the Brazilian DNA (Resolution number 1).	Ok	Ok
E.1.4. Is the undertaken stakeholder process described in a complete and transparent manner?	41/50	DR	Yes, it followed the requirements of the Brazilian DNA.	Ok	Ok
E.1.5. Is a summary of the stakeholder comments received provided?	41/50	DR	No comments received.	Ok	Ok
E.1.6. Has due account been taken of any stakeholder comments received?	41/50	DR	No comments received.	Ok	Ok

* MoV = Means of Verification, DR= Document Review, I= Interview

Table 3 References

Reference ID	Title / Description	Comments
1.	Lixo Zero Composting Project PDD Version 1 – 20 December 2007	CDM – Project Design Document
2.	http://cdm.unfccc.int/Projects/Validation/index.html	Searching page of the UNFCCC site.
3.	http://cdm.unfccc.int/Projects/Validation/DB/O909DSD2JNCMX8JJXDJQ6X4HS3MPOH/view.html	Page of the UNFCCC with link to where the Project was displayed for Public Comments.
4.	http://cdm.unfccc.int/DOE/scopes.html	Page of the UNFCCC with scopes and their approved methodologies.
5.	AM0025 "Avoided emissions from organic waste through alternative waste treatment processes" Version 10	Approved CDM methodology used in the Project
6.	http://www.ibge.gov.br/home/estatistica/populacao/condicaodevida/pnsb/default.shtm	Brazilian Institute for Geography and Statistics website
7.	http://cdm.unfccc.int/methodologies/DB/K04K512KEMA2MRZ5MXGVIFDX7042C6/view.html	UNFCCC webpage with the history of the methodology.
8.	Licença de Operação N°FE012996 – FEEMA – Governo do Estado do Rio de Janeiro	Operation License issued by FEEMA (the Environmental Regulators of the State of Rio de Janeiro)
9.	Registro de Produto de Números: RJ-77317 10001-5 and RJ-77317 10002-3 – Ministério da Agricultura, Pecuária e Abastecimento.	Soil Conditioner – Products Registration within the Ministry of Agriculture, Cattle Raising and Supply.
10.	Registro do estabelecimento de Número: (EP) RJ-77317-4 – Ministério da Agricultura, Pecuária e Abastecimento.	Establishment Registration within the the Ministry of Agriculture, Cattle Raising

* MoV = Means of Verification, DR= Document Review, I= Interview

Reference ID	Title / Description	Comments
		and Supply.
11.	Procuração da Ambiental Lixo Zero para Flavio de Araújo Cunha	Letter of Attorney from Ambiental LixoZero to Flávio de Araujo Cunha
12.	Attestation by Ecocert to Ambiental Lixo Zero for the year 2007/2008	Attestation that Ambiental Lixo Zero products are fit for organic agriculture
13.	Lay-out 12 Maio 07	Layout of the Ambiental Lixo Zero composting plant
14.	Nota Fiscal da Bioexton Biotecnologia	Bioexton Biotechnology Invoice
15.	http://www.bioexton.com.br/nova/default.asp?controle=inpi	Webpage with patent number for Bioexton catalyst agent in Brazil
16.	http://www.bioexton.com.br/nova/default.asp?controle=uspto	Webpage with patent number for Bioexton catalyst agent in the USA
17.	www.bvsde.paho.org/bvsaidis/resisoli/mexico/03064p04.pdf Simplified Recycling and composting garbage plants	Article published by the WHO on its Virtual Library of Sustainable Development and Environmental Health.
18.	Contrato Particular de Operações	Contract between Ambiental Lixo Zero and Multiambiental Coletas e Transportes Ltda - CONFIDENCIAL
19.	Instrumento Particular de Contrato para Prestação de Serviços de Recebimento de Resíduos Orgânicos Destinados à Transformação em Fertilizantes Orgânicos	Contract between Ambiental Lixo Zero and DEMAX – CONFIDENCIAL
20.	FEEMA – Sistema de Licenciamento de atividades poluidoras – Formulário de Requerimento	FEEMA's Request form for operational license

* MoV = Means of Verification, DR= Document Review, I= Interview

Reference ID	Title / Description	Comments
21.	http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/5_Volume5/V5_3_Ch3_SWDS.pdf	IPCC report used to estimate AF.
22.	Revista Orgânica	Organic Magazine with publication about the process used by Ambiental Lixo Zero.
23.	https://www.mfrural.com.br/produtos.aspx?categoria3=255&nmop=Fertilizantes-Agricolas-Fertilizantes-Organicos-Outros	Webpage with prices of different types of fertilizers – found by DOE (last accessed 31/07/08)
24.	Lixo Municipal: Manual de Gerenciamento Integrado	Document published by the Institute of Technological Research of São Paulo and CEMPRE (from the Portuguese Compromisso Empresarial para Reciclagem – Entrepreneurial Commitment to Recycling.
25.	http://www.abrelpe.org.br/panorama_2007.php	Panorama of Solid Residues in Brazil – 2007 (from the Portuguese – Panorama dos Resíduos Sólidos no Brasil – 2007)
26.	http://www.feema.rj.gov.br/legislacao.asp	Feema Web site with Landfill regulations in Rio
27.	http://cdm.unfccc.int/Reference/tools/index.html	Web page of UNFCCC with latest tools
28.	MoC Lixo Zero 2008.05.26	Modalities of Communication letter provided by PPs.
29.	Respostas Lixo Zero – Requisições Iniciais da Validação.pdf	Statement of the project developer with history of waste processed and compost produced during pilot

* MoV = Means of Verification, DR= Document Review, I= Interview

Reference ID	Title / Description	Comments
		project as well as future estimates of them.
30.	Lixo Zero Composting Project PDD Version 2 – 21 May 2008	CDM – Project Design Document (Version 2)
31.	Uso agrícola de composto de lixo urbano – benefício ou prejuízo.pdf	Article by EMBRAPA talking about the risks of using solid waste as raw material for compost.
32.	http://www.bndes.gov.br/produtos/faq/bloco1.asp#perg16	Site with requirements for the financing of BNDES
33.	Contract EcoSecurities-Lixo Zero – Signature and date pages	Initial page and signatures of the contract between Ambiental Lixo Zero and EcoSecurities
34.	2005-2006 Business Balances and Accountants' Analysis	Spreadsheets with business balances for the years of 2005 and 2006 and reports with analysis of two accountants.
35.	Lixo Zero – calculator v2.1	Version two of the calculations for the estimations of emission reductions.
36.	Light Invoice	Energy invoice to Ambiental Lixo Zero
37.	http://cdm.unfccc.int/public_inputs/2008/VVM/vvm.pdf	Validation and Verification Manual (Draft)
38.	http://maps.google.com/	Site used to cross-reference the distance from Gramacho to the project site.
39.	Auto Posto do Trabalho IV Ltda.	Fuel usage invoices

* MoV = Means of Verification, DR= Document Review, I= Interview

Reference ID	Title / Description	Comments
40.	2nd answer to NIR2	Email from project developer with answer about the bottle neck of the process plant.
41.	Lixo Zero Composting Project PDD Version 3 – 11 September 2008	CDM – Project Design Document (Version 3)
42.	Página 117 – IPT 2000	Page 117 of the document 'Lixo Municipal: Manual de Gerenciamento Integrado' published by the Institute of Technological Research of São Paulo and CEMPRE (from the Portuguese Compromisso Empresarial para Reciclagem – Entrepreneurial Commitment to Recycling) describing accelerated composting methods
43.	Answer to NIR 11	Email by the PP answering to NIR11.
44.	http://www.ecosecurities.com/Footers/Contact_us/default.aspx	Website with contact details of different offices of Ecosecurities.
45	http://www.ibam.org.br/publique/media/Boletim5rs.pdf	Document published by IBAMA (Instituto Brasileiro de Proteção ao Meio Ambiente) the Brazilian Environmental Regulators.
46.	http://www.bioexton.com.br/nova/default.asp	Bioexton Webpage explaining its technology and giving the number of projects using the technology.

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Reference ID	Title / Description	Comments
47.	http://www.bvsde.paho.org/bvsaidis/resisoli/mexico/03064p04.pdf	Article talking about simplified composting plants in Rio Grande do Norte.
48.	http://www.saniplanengenharia.com.br/Data/Feema_DZ-1310.R7.doc	Government legislation requiring industry to describe in inventories technical information on quantity, characteristics and destiny given to their waste, amongst other things.
49.	http://e-legis.anvisa.gov.br/leisref/public/showAct.php?id=13554	ANVISA resolution about the management of residues from health services.
50.	Letters + ARs + Post Office List of Clients and Ars corresponding numbers	Folder with all the letters sent out for local stakeholder consultation and ARs as well as Post Office List of Clients with ARs corresponding numbers.
51.	http://cdm.unfccc.int/Reference/tools/ls/meth_tool06_v01.pdf	'Tool to determine project emissions form flaring gases containing methane'
52.	Pre-feasibility study for Landfill Gas recovery and Energy Production at the Gramacho Landfill – Rio de Janeiro, Brazil http://www.bancomundial.org.ar/lfg/archivos/PrefeasibilityStudies/English/Gramacho_PreFeasibility_Study_English.pdf	Gramacho Pre-feasibility study with information for the calculation of AF.
53.	Cópia de BR- Grid EF SSECO – 2005 to 2007 Ex-ante	Calculation spreadsheets of the EF applied in the Project.
54.	http://cdm.unfccc.int/Reference /tools/ls/meth_tool07_v01_1.pdf	'Tool to calculate the emission factor for an electricity system'
55.	http://cdm.unfccc.int/Reference/tools/index.html	'Tool for the demonstration and assessment of

* MoV = Means of Verification, DR= Document Review, I= Interview

Reference ID	Title / Description	Comments
		additionality'
56.	http://www.ecocert.com.br/projetos.php	Ecocert Webpage with list of other certified projects
57.	http://cdm.unfccc.int/Reference/tools/ls/meth_tool04_v04.pdf	'Tool to determined methane emissions avoided from dumping waste at a solid waste disposal site'.
58.	Contrato de recebimento e destinação final dos resíduos orgânicos (contract between Ambiental Lixo Zero and Hortigruti)	CONFIDENCIAL – contract between Ambiental Lixo Zero and HORTIFRUTI.
59.	http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_3_Ch3_Mobile_Combustion.pdf	IPCC page with value used for VFcons
60.	BEN 2006	Balanço Energético Nacional 2006 ano base 2005 (table 9 used as source of diesel density)
61.	http://cdm.unfccc.int/Project/DB/DNV-CUK1188545610.71/view	Project 1316:Centro Industrial del Sur Organic Waste Project already registered as a CDM Project in the UNFCCC website.
62.	http://cdm.unfccc.int/Reference/Guidclarif/pdd/PDD_guid04_v07.pdf	Latest guidelines for completing CDM - PDD

* MoV = Means of Verification, DR= Document Review, I= Interview

A.3 Annex 3: Overview of Findings

Findings Overview

Findings from validation of Lixo Zero Composting Project
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:	13/06/2008			Raised by:	Fabian Gonçalves/Talita Beck		
No.:	01	Type	CAR	Issue:	Modalities of Communication Letter	Ref.:	A.2. Table 1 Item 6
Lead Assessor Comment					Date: 13/06/2008		
Provide the letter confirming the modalities of communication with the UNFCCC**.**							
Project Participant Response:					Date: 08/07/2008		
The MoC has been signed by the project participants and sent to the validator.							
Acceptance and Close out by Lead Assessor:					Date: 05/08/2008		
Information Provided: MoC Information Verified: SGS verified the MoC sent by Ecosecurities					Verified Document Reference: MoC Lixo Zero 2008.05.26 (Ref.28)		
Reasoning for not acceptance or acceptance and close out: The MoC was provided by Ecosecurities and the CAR 1 was closed out.							

Date:	13/06/2008			Raised by:	Fabian Gonçalves/Talita Beck		
No.:	02	Type	NIR	Issue:	Wx and Wjx	Ref.:	A.2.2 and B.7.4
Lead Assessor Comment					Date: 13/06/2008		
Provide verifiable evidence of the data used in the estimation of the amount of waste input into the project (i.e. total amount of waste prevented from disposal) and the amount of different waste types at validation.							
Project Participant Response:					Date: 08/07/2008		

In order to perform the most accurate estimative possible to correctly forecast the emission reductions in the PDD, data provided by the project developer were used. The project developer, on the other hand, has difficulties to provide reliable data and verifiable evidence mainly because of the following factors:

1) The technology is new to the host country, as stated in the PDD. Therefore, there is no other way to estimate values than the project developer own experience;
2) The project activity has never operated as it is forecasted to operate. As the technology is new, it has always being adapted in order to provide better results. Therefore, several configurations of equipments were tested and will be tested.
3) The company focus, until the present moment, was related to gather financial resources and adapt the technology. As it was operating only as a pilot plant (under test conditions), they were not obligated to monitor, record and archive any data.
4) The great majority of the main equipments were manufactured specifically for Ambiental Lixo Zero, according to their financial and spatial availability at the time. Moreover, the operational tests performed in the equipments during the pilot phase were not recorded. Therefore, although the project participant knows what the installed capacity of the plant is, the company is not able to provide any reports or equipment manual stating this information.

Because of these factors, the most reliable data can be found at the business plan that the project developer uses in order to negotiate its product. A declaration from the project developer is being provided to the validator in order to substantiate the facts stated in this response. The PDD was updated, with most recent data, in result of this request.

Acceptance and Close out by Lead Assessor:	Date: 05/08/2008
Information Provided: A statement from the project developer with history of the waste being delivered during the trials of the pilot plant and estimates of the amount of waste expected to be received which is also based on the plants was provided by the PP. An email with an analysis of the process bottle neck was subsequently sent by the PPs. Information Verified: The document was read and content analysed against VVM and Briefing Note BN196 The document was read and the content was analysed against VVM.	Verified Document Reference: Respostas Lixo Zero – Requisições iniciais da validação.pdf (Ref.29) http://cdm.unfccc.int/public_inputs/2008/VVM/vvm.pdf (Ref.37) 2nd answer to NIR2 (Ref.40).

Reasoning for not acceptance or acceptance and close out:
A business plan was provided by the PP with the history data of the food residues delivered to the pilot plant in previous years. Because the plant was not in full mode then, estimates of the amount of residues which the project is able to receive and process using its full capacity (which the PDD states to be 1000 tonnes per day) was provided. The estimates in the business plan are of approximately 800tonnes of residues per day. The PP uses the value of 500 tonnes of residues per day in the PDD to be conservative.
PP states that several configurations of equipments have been tested and will be tested. Explain the choice of the process' capacity in the light of these changes. Provide the specification of the equipment used for the choice of process capacity so that the DOE can confirm that the value of 500tonnes per day is appropriate.
NIR remains open.
01/09/08
An email was sent by the project developer stating that the project will have the capability of processing 500tonnes of residues operating on a 2 shift basis, per day. It also states that:

- **Today** their shredder has the capacity to process 40 tonnes of waste per hour. This means that in two shifts (or 16hrs) they are able to process 640tonnes of waste per day.
- That the bottle neck of the process is in the reception shredder and the conveyor belt.
    1. The reception shredder has a installed capacity of 60m3/h (1ton = 0.60m3).
    2. The conveyor belt where the residues are selected, accommodate today 10 operators, and the processing is estimated at 3 tonnes/person/hour. It is the intention of the project developer to change the configuration of the project to allow for a conveyor belt which will accommodate 25 operators.

Given these values it can be said that:

- Today the shredder has capacity to attend the estimated 500 tonnes of residues processed per day if 2 shifts per day are adopted.
- Today the reception shredder has a installed capacity of 100tonnes/hour which means 1600tonnes/day and therefore would also attend to the estimated 500 tonnes of residues processed per day if a 2 shift day is adopted.
- Today, the conveyor belt has the capacity to process 30 tonnes of residues per hour. This means 480 tonnes per day if the 2 shifts a day are considered.

From the data provided, it is therefore concluded that:

- The reception shredder is the least likely to be the process bottleneck;
- The shredder and the conveyor belt and its capacity to accommodate operators are the projects bottle necks.

05/10/08
Based on the the draft VVM (ref.37) which states that "where data parameters will be monitored and hence only become available after validation of the project activity (e.g. measurements after the implementation of the project activity), the DOE should confirm that the emission reduction estimates provided in the PDD are reasonable", the DOE made a comparison of the project design plan of the PDD against the PPs' estimates described above (more specifically the project developer's estimates) and found that Wx estimates are reasonable. NIR 2 was closed out.

Date:	13/06/2008			Raised by:	Fabian Gonçalves/Talita Beck		
No.:	03	Type	NIR	Issue:	Mcompost,y	Ref.:	A.2.2. and B.7.4
Lead Assessor Comment					Date: 13/06/2008		
Provide verifiable evidence to the data used in the estimation of the total amount of compost produced per year.							
Project Participant Response:					Date: 08/07/2008		
Again, as a consequence of the facts stated previously, the estimation of the total amount of compost produced per year was performed based on previous experience from the project developer. It was used a relation of the total amount of waste treated with the total amount of compost produced at the time the plant operated under test conditions. The PDD was updated, with most recent data, in result of this request.							
Acceptance and Close out by Lead Assessor:					Date: 05/08/2008		

Information Provided: A statement from the project developer with the history of the daily average residues being delivered during the trials of the pilot plant and the resulting daily average of compost being produced for the years of 2004 to 2007. Information Verified: The document was read and content analysed against VVM and Briefing Note BN196	Verified Document Reference: Respostas Lixo Zero – Requisições iniciais da validação.pdf (Ref.29) http://cdm.unfccc.int/public_inputs/2008/VVM/vvm.pdf (Ref.37)
Reasoning for not acceptance or acceptance and close out: The relationship of waste processed and compost produced used in the calculations of Mcompost,y were checked against estimates from the pilot plant data (ref29). However, because the waste processing capacity of the project has not yet been confirmed, this NIR will remain opened until NIR2 is addressed. The waste capacity of the process plant has been confirmed as reasonable so NIR 3 was closed out.	

Date:	13/06/2008			Raised by:	Fabian Gonçalves/Talita Beck		
No.:	4	Type	NIR	Issue:	Lt,y	Ref.:	B.7.4
Lead Assessor Comment					Date: 13/06/2008		
Substantiate (explain and provide evidence) of the data used to estimate the leakage caused by increase in transportation due to the project activity for the ERs calculations with special reference to DTi,y (average additional distance traveled by vehicle type I compared to baseline).							
Project Participant Response:					Date: 08/07/2008		
The project developer never operated with the new configuration of equipments. They also never operated at full capacity. In order to provide estimative to the PDD, the source of information used was the actual negotiations of the project developer. During the site visit, some (confidential) proposals were provided to the validator. According to these negotiations, it is expected that the clients from Ambiental Lixo Zero are situated at a radius of 250 km. This value was used at the PDD for estimative. However, during the crediting period, this distance will be monitored as the address of the clients. The actual kilometres (distance travelled by each truck) will be used to calculate leakage emissions. The estimative of 250 km is considered conservative.							
Acceptance and Close out by Lead Assessor:					Date: 05/08/2008		
Information Provided: New version of the PDD and the contracts provided during site visit. Information Verified: The distance shown in the new version of the PDD was cross checked with Google Map distance.					Verified Document Reference: Lixo Zero Composting Project PDD Version 2 – 21 May 2008 (Ref.30) Contracts Ref. nos. 18, 19. http://maps.google.com/ (Ref.38). Contrato de recebimento e destinação final dos resíduos orgânicos – Confidential contract between Ambiental Lixo Zero and HORTIFRUTI (Ref.58)		
Reasoning for not acceptance or acceptance and close out: The estimates about the 250Km radius where it is expected that clients of Ambiental Lixo Zero are situated were crosschecked against the contracts provided at validation and concur. The reason why this NIR was opened is that, the location of the Gramacho Landfill was not clear in the Google map of the PDD version 1. This map was evidencing the distance between these two points because any incremental distance between landfill and project site was to be accounted as leakage, and PPs stated that this was less than 10Km. The information is now clear in the PDD version 2 and this information was crosschecked with the distance given in Google Map (Ref.38). NIR 4 was closed out.							

Date:	13/06/2008			Raised by:	Fabian Gonçalves/Talita Beck		
No.:	05	Type	CAR	Issue:	Crediting period	Ref.:	A.4.11
Lead Assessor Comment					Date: 13/06/2008		
Provide a more realistic date for the starting of the crediting period (i.e. other than 01/07/2008).							

Project Participant Response:	Date: 08/07/2008
The starting date of the crediting period was updated in the PDD to 01/01/2009 (DD/MM/YYYY) or the date of registration of the CDM project activity, whichever is later. The PDD was updated in result of this request.	
Acceptance and Close out by Lead Assessor:	Date: 05/08/2008
Information Provided: New Version of the PDD was provided Information Verified: The date of the start of the crediting period was checked	Verified Document Reference: Lixo Zero Composting Project PDD Version 2 – 21 May 2008 (Ref.30) Lixo Zero Composting Project PDD Version 3 – 11 September 2008 (Ref.41)
Reasoning for not acceptance or acceptance and close out: The starting date of the crediting period has been changed in Version 2 of the PDD and it is now the earliest of 01/01/09 or the date of the registration of the CDM project activity. CAR 5 was closed out. The date has changed again in version 3 of the PDD to the earliest of either 01/03/09 or the date of the registration of the CDM project activity.	

Date:	13/06/2008			Raised by:	Fabian Gonçalves/Talita Beck		
No.:	06	Type	CAR	Issue:	Step 1b of the additionality tool was incorrectly applied	Ref.:	B.3.1
Lead Assessor Comment					Date: 13/06/2008		
In Section B.4. of the PDD, when applying Step 1b of the 'Tool for the demonstration and assessment of additionality', the alternative of disposing of waste at a landfill where the landfill gas is captured has been wrongly excluded as a viable alternative because it complied with regulations. The non-implementation of this alternative because there is no regulations enforcing it, and because otherwise this would not be applied due to financial reasons, should be discussed in the barrier analysis.							
Project Participant Response:					Date: 08/07/2008		
The exclusion of this option in Step 1 was removed. The discussion of this issue is performed in the barrier analysis, performed in section B.5 from the PDD. The PDD was updated in result of this request.							
Acceptance and Close out by Lead Assessor:					Date: 05/08/2008		
Information Provided: New Version of the PDD was provided Information Verified: The DOE verified the contents of the PDD version 2.					Verified Document Reference: Lixo Zero Composting Project PDD Version 2 – 21 May 2008 (Ref.30)		
Reasoning for not acceptance or acceptance and close out: The exclusion of alternative 3 (disposing of landfill waste where the landfill gas is captured) was removed from section B.4 in version 2 of the PDD. This alternative is now discussed and excluded as a non-realistic alternative in section B.5. CAR 6 was closed out.							

Date:	13/06/2008			Raised by:	Fabian Gonçalves/Talita Beck		
No.:	07	Type	NIR	Issue:	Step 2 of the Baseline methodology of the AM0025 not explained in the PDD.	Ref.:	B.3.1
Lead Assessor Comment					Date: 13/06/2008		
Explain why this section is not applicable as stated in the PDD p.10.							
Project Participant Response:					Date: 08/07/2008		
As there is no production of electricity/heat comprehended in the baseline of the project activity, there is no need to identify baseline energy source. There is no fuel used in the Baseline. For this project activity, there is only the consumption of energy/fuel. Therefore, this section is not applicable. The PDD was updated in result of this request.							
Acceptance and Close out by Lead Assessor:					Date: 05/08/2008		
Information Provided: New Version of the PDD was provided Information Verified: The DOE verified the contents of the PDD version 2.					Verified Document Reference: Lixo Zero Composting Project PDD Version 2 – 21 May 2008 (Ref.30)		

Reasoning for not acceptance or acceptance and close out: The methodology AM0025 asks for the identification of fuel for the baseline choice of energy source and it is now explained in Version 2 of the PDD that there is no production of electricity/heat in the project activity itself so no need to identify the baseline source. This is in accordance with the methodology AM0025 so that NIR7 was closed out.

Date:	13/06/2008			Raised by:	Fabian Gonçalves/Talita Beck		
No.:	08	Type	CAR	Issue:	Steps in the determination of baseline scenario	Ref.:	B.3.1
Lead Assessor Comment					Date: 13/06/2008		
Change step 3 (Barrier Analysis) to reflect the order of analysis of alternatives used in the "Tool for demonstration and assessment of additionality" (i.e. use format with steps 3a and 3b, analyzing barriers that prevent the implementation of the proposed CDM activity – alternative 1 – and showing that the identified barriers would not prevent at least one of the alternatives separately in its respective sections).							
Project Participant Response:					Date: 08/07/2008		
Sub-steps 3a and 3b were inserted in section B.5 (step 3 from the "Tool for demonstration and assessment of additionality". The PDD was updated in result of this request.							
Acceptance and Close out by Lead Assessor:					Date: 05/08/2008		
Information Provided: New Version of the PDD was provided Information Verified: The DOE verified the contents of the PDD version 2.						Verified Document Reference: Lixo Zero Composting Project PDD Version 2 – 21 May 2008 (Ref.30)	
Reasoning for not acceptance or acceptance and close out: Step 3 of the PDD version 2 now includes steps 3a and 3b required by CAR8. CAR 8 was closed out.							

Date:	13/06/2008			Raised by:	Fabian Gonçalves/Talita Beck		
No.:	09	Type	NIR	Issue:	Evidence given in barrier analysis	Ref.:	B.3.1
Lead Assessor Comment					Date: 13/06/2008		
Provide the website which specifies that operational licenses are necessary for the financing by the BNDES (industry norm).							
Project Participant Response:					Date: 08/07/2008		
The website is http://www.bndes.gov.br/produtos/faq/bloco1.asp#perg16, where can be found information regarding prerequisites to request financing. This website was inserted in the PDD. The PDD was updated in result of this request.							
Acceptance and Close out by Lead Assessor:					Date: 05/08/2008		
Information Provided: The link with requirements for financing from the BNDES http://www.bndes.gov.br/produtos/faq/bloco1.asp#perg16 Information Verified: The content of the website was verified.						Verified Document Reference: http://www.bndes.gov.br/produtos/faq/bloco1.asp#perg16 (Ref.32)	
Reasoning for not acceptance or acceptance and close out: The content of the website was verified and paragraph 16 of the site specifies that environmental legislation, and therefore licenses, must be adhered to before one can request financing from the BNDES. NIR 9 was closed out.							

Date:	13/06/2008			Raised by:	Fabian Gonçalves/Talita Beck		
No.:	10	Type	CAR	Issue:	Evidence given in barrier analysis	Ref.:	B.3.1
Lead Assessor Comment					Date: 13/06/2008		
Provide and include in the text of the analysis of the PDD, relevant and referenced evidence (as per the							

latest version of the "Tool for the demonstration and assessment of additionnality" – i.e. market prices) that consumers tend to use soil fertilized with animal manure as opposed to composting from companies that use waste similar to the one used in the project activity.

Project Participant Response:	Date: 08/07/2008

The market prices of fertilized soil varies greatly (there can be found fertilized soil from several different qualities and compositions). Moreover, the evidence for the tendency of using fertilized soil with manure (or with some other compound) is not mainly financial, but cultural. The quality of fertilizer from composting units in Brazil was, historically, very poor; and the amount of this kind of fertilizer available in the market was extremely low. As shown by the common practice analysis in the PDD, even today in Brazil there are very few composting units. Therefore, it is not feasible to prove that fertilized soil was preferred instead of compost fertilizer using market prices.
Following this rationale, a text from EMBRAPA (from Portuguese Empresa Brasileira de Pesquisa Agropecuária – a respected federal institution) corroborates the argument of low quality compost. It states that the problems with the compost are related mainly to three factors:

1) the poor quality of the residues used to make the compost and to poorly managed composting processes;
2) the presence of heavy metals in the waste used to make the compost and, therefore, in the final compost as well;
3) the presence of pathogens in the compost.

The proposed project activity intends to change this wrong and outdated culture already established in Brazil that compost is bad as fertilizer. Therefore, all these three aspects were severely evaluated in order to provide excellent quality compost.
Pires, A.M.M. (2006). Uso agrícola de composto de lixo urbano: benefício ou prejuízo?. EMBRAPA - Empresa Brasileira de Pesquisa Agropecuária. The text can be found at http://www.agencia.cnptia.embrapa.br/recursos/Pires_compostoID-CuG2uuX4Ti.pdf. Websited visited in 14/07/2008.

Acceptance and Close out by Lead Assessor:	Date: 05/08/2008
Information Provided: The text from EMBRAPA Information Verified: The text by EMBRAPA was analysed.	Verified Document Reference: Uso Agrícola de Composto de Lixo Urbano – Benefício ou prejuízo.pdf (Ref.31) 11/09/08 – Lixo Zero Composting Project PDD Version 3 – 11 September 2008 (Ref.41)

Reasoning for not acceptance or acceptance and close out:
From the answer given by the PP, the DOE accepts the number of composting stations coupled with the text by EMBRAPA as an indication of cultural choices. However, this rationale, together with the reference provided, should also be included in the PDD so that the existence of this barrier can be demonstrated with the support of evidences. Furthermore, if the cultural, qualitative and prevailing practices are the issue, it is suggested that this issue be classified as such (i.e. a barrier other than investment). CAR remains opened.
11/09/08 – the Lixo Zero Composting Project PDD Version 3 – 11 September 2008 (Ref.41) was analised and has a more comprehensive analysis of the barrier and cites the relevant evidence (ref.31). CAR 10 was closed out.

Date:	13/06/2008			Raised by:	Fabian Gonçalves/Talita Beck		
No.:	11	Type	NIR	Issue:	Barrier analysis assumptions	Ref.:	B.3.1
Lead Assessor Comment				Date: 13/06/2008			

Explain the statement made on page 5 of the PDD that "the technology proposed for the composting plant can be regarded as a new technology to the State of Rio de Janeiro, to the southeast region and to Brazil" once the product of this technology is being commercialized in MG (also as organic) and once the reference from IPT (2000) of the PDD states that there are installations of the accelerated composting method in RJ as well as other Brazilian states, although many them are not successful for different reasons. Explain why this has not been discussed in the barrier analysis too.	
Project Participant Response:	Date: 08/07/2008
The technology used for this project activity is patented. There is no possibility that one other company use this technology, as it implies in a violation of the rights of the patent owner. The patent certificate was provided to the validator during site visit. The product can be similar, but as the process is not, we can assume that the technology is new. In the PDD is stated that the technology is new, and not the product. The patent is evidence. The accelerated composting method described by IPT (2000) is entirely different from the technology used in this project activity, and thus can not be compared to it. IPT (2000) – page 117 – describes the technology of accelerated composting as "a procedure that differs from the traditional composting by the presence of a biodigester or reactor, also called bioestabilizer". Moreover, amongst the special equipment and methodologies cited as existing in a accelerated composting unit, it is not mentioned the utilization of a pool of nutrients and bacteria in order to speed up the composting process. Therefore, this technology is also not comparable to the proposed project activity technology (it would be necessary the acquisition of an additional equipment, changing entirely the core of the technology), and thus was not included in the Barrier Analysis discussion.	
Acceptance and Close out by Lead Assessor:	Date: 05/08/2008
Information Provided: The information provided was the answer above 12/09/08 The email by PP answering NIR11 (Ref.43) and Page 117 of the IPT 2000 (Ref.42). Information Verified: The answer above 12/09/08 The email by PP answering NIR11 (Ref.43) and Page 117 of the IPT 2000 (Ref.42).	Verified Document Reference: Nota Fiscal da Bioexton Biotecnologia (Ref.14) http://www.bioexton.com.br/nova/default.asp?controle=inpi (Ref.15) 12/09/08 – Página 117 – IPT 2000 (Ref.42) Answer to NIR11 (Ref.43) http://www.ibam.org.br/publique/media/Boletim5rs.pdf (Ref. 45). http://www.bioexton.com.br/nova/default.asp (Ref. 46). Lixo Zero Composting Project PDD Version 3 – 11 September 2008 (Ref.41)

Reasoning for not acceptance or acceptance and close out:
During site visit the PP presented to the DOE a receipt of the purchase of the technology produced and patented by Bioexton and the web address with the patents of the technology in Brazil and the US.
According to the site http://www.agrociencia.brtdata.com.br/ENCICLOPEDIA/B/BIOEXTON.htm Bioexton is a biocatalyser used to accelerate the degradation of organic elements and frequently used in the production of organic compost.
The technology used for this project activity is patented by Bioexton and subsequently commercialised. The year of patent in Brazil is 2000. This does not guarantee that the technology is solely sold to Ambiental Lixo Zero and it does not indicate that the technology is new.
As far as the description given in page 117 of IPT (2000), a biodigester (as the name itself implies) uses biological culture as a digester. This usually involves the use of bacteria. provide the section of the IPT(2000) with such a description so that the DOE can assess it.
Despite the above discussion, the DOE acknowledges that the technology is not well diffused into the market and that this could lead to being unknown but would like to see this transparently discussed in the PDD.
NIR remains outstanding.
12/09/08 -
The information of page 117 of the IPT (2000) was sent to the DOE by the PP. This information was analysed and it explains the process of accelerated composting sites. It does not mention however the use of biocatalysers. In this respect the technology of the Project does differ from the one explained in this reference.
The DOE has accepted, given the further explanation in ref.43 and ref. 42, the statement "the technology proposed for the composting plant can be regarded as a new technology to the State of Rio de Janeiro, to the southeast region and to Brazil" in the light of the following:
1) the process of the Project activity uses a biocatalyser which further accelerates the process of accelerated composting plants, from approximately 45 days to approximately 72hours, and this process is little diffused in the region and country (refs. 45 and 46)
2) the combination of the use of the biocatalyser, of the fact that the project proposal is to use urban residues and that its proposal is to produce organic fertilizer makes the technology even less difused.

However, the PP accepted that it is not conservative to call the technology 'exclusive' or 'unique' given the evidence already discussed earlier and given the fact that the site of Bioexton also mentions the concessions given to 25 other projects in Brazil. The PP has agreed to remove from the PDD any reference to the technology as being 'exclusive' to Lixo Zero, especially for the section where it discusses common practice. NIR 11 was closed out.

Date:	13/06/2008			Raised by:	Fabian Gonçalves/Talita Beck		
No.:	12	Type	CAR	Issue:	Tools	Ref.:	B.4.2
Lead Assessor Comment					Date: 13/06/2008		
Change the version of the "Tool for the Demonstration and assessment of Additionality" to Version5 and the version of the "Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site" to Version 3 as per EB39.							
Project Participant Response:					Date: 08/07/2008		
The version of these documents was changed. The PDD was updated in result of this request.							
Acceptance and Close out by Lead Assessor:					Date: 05/08/2008		
Information Provided: New Version of the PDD was provided Information Verified: The DOE verified the contents of the PDD version 2.					Verified Document Reference: Lixo Zero Composting Project PDD Version 2 – 21 May 2008 (Ref.30) Lixo Zero Composting Project PDD Version 3 – 11 September 2008 (Ref.41)		

Reasoning for not acceptance or acceptance and close out: The DOE verified the contents of the PDD version 2 and confirms that changes have been made. CAR 12 was closed out. Later this tool changed to version 5.2. Although this did not impact on the PDD this has been changed to show that it uses the latest version (see version 3 of PDD, ref.41). The "Tool to determine methane emissions avoided from dumping waste at a solid waste disposal site" also changed to version 4. This was also corrected in the new PDD.

Date:	13/06/2008			Raised by:	Fabian Gonçalves/Talita Beck		
No.:	13	Type	CAR	Issue:	Starting date of project activity	Ref.:	B.4.3
Lead Assessor Comment					Date: 13/06/2008		
Change the starting date of the project activity to reflect the definition given in the EB33 paragraph 76 (i.e. '**the earliest of** the dates at which the **implementation or construction or real action** of the project activity begins').							
Project Participant Response:					Date: 08/07/2008		
The starting date of the project activity, as the earliest of the dates which the implementation, construction or real action, was defined as the signature of the contract binding the project developer and the carbon advisor. A copy of the contract page containing the signatures and the dates was provided to the validator. Therefore, this event was considered the real action date. This information was updated in the PDD, which was also changed in order to add a clearer and more detailed timeline of the project activity. In this timeline, can be seen the entire historical events that led to the implementation of the actual project activity. The PDD was updated in result of this request.							
Acceptance and Close out by Lead Assessor:					Date: 05/08/2008		
Information Provided: New Version of the PDD was provided and Contract between Lixo Zero and Ecosecurities Information Verified: The DOE verified the contents of the PDD version 2 and the Contract above and cross checked this with the statement made by the project developer.						Verified Document Reference: Respostas Lixo Zero – Requisições iniciais da validação.pdf (Ref.29) Lixo Zero Composting Project PDD Version 2 – 21 May 2008 (Ref.30) Contract EcoSecurities-Lixo Zero – Signature and date pages (Ref.33) 12/08/09 Lixo Zero Composting Project PDD Version 3 – 11 September 2008 (Ref.41) 2005-2006 Business Balances and Accountants' Analysis (Ref. 34).	
Reasoning for not acceptance or acceptance and close out: It is clear that the contract signed between the PPs is a real action in terms of alleviating its barriers and it can be considered as consideration of CDM. However, before this happened (in September 2006) the project developer must have had a construction permit and have started construction, since tests in the pilot plant were going on since 2004. This would therefore be the earliest of the dates first time around. On the other hand the project has ceased in 2007 and started again after the project developer received the Environmental Operational License and the resulting decision of EcoScurities to produce a PDD. This would therefore be the earliest of the dates second time round. CAR remains opened. 12/08/09 The PP has sent Version 3 of the PDD with the revised date of the start of the project activity. They considered the date of the Operational License issued by FEEMA (which resulted in the decision of EcoSecurities to produce the PDD), after the project had ceased in 2007, as the starting date. The DOE accepted this date as the 'real action' date in the light of the barriers it faced (the ones already seen and evidenced in the PDD) and given the fact that the project ceased in early 2007. Furthermore the reports of 2 accountants were received saying that the project was in financial difficulties and would cease in the circumstances it was found in 2005 and 2006 (this was provided as evidence of early CDM consideration – ref.34). The CAR 13 was closed out.							

Date:	13/06/2008			Raised by:	Fabian Gonçalves/Talita Beck		
No.:	14	Type	NIR	Issue:	CDM consideration	Ref.:	B.4.3
Lead Assessor Comment					Date: 13/06/2008		
Provide the evidence of CDM consideration and the evidence which made the Project Participants realise that the project could only continue with the revenues of CDM carbon credits (i.e. that the project activity would cease if CDM carbon credits revenue were not received).							
Project Participant Response:					Date: 08/07/2008		

The following timeline was inserted in the PDD:

Event	Approximate Time	Explanation
Requesting Environmental Operational License	End 2004	The plant needed this license to start its operation. However, the installation of equipments was not finished. They needed money to buy lots of equipments and even the equipments bought had problems when the technology was being tested.
End of Financial Resources	End 2005	As the company was not able to request financing, bankruptcy was a reality in this time. The many tests that the company needed to adapt the technology were consuming its already little resources.
Presented CDM possibilities	Mid 2006	Lixo Zero started considering possible CDM revenues as a way to guarantee their investment in the company. Meetings with EcoSecurities staff pointed out a positive sign for this intention.
Contract with EcoSecurities Signed	End 2006	After negotiations, the contract was signed. The installation of equipments, delayed in the past, could start again because now the project developer would have his investments returned.
Delays in Environmental license	Beginning 2007	More delays to get the environmental license led to consequent delays in CDM revenues, culminating in another wave of pessimism in the project developer.
Envirnomental License received	Mid 2007	Only at this time EcoSecurities could assure that the project was really going forward.
PDD development Starts	End 2007	After a thorough evaluation regarding additionality and real potential of emission reductions, EcoSecurities started developing the PDD. At this time financing request was not an option, because the company did not have any guarantees to give to BNDES in order to assure the payment.

Moreover, in order to evidence this timeline, a declaration from the project developer was provided to the validator, as well as accountants reports stating the financial status of the company in the time of the decision-making. By this accountants reports, can be noticed that the company was facing serious difficulties, with major constraints of money.

According to the accountants consulted:

- The great majority of the capital from the company is in the form of equipments, showing an excess of immobilized capital;
- In 2006 there was an increase in the Acid Test Ratio when compared to 2005, but this increase was due to an injection of capital and not due to operational revenues, showing that the company (even not being able to request finance) was able to inject a sum of own money, but this sum injected was consumed;
- In conclusion, as the company was not being able to generate its own resources, the Indebtedness Degree tends to increase. This happens because the company's need for external income tends to

increase as well in order to make possible its operation. CDM revenues were considered by the project developer by a mean to alleviate the losses due to lack of financing. A copy of the company's balance sheets and accoutants reports was provided to the validator. Therefore, after the presentation of CDM possibilities and the signing of a contract with the carbon advisor, the company decided to go ahead with the project as a way to recover the sums already invested at the composting facility. In conclusion, we consider that CDM was seriously considered as a way to make the project happen and, without CDM revenues, this project would most certain not go ahead. The PDD was updated in result of this request.

Acceptance and Close out by Lead Assessor:	Date: 05/08/2008
Information Provided: New Version of the PDD, contract between Lixo Zero and Ecosecurities (signature and date pages), declaration of project developer (Ref.29), business balances for the years of 2005 and 2006 and accountant's reports Information Verified: The DOE verified the contents of the PDD version 2 and the timelines above were inserted. The timelines above were crosschecked with the project developers declaration, business contract and business balances as well as accountants reports.	Verified Document Reference: Respostas Lixo Zero – Requisições iniciais da validação.pdf (Ref.29) 2005-2006 Business Balances and Accountants' Analysis (Ref. 34) Lixo Zero Composting Project PDD Version 2 – 21 May 2008 (Ref.30) Contract EcoSecurities-Lixo Zero – Signature and date pages (Ref.33)

Reasoning for not acceptance or acceptance and close out:
The project developers declaration states that in 2004 and 2005 the plant operated as a pilot plant.
In 2006 the plant operated with great financial difficulty until May. With the onerous financial expenses and lack of environmental/operational license and therefore no receipt of waste residues, production was almost zero after May. In September the contract with EcoSecurities was signed and the credits were seen as the means to alleviate barriers for the beginning of full operations. Therefore the project developer invested more into the plant.
In May 2007 operations ceased since the project developer did not receive environmental/operational license and with no income there was no way to continue tests. In September the environmental/operational license was received and the project developer was able to secure more investment into the business and EcoSecurities started development of PDD. New equipments were bought, these were however only received in May 2008. The company has now to initiate to repay the money borrowed.
During site visit there was no evidence that the plant is operating, only a few samples of the product.
The Balance sheets were examined too. In 2005 the 'ativo' or investments were the same as the 'passivo' or money being borrowed into the company, and there was no income.
In 2006, the company had a little bit of income from sales (judging from the statement made by the project developer this is from the beginning of 2006 till May) but operational expenses were very high.
The first of the accountants reports that bankruptcy of a company may happen through the excess of financial immobilised investment which in 2005 was 94% and in 2006 76% (that is the 'ativo' or investment was represented by 94% and 76% of immobilised investments – i.e. equipments).
The second accountant states that bankruptcy is evident from the indices calculated. In the beginning of activities the company needed to, besides proceeding with some pre-operational expenses, increase its acquisition of equipments utilizing third party investments which translated into very low indices and consequently deficits that were delayed over the financial exercise. He concluded that the company is not able to generate its own financial resources as a consequence of that and that the indebtedness is likely to increase, as it will continue to need the ingress of external resources in order to make its operation viable.
From the documents presented after this NIR and the observation in the site visit accepted that CDM revenue will help the project overcome the difficulties which originated with the barriers identified.
The pages of the contract between Ambiental Lixo Zero and EcoSecurities were also verified. This is accepted as the evidence of CDM consideration. This NIR 14 was closed out.

Date:	13/06/2008			Raised by:	Fabian Gonçalves/Talita Beck		
No.:	15	Type	NIR	Issue:	EGpj,ff,y	Ref.:	B.7.4
Lead Assessor Comment					Date: 13/06/2008		
Substantiate (explain and provide evidence) of the data used to estimate amount of energy consumed from the grid by the project activity for the ERs calculations.							

Project Participant Response:	Date: 08/07/2008
The project developer never operated with the new configuration of equipments. They also never operated at full capacity. In order to provide estimative to the PDD, the installed capacity of equipments were used as if the project activity will operate all equipments at full capacity, 24 hours a day (for the PDD version 2, the list of equipments were updated, thus leading to changes in the PDD – the new installed capacity list was provided to the validator). However, during the crediting period, as the electricity will have to be bought from the grid operator, receipts will be used to monitor the electricity consumed. In case that it is not possible to check the receipts, the full installed capacity reported in this PDD will be used. During the site visit, a copy of purchase receipt was provided to the validator. This approach is considered conservative, as the grid operator has an electricity meter installed at Ambiental Lixo Zero plant in order to monitor the electricity consumed, and this meter is maintained according to national standards.	
Acceptance and Close out by Lead Assessor:	Date: 05/08/2008

Information Provided:	Verified Document Reference:
New version of the PDD, Lixo Zero – calculator v2. 1 and electricity invoice Information Verified: The estimated amount of electricity consumed on the PDD was cross checked with the spreadsheet's new list of equipment and estimations, and with electricity bill. These documents were also crosschecked with VVM.	Lixo Zero Composting Project PDD Version 2 – 21 May 2008 (Ref.30) Lixo Zero – calculator v2.1 (Ref.35) Light Invoice (Ref.36) http://cdm.unfccc.int/public_inputs/2008/VVM/vvm.pdf (Ref.37) 12/09/08 Lixo Zero Composting Project PDD Version 3 – 11 September 2008 (Ref.41) http://cdm.unfccc.int/Project/DB/DNV-CUK1188545610.71/view (ref.61)

Reasoning for not acceptance or acceptance and close out:
1) The methodology states that this parameter is supposed to be monitored so that it is essential that the PDD reflects this. As a minimum the invoices of the electricity company should be used every time.
2) The receipt provided by the PP could not be used for the estimates of the energy because the operation of the plant during the pilot period was erratic and energy consumed low.
3) In order to provide estimative to the PDD, the installed capacity of equipments at 100% load factor, 24 hours a day, was used. This method of estimation is acceptable for the validation stage. The estimate was crosschecked with the estimates of a projects already registered (ref.61). The project which was used for comparison has a process capacity of 90tonnes of waste per hour using a load factor of 75% and considered the time of operation to be of approximately 13hrs/day. The project estimated the energy use at 1198.3 MWh/year, this is slightly less than the 2201.57 MWh/year estimated by PPs of this project. The value is higher due to the use of 24hrs operation. This has lead to a conservative estimate and thus accepted.
However, as stated by the project developer, the grid operator has an electricity meter installed at Ambiental Lixo Zero plant in order to monitor the electricity consumed, and this meter is maintained according to national standards. During verification this meter should be used to obtain the electricity consumed by the project and not an estimative value. NIR 15 will be closed out considering that this information will be updated in the monitoring section of the PDD.
12/09/08
The monitoring section of the PDD version 3 was updated to say that the parameter will be measured by the electricity meter but it will be estimated by the total capacity of the plant if the meter could not be used. NIR15 was closed out.

Date:	13/06/2008			Raised by:	Fabian Gonçalves/Talita Beck		
No.:	16	Type	NIR	Issue:	Sa,y	Ref.:	B.7.4
Lead Assessor Comment					Date: 13/06/2008		
Substantiate (explain and provide evidence) of the data used to estimate the share of the waste that degrades under anaerobic conditions in the composting plant for the ERs calculations.							
Project Participant Response:					Date: 08/07/2008		

The project developer never operated with the new configuration of equipments. They also never operated at full capacity. In order to provide estimative to the PDD, as no measurements were performed before the description of the project design, the parameter in question was conservatively chosen as 2% (the version 1 of PDD was corrected and the estimative of 2% was added – the value previously used was wrong, the item in question was misinterpreted). When the project activity starts its full operation, the monitoring system will be in place and, for the crediting period, monitoring data will be used.	
Acceptance and Close out by Lead Assessor:	Date: 05/08/2008
Information Provided: New version of the PDD 12/09/08 Version 3 of the PDD Information Verified: The value of Sa,y applied 12/09/08 The removal of the word indirect	Verified Document Reference: Lixo Zero Composting Project PDD Version 2 – 21 May 2008 (Ref.30) 12/09/08 Lixo Zero Composting Project PDD Version 3 – 11 September 2008 (Ref.41) http://cdm.unfccc.int/Project/DB/DNV-CUK1188545610.71/view (ref.61)
Reasoning for not acceptance or acceptance and close out: This data is also in the section of monitored parameters and therefore was compared to the same project as in NIR 15. The project which has already been registered used an estimated value of 0% using the same method of aeration of compost pile in the plant. Since this estimate is a %, it does not depend on process capacity, and the value of 2% is therefore reasonable. This NIR can be closed upon the removal of the word “(indirect)” (in the heading: source of data, under this parameter, section B.7.1) since this parameter is to be monitored by a standardised mobile gas detection unit (O2 mobile gas detectors measure this data directly) and guarantees the first applicability criteria of the project – that the process is done in aerobic conditions. NIR remains outstanding. 12/09/08 The word ‘(indirect)’ was removed from the heading: source of data, under this parameter, section B.7.1 in PDD version 3. NIR 16 was closed out.	

Date:	13/06/2008			Raised by:	Fabian Gonçalves/Talita Beck		
No.:	1	Type	FAR	Issue:	Implementation of procedures for Monitroing Plan	Ref.:	B.13
Lead Assessor Comment					Date: 02/10/08		
FAR 1 was raised to address the implementation of monitoring plan before verification. The measures described in section B.7.2 and Annex 4 of the PDD should be implemented. Procedures regarding calibration of monitoring equipment, maintenance of monitoring equipment and installations, day-to-day records handling, training, monitoring adjustments, missing data allowing redundant reconstruction, project performance to guarantee the data should be implemented and available in the first verification.							
Project Participant Response:					Date:		
Acceptance and Close out by Lead Assessor:					Date:		

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