RINA

VALIDATION REPORT

Final

"BRASCARBON Methane Recovery Project BCA-BRA-15"
in
Brazil

Report N°. 2010-BQ-10-MD
Revision N°. 1.3

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VALIDATION REPORT

Project Title: "BRASCARBON Methane Recovery Project BCA-BRA-15"	**Country:** Brazil	**Estimated CERs (tCO_2e):** 53,170 *annual average*
Client: Luso Carbon Fund – Fundo Especial de Investimento Fechado	**Client contact:** Mr. David Garcia	
Report No.: 2010-BQ-10-MD	**Revision:** 1.3	**Date of this report:** 02/11/2011
Approved by (Final Report – DCI Director approval): Roberto Cavanna		**Date of approval:** 03/11/2011

Methodology

Number:	**Version:**	**Title:**	**Scale**	**SS(s):**
AMS-III.D	version 17 of 26/11/2010	"Methane recovery in animal manure management systems"	Small	15

RINA Services S.p.A. (RINA), commissioned by Luso Carbon Fund – Fundo Especial de Investimento Fechado, performed the validation of the project activity "BRASCARBON Methane Recovery Project BCA-BRA-15" in Brazil, with regard to the relevant requirements for CDM activities.

In conclusion, it is RINA's opinion that the project activity "BRASCARBON Methane Recovery Project BCA-BRA-15" in Brazil, as described in the PDD version 3 of 21/06/2011, meets all relevant requirements for CDM activities and all relevant host Party criteria and correctly applies the baseline and monitoring methodology AMS-III.D "Methane recovery in animal manure management systems" version 17 of 26/11/2010. As the LoA from Portugal depends on the approval of the DNA of Brazil, prior to the submission of the Project Design Document and the Validation Report to the CDM Executive Board, the Project will have to receive the written approval of voluntary participation from the DNA of Brazil and Portugal, including the confirmation from Brazilian DNA that the Project assists the country in achieving sustainable development.

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Abbreviations

AR	Acknowledgement Receipts (Avisos de Recebimento)
BE	Baseline Emissions
BRL	Brazilian Reais
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM M&P	CDM Modalities and Procedures
CER(s)	Certified Emission Reduction(s)
CH_4	Methane
CL	Clarification Request
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
CRT	Coordination and Technical Control Staff
D_{CH4}	Methane density calculation
DCI	Certification Division of RINA Services Spa
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	Executive Board
EIA	Environmental Impact Assessment
ER	Emission Reductions
FAR	Forward Action Request
FE	Hourly flare efficiency
FFR	Formulated Feed Rations
GHG(s)	Greenhouse gas(es)
GWP	Global Warming Potential
INMET	National Meteorology Institute (from the Portuguese: *Instituto Nacional de Meteorologia*)
IPCC	Intergovernmental Panel on Climate Change
LoA	Letter of Approval
MoV	Means of Verification
MP	Monitoring Plan
MR	Monitoring Report
NGO	Non-governmental Organization
ODA	Official Development Assistance
P_{BIOGAS}	Work pressure of the biogas measuring
PDD	Project Design Document
PE	Project Emissions
PP(s)	Project Participant(s)
Ref.	Document Reference
RINA	RINA Services Spa
SS(s)	Sectoral Scope(s)
T_{BIOGAS}	Biogas temperature
Tf	Flare temperature measuring
UNFCCC	United Nations Framework Convention on Climate Change
VS	Volatile Solids
VVM	Validation and Verification Manual
W_{CH4}	Methane content
Wsite	Swine Average Weight

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1 INTRODUCTION

Luso Carbon Fund – Fundo Especial de Investimento Fechado has commissioned RINA to carry out the validation of the "BRASCARBON Methane Recovery Project BCA-BRA-15" project in Brazil.

This report summarizes the findings of the validation of the project, performed on the basis of UNFCCC criteria for CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

The objective of the Validation is to have an independent evaluation of a project activity by a designated operational entity against the requirements of the CDM as set out in decision 3/CMP.1, its annex and relevant decisions of the COP/MOP, on the basis of the project design document. In particular, the project's baseline, monitoring plan, and the project's compliance with relevant UNFCCC requirements and host Party criteria are validated in order to confirm that the project design, as documented, is sound and reasonable and meets the identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

1.2 Scope

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

UNFCCC criteria for CDM refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures, the simplified modalities and procedures for small-scale CDM project activities and the subsequent decisions by the CDM Executive Board.

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

2 METHODOLOGY

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

The validation consisted of the following three phases:

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

The following sections outline each step in more detail.

2.1 Document Review

The PDD, version 3 of 21/06/2011 and previous versions /1/, in particular the applicability of the methodology, the baseline determination, the additionality of the project activity, the starting date of the project, the monitoring plan, the emission reduction calculations provided in the form of a spreadsheet, version 2, dated 21/06/2011: "PDD 15 AMS III D VERSÃO 17 29092011.xls" and previous versions /8/, were assessed as part of the validation.

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

/1/	Brascarbon Consultoria, Projetos e Representação S/A: CDM-PDD for project activity "BRASCARBON Methane Recovery Project BCA-BRA-15" in Brazil, version 3 of 21/06/2011 Version 2 of 19/05/2011 Version 1 of 01/04/2010.
/2/	CDM Executive Board: Baseline and monitoring methodology AMS-III.D, "Methane recovery in

	animal manure management systems", version 16 of 20/03/2010 and version 17 of 26/11/2010.
/3/	CDM Executive Board: Validation and Verification Manual, version 01.2 of 30/07/2010.
/4/	CDM Executive Board: "Guidelines for completing the simplified project design document (CDM-SSC-PDD) and the form for proposed new small scale methodologies (CDM-SSC-NM)", version 5 of 15/09/2007.
/5/	CDM Executive Board: Attachment A of Appendix B of the Simplified Modalities and Procedures for Small-Scale CDM Project Activities, Version 08, dated 29/09/ 2011.
/6/	CDM Executive Board: "Tool to determine project emissions from flaring gases containing methane", version 1, EB 28, 15/12/2006.
/7/	CDM Executive Board: "Glossary of CDM Terms", version 5 of 19/08/2009.
/8/	Brascarbon Consultoria, Projetos e Representação S/A: Brascarbon CERs spreadsheet version 2, dated 29/09/2011 ("*PDD 15 AMS III D VERSÃO 17 29092011.xls*") version 1, 01/04/2010 ("*PDD 15 AMS III D VERSÃO 16.xls*")
/9/	Brascarbon Consultoria, Projetos e Representação S/A: Brascarbon Financial analysis spreadsheet Version 3, dated 21/06/2011 ("IRR PDD15_version 3.xls") version 2, dated 19/05/2011 ("IRR PDD15_version 2.xls") version 1 dated 01/04/2010. ("*IRR PDD 15 version 1.xls*"),
/10/	Brascarbon Local Stakeholders consultation (letters, dated 05/04/2010: "Carta aos Stakeholders Oficiais PDD 15.doc" and Acknowledges Receipts: "AR - AVISOS DE RECEBIMENTOS.pdf").
/11/	Brascarbon Consultoria, Projetos e Representação S/A: Brascabon monitoring procedures: POP 1- Flare temperature measuring-Tf (*Obtenção da temperatura do flare - T_f*) POP 2- Site inspection & MS% i,y (Inspeção das localidades & *MS% i,y*) POP 3- Animals counting (*Contagem de animais*) POP 4- Biogas volume measuring (*Medição do volume de biogás através da vazão*) POP 5- Methane contend monitoring– W_{CH4} (*Medição da concentração de metano– $W\ CH_4$*) POP 5a- Methane content 90% - W_{CH4} (medição da concentração de metano (int. Conf. 90%) – W_{CH4} POP 6- Biogas temperature monitoring-T_{BIOGAS} (*Obtenção da temperatura do biogás - $T_{BIOGÁS}$*) POP 7- Methane density calculation- D_{CH4} (*Cálculo da densidade do metano – D_{CH4}*) POP 8- Hourly flare efficiency-FE (*Eficiência horária do flare – FE*) POP 9- Biodigester sludge removal (*Remoção do lodo do biodigestor*) POP 10- General training (*Treinamento Geral*) POP 12- General Maintenance (*Manutenção Geral*) POP 13- Work pressure of the biogas measuring- P_{BIOGAS} (*Obtenção da pressão de trabalho do biogás - $P_{BIOGÁS}$*) POP 14- Feed formulation-FFR (*Formulação de ração – FFR*) POP 15- Genetics (Genética) POP 16- Swine average weight - Wsite (*Peso médio dos animais confinados – Wsite*) POP 17- Emissions reductions calculation ex-post (*Cálculo das reduções de emissões ex-post*) POP 20- Operations tart-up Biodigester/ flow meter/ flare (*Start-up das operações – Biodigestor/ medidor de vazão/ flare*) POP 23- Field equipments calibration (*Calibração de equipamentos de campo*) POP 24- Operational days of the biodigester (*Dias de funcionamento do biodigestor*)
/12/	Brascarbon pictures of Granja Colorado, received on 12/08/2010.
/13/	IPCC 2006, chapter 10, volume 4, Tables 10.17 (page 10.45), 10A-7 (page 10.80) and 10A-8 (page 10.81).
/14/	Agroceres Pic Genética de Suínos Ltda - Purchase receipts ("*agroceres.pdf*"), 11/09/2008.
/15/	Rossetto's evidence of the Formulated Feed Rations ("*rossetto.pdf*")
/16/	Empresa José Rosseto e Outros' letter regarding the genetics used in the farms, dated 05/03/2010 ("*declaracao rossetto.pdf*").
/17/	Rossetto's control of the number of animals for each farm "*SUINOCULTURA ROSSETTO.pdf*"

	(received on 18/08/2010).
/18/	Brascarbon Environment Impact Assessment "Caracterização de impactos ambientais para suinocultura" ("*Caracterização de Impactos Ambientais – Farm XXXXX.pdf*").
/19/	CDM Executive Board: Non-binding best practice examples to demonstrate additionality for SSC project activities, EB 35 annex 34.
/20/	CDM Executive Board: Guidelines on the assessment of investment analysis, version 5 of 15/07/2011, EB 62 – annex 05.
/21/	Brascarbon Consultoria, Projetos e Representação S/A: Manual of the Digesters description (design) (Manual Descritivo dos Biodigestores) ("*Memorial Descritivo_Projeto Biodigestores Brascarbon_23jun05.pdf*").
/22/	Brascarbon Consultoria, Projetos e Representação S/A: Description of the dimensions and volume of the digester for each farm ("*Dimensionamento Rosseto.xls*").
/23/	Rossetto's control of the weight of the animals. Copies of the weight ticket were verified during site visit.
/24/	Brazilian DNA resolution number 7 for the local stakeholder consultation, dated 05/03/2008.
/25/	CDM Executive Board: Guidelines on assessment of de-bundling for SSC project activities, version 3 of 28 May 2010.
/26/	INMET web site National Meteorology Institute, available at <http://www.inmet.gov.br/html/clima.php> accessed on 20/06/2011
/27/	Environmental Ministry (Ministério de Meio Ambiente-MMA) Brazilian Water Environment Legislation, available in Portuguese at: http://www.mma.gov.br/port/conama/res/res05/res35705.pdf accessed on 20/06/2011
/28/	Rosseto's letter regarding the number of animal during the period 01/03/2009 to 31/02/2010, dated 01/03/2010
/29/	Rosseto's letter regarding the dimension of the anaerobic lagoons, dated 14/01/2010
/30/	Brascarbon Consultoria, Projetos e Representação S/A: Brascarbon spreadsheet with the retention time of the anaerobic lagoons (no date available) ("calculo tempo retencao.xlsx)
/31/	CDM Executive Board: "Guidance on the demonstration and assessment of prior consideration of the CDM", version 4 of 15/07/2011 (EB 62, annex 13)
/32/	A&P Pezzato Construções Ltda proposal number 012/09 for construction and installation of the biodigesters, dated 11/11/2009, valid for two years
/33/	A&P Pezzato Construções Ltda proposal number 011/09 for maintenance of the biodigesters, dated 11/11/2009, valid for two years
/34/	A&P Pezzato Construções Ltda proposal number 013/09 for construction, installation and maintenance of anaerobic lagoons (open lagoon), dated 11/11/2009, valid for two years
/35/	CDM Executive Board: "General Guidelines to SSC CDM methodologies", version 17 of 03/06/2011 EB 61 annex 21.
/36/	A&P Pezzato Construções Ltda – Evidence of starting date, dated 15/06/2011 (confirmation of acceptance of proposals /32//33//34/)
/37/	MCO2 – Sociedade Gestora de Fundos de Investimento Imobiliario, SA: Board Meeting, number 23, dated 12/04/2011 (approval of the Project Implementation/investiment decision)
/38/	A&P Pezzato Construções Ltda – Evidence of investiment and maintenance costs for similar plant in Brazil, dated 01/03/2011.
/39/	Similar registered CDM projects in Brazil: AgCert AWMS GHG Mitigation Project BR05-B-10, Minas Gerais, Goias, Mato Grosso, and Mato Grosso do Sul - Brazil UNFCCC n# 0417 AgCert AWMS GHG Mitigation Project BR05-B-15, Paraná, Santa Catarina, and Rio Grande do Sul, Brazil UNFCCC 00421 AgCert AWMS GHG Mitigation Project BR05-B-16, Bahia, Goiás, Mato Grosso, Minas Gerais, Rio de Janeiro and São Paulo, Brazil UNFCCC n#422 ECOINVEST – MASTER Agropecuária – GHG capture and combustion from swine farms in Southern Brazil UNFCCC n# 0469

	Batavo Cooperativa Agroindustrial: Greenhouse emission reductions on swine production by means the installation of better waste management systems UNFCCC n# 3984
/40/	Portugal Ratification status available at: http://maindb.unfccc.int/public/country.pl?country=PT
/41/	Brazil Ratification status available at: http://maindb.unfccc.int/public/country.pl?country=BR
/42/	CDM Executive Board: Tool for the demonstration and assessment of additionality, version 05.2.1 of 11/08/2011
/43/	EMBRAPA guidelines available at <http://www.cnpsa.embrapa.br/pnma/pdf_doc/doc_pnma.pdf> accessed on 07/08/2011 (Portuguese language)
/44/	EMBRAPA website http://www.embrapa.br/ accessed on 07/08/2011 (Portuguese language)

2.2 Follow-up actions

On 14/07/2010, RINA visited Cerqueira César (office and 6 farms- details in the section A.2.1 of table 2 of the validation protocol) to resolve questions and issues identified during the document review and to perform interviews with relevant stakeholders in the host country. As the project was not implemented, from the 7 sites described in the PDD, RINA visit 6 of them: Sítio Barreiro, Sítio Santa Rosa Dos Ventos, Sítio Mirante do Macuco, Fazenda São Francisco, Fazenda Bom Retiro, Sítio Água Do Rosário.

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

	Date	Name and Role	Organization	Topic
/a/	14/07/2010	Stela Campos Rosseto- farms responsible	José Rosseto e outros	Baseline scenario (open lagoon), number of animal per farm, animal genetic
/b/	14/07/2010	Edmar Paulo da Silva-farms responsible	José Rosseto e outros	
/c/	14/07/2010	Luiz Lasas-consultant	Brascarbon	Additionality, emission reduction, monitoring plan, stakeholders consultation process, environmental studies, project implementation
/d/	14/07/2010	David Gracia-consultant	Brascarbon	

2.3 Resolution of outstanding issues

The objective of this phase of the validation is to resolve any outstanding issues which need to be clarified for RINA's positive conclusion on the project design.

To guarantee transparency a validation protocol has been customized for the project. The protocol shows in a transparent manner the requirements, means of validation and the results from validating the identified criteria. The validation protocol consists of four tables; the different columns in these tables are described in the figure below (see Figure 1). The completed validation protocol is enclosed in Appendix A to this report.

A corrective action request (CAR) is raised if one of the following occurs:

- The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions.
- The CDM requirements have not been met.
- There is a risk that the emission reductions cannot be monitored or calculate.

A clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

A forward action request (FAR) is raised during validation to highlight issues related to project implementation that require review during the first verification of the project activity. FARs shall not relate to the CDM requirements for registration. CARs, CLs and FARs identified are included in the validation protocol in Appendix A of this report.

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Figure 1 Validation protocol tables

Validation Protocol, Table 1 - Mandatory requirement		
Requirement	**Reference**	**Conclusion**
The requirements the project must meet.	Makes reference to the documents where the answer to the requirement is found.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) if a requirement is not met. A request for clarification (CL) is used when the validation team has identified a need for further clarification.

Validation Protocol, Table 2 - Requirement checklist					
Checklist Question	**Ref.**	**MoV**	**Comments**	**Draft Conclusion**	**Final Conclusion**
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organized in seven different sections.	Makes reference to documents where the answer to the checklist question or item is found.	Explain how conformance with the checklist question is investigated. Examples are document review (DR), interview or any other follow-up actions (I), cross checking (CC) with available information relating to projects, (N/A) means not applicable.	The discussion on how the conclusion is arrived at and the conclusion on the compliance with checklist question so far.	OK is used if the information and evidence provided is adequate to demonstrate compliance with CDM requirements. For CAR, CL and FAR see the definitions above.	OK is used if the information and evidence provided is adequate to demonstrate compliance with CDM requirements.

Validation Protocol, Table 3 - Resolution of Corrective Action Requests and Clarification			
Corrective action requests and/or clarification requests	**Reference to Table 2**	**Response by project participants**	**Validation Conclusion**
The CAR and/or CLs raised in table 2 are repeated here.	Reference to the checklist question number in Table 2 where the CAR or CL is explained.	The responses given by the project participants to address the CARs and/or CLs.	The validation team's assessment and final conclusion of the CARs and/or CLs.

Validation Protocol, Table 4 - Forward Action Requests		
Forward action request	**Reference to Table 2**	**Response by project participants Validation Conclusion**
The FAR raised in table 2 is repeated here.	Reference to the checklist question number in Table 2 where the FAR is explained.	Response by the project participants on how forward action request will be addressed prior to first verification.

2.4 Internal quality control

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

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

2.5 Validation team and technical reviewer(s)

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

Role/Qualification	Last Name	First Name	Country
Team Leader CDM	Principe Branco Saettoni	Geisa Maria	Brazil
CDM Validator	San Valero	Vicente	Brazil
CDM Validator/technical expert	Poll Herrmann	Lilian Cristine	Brazil
CDM Validator	De Lima Carvalho	Thaís	Brazil
Financial expert	Mendonça de Oliveira	Tiago	Brazil
Technical Reviewer	Valoroso	Rita	Italy
Technical Reviewer	Dias	Cintia Mara Miranda	Brazil
Technical Reviewer	Badhwar	Naresh	India

3 VALIDATION FINDINGS

The findings of the validation related to the project, as described in the PDD version 3 of 21/06/2011 /1/ are stated in the following sections.
The validation requirements, the means of validation and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

3.1 Approval and Participation

The project's host Party is Brazil and Portugal is identified as Annex I country.

Brazil and Portugal fulfill the requirements to participate in the CDM. Both have ratified the Kyoto protocol and have established a DNA according to the participating requirements for CDM under the Kyoto Protocol. Brazil ratified the Kyoto Protocol on 23/08/2002 and established as its DNA, the "Comissão Interministerial de Mudança Global do Clima" as per the UNFCCC website /41/. Portugal ratified the Kyoto Protocol on 31/05/2002 and established as its DNA, the "Ministry of Environment, Spatial Planning and Regional Climate Change Commission" as per the UNFCCC website /40/.

The project participants are Brascarbon Consultoria, Projetos e Representação S/A. from Brazil and Luso Carbon Fund – Fundo Especial de Investimento Fechado from Portugal (Annex I country), and all participants are private entities. The project participants are correctly listed in table A.3 of the PDD and the information is consistent with the contact details provided in Annex 1 of the PDD /1/.

The table below will be completed after the receipt of the LoAs from Portugal and Brazil.

The letter of approval from Portugal and Brazil has not been received and request for registration will not be submitted until it has been received.

Project participants	Luso Carbon Fund – Fundo Especial de Investimento Fechado	Brascarbon Consultoria, Projetos e Representação S/A.
Parties involved	Portugal	Brazil
APPROVAL		

LoA received	Not yet available	Not yet available
Date of LoA	/	/
LoA received from	/	/
Validation of authenticity	/	/
Validity of LoA	/	/
PARTICIPATION		
Party is party to Kyoto Protocol	Yes	Yes
Voluntary participation	Yes	Yes
Project contribution to SD	Yes	/

3.2 Project design document

The PDD for the project activity "BRASCARBON Methane Recovery Project BCA-BRA-15" in Brazil, version 1 of 01/04/2010, version 2 of 19/05/2011 and version 3 of 21/06/2011 /1/, submitted by Luso Carbon Fund – Fundo Especial de Investimento Fechado and Brascarbon Consultoria, Projetos e Representação S/A., has been the basis for the validation process.

RINA confirms that the above PDD is based on the currently valid PDD template and is completed in accordance with the applicable guidance document "Guidelines for completing the simplified project design document (CDM-SSC-PDD) and the form for proposed new small scale methodologies (CDM-SSC-NM)", version 5 of 15/09/2007 /4/.

The main differences between the PDD version 1 published for GSP and current PDD version 3 are the following: update of the version of the applied methodology from version 16 to version 17 /2/, exclusion of the energy generation/ generators of the project design, including the revision of the investment barrier to not consider the scenario with the energy generation, correction of the NPV calculation, revision of SELIC period, exclusion of the technological barrier, revision of the CERs calculation and PDD to correct the number of guilts and boars that was exchanged for the site Sítio Mirante do Macuco (changing the CERs estimatives), revision of the monitoring plan to include the project emissions formula according to the "Tool to determine project emissions from flaring gases containing methane", revision of the PDD to include the monitoring of the flare efficiency as per the requirements of the "Tool to determine project emissions from flaring gases containing methane", inclusion in the monitoring plan the parameter nd_y (Number of days in year "y" where the treatment plant was operational), revision of the archiving time as per the Guidelines for completing the simplified project design document (CDM-SSC-PDD) and the form for proposed new small scale methodologies (CDM-SSC-NM)", version 5 of 15/09/2007, exclusion of the barrier due to prevailing practice.

The estimated CERs in the PDD version 1 /1/ published for GSP accounted to 54,372 tCO_2e while the estimated CERs in the PDD version 3 submitted for registration account to 53,170 tCO_2e. The difference in the estimation is due to the the number of guilts and boars that was exchanged for the site Sítio Mirante do Macuco.

3.3 Project Design

The Project Activity consists of the construction of new covered in-ground anaerobic reactor (digesters) that will utilize the organic material currently treated in wastewater opened lagoons, from the confined animal (breading, nursery and finishing swines)operations, to produce biogas. The project activity will capture and combust (flare) the methane gas produced. The project activity is located in the city of Cerqueira César, São Paulo state. The geographical coordinates of the farms are:

Farm	Geographical Coordinates
Sítio Barreiro	S 23º 11' 24.9'' W 049º 12' 04.3''
Sítio Santa Rosa Dos Ventos	S 23º 08' 01.3''

	W 049º 10' 26.3''
Sítio Mirante do Macuco	S 23º 09' 00.3'' W 049º 10' 36.2''
Fazenda São Francisco	S 23º 09' 47.9'' W 049º 10' 39.1''
Fazenda Bom Retiro	S 23º 09' 54.8'' W 049º 12' 04.3''
Sítio Água Do Rosário	S 23º 00' 10.4'' W 049º 04' 58.0''
Granja Colorado	S 23º 05' 58.4'' W 049º 06' 10.5''

Each farm will have one biodigester which will send the biogas through a pipe where it will be located the flow meter. The biogas will then be burned in an enclosed flare and all data stored in a Control Logic Program (CLP) /21//22/.
The dimentions of the biodigetor are described as follows /22/:

Farm	Site ID	Width (m)	Length (m)	Height (m)	Slope
Sitio Barreiro	BCA-221SP1-15	13	40	5	60º
Fazenda Bom Retiro	BCA-222SP1-15	15	50	5	60º
Granja Colorado	BCA-223SP1-15	11	40	4	60º
Sitio Agua Do Rosario	BCA-224SP1-15	15	50	5	60º
Sitio Mirante do Macuco	BCA-225SP1-15	13	45	5	60º
Santa Rosa Dos Ventos	BCA-227SP1-15	13	40	5	60º
Fazenda São Francisco	BCA-228SP1-15	14	45	5	60º

The difference between pre-project and post-project activity is clearly described in the PDD /1/. In the baseline the organic material is treated in the wastewater opened lagoons and in the project activity, the material will be treated in a new covered in-ground anaerobic reactors (digesters). The project design engineering reflects current good practice in Brazil. The biodigestor technology results in a significantly better performance than the open lagoons used in the baseline scenario /21/. At the time of the site visit, there was no equipment installed in the project farms.
The project is not a debundled component of a large project activity. Besides, the project participants have another small scale CDM project activity with the same methodology; the distance between the farms is greater than 1 Km. Project participants informed that the nearest project activity is located in Fartura city. Confirmed through Google maps that Fartura is approximately 75 Km far away from Cerqueira César.
The expected operational lifetime of the project activity, as defined in the PDD /1/, is 21 years, representing the crediting period of the project activity. As the equipments lifetime depends on external conditions, like climatic conditions, PP assures that if any equipment needs to be replaced, it will have the same characteristics of the equipment described in the PDD, not impacting/changing the project activity. A renewable crediting period of 7 years has been chosen for the project, starting from 01/01/2012, or the date of registration, whichever is later.
The project starting date was changed to 15/06/2011, to represent the signature of the construction contract to implement the project activity /36/. The starting date of the published PDD was revised in order to comply with "Glossary of CDM Terms", version 5, to represent a date to conduct a real action to implement the project activity.
The total GHG emission reductions from the "BRASCARBON Methane Recovery Project BCA-BRA-15" are estimated to be 372,190 tCO_2e during the first renewable 7 years crediting period, resulting in an annual average emission reductions of 53,170 tCO_2e / year.

RINA confirms that the description of the proposed CDM project activity, as contained in the PDD /1/ sufficiently covers all relevant elements, is accurate and complete and that it provides the reader with a clear understanding of the nature of the proposed CDM project activity.

3.4 Application of selected baseline and monitoring methodology

The project correctly applies the current approved simplified monitoring methodology for selected small-scale CDM project activity categories, AMS-III.D - "Methane recovery in animal manure management systems", version 17 of 26/11/2010 /2/.

The project is within the eligibility requirements of the baseline methodology since the annual estimated emission reductions of greenhouse gases is 53,170 tCO_2e, less than or equal to 60 $ktCO_2$ equivalent annually from all type III components of the project activity /35/.

The applicability conditions of the methodology are described bellow:

(a) The livestock population in the farm is managed under confined conditions;

Confined conditions were verified in the sites/farms during the site visit.

(b) Manure or the streams obtained after treatment are not discharged into natural water resources (e.g., river or estuaries).

During the site visit it was verified that no manure or the streams obtained after the lagoons are discharged into natural water resources. The sludge is used as a fertilizer and treated effluent is sent to lagoons where it is aerated and then used in irrigation. Moreover, PP has provided the procedure POP-9 /11/ to assure that the manure stream after treatment will not be discharged into natural water resources. The procedure also gives orientation to assure that the final sludge be used aerobically as fertilizer in the soil. It shall be assured that the sludge will not be deposited in the secondary lagoons or confined spaces to avoid possible methane emissions

(c) The annual average temperature of baseline site where anaerobic manure treatment facility is located is higher than 5° C;

The average temperature of São Paulo state is 23-25°C. Rina has confirmed the average temperature in the INPE (National Institute of Space Research) web site and INMET (meteorological National Institute) /26/

(d) In the baseline scenario the retention time of manure waste in the anaerobic treatment system is greater than 1 month, and in case of anaerobic lagoons in the baseline, their depths are at least 1 m

It is confirmed that the anaerobic lagoons are deeper than 1 meter for all farms (site visit and pictures of the Granja Colorado /12/). A meter was used to check that the installed lagoons are deeper than 1 meter. Moreover, PP has demonstrated that in the baseline scenario the retention time is greater than 30 days. The calculus is presented in the spreadsheet "*calculo tempo retencao.xlsx*" /30/ and considers data provided by the farmer's producer/28//29/.

(e) No methane recovery and destruction by flaring, combustion or gainful use takes place in the baseline scenario;

It is confirmed by site inspection that in the baseline scenario there are no methane recovery and destruction by flaring, combustion or gainful use.

The following project activity conditions were assessed:

(a) The residual waste from the animal manure management system shall be handled aerobically, otherwise the related emissions shall be taken into account as per relevant procedures of AMS-III.AO "Methane recovery through controlled anaerobic digestion". In case of soil application, proper conditions and procedures (not resulting in methane emissions) must be ensured;

The sludge is distributed over the field to improve fertilization. PP has provided the procedure POP-9 /11/ the procedure gives orientation to assure that the final sludge be used aerobically as fertilizer in the soil. It shall be assured that the sludge will not be deposited in the secondary lagoons or confined spaces to avoid possible methane emissions. The treated effluent is sent to lagoons where it is aerated and then used in irrigation.

(b) Technical measures shall be used (including a flare for exigencies) to ensure that all biogas produced by the digester is used or flared;

All generated biogas will be destroyed by flaring. The monitoring of the biogas is described in the operational procedure POP 4: Biogas volume measuring /11/

(c) The storage time of the manure after removal from the animal barns, including transportation, should not exceed 45 days before being fed into the anaerobic digester;
It was verified /informed during the site visit that there is no manure storage. In some farms there is a continuous flow or the removal is done twice a day. This is assured due to the common farms practices of the Confined Animal Feed Operation Practices, which follows recommendations from EMBRAPA/43/ (Empresa Brasileira de Agricultura e Agropecuária/ Brazilian Enterprise for Agriculture and Agricultural) to get high standards of sanitary conditions in the confined operations. As per project participants the dry matter content of the manure is not removed from the barns. The barn is daily washed an all waste is removed by the water flushing system to the digester.

Emission sources which are not addressed by the applied methodology and which are expected to contribute more than 1% of the overall expected average annual emissions reduction have not been identified.

RINA hereby confirms that the selected baseline and monitoring methodology has been previously approved by the CDM Executive Board, and is applicable to the Project, which complies with all the applicability conditions therein.

3.5 Project boundary and baseline identification

3.5.1 Project boundary

According to the approved baseline and monitoring methodology AMS-III.D “Methane recovery in animal manure management systems”, /2/. “the project boundary is the physical, geographical site (s) of the livestock and manure generation and management system, and the facilities which recover and flare/combust or use methane.” Therefore, the project boundary described in the PDD /1/ includes the GHG emissions that come from the animal waste practices, including the GHG resulting from the capture and combustion of biogas. . It includes the manure produced in the farms, the biodigesters, the digester output storage (secondary lagoons), the biogas combustion system (Flare). Therefore, the project boundary was defined as per the boundary defined in the methodology. By checking the information and the project site, RINA can confirm that the project boundary and emission sources described in the PDD /1/ are accurate and complete, and also that the selected sources and gases are justified for the proposed project activity.

Emissions sources included in the project boundary are shown in the table below:

	GHGs involved	**Description**
Baseline emissions	CH_4	Methane relased in the atmosphere from the open lagoon. Waste or raw material that would decay anaerobically in the absence of the proposed project actity.
Project emissions	CO_2	Emission due to physical leakage of biogas. Emissions from flaring or combustion of the biogas.
Leakage	No leakage as per the methodology.	

3.5.2 Baseline identification

The baseline scenario was correctly defined as per the methodology AMS-III.D “Methane recovery in animal manure management systems” /2/: is the amount of methane that would be emitted to the atmosphere during the crediting period in the absence of the project activity. The baseline scenario to the

project activity is the treatment of animal manure in open anaerobic lagoons, with the release of greenhouse gases to the atmosphere.

The anaerobic digester requires a much higher investment, it can be confirmed that the anaerobic lagoon, usually requires less investment, is the most likely alternative and therefore can be considered the baseline scenario. At the time of validation the environmental agency does not require licensing for the swine farms. Section B.2 of the PDD /1/ clarifies that the state of São Paulo does not have any specific environmental legislation for the handling of manure. In Brazilian swine farms, the environment legislation restricts discharging the manure into the water bodies' /27/. Therefore, the baseline scenario is in accordance with national regulatory and legal requirements.

The baseline is the emissions of methane from anaerobic decay of swine manure, calculated in accordance with the requirements of the applied methodology AMS-III.D. The baseline scenario has been determined using conservative assumptions. The detailed assessment of the assumptions is provided in the section "*3.8- Estimation of GHG emissions*" below.

RINA was able to verify all the documented evidence listed above during the validation process and can confirm that:

- All the assumptions and data used by the project participants are listed in the PDD, including their references and sources;
- All documentation used /9/ /32//33//34/ is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD;
- Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence /8//13//14//15//16//17//28//29/ and can be deemed reasonable;
- Relevant national and/or sectoral policies and circumstances /18//27/ are considered and listed in the PDD;
- The approved baseline methodology "Methane recovery in animal manure management systems"has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.

3.6 Additionality

The additionality of the project has been established applying the tool "*Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities*" /5/

RINA's opinion regarding the additionality of the proposed project is further explained in the following steps.

3.6.1 Prior consideration of the clean development mechanism

The PDD was published for global stakeholder consultation on 21/05/2010 which is prior to the starting date of the project activity (15/06/2011 – /36/ - confirmation of acceptance of proposals). Hence, this clearly demonstrates the project developer's awareness of the CDM and importance of CDM revenues for the development of the project. RINA was able to confirm that the incentive from CDM was seriously considered in the decision to implement the project activity. The PDD was published for Global Stakeholder comments prior to start date of project activity so notification to UNFCCC and DNA regarding intention to seek CDM status is not necessary as per EB 62 Annex 13.

In conclusion, in accordance with the requirements of the Guidance on the demonstration and assessment of prior consideration of the CDM /31/ and VVM /3/, RINA can confirm that the CDM was considered seriously in the decision to implement the project activity.

3.6.2 Identification of alternatives

In Brazil, there are currently no direct subsidies or promotional support for the implementation of manure management or capture and destroying biogas.

In the PDD version 3 /1/, no electricity generation is being considered for the project activity, therefore, it is not expected any financial nor economics benefits other than the carbon credits. As there are higher costs required to install biodigesters and flare than what would be represented by the baseline scenario, the project faces investment barriers compared with the usual practice of open anaerobic lagoons /9/.
To demonstrate the investment barrier, PP presented an economic analysis considering two scenarios:

1) the installation of the anaerobic lagoon, as usual in the baseline scenario
2) the installation of the anaerobic digester plus flare

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3.6.3 Investment analysis

The financial calculations have been checked by a financial expert.
To demonstrate the additionality, as per Attachment A to Appendix B /5/, PP has used Investment Barrier. Further as per Non Binding Best Practice examples to Demonstrate Additionality for SSC CDM /19/, PP has used investment analysis as described in the sections bellow.

3.6.3.1 Choice of approach

The investiment comparision analysis was done in accordance with the “Tool for demonstration and assessment of additionality” (version 5.2.1) and Guidelines on the assessment of investiment analysis, version (version 5). Among the three options available for investment analysis as discussed in the “Tool for the demonstration and assessment of additionality”.

PP is applying the NPV (net present value) analysis to demonstrate the additionality of the project activity. In the PDD version 1, the simple cost analysis was not applicable because it was considered the revenues from energy generation therefore; PP has chosen the comparision analysis in order to analyze/compare the projects’ scenarios.

3.6.3.2 Benchmark selection

For the analysis, project participants are using the SELIC index as discount rate to calculate the NPV (Net Present Value) of the project. The SELIC rate is defined, calculated and works as Brazilian Central Bank’ s overnight lending rate and therefore is considered the country’s risk-free rate. The Selic presented by project participants as the project benchmark is a popular and publicly investment option in Brazil. In the project activity, PP used the SELIC of 11.67% was calculated considering the average of the last month prior to the Investiment Decision, dated of 12/04/2011 /37/. The investiment decision is represented by the Board Meeting held on 12/04/2011, which approves the project implementation. Rina has cross-checked all evidences stated in the financial analysis spreadsheet /9/ and confirms that benchmark applied is in line with para 112 of VVM v.1.2.

3.6.3.3 Input parameters

For both scenarios RINA has cross checked the inputs values as follows:
For project scenario, project participants presented the proposal number 012/09 from a third part company A&P Pezzato Construções Ltda /32/ with the quotations to construct and install the biodigesters (with flare) for each farm. For the maintenance costs (including biodigestors set and flare) the values were presented in the proposal 011/09 also from A&P Pezzato Construções Ltda /33/. Both proposals are dated 11/11/2009 and are valid for two years.
For the baseline scenario, the inputs values were based on a proposal from A&P Pezzato Construções Ltda. number 013/09 for construction, installation and maintenance of anaerobic lagoons (open lagoon), dated 11/11/2009 /34/, also valid for two years. The proposals mentions the values applied for each farm (including the name of the farms)
In all proposals, the quotations are in Brazilian Reais (BRL) and PP converted it to USD, using the average of the last month prior to the Investiment Decision (BRL X USD =1.587). RINA has cross checked the values presented in BRL and the conversion to USD.

VALIDATION REPORT

The sources used in the financial analysis assessment (input values cross checks) are credible and the values applied are consistent with the sources. Input values are provided by an independent third party company. Input values used are considered valid and applicable at the time of the investment decision taken by the project participant, as presented bellow:

Baseline scenario:

FARM/SITE	Equipment costs (anaerobic open lagoon) /34/		Installation costs /34/		Maintenance costs /34/	
	BRL	USD	BRL	USD	BRL	USD
Sitio Barreiro	77,181	48,633	6,620	4,171	1,750	1,103
Sitio Santa Rosa dos Ventos	130,866	82,461	3,816	2,405	1,750	1,103
Sitio Mirante do Macuco	130,866	71,646	5,663	3,568	1,750	1,103
Faz São Francisco	79,182	49,894	3,816	2,405	1,750	1,103
Fazenda Bom Retiro	64,565	40,684	5,663	3,568	1,750	1,103
Sitio Agua do Rosario	93,270	58,771	3,665	2,309	1,750	1,103
Granja Colorado	73,966	46,607	5,654	3,563	1,750	1,103
Total	**632,732**	**398,697**	**34,887**	21,983	**12,250**	**7,719**

Project Scenario:

FARM/SITE	Equipment costs (biodigestor set and flare) /32/		Installation costs /32/		Maintenance costs /33/	
	BRL	USD	BRL	USD	BRL	USD
Sitio Barreiro	122,901	77,442	32,395	20,413	27,308	17,207
Sitio Santa Rosa dos Ventos	179,741	113,258	53,474	33,695	27,308	17,207
Sitio Mirante do Macuco	173,583	109,378	50,712	31,955	27,308	17,207
Faz São Francisco	109,130	68,765	28,938	18,234	27,308	17,207
Fazenda Bom Retiro	118,313	74,551	33,340	21,008	27,308	17,207
Sitio Agua do Rosario	142,438	89,753	40,986	25,826	27,308	17,207
Granja Colorado	122,901	77,442	32.395	20,413	27,308	17,207
Total	**969,007**	610,590	**272,240**	**171,544**	**191,156**	**120,451**

The results of the NPV analysis are present bellow:

FARM/SITE	NPV (SCENARIO 1) - USD	NPV (SCENARIO 2) – USD
Sitio Barreiro	-61,215	-229,089
Sitio Santa Rosa dos Ventos	-93,279	-278,188
Sitio Mirante do Macuco	-83,624	-272,567
Faz São Francisco	-60,709	-218,234
Fazenda Bom Retiro	-52,552	-226,794
Sitio Agua do Rosario	-69,491	-246,813

Granja Colorado	-58,580	-229,089
Total	**-479,556**	**-1,700,774**

Based on the presented documentation and the local and sectoral expertise, the validation team deems the input values to be appropriate and reasonable.
RINA confirms that underlying assumptions are appropriate and calculations are correct. It can be concluded that the project activity faces the investment barrier since the NPV analysis demonstrate that the costs for the project activity is more than three times the costs of the baseline scenario.

3.6.3.4 Calculation and conclusion

In the Financial Analysis spreadsheet project participants are using the NPV (Net Present Value) to compare the two different Scenarios. The NPV of a time series of cash flows, both incoming and outgoing, is defined as the sum of the present values (PVs) of the individual cash flows. The PV is calculated by the formula $PV_t = R_t / (1+i)^t$, where the "R_t" is the net cash flow; the "*i"* is the discount rate (defined in % / period of time [per day, per month or per year]; and the "*t*" is the time of the cash flow. PP has considered 21 years for the analysis to reflect the crediting period of the project activity.

In the first version of the financial analysis spreadsheet, *"IRR PDD 15 version 1.xls*" /9/ project participants included the discount rate in the formula with the value of 8.65, this number was not divided by 100, so the formula "*(1+i)"* has the value 9.65 and not the value 1.0865, resulting in an underappreciated value of NPV. PP has revised the calculations, in the version 3 of Project Financial Analysis (IRR PDD15_version 3 .xls) /9/ and properly recalculated the NPV of the two scenarios (Baseline Scenario and Biodigestor+Flare). The value of the discount rate was revised to 11.65% in order to comply with the investment decision. Therefore, RINA has confirmed that the calculations are correctly presented by PP to demonstrate the additionality of the project activity.

3.6.3.5 Sensitivity analysis

In last version of the PDD and Project financial analysis project participants presented the sensitivity analysis. As both scenarios (baseline and project activity) just have negative cash flows and the biodigestor/flare system really requires more investment than the open lagoon.
A sensitivity analysis has been carried out for parameters considering a decresing of 10% in the project investment and O &M to demonstrate the robustness of the financial analysis. Since the purpose of this sensitivity analysis is to assess the impact of more favorable scenario on the project feasibility, RINA considers appropriate the sensivity analysis carried out by PP, with the deacrese of 10 % of the mentioned parameters.

The results of the sensitivity analysis are presented bellow:

FARM/SITE	Scenario 2	
	ALTERNATIVE A	ALTERNATIVE B
	CONSIDERING 10% INVESTMENT COST REDUCTION	CONSIDERING 10% MAINTENANCE COST REDUCTION
Sitio Barreiro	-219.304	-215.966
Sitio Santa Rosa dos Ventos	-263.492	-265.064
Sitio Mirante do Macuco	-258.434	-259.444
Faz São Francisco	-209.534	-205.110
Fazenda Bom Retiro	-217.238	-213.670
Sitio Agua do Rosario	-235.255	-233.690
Granja Colorado	-219.304	-215.966

In none of the cases the project scenario became more attractive than the baseline scenario. NPV of Scenario 2 and even with 10 % reduction in investment cost and 10% reduction in maintenance cost of Scenario 2, it is still less attractive than scenario 1.

3.6.4 Barrier analysis

During validation process the technology barrier was removed by PP.

Not applicable. PP has applied the "*Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities*"

3.6.5 Common practice analysis

Not applicable. PP has applied the "*Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities*" /5/

3.6.6 Conclusion

RINA can confirm that all data, rationales, assumptions, justifications and documentation provided by the project participants to support demonstration of additionality are credible and reliable.

By assessing the evidences presented and cross-checking the information contained in, RINA considers the reasoning for the proposed project additionality demonstration is credible and reasonable i.e. the proposed project has the ability to reduce anthropogenic emissions of greenhouse gases by sources below those that would have occurred in the absence of the registered CDM project activity.

3.7 Monitoring Plan

The approved baseline and monitoring methodology AMS-III.D, "Methane recovery in animal manure management systems", version 17 of 26/11/2010 /2/ has been correctly applied.

The monitoring plan is in accordance with the monitoring methodology and will give opportunity for real measurement of achieved emission reductions.

RINA has checked all the parameters presented in the monitoring plan against the requirements of the methodology and no deviations relevant to the project activity have been found.

RINA confirms that the monitoring arrangements described in the monitoring plan are feasible within the project design, and the means of implementation of the monitoring plan are sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported *ex post* and verified.

3.7.1 Parameters determined ex-ante

The following parameters are available at validation:

* **MCF_j** (Annual methane conversion factor for the baseline animal waste management system "j"): 79%: obtained from IPCC2006, vol 4, chapter 10, Tables 10.17. /13/

* **$MS\%_{Bl,j}$** (Fraction of manure handled in baseline animal manure management system "j") 100% of the manure will be handled per category T, system S and climate region k. Confirmed during site visit that all the manure generate goes to the open lagoons.

* **$VS_{default}$** (Default value for the volatile solid excretion rate per day on a dry-matter basis for a defined livestock population) 0.3 Kg dry matter/animal/day for market swine, 0.46 Kg dry matter/animal/day for breeding swine and guilts: obtained from IPCC 2006, chapter 10, volume 4, Tables 10A-7 and 10A-8 /13/. Observation: as mentioned above, the parameters from Western Europe are applicable as project farms, as well as almost all Brazilian swine genetics, are mainly originated from North America and Western Europe)/44/

* **GWP_{CH4}** (Global warming potential of CH_4) 21: obtained from IPCC 2006, as per the methodology /2/

* **$B_{0,LT}$** (Maximum methane producing potential of the volatile solid generated for animal type "LT") 0.45 m^3 CH_4/kg dm for all categories: obtained from IPCC 2006, chapter 10, volume 4, Tables 10A-7 and 10A-8 /13/

* **$W_{default}$** (Default average animal weight of a defined population at the project site). 198 Kg for sows and guilts (breeding swines) and 50 Kg for finishers, nursery and boars (market swine): obtained from IPCC 2006, chapter 10, volume 4, Tables 10A-7 and 10A-8 /13/

(Observation: as mentioned above, the parameters from Western Europe are applicable as project farms, as well as almost all Brazilian swine genetics, are mainly originated from North America and Western Europe)/44/.

***UFb** (Model correction factor to account for model uncertainties): 0.94, as defined in the applied methodology /2/

RINA has checked these data from respective sources and found to be correct

3.7.2 Parameters monitored ex-post

As per the applied simplified monitoring methodology for selected small-scale CDM project activity categories AMS-III.D "Methane recovery in animal manure management systems", version 17 of 26/11/2010 /2/, the following parameters will be monitored *ex-post*:

*T_f (Combustion temperature of the flare): monitored according to the Monitoring Operational Procedure POP-01, which will be measured through the continuous temperature registration in the programmable logic controller (PLC) /11/.

*W_{site} (average animal weight of a defined livestock population at the project site), monitored quarterly according to the Operational Procedure POP-016. /11/

***Site inspection** (inspection on the site considering relevant regulation and the infrastructure of the site) annually monitoring includes the relevant regulation and the infrastructure of the site according to the Operational Procedure - POP-02. /11/

*$N_{LT,y}$ (annual average number of animals of type "LT" in the year "y"), monitored monthly according to the procedure- POP-03. /11/

*$BG_{burnt,y}$ (biogas flared or combusted in the year y) monitored according to the operational procedure POP-04 /11/. The amount biogas will be measured by cumulative flow meter and reported monthly by the regional technician. In the control spreadsheet it is necessary to register the inspection day, hour of and the volume of the biogas. The information recorded in the PLC will be recovered using a pen drive and a excel spreadsheet from the system will be available to show the flow rate per minute per day. /11/

*$W_{CH4,y}$ (methane content in biogas in the year "y")- monitored according to the operational procedure POP-05. The monitoring frequency will be determined to provide a confidence level of 90/10. Monitored through calibrated portable gas (methane) analyzer instrument /11/

*T_{biogas} (temperature of the biogas at operation conditions)- monitored monthly according to the operational procedure POP-06 /11/.

*D_{CH4} (density of the methane combusted at operational conditions)- calculated monthly according to the operational procedure POP-07 /11/, considering the parameters pressure, temperature and molecular mass of methane. /11/

*Q_{DM} (sludge soil application) - monitored according to the operational procedure POP-09. /11/

*** FE or** $\eta_{flare,\ h}$ (Flare efficiency)- PP considers efficiency of 90% for the hour with all temperature measurements above or equal to 500º Celsius or 50% if the temperature in the exhaust gas of the flare (Tflare) is above 500 °C but the manufacturer's specifications on proper operation of the flare are not met at any point in time during the hour h. It will consider 0% efficiency for the hour h if any temperature measurements is below 500º Celsius (The temperature measurement and its registration in the programmable logic controller system (PLC) is performed every minute.) The monitoring is included in the operational procedure POP-08 /11/ and is in compliance with the requirements of the *"Tool to determine project emissions from flaring gases containing methane"* /6/.

***FFR** (formulated feed rations)- monitored and controlled monthly according to animal category, as per the operational procedure POP-14 /11/.

*P_{biogas} (pressure of the biogas at operational conditions)- monitored monthly according to the operational procedure POP-13 /11/.

***Genetic source** (genetic source from annex I Party) monitored annually according to the operational procedure POP-15 /11/

*$MS\%_{i,y}$ (fraction of manure handled in project emissions in system "I", year "y")- monitored annually according to the operational procedure POP-02 /11/.

***$N_{day,y}$** (number of days animal is alive in the farm, in year "y") and **$N_{p,y}$** (number of animals produced annually of type "LT" in year "y") number of animal per category will be monitored monthly according to the operational procedure POP-03 /11/. The ex-ante estimative was done considering information provided by the swine farmer /29/

* **$FV_{RG,h}$** (Volumetric flow rate of the residual gas in dry basis at normal conditions in hour h) monitored according to the operational procedure POP-04. The amount biogas will be measured by cumulative flow meter and reported monthly by the regional technician

* **$TM_{RG,h}$** (Mass flow rate of methane in the residual gas in the hour h) the parameter will be monthly calculated as per the *"Tool to determine project emissions from flaring gases containing methane"* /6/, An The operational procedure POP 17 /11/ includes the instruction to the calculation

* **$fv_{CH4,RG}$** (Volumetric fraction of methane content in the residual gas on dry basis): monitored according to the operational procedure POP-05. The monitoring frequency will be determined to provide a confidence level of 95%.

* **nd_y** (Number of days in year "y" where the treatment plant was operational)- Monitoring operational procedure POP-24/11/.* **Other flare operation parameters**. Parameters that are required to monitor whether the flare operated within the range of operating conditions according to the manufacturer's specification will be monitored.

For the energy monitoring FAR #2 was open: The project activity was not implemented during the site visit, therefore, it was not possible to confirm that there is no connection to grid. During the validation, PP assures that no electricity will be consumed in the project activity and the energy will be provided by 12 volt batteries. The energy supply for the project activity has to be confirmed during the verification.

RINA has reviewed the monitoring plan described in the PDD and the relevant procedures for monitoring and found them in accordance with the applied methodology.

3.7.3 Management system and quality assurance

At the time of site visit the project was not implemented/ operational yet. It was verified that the PPs have procedures /11/ to assure the proper monitoring of the project activity and they are feasible within the project design. Data will be monitored using calibrated equipments. The procedures have specific formularies in order to assure data monitoring and recording in all the farms included in the proposed project activity /11/. All data will be sent to the Brascarbon office that will manage the information from all project farms. Moreover, there is a procedure for training annually the personnel involved in the monitoring of the project activity.

The maintenance of the project activity is described in the Operational procedure POP-12: General maintenance /11/.

For instance, the calibrations frequencies described in the mentioned procedure are:

*The flow meter will be calibrated every two as per fabricant recommendations,

*The gas analyzer will be calibrated every six months, as per the fabricant recommendations.

Moreover, the procedure also describes the general maintenance of the flare and digester:

*BIOGAS equipment, for the biogas pressure and temperature, will be calibrated annually, defined in the procedure POP 13 and POP 6 respectively /11/.

* The thermocouple will be calibrated every year (POP-12) /11/, as per the *Tool to determine project emissions from flaring gases* containing methane" /6/ requirements.

The archiving time defined in the PDD /1/ is as per the "Guidelines for completing the simplified project design document (CDM-SSC-PDD)" /4/ requirements: all data monitored and required for verification and issuance is kept for a minimum of two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later.

RINA has verified that the PPs have procedures /11/ to assure the proper monitoring of the project activity and they are feasible within the project design.

3.8 Estimation of GHG emissions

Emission reduction calculations are transparently documented by the spreadsheet /8/ in line with AMS-III.D, version 17 of 26/11/2010 as follows:

Baseline and project emission reduction *ex-ante* had been properly explained on the PDD /1/ as per the methodology AMS-III.D"Methane recovery in animal manure management systems" version 17 of 26/11/2010.

$ER_{y,estimated} = BE_y - PE_y - L_y$

According to AMS-III.D, no leakage calculation is required, therefore,

$ER_{y,estimated} = BE_y - PE_y$

The baseline emission estimate can be replicated using the data and parameter values provided in the PDD /1/ and supporting files submitted for registration /8/. The data sources mentioned have been verified by RINA as follows:

Baseline emissions

As per the applied methodology (paragraph 9), the Baseline emissions (BEy) are calculated by using one of the following two options:

(a) Using the amount of the waste or raw material that would decay anaerobically in the absence of the project activity, with the most recent IPCC tier 2 approach (please refer to the chapter 'Emissions from Livestock and Manure Management' under the volume 'Agriculture, Forestry and other Land use' of the 2006 IPCC Guidelines for National Greenhouse Gas Inventories). For this calculation, information about the characteristics of the manure and of the management systems in the baseline is required. Manure characteristics include the amount of volatile solids (VS) produced by the livestock and the maximum amount of methane that can be potentially produced from that manure (B_o);

(b) Using the amount of manure that would decay anaerobically in the absence of the project activity based on direct measurement of the quantity of manure treated together with its specific volatile solids (SVS) content.

Option a) was chosen, therefore, the baseline emissions (BE_y) are calculated using the formula provided in the methodology:

$BE_y = GWP_{CH4} * D_{CH4} * UF_b * \sum_{j,LT} MCF_J * B_{0,LT} * N_{LT,y} * VS_{LT,y} * MS\%_{Bl,j}$

The parameters D_{CH4} (CH_4 density) and UF_b (Model correction factor to account for model uncertainties) and GWP_{CH4} (Global Warming Potential of CH_4) are presented by the methodology as 0.00067 t/m^3, 0.94 and 21, respectively.

It is considered that 100 % of the baseline manure will be handled in the system "j" ($MS\%_{BL,j}$).

The MCF_j (annual methane conversion factor for the baseline waste management system "j") for open lagoon and ambient temperature for São Paulo state. The value of 79 % was obtained from IPCC 2006, chapter 10, volume 4, Table 10.17, page 10.45, considering the average temperature of 23ºC-25ºC.

The parameter $VS_{LT,y}$ is determined using the formula provided in the methodology:

$VS_{LT,y} = (W_{site}/W_{default}) * VS_{default} * nd_y$

The parameter W_{site} was confirmed in the farmer's control for the ex-ante estimative /23/ and it will be monitored *ex-post*. Moreover the parameter nd_y is considered 365 days and will be monitored *ex-post*.

The parameters $W_{default}$ (default average animal weight of a defined livestock population at the project site), $B_{0,LT}$ (maximum amount of methane that can be potentially produced from manure) and $VS_{default}$ (Volatile Solids) have been chosen from IPCC 2006, chapter 10, volume 4, Tables 10A-7 and 10A-8 (pages 10.80 and 10.81) /13/. Default values applicable to developed countries were used; the following conditions were verified and found acceptable:

-*The genetic source of the production operations livestock originates from an Annex I Party*: RINA verified that the project farms, as well as almost all Brazilian swine genetics, are mainly originated from North America and Western Europe (Agroceres-PIC) and genetics can also be confirmed through purchase receipts /14/. Moreover, the farms' producer has presented a declaration confirming that the agroceres and topigs genetics are used in all farms included in the project activity. The letter clarifies that Sítio Barreiro is responsible to purchase the animals and transfer them to the others farms /16/.

-*The farm uses formulated feed rations (FFR) which are optimized for the various animal(s), stage of growth, category, weight gain/productivity and/or genetics*: as verified in the site visit, in the farms (office) there is a control of the formulated feed rations (FFR) /15/.

For the $N_{LT,y}$ (Annual average number of animals of type "LT" in year "y") the ex-ante estimative was based on the numbers of animal provided by the swine farmer's /29/. This parameter will be monitored ex-post, as per the requirements of the applied methodology:

$N_{LT,y} = N_{da,y} * (N_{p,y}/365)$

Where:

$N_{da,y}$: Number of days animal is alive in the farm in the year "y" (numbers)

$N_{p,y}$: Number of animals produced annually of type "LT" for the year "y" (numbers)

Project Emissions

As per the methodology the project emissions are calculated as follow:

$PE_y = PE_{PL,y} + PE_{flare,y} + PE_{power,y} + PE_{transp,y} + PE_{storage,y}$

* **$PE_{PL,y}$** (Emissions due to physical leakage of biogas in year "y" (tCO2e)): as paragraph 9- option a) was chosen, as per the methodology requirements, it is estimated as 10% of the maximum methane production potential of the manure fed into the management system implemented in the project activity:

$PE_{PL,y}=0,10*GWP_{CH4}*D_{CH4}*\sum B_{0,LT}* N_{LT,y} * VS_{LT,y}* MS\%_{i,y}$

***$PE_{flare,y}$** (Emissions from flaring or combustion of the biogas stream in the year "y" (tCO2e)): it is determined as per the "Tool to determine project emissions from flaring gases containing methane"/6/. PP adopted the default value of 90% for the flare efficiency in compliance with the manufacture's specification.

As per the "Tool to determine project emissions from flaring gases containing methane"/6/, the formula to determine project emissions from flaring ($PE_{flare,y}$) is:

$$PE_{flare,y} = \sum_{h=1}^{8760} TM_{RG,h} \times (1 - \eta_{flare,h}) \times \frac{GWP_{CH4}}{1000}$$

Where:

$PE_{flare,y}$: Project emissions from flaring of the residual gas stream in year y (tCO_2e)

$TM_{RG,h}$: Mass flow rate of methane in the residual gas in the hour h (Kg/h)

$\eta_{flare,h}$: Flare efficiency in hour h (-)

GWP_{CH4}: Global Warming Potential of methane valid for the commitment period (tCO_2e/t_{CH4})

***$PE_{power,y}$** (Emissions from the use of fossil fuel or electricity for the operation of the installed facilities in the year "y" (tCO_2e)): Neither fossil fuel nor electricity will be consumed in the project activity. (Please, refer to FAR #2)

***$PE_{transp,y}$** (Emissions from incremental transportation in the year y (tCO2e), as per relevant paragraph in AMS-III.F): No incremental transportation will occur in the project activity, and therefore, $PE_{transp,y} = 0$.

***$PE_{storage,y}$** (Emissions from the storage of the manure (tCO_2e)): The manure will not be stored in the project activity and the accumulation and transportation will not exceed 24 hours. Therefore this parameter is 0.

Ex-post emission reduction:

The emissions reductions achieved in any year are the lowest value of the following:

$$ER_{y,\ expost} = min\ [(BE_{y,\ ex\ post} - PE_{y,\ ex\ post}),\ (MD_y - PE_{power,\ y,\ ex\ post})]$$

Where:

$ER_{y\ ex\ post}$ – Emission reductions achieved by the project activity based on monitored values for year y (tCO_2e)

$BE_{y\ ex\ post}$ – Baseline emissions calculated for year y (tCO_2e),

$PE_{y\ ex\ post}$ – Project emissions calculated for year y (tCO_2e)

MD_y – Methane captured and destroyed or used gainfully by the project activity in year y (tCO_2e)

$PE_{power\ y\ ex\ post}$ – Emissions from the use of fossil fuel or electricity for the operation of the installed facilities based on monitored values in the year y (tCO_2e)

The methane destroyed in the flares (MD) will be measured using the conditions of flaring process as follows:

$$MD_y = BG_{burnt} * w_{CH4,y} * D_{CH4} * FE * GWP_{CH4}$$

Where:

$BG_{burnt,y}$ – biogas flared or combusted in year y (m^3)

$W_{CH4,y}$ – methane content in the biogas in the year "y" (volume fraction).

D_{CH4} – methane density in biogas operational conditions in the year "y" (tones/m^3).

FE – flare efficiency in the year "y" (fraction)

GWP_{CH4} – methane global warming potential

The comparison of the baseline with the actual measured data will be used to *cap* the maximum emission reductions in any year according to the operational procedure POP-17 /11/. This approach complies with paragraph 18 of the AMS-III.D, version 17 of 26/11/2010 with respect to the emission reductions achieved by the project activity being limited to the *ex-post* calculated baseline emissions minus project emissions using the actual monitored data for the project activity and the emission reductions achieved in any year will be the lowest of the calculated value.

Based on the above assessment, the validation team hereby confirms that:

(a) All assumptions and data used by the project participants are listed in the PDD, including their references and sources;

(b) All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD;

(c) All values used in the PDD are considered reasonable in the context of the proposed CDM project activity;

(d) The baseline methodology has been applied correctly to calculate baseline emissions, project emissions and emission reductions;

(e) All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.

3.9 Environmental Impacts

At the time of the site visit, the environmental agency of São Paulo state does not require any environmental license (confirmed in the CETESB web site (http://www.cetesb.sp.gov.br/licenciamentoo/cetesb/lic_previa_quem.asp), accessed on 13/08/2010.

The project participants provided an "Environmental impacts assessment" for each farm included in the project activity /18/. The project activity will bring environmental benefits to all farms.

For the environmental licenses, FAR #1 was open: RINA verified that the procedure POP-2 /11/, includes the monitoring of the environmental licenses, so if in the future this is applicable, PP shall present this monitoring in further verifications

3.10 Local stakeholders consultation

Prior to the publication of the PDD on the UNFCCC website, from 21/05/2010 to 19/06/2010, the Project owner performed the local stakeholder consultation as per required by the Interministerial Commission on Global Climate Change (CIMGC) and in accordance to the Resolution 7 of the Brazilian DNA (05 March 2008) /24/. The project participants sent letters, inviting for comments, to the following stakeholders/City authorities /10/

Stakeholders	ARs
Mr. Antonio Rossetto Neto	12/04/2010
Associação Paulista de criadores suínos (Paulista Association of swine producers)	12/04/2010
Camara Municipal de Cerqueira César (Cerqueira César city house)	12/04/2010
Mr. José Rossetto	12/04/2010
Mr. Clóvis Rossetto	12/04/2010
Mr. Valdomiro Rossetto	12/04/2010
Sindicato Rural Vale do Rio Pardo (Vale do Rio Doce Rural Union)	12/04/2010
Companhia de Tecnologia de Saneamento Ambiental de São Paulo (CETESB) (State Environmental agency)	12/04/2010
Secretaria de Meio Ambiente do Estado de São Paulo (State Environmental Secretary)	12/04/2010
Assembléia Legislativa de São Paulo (São Paulo state Legislative Assembly)	09/04/2010
Ministério Público Estadual de São Paulo (Public Ministry of the state of São Paulo)	12/04/2010
Dir. Meio Ambiente de Cerqueira César (Cerqueira César Environemntal director)	12/04/2010
Secretaria de Agricultura de Cerqueira César (Cerqueira César Agricultural Secretary)	12/04/2010
Prefeitura Municipal de Cerqueira César (Cerqueira César city council)	12/04/2010
Associação Brasileira do Ministério Público de Meio Ambiente (Brazilian Association of Environmental Ministry Public)	12/04/2010
Ministério Público Federal (National Ministry Public)	12/04/2010
IBAMA (National Environmental Agency)	12/04/2010
EMBRAPA- Empresa Brasileira de Pesquisa Agropecuária (Brazilian Enterprise for Agricultural Research)	13/04/2010
FBOMS- *Fórum Brasileiro de ONGs e Movimentos Sociais* (Brazilian Fórum of NGOs)	26/04/2010

It was verified that the letters sent to the stakeholders followed the Brazilian DNA Resolution nº 7 /24/. Letters were sent in Portuguese and PDD was made publicly available, in Portuguese, in the following web link: http://www.brascarbon.com.br/anexo3PDD15.pdf. Information about the sustainable development is available in Portuguese in the web link: http://www.brascarbon.com.br/bca-bra-15brazil.pdf. No comments received.

RINA can confirm that the process is adequate and credible for local stakeholder consultation and in compliance with the Brazilian requirements in place for the local stakeholder consultation.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The PDD version 1 of 01/04/2010 was made publicly available on the CDM UNFCCC website (http://cdm.unfccc.int/Projects/Validation/DB/1Q2CV30LX3KJ5U93ZNC9W6V9CQE0ZA/view.html) and Parties, stakeholders and NGOs were invited to provide comments during a 30 days period from 21/05/2010 to 19/06/2010. No public comments were received during that period.

RINA

VALIDATION REPORT

5 VALIDATION OPINION

RINA Services Spa (RINA) has performed validation of the project activity "BRASCARBON Methane Recovery Project BCA-BRA-15" in Brazil, with regard to the relevant requirements for CDM activities.

The review of the project design document and the subsequent follow-up interviews have provided RINA with sufficient evidence to determine the fulfillment of the stated criteria.

The host Party is Brazil and the Annex I Party is Portugal. Both Parties fulfill the participation criteria.

The project correctly applies the approved baseline and monitoring methodology AMS-III.D, "Methane recovery in animal manure management systems", version 17 of 26/11/2010.

By capturing and burning the biogas generated through the decomposition of the swine manure produced at selected swine the project results in reduction of CH_4 emissions that are real, measurable and give long-term benefits to the mitigation of climate change. 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 GHG emission reductions from the "BRASCARBON Methane Recovery Project BCA-BRA-15" are estimated to be 372,190 tCO_2e during the first renewable 7 years crediting period, resulting in an annual average emission reductions of 53,170 tCO_2e / year. The emission reduction forecast has been checked and it is deemed likely the stated amount is achieved given that the underlying assumption does not change.

The monitoring plan sufficiently specifies the monitoring requirements for the monitoring of the project's emission reductions. The monitoring arrangements described in the monitoring plan are feasible within the project design and it is RINA's opinion that the project participants are able to implement the monitoring plan.

In conclusion, it is RINA's opinion that the project activity "BRASCARBON Methane Recovery Project BCA-BRA-15" in Brazil, as described in the PDD version 3 of 21/06/2011 /45/, meets all relevant UNFCCC requirements for the CDM and all relevant host Party criteria and correctly applies the baseline and monitoring methodology AMS-III.D, "Methane recovery in animal manure management systems", version 17 of 26/11/2010.

As the LoA from Portugal depends on the approval of the DNA of Brazil, prior to the submission of the Project Design Document and the Validation Report to the CDM Executive Board, the Project will have to receive the written approval of voluntary participation from the DNA of Brazil and Portugal, including the confirmation from Brazilian DNA that the Project assists the country in achieving sustainable development.

APPENDIX A

VALIDATION PROTOCOL

TABLE 1 MANDATORY REQUIREMENTS

Requirement	Reference	Conclusion
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reductions commitment under Art. 3.	Kyoto Protocol Art.12.2	**OK**
2. The project shall assist non Annex I Parties contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2	**---** Prior to the submission of the Project Design Document and the Validation Report to the CDM Executive Board, the Project will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the Project assists the country in achieving sustainable development.
3. The project shall have the written approval of voluntary participation from the designated national authority of each Party involved.	Kyoto Protocol Art.12.5a CDM Modalities and Procedures §40a	**---** **~~CAR 16~~** Prior to the submission of the Project Design Document and the Validation Report to the CDM Executive Board, the Project will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the Project assists the country in achieving sustainable development.
4. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof.	Kyoto Protocol Art.12.2 CDM Modalities and Procedure §40	**---** Prior to the submission of the Project Design Document and the Validation Report to the CDM Executive Board, the Project will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the Project assists the country in achieving sustainable development.
5. In case public funding from Parties included in Annex I is used for the project activity, these Parties shall provide an affirmation that such funding does not result in a diversion of official development assistance (ODA) and is separate from and is not counted towards the financial obligations of these Parties.	Decision 17/CP.7 CDM Modalities and Procedures Appendix B §2	**~~CL 3~~**
6. Parties participating in the CDM shall designate a national authority for the CDM.	CDM Modalities and Procedures §29	**OK**
7. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol.	CDM Modalities and Procedures §30/31a	**OK**
8. The participating Annex I Party's assigned amount shall have been calculated and recorded.	CDM Modalities and Procedure §31b	**OK**

Requirement	Reference	Conclusion
9. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7.	CDM Modalities and Procedure §31b	**OK**
10. Reduction in GHG emissions shall be additional to any that would occur in the absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.	CDM Modalities and Procedure §43	**OK**
11. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change.	Kyoto Protocol Art.12.5b	**OK**
12. The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakech Accords and shall not be a de-bundled component of a larger project activity.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c	**OK**
13. The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and use the simplified baseline and monitoring methodology for that project category.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22e	**OK**
14. If required by the host country, an analysis of the environmental impacts of the project activity is carried out and documented.	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22c	**OK**
15. Comments by local stakeholders shall be invited, a summary of these provided and how due account was taken of any comments received.	CDM Modalities and Procedures §37b	**OK**
16. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30/45 days, and the project design document and comments have been made publicly available.	CDM Modalities and Procedures §40	**OK**
17. Baseline and monitoring methodology shall be previously approved by the CDM Methodology Panel.	CDM Modalities and Procedures §37e	**OK**
18. A baseline shall be established on a project-specific	CDM Modalities and	~~**CAR 17**~~

Requirement	Reference	Conclusion
basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances.	Procedures §47	
19. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords, and relevant decisions of the COP/MOP.	CDM Modalities and Procedures §37f	~~**CL 10**~~, ~~**CL 11**~~, ~~**CL 12**~~, ~~**CAR 10**~~, ~~**CAR 13**~~

TABLE 2 REQUIREMENTS CHECKLIST

Checklist Question		Ref.	MoV[1]	Comments	Draft Conclusion	Final Conclusion
A. General Description of Project Activity						
A.1.	**Title of the project activity**					
A.1.1.	Title of the project activity, version number and date of the PDD (section A.1).	/1/	DR	The title of project activity is "BRASCARBON Methane Recovery Project BCA-BRA-15", as per the published PDD version 1 of of 01/04/2010.		**OK**
A.1.2.	Does the project comply with the applicable requirements for completing the PDDs?	/1/ /4/	DR/CC	PDD is in accordance with the "Guidelines for completing the simplified project design document (CDM-SSC-PDD) and the form for proposed new small scale methodologies (CDM-SSC-NM)", version 5 of 15/09/2007.		**OK**
A.2.	**Description of the proposed project activity**					
A.2.1.	Does the PDD contain an accurate description of the project activity and provide the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation? How was the design of the project assessed?	/1/ /12/ /21/ /22/	DR/CC	The Project Activity consists of the construction of a new covered in-ground anaerobic reactor (digester) that will utilize the organic material currently treated in the wastewater opened lagoon, from the confined animal operations to produce biogas. The project activity will capture and combust the methane gas produced. Alternatively, for future purposes, the biogas can be used in electricity generators, for in site electricity supply where no claims for emissions reductions by the electricity generation will be requested during the entire project activity but by the emissions reductions of the biogas destroyed in the generators. As the project was not implemented, from the 7 sites described in the PDD, RINA visit 6 of them: Sítio Barreiro, Sítio Santa Rosa Dos Ventos, Sítio Mirante do Macuco, Fazenda		**OK**

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

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
				São Francisco, Fazenda Bom Retiro, Sítio Água Do Rosário. Granja Colorado: PP provided pictures of the project site, including measurements of the open lagoon with the meter to confirm that they are deeper than 1 meter /12/. At the time of the site visit, the project was not implemented. PP provided a manual with the design of the project activity /21/ and the dimensions/ volume of the digesters /22/. PPs shall include in the PDD, for each farm, the dimensions of the biodigesters and the flare and generator specifications.	~~CL 14~~	
A.2.2.	Does the project activity involve alteration of existing installations? If yes, have the differences between pre-project and post-project activity been clearly described in the PDD?	/1/ /12/	DR/CC	The difference between pre-project and post-project activity is clearly described in the PDD version 1. In the baseline the organic material is treated in the wastewater opened lagoons and in the project activity, the material will be treated in a new covered in ground anaerobic reactors (digesters).		**OK**
A.2.3.	Does the project qualify as a small-scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM?	/1/ /8/	DR/CC	The project is within the eligibility requirements of the baseline methodology since the annual estimated emission reductions of greenhouse gases is 53,170 tCO_2e, less than or equal to 60 $ktCO_2$ equivalent annually from all type III components of the project activity.		**OK**
A.2.4.	Is the small-scale project activity a de-bundled component of a larger project activity?	/1/ /25/	DR/CC	The project is not a debundled component of a large project activity. Besides, the project participants have another small scale CDM project activity with the same methodology; the distance between the farms is greater than 1 Km. Project participants informed that the nearest project activity is located in Fartura city. Confirmed through Google maps that Fartura is approximately 75 Km far away		**OK**

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
				from Cerqueira César.		
A.3.	**Project participants**					
A.3.1.	Have the Parties and project participants involved in the project been listed in tabular form in Section A.3 and are they consistent with the information detailed in Annex 1 of the PDD?	/1/ /4/	DR	The project participants are two private entities: Brascarbon Consultoria, Projetos e Representação S/A. from Brazil (host Party) and Luso Carbon Fund – Fundo Especial de Investimento Fechado from Portugal. Section A.3 of the PDD is consistent with Annex 1. The Parties involved are not project participants. PPs shall provide the table in section A.3 of the PDD as per the table presented in the "Guidelines for completing the simplified project design document (CDM-SSC-PDD) and the form for proposed new small scale methodologies (CDM-SSC-NM)", version 5 of 15/09/2007.	~~CAR 15~~	**OK**
A.3.2.	Do all participating Parties fulfill the participation requirements as follows: (a) Party has ratified the Kyoto Protocol; (b) Party has a Designated National Authority; (c) The assigned amount has been determined.	/1/	DR/CC	Brazil (host country) has ratified the protocol on 23 August 2002. The Brazilian designated national authority for the CDM is the "Comissão Interministerial de Mudança Global do Clima" (CIMGC). Portugal has ratified the protocol on 31/05/2002 and the designated national authority for the CDM is the "Ministry of Environment, Spatial Planning and Regional Climate Change Commission".		**OK**
A.3.3.	Have the letters of approval been issued?	/1/	DR	Prior to the submission of the Project Design Document and the Validation Report to the CDM Executive Board, the Project will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the Project assists the country in achieving sustainable development.		**---**

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
				Project participants shall provide the project's LoA and the written approval of voluntary participation from the Designated National Authority from Portugal..	~~CAR 16~~	
A.3.4.	Do the letter/s of approval (LoA/s) confirm the following requirements? (a) The Party has ratified the Kyoto Protocol; (b) The participation is voluntary; (c) In the case of the host Party, the project contributes to the sustainable development of the country; (d) It refers to the precise project activity title in the PDD; (e) Has been issued by the respective Party's designated national authority (DNA). Indicate whether the LoA/s were received from the project participants or directly from the DNA. In case of doubt regarding the authenticity of the LoA/s, describe how it was assessed the authenticity of the LoA/s.	/1/	DR	See section A.3.3.	~~CAR 16~~	---
A.3.5.	Have all private/public project participants been authorized by a Party to the Kyoto Protocol?	/1/	DR	Please refer to section A.3.3.	---	---
A.4.	**Technical description of the project**					
A.4.1.	Is the project location clearly defined?	/1/	DR/CC	The project activity is located in the city of Cerqueira César, São Paulo state. The geographical coordinates presented in the PDD version 1 are: Farm — Geographical Coordinates Sítio Barreiro — S 23º 11'24.9'' W 049º 12' 04.3'' Sítio Santa Rosa Dos Ventos — S 23º 08' 01.3'' W 049º 10' 26.3'' Sítio Mirante do Macuco — S 23º 09' 00.3'' W 049º 10' 36.2''		**OK**

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
				<table><tr><td>Fazenda São Francisco</td><td>S 23º 09' 47.9'' W 049º 10' 39.1''</td></tr><tr><td>Fazenda Bom Retiro</td><td>S 23º 09' 54.8'' W 049º 12' 04.3''</td></tr><tr><td>Sítio Água Do Rosário</td><td>S 23º 00' 10.3'' W 049º 04' 58.1''</td></tr><tr><td>Granja Colorado</td><td>S 23º 02' 31.5'' W 049º 08' 04.8''</td></tr></table> As verified during site visit, the farms do not have any identification (the names of the farms were informed during the site visit). Through the geographical coordinates presented in the PDD it is possible to check the farms (Google maps) and confirm the existence of the lagoons visited during the site visit, except for the farms Sítio Água Do Rosário and Granja Colorado, as the available image is not clear and therefore is not possible to find/confirm the farms location and their open lagoons. PPs are requested to provide evidences/ information on how it is possible to confirm the geographical coordinates of these two farms.	~~**CAR 1**~~	
A.4.2.	Does the project design engineering reflect current good practices? Would the technology result in a significantly better performance than any commonly used technologies in the host Country? Is any transfer of technology from any Annex I Party involved?	/1/	DR	Yes, the project design engineering reflects current good practice in Brazil. The biodigestor technology results in a significantly better performance than the open lagoons used in the baseline scenario. It is not identified the transfer of technology from Annex 1 Party involved. The project activity will implement anaerobic digesters to treat the manure under controlled conditions as well as to capture and burn the methane generated in the anaerobic digesters. Alternatively, for future purposes, the biogas can be used to		**OK**

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
				produce electricity in the generators. The project will not claim emissions reductions due the electricity generation to be used on the site, just emissions reductions of the biogas destroyed in the generators. No electricity will be consumed from the grid. The technical parts that will be powered by energy will be supplied by solar cells. The energy will be stored in 12 volts batteries.		
A.4.3.	If public funding from Parties included in Annex I is used for the project activity, have these Parties provided an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these Parties?	/1/	DR	PPs are requested to evidence/confirm that no public funding from Parties included in Annex I is used for the project	~~CL 3~~	**OK**
B. Application of a baseline and monitoring methodology						
B.1.	**Methodology applied**					
B.1.1.	Does the project activity apply an approved methodology and the correct version?	/1/ /2/	DR/CC	The project applies the current approved simplified monitoring methodology for selected small-scale CDM project activity categories, AMS-III.D - "Methane recovery in animal manure management systems", version 16 of 26/03/2010.		**OK**
B.2.	**Applicability criteria of the methodology/tools**					
B.2.1.	The project activity complies with the applicability criteria?	/1/ /2/ /12/	DR/CC /I	Section B.2 of the PDD mentions in items: "(a) The livestock *population in the farm is managed under confined conditions" and "(b)* Manure or *the streams obtained after treatment are not discharged into natural water resources (e.g., river or estuaries)", that the* conditions can be confirmed in the environmental licenses, however PPs did not provided the environmental licenses for the farms. The applicability conditions of the methodology are described bellow:	~~CL 1~~	**OK**

Checklist Question	Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
			(a) The livestock population in the farm is managed under confined conditions; Confined conditions were verified in the sites/farms during the site visit. *(b) Manure or the streams obtained after treatment are not discharged into natural water resources (e.g., river or estuaries)*. During the site visit it was verified that no manure or the streams obtained after the lagoons are discharged into natural water resources and the treated effluent/sludge is used as a fertilizer in the coffee plantations. PP confirmed that this practice will remain after the implementation of the project activity. PPs are requested to ensure with proper conditions and procedures that the applicability criteria *(b) Manure or the streams obtained after treatment are not discharged into natural water resources (e.g., river or* estuaries) and condition *(a) (The final sludge must be aerobically. In case of soil application of the final sludge the proper conditions and procedures (not resulting in methane emissions) will be ensured after the project implementation* *(c) The annual average temperature of baseline site where anaerobic manure treatment facility is located is higher than 5° C*; The published PDD mentions that the average temperature for the São Paulo state is 23-25°C and PPs provided two web links to check the temperature. Nevertheless, PPs	~~CAR 18~~ ~~CL 2~~	

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
				shall clarify how this average was calculated. *(d) In the baseline scenario the retention time of manure waste in the anaerobic treatment system is greater than 1 month, and in case of anaerobic lagoons in the baseline, their depths are at least 1 m* Confirmed that the anaerobic lagoon is deeper than 1 meter for all farms (site visit and pictures of the Granja Colorado). A meter was used to check that the installed lagoons are deeper than 1 meter. Regarding the retention time, PP mentions in the PDD version 1 a report from Embrapa with general data (not specific to the retention time of the project activity). PP shall present the calculation of the retention time of the baseline scenario anaerobic lagoons for each farm, considering the volume of the lagoons and the manure flow. *(e) No methane recovery and destruction by flaring, combustion or gainful use takes place in the baseline scenario*; Confirmed by site inspection that in the baseline scenario there is no methane recovery and recovery and destruction by flaring, combustion or gainful use. The following project activity conditions were assessed: *(a) The final sludge must be aerobically. In case of soil application of the final sludge the proper conditions and procedures (not resulting in methane emissions) must be ensured*;	~~**CAR 2**~~	

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
				The sludge is distributed over the field to improve fertilization. Please, refer to ~~**CAR 18**~~ above. *(b) Technical measures shall be used (including a flare for exigencies) to ensure that all biogas produced by the digester is used or flared*; All generated biogas will be destroyed by flaring. Alternatively, for future purposes, the biogas could be used for electricity supply the site by generators. No claims of emission reductions due to electricity production will be required, only due to the destruction of biogas by the generators. Therefore, no assessment was made under category I. *(c) The storage time of the manure after removal from the animal barns, including transportation, should not exceed 5 days before being fed into the anaerobic digester*; It was verified /informed during the site visit that there is no manure storage. In some farms there is a continuous flow or the removal is done twice a day. This is assured due to the common farms practices of the Confined Animal Feed Operation Practices, which follows recommendations from EMBRAPA (Empresa Brasileira de Agricultura e Agropecuária) to get high standards of sanitary conditions in the confined operations. These recommendations can be found at EMBRAPA web site where all producers use as a guideline. http://www.cnpsa.embrapa.br/pnma/pdf_doc/doc_pnma.pdf		
B.2.2.	Is the selected baseline one of the baseline(s) described in the methodology and this hence confirms the applicability of the methodology?	/1/	DR/CC	Please refer to section B.2.1	~~**CAR 2**~~	**OK**

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
B.3.	**Project boundary**					
B.3.1.	Is the project boundary clearly defined and in accordance with the applied methodology?	/1/	DR/CC	As per the methodology, "the project boundary is the physical, geographical site (s) of the livestock and manure generation and management system, and the facilities which recover and flare/combust or use methane." Therefore, the project boundary described in the PDD includes the GHG emissions that come from the animal waste practices, including the GHG resulting from the capture and combustion of biogas.		**OK**
B.3.2.	What are the project's system boundaries (components and facilities used to mitigate GHGs)?	/1/	DR/CC	The project boundary is illustrated in the PDD. It includes the manure produced in the farms, the biodigesters, the digester output storage (system of one or more lagoons), the biogas combustion system (Flare). PPs shall clarify why the generators were not included in the project boundary.	~~**CAR 3**~~	**OK**
B.3.3.	Which sources are identified for the project? Does the identified project boundary cover all possible sources linked to the project activity?	/1/	DR/CC	Please refer to section B.3.1.		**OK**
B.3.4.	Does the project involve other emissions sources not foreseen by the methodologies that may question the applicability of the methodology? Do these sources contribute by more than 1% to the estimated emission reductions of the project?	/1/	DR/CC	It was not identified other emissions not foreseen by the methodology		**OK**
B.4.	**Baseline scenario identification**					
B.4.1.	Which baseline scenarios have been identified? Is the list of the baseline scenarios complete?	/1/ /2/	DR/CC	The baseline scenario was correctly defined as per the methodology AMS-III.D: which is the amount of methane that would be emitted to the atmosphere during the crediting period in the absence of the project activity. First scenario, where only the installation of the anaerobic digester plus flare is being considered and, the second scenario, where the installation of both an anaerobic digester		**OK**

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
				plus flare and a generator are being considered and which assumes that all the farms will start to produce electricity in 2011 (using a standard generator with installed capacity of 40 KW, to produce energy during 12 hours/day, consuming 100% of the biogas produced, only for farm activities proposals, without connection to the grid for further energy commercialization); and third, the installation of the anaerobic lagoon, as usual in the baseline scenario.		
B.4.2.	How have the other baseline scenarios been eliminated in order to determine the baseline?	/1/	DR	The baseline scenario to the project activity is the treatment of animal manure in open anaerobic lagoons, with the release of greenhouse gases to the atmosphere. The anaerobic digester requires a higher investment, it can be confirmed that the anaerobic lagoon, as it usually requires less investment, is the most likely alternative and therefore can be considered the baseline scenario.		**OK**
B.4.3.	What is the baseline scenario? Is the determination of the baseline scenario in accordance with the guidance in the methodology?	/1/	DR	See section B.4.1.		**OK**
B.4.4.	Has the baseline scenario been determined using conservative assumptions? Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/	DR	PDD's (version 1) section B.4 did not list/discuss any national and/or sectoral policies relevant to the baseline scenario of the project activity. PPs are requested to add information related to regulatory and legal requirements and provide documented evidence/s	~~**CAR 17**~~	**OK**
B.5.	**Additionality determination**					
B.5.1.	What tool does the project use to assess additionality? Is this in line with the methodology?	/1/ /5/	DR	No tools to assess additionality are drawn up by the applied methodology. The project activity is using the "Attachment A of Appendix B of the Simplified Modalities and Procedures for Small-Scale CDM Project		**OK**

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
				Activities", Version 06, dated 30 September 2005" to assess the additionality.		
B.5.2.	What is the project additionality mainly based on?	/1/	DR	The project activity is based on the following barriers: -Investment barrier, -Technological barrier, -Barrier Due to Prevailing Practices (National Policies and Circumstances).		**OK**
B.5.3.	**Prior consideration of CDM**					
B.5.3.1.	What is the starting date of the proposed project activity?	/1/		The project's starting date was defined as 01/06/2010 in the published PDD. The project's starting date (01/06/2010) presented in the PDD version 1 refers to the forecasted date to sign the contract(s) to start the site construction, when PPs are to commit to expenditures related to the implementation or to the construction of the project activity. However during the site visit (14/07/2010), it was verified that the contract(s) have not been signed. PPs shall update the starting date of the project activity.	~~**CAR 4**~~	**OK**
B.5.3.2.	What is the evidence for serious consideration of CDM prior to the time of decision to proceed with the project activity?	/1/	DR	The notification to the UNFCCC secretariat and the Host Party DNA is not necessary as the project's starting date is after 02 August 2008 and the PDD has been published for global stakeholder consultation (21/05/2010) before the project activity start date (01/06/2010). First paragraph of section B.5 of the PDD version 1 shall be revised. The start of the validation is 21 May 2010 (PDD published in the UNFCCC website) and not September 2009.	~~**CAR 5**~~	**OK**
B.5.3.3.	What initiatives were taken by the project participants from the starting date of the project activity to the	/1/	DR	Not applicable. Project's starting date is after 02 August 2008 and the PDD has been		**OK**

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
	start of validation in parallel with the physical implementation of the project activity?			published for global stakeholder consultation (21/05/2010) before the project activity start date (01/06/2010).		
B.5.3.4.	Does the timeline of the project confirm that continuous actions in parallel with the implementation were taken to secure CDM status?	/1/	DR	Not applicable. Project's starting date is after 02 August 2008 and the PDD has been published for global stakeholder consultation (21/05/2010) before the project activity start date (01/06/2010).		**OK**
B.5.4.	**Investment analysis**					
B.5.4.1.	What is the analysis method used to determine whether the proposed project activity is not (a) the most economically or financially attractive; or (b) economically or financially feasible, without the revenue from the sale of certified emission reductions?	/1/	DR	Not applicable. PDD version 1 uses the barrier analysis.		**OK**
B.5.4.2.	What the financial indicator is used?	/1/	DR	Not applicable. PDD version 1 uses the barrier analysis.		**OK**
B.5.4.3.	Does the income tax calculation take depreciation into account? Is the depreciation year in accordance with normal accounting practice in the Host Country?	/1/	DR	Not applicable. PDD version 1 uses the barrier analysis.		**OK**
B.5.4.4.	Is the time period of the investment analysis and operating time of the project realistic? Has salvage value been taken into account? Is the working capital returned in the last year of the operation?	/1/	DR	Not applicable. PDD version 1 uses the barrier analysis.		**OK**
B.5.4.5.	Cross-check of main parameters used in the financial analysis: electricity generation, electricity tariff, investment costs, operating and maintenance costs, taxes, other costs. The main parameters can be changed for the different project category.	/1/	DR	Not applicable. PDD version 1 uses the barrier analysis.		**OK**
B.5.4.6.	Sensitivity analysis: have the key parameters contributing to more than 20% of the revenue/costs during operating or implementation been identified?	/1/	DR	Not applicable. PDD version 1 uses the barrier analysis.		**OK**
B.5.4.7.	Sensitivity analysis: is the range of variations is reasonable in the project activity? The main parameters can be changed for the	/1/	DR	Not applicable. PDD version 1 uses the barrier analysis.		**OK**

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
	different project category.					
B.5.4.8.	Have the key parameters been varied to reach the benchmark and the likelihood of this happening been justified to be small?	/1/	DR	Not applicable. PDD version 1 uses the barrier analysis.		**OK**
B.5.5.	**Barrier analysis**					
B.5.5.1.	Are the barriers identified complimentary to a potential investment analysis?	/1/	DR	The additionality of the project activity is explained through the following barriers: -Investment barrier, -Technological Barrier, -Barrier due to prevailing practice (National Policies and Circumstances).		**OK**
B.5.5.2.	How were the investment barriers assessed to be real? How does CDM alleviate the investment barriers?	/1/ /19/ /20/	DR	To assess the investment barrier RINA applied the following supporting documents: - Non-binding best practice examples to demonstrate additionality for SSC project activities, EB 35 annex 34; - Guidelines on the assessment of investment analysis, EB 51 annex 58. To demonstrate the investment barrier, PPs presented an economic analysis considering three scenarios: 1) installation of the anaerobic digester plus flare; 2) installation of the anaerobic digester plus flare and a generator (assuming that all farms will produced electricity in 2011, use a standard generator of 40 KW, using all biogas produced to generate energy during 12 hours/day for internal consumption); 3) the installation of the anaerobic lagoon, as usual in the baseline scenario. For the analysis, project participants are using the SELIC index as discount rate to calculate the NPV (Net Present Value) of the project. The SELIC rate is defined, calculated and works as Brazilian Central Bank' s overnight lending rate and therefore is considered the		**OK**

Checklist Question	Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
			country's risk-free rate. In the project activity, PP used the SELIC for the month of November 2009 and the value is 8.65 %. RINA analyzed the historic of SELIC since the begging of 2009 until date of the site visit and verified that the value used by PP is conservative, since it is the lowest SELIC rate for the mentioned period. In the Financial Analysis spreadsheet project participants are using the NPV (Net Present Value) to compare the three different Scenarios. The NPV of a time series of cash flows, both incoming and outgoing, is defined as the sum of the present values (PVs) of the individual cash flows. The PV is calculated by the formula PVt = *Rt / (1+i)t,* where the "Rt" is the net cash flow; the "i" is the discount rate (defined in % / period of time [per day, per month or per year]; and the "t" is the time of the cash flow. In the *spreadsheet "IRR PDD 15 version* 1.xls" project participants included the discount rate in the formula with the value of 8.65, this number was not divided by 100, so the formula "(1+i)" has the value 9.65 and not the value 1.0865, resulting in an underappreciated value of NPV. PP shall clarify the NPV calculations used in the spreadsheet version 1, including the financial analysis and the sensitivity analysis). . In the Scenario 2 (Digester + Flare + Generator) presented in the financial analysis, all investment is applied in the first year of the project. Project participants also presented in the first year the same levels of revenues of electricity (savings due the on site energy production) that are presented in another	~~CAR 6~~	

Checklist Question	Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
			years of the financial analysis. PPs shall clarify why the time required to prepare, build and install all facilities and equipments of the project activity is not considered in the financial analysis. Project participants presented the evidences about investments for all project's farms, however there is a large volume of information and it is not possible to compare these evidences with the values presented in the spreadsheet *"IRR PDD 15 version 1.xls".* Project participants should prepare a summary containing the project investments, detailing the farms, scenarios and type of investments (i.e.: flare equipments, generator equipments, digester equipments, buildings, etc) in order to better cross check the evidences against these figures. In addition, when applicable, PPs shall present the conversion rate used (BRL x USD), in order to cross check against the values presented in the financial analysis spreadsheet. Moreover, PPs shall provide evidences for maintenances and other costs. The equipments' investment and the energy price of the proposed project (Scenario 2) were submitted to the sensitivity analysis. Project participants should include in the sensitivity analysis of the equipments' costs the value of the installation costs (equipment costs + installation cost + purchase cost). Moreover, project participants should create a third analysis with the Maintenance Costs. Since the 10% variation for all parameters didn't presented an NPV for the proposed	~~CL 4~~ ~~CL 5~~ ~~CAR 7~~	

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
				project activity scenario more favorable than the baseline scenario it would be more useful to show how large should be these variations to make the proposed project NPV equal the baseline scenario. Then a second analysis should be applied to discuss the likelihood of occurrence of these scenarios.	~~CL 6~~	
B.5.5.3.	Is the project activity prevented by the investment barriers and at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR	See section B.5.4.3	~~CAR 6~~ ~~CAR 7~~ ~~CL 4~~ ~~CL 5~~ ~~CL 6~~	
B.5.5.4.	How were the technological barriers assessed to be real? How does CDM alleviate the technological barriers?	/1/	DR	The implementation of the anaerobic digester technology requires special expertise related to project design, operation and maintenance of flare, and operational control of biodigesters (pressure, temperature, methane concentration, density of manure, etc). This expertise is not common with swine farm managers, thus Brascarbon will be responsible for implementing an external support to the farmers. Hence, the project would not be implemented without external support to overcome the technical difficulties.		**OK**
B.5.5.5.	Is the project activity prevented by the technological barriers and is at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR	Yes, the technological barrier is not faced in the operation of the anaerobic open lagoons. To the farms' owners the open lagoons is the common practice and the skilled labors for the biodigesters implementation and operation will be provided by Brascarbon, that have the know-how of the technology, with the project implementation.		**OK**
B.5.5.6.	How were the barriers due to prevailing practice assessed to be real? How does CDM alleviate the barriers due to prevailing practice?	/1/	DR	PPs are requested to clarify why the Barrier due to prevailing practice (National Policies and Circumstances), presented in the published PDD, is discussing practices and actions in Santa Catarina state and not in São	~~CL 7~~	**OK**

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
				Paulo state, where the project activity is located. Moreover, PP did not demonstrate how the CDM alleviates the barrier due prevailing practice. PPs are requested to clarify why the Barrier due to prevailing practice (National Policies and Circumstances), presented in the published PDD, is discussing practices and actions in Santa Catarina state and not in São Paulo state, where the project activity is located. Moreover, PP did not demonstrate how the CDM alleviates the barrier due prevailing practice.	~~CAR 19~~	
B.5.5.7.	Is the project activity prevented by the barriers due to prevailing practice and is at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR	Please refer to section B.5.5.6	~~CL 7~~	**OK**
B.5.5.8.	How were the other barriers assessed to be real? How does CDM alleviate the other barriers?	/1/	DR	The additionality of the project activity has been demonstrated through the application of the investment barrier, technological Barrier and barrier due to prevailing practice (National Policies and Circumstances). No other barriers were assessed.		**OK**
B.5.5.9.	Is the project activity prevented by the other barriers and is at least one of the possible alternatives to the project activity is feasible under the same circumstances?	/1/	DR	Please refer to section B.5.4.9.		**OK**
B.5.6.	**Common practice analysis**					
B.5.6.1.	What are the geographical scope and scope of technology of the common practice analysis?	/1/	DR	The proposed project activity is a small scale and based on the "Attachment A of Appendix B of the Simplified Modalities and Procedures for Small-Scale CDM Project Activities", the		**OK**

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
				investment barrier, technological Barrier and barrier due to prevailing practice (National Policies and Circumstances) have been assessed.		
B.5.6.2.	How many similar non-CDM-projects exist in the region within the project's scope?	/1/	DR	Please refer to section B.5.5.1		**OK**
B.5.6.3.	How were possible essential distinctions between the project activity and similar activities assessed?	/1/	DR	Please refer to section B.5.5.1		**OK**
B.5.6.4.	What is the data source(s) used for the common practice analysis?	/1/	DR	Please refer to section B.5.5.1		**OK**
B.5.7.	**Conclusion on the additionality assessment**					
B.5.7.1.	What is the conclusion with regard to the additionality of the project activity?	/1/	DR	Additional information is requested to conclude the additionality assessment.	~~**CAR 6**~~ ~~**CAR 7**~~ ~~**CL 4**~~ ~~**CL 5**~~ ~~**CL 6**~~ ~~**CL 7**~~	**OK**
B.6.	**Calculation of GHG emission reductions**					
B.6.1.	**Baseline emissions**					
B.6.1.1.	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /2/ /13/ /14/ /15/ /23/	DR/CC	Yes. The baseline emission is calculated as per the requirements of the methodology. The baseline emissions (BE_y) are calculated using the formula provided in the methodology: $BE_y = GWP_{CH4} * D_{CH4}*UF_b*\sum_{j,LT} MCF_J*B_{0,LT}* N_{LT,y}*VS_{LT,y}* MS\%_{Bl,j}$ The parameters D_{CH4} and UF_b are presented by the methodology as 0.00067 t/m^3 and 0.94, respectively. It is considered that 100 % of the baseline manure will be handled in the system "j" ($MS\%_{BL,j}$).		**OK**

Checklist Question	Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
			The MCF_j (annual methane conversion factor for the baseline waste management system "j") for open lagoon and ambient temperature for São Paulo state. The value of 79 % was obtained from IPCC 2006, chapter 10, volume 4, Table 10.17, page 10.45, considering the average temperature of 23ºC-25ºC. For the São Paulo state temperature, CL 2 was open (section B.2), to confirm the state average temperature. The parameter $VS_{LT,y}$ is determined using the formula provided in the methodology: $VS_{LT,y} = (W_{site}/W_{default}) * VS_{default} * nd_y$ The parameter W_{site} was confirmed in the farmer's control /23/. Moreover the parameter nd_y is considered 365 days. The parameters $W_{default}$ (default average animal weight of a defined livestock population at the project site), $B_{0,LT}$ (maximum amount of methane that can be potentially produced from manure) and $VS_{default}$ (Volatile Solids) have been chosen from IPCC 2006, chapter 10, volume 4, Tables 10A-7 and 10A-8 (pages 10.80 and 10.81) /13/. Default values applicable to developed countries were used, the following conditions were verified and found acceptable: -*The genetic source of the production operations livestock originates from an Annex I Party*: RINA verified that the project farms, as well as almost all Brazilian swine genetics, are mainly originated from North America and Western Europe (Agroceres-PIC) and genetics can also be confirmed through purchase receipts /14/.		

Checklist Question	Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
			PPs provided a farm's owner (Empresa José Rosseto e Outros) letter dated 05/03/2010, confirming that the genetics are Agroceres and Topigs. PPs shall confirm if these genetics (evidence/s) are the same for all farms included in the project activity since the letter mentions only the farms Sítio Barreiro, Santa Rosa and Mirante, among others that are not part of this project activity (farms not mentioned: Sítio São Francisco, Fazenda Bom Retiro, Sítio Água do Rosário and Granja Colorado). The letter clarifies that Sítio Barreiro is responsible to purchase the animals and transfer them to the others farms. Moreover, PPs shall confirm the genetics of Topigs and provide purchase invoices. Finally, the web link provided in the PDD for the Associação Brasileira dos Criadores de Suinos" (Brazilian Swine Association) can not be accessed.	~~CL 8~~	
			-*The farm uses formulated feed rations (FFR) which are optimized for the various animal(s), stage of growth, category, weight gain/productivity and/or genetics*: as verified in the site visit, in the farms (office) there is a control of the formulated feed rations (FFR) /15/.		
			Regarding the annual average number of animals of type LT in the year "y" (NLT,y), during site visit, RINA assessed the farmer's control related to the number of animals and verified that for Sítio Mirante do Macuco the numbers of guilts and boars are exchanged. PP shall revise table B2 and related information presented in the PDD. In addition,	~~CAR 8~~	

Checklist Question	Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
			PP shall present all the figures in English (comma for thousands). A comparison of the annual average number of animals as per farmers control /17/ and numbers described in the PDD is presented bellow:	~~CL 9~~	

Reference	Farm/Site	Anual Average Number of Animals of Type LT in year y - $N_{LT,y}$					Total
		Sows	Finishers	Nursery/ Weaners	Boars	Gilts	
PDD	Sitio Barreiro	3,300	-	-	15	660	**3,975**
Farmer's control - 2009		2,891			37	579	**3,507**
PDD	Sitio Santa Rosa	3,000	-	-	15	600	**3,615**
Farmer's control - 2009		2,643			37	526	**3,206**
PDD	Sitio Mirante do Macuco	3,200	-	-	1,000	15	**4,215**
Farmer's control - 2009		2,814			13	2471	**5,297**
PDD	Faz São Francisco	-	12,400	11,000	-	-	**23,400**
Farmer's control - 2009			11,500	2,258			**13,758**
PDD	Fazenda Bom Retiro	-	16,400	10,000	-	-	**26,400**
Farmer's control - 2009			15,213	2,065			**17,278**
PDD	Sitio Agua do Rosario	-	20,000	8,000	-	-	**28,000**
Farmer's control - 2009			18,567	1,647			**20,215**

PPs shall clarify how the annual average number of animals of type LT in the year "y" (NLT,y), presented in the PDD was determined.

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
B.6.1.2.	Have conservative assumptions been used when calculating the baseline emissions and are the uncertainty estimates properly addressed?	/1/	DR	Please, see section B.6.1.1.	~~CL 8~~ ~~CAR 8~~ ~~CL 9~~	**OK**
B.6.2.	**Project emissions**					
B.6.2.1.	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /2/ /6/ /8/	DR	As per the methodology the project emissions are calculated as follow: $PE_y = PE_{PL,y} + PE_{flare,y} + PE_{power,y} + PE_{storage,y}$ **$PE_{PL,y}$** (Emissions due to physical leakage of biogas in year "y" (tCO2e)): as per the methodology requirements, it is estimated as 10% of the maximum methane production potential of the manure fed into the management system implemented in the project activity. ($PE_{PL,y}=0,10*GWP_{CH4}*D_{CH4}*\sum B_{0,LT}* N_{LT,y} * VS_{LT,y}* MS\%_{i,y}$) **$PE_{flare,y}$** (Emissions from flaring or combustion of the biogas stream in the year "y" (tCO2e)): it is determined as per the "Tool to determine project emissions from flaring gases containing methane"/6/. PP adopted the default value of 90% for the flare efficiency in compliance with the manufacture's specification. Project participants shall include in the PDD the formula to determine project emissions from flaring (PEflare,y), according to the "Tool to determine project emissions from flaring gases containing methane". **$PE_{power,y}$** (Emissions from the use of fossil fuel or electricity for the operation of the installed facilities in the year "y" (tCO_2e)): Neither fossil fuel nor electricity will be	~~CAR 9~~	**OK**

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
				consumed in the project activity. As per PPs, the technical parts that will be powered by energy will be supplied by solar cells. The energy will be stored in 12 volts batteries. However, for conservativeness, PPs shall include in the PDD the monitoring of electricity consumption from the grid to assure that if electricity is consumed, related emissions will be considered. **$PE_{storage,y}$** (Emissions from the storage of the manure (tCO_2e)): The manure will not be stored in the project activity and the accumulation and transportation will not exceed 24 hours. Therefore this parameter is 0.	~~**CAR 10**~~	
B.6.2.2.	Have conservative assumptions been used when calculating the project emissions and are the uncertainty estimates properly addressed?	/1/	DR	Please refer to section B.6.2.1.	~~**CAR 9**~~ ~~**CAR 10**~~	**OK**
B.6.3.	**Leakage**					
B.6.3.1.	Are the calculations documented according to the approved methodology and in a complete and transparent manner?	/1/ /2/	DR	According to AMS-III.D, no leakage calculation is required.		**OK**
B.6.3.2.	Have conservative assumptions been used when calculating the leakage and are the uncertainty estimates properly addressed?	/1/	DR	Please refer to section B.6.3.1		**OK**
B.6.4.	**Emission reductions**					
B.6.4.1.	Has the methodology been correctly applied to calculate the emission reductions and can this be replicated by the data provided in the PDD and supporting files to be submitted for registration?	/1/ /2/	DR	Baseline and project emission reduction *ex-ante* had been properly explained on the PDD as per the methodology. $ER_{y,estimated} = BE_y - PE_y$ The baseline emission was estimated using the formula from AMS-III.D: $BE_y = GWP_{CH4} * D_{CH4}*UF_b*\sum_{j,LT} MCF_J*B_{0,LT}*$		**OK**

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
				$N_{LT,y}$*$VS_{LT,y}$* $MS\%_{Bl,j}$ The project emission was estimated using the formula from AMS-III.D: $PE_y = PE_{PL,y} + PE_{flare,y} + PE_{power,y} + PE_{storage,y}$ See section B.6.2.1 regarding the **$PE_{power,y}$** (CAR 9) and $PE_{flare,y}$ (CAR 10**)**. Regarding the ex-post emission reduction calculation, as per the methodology AMS-III.D, version 16, the emissions reductions achieved in any year are the lowest value of the following: $ERy_{, expost} = min [(BEy_{, ex\ post} – PEy_{, ex\ post}), (MD\text{-}PE_{power, y, ex\ post})]$. Besides that, the formula that is presented in the procedure "POP-17 Ex-post calculation of emissions reductions" (from Portuguese "Cálculo das reduções de emissões ex-post") shall be mentioned in the PDD.	~~CAR 9~~ ~~CAR 10~~ ~~CAR 11~~	
B.6.5.	**Data and parameters that are available at validation and that are not monitored**					
B.6.5.1.	How were the parameters available at validation verified?	/1/ /2/ /13/	DR	The following parameters are available at validation: * **MCF_j** (Annual methane conversion factor for the baseline animal waste management system "j"): 79%: obtained from IPCC2006, vol 4, chapter 10, Tables 10.17. * **$MS\%_{Bl,j}$** (Fraction of manure handled in baseline animal manure management system "j") 100% of the manure will be handled per category T, system S and climate region k. Confirmed during site visit that all the manure generate goes to the open lagoons.		**OK**

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
				* **VS $_{default}$** (Default value for the volatile solid excretion rate per day on a dry-matter basis for a defined livestock population) 0.3 Kg dry matter/animal/day for market swine, 0.46 Kg dry matter/animal/day for breeding swine and guilts: obtained from IPCC 2006, chapter 10, volume 4, Tables 10A-7 and 10A-8 ***GWP$_{CH4}$** (Global warming potential of CH4) 21: obtained from IPCC 2006 ***B$_{0,LT}$** (Maximum methane producing potential of the volatile solid generated for animal type "LT") 0.45 m^3 CH_4/kg dm for all categories: obtained from IPCC 2006, chapter 10, volume 4, Tables 10A-7 and 10A-8 * **W$_{default}$** (Default average animal weight of a defined population at the project site). 198 Kg for sows and guilts (breeding swines) and 50 Kg for finishers, nursery and boars (market swines): obtained from IPCC 2006, chapter 10, volume 4, Tables 10A-7 and 10A-8 (Observation: as mentioned above, the parameters from western Europe are applicable as project farms, as well as almost all Brazilian swine genetics, are mainly originated from North America and Western Europe). PP shall in include in section B.6.2 of the PDD the parameter UFb (Model correction factor to account for model uncertainties).	~~**CAR 12**~~	
B.7.	**Monitoring plan**					
B.7.1.	**Data and parameters monitored**					
B.7.1.1.	Does the monitoring plan described in the PDD	/1/	DR	Yes. The project applies the approved		**OK**

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
	comply with the requirements of the methodology?	/2/		simplified monitoring methodology for selected small-scale CDM project activity categories AMS-III.D, version 16 of 26/03/2010.		
B.7.1.2.	Does the monitoring plan contain all necessary parameters and are they clearly described?	/1/ /2/ /11/	DR/CC	As per the methodology AMS-III.D, version 16, the emissions reductions achieved in any year are the lowest value of the following: $ER_{y,\ expost} = min\ [(BE_{y,\ ex\ post} - PE_{y,\ ex\ post}), (MD\text{-}PE_{power,\ y,\ ex\ post})]$. According to the published PDD, the parameters to be monitored *ex-post* are: *$\mathbf{T_f}$ (Combustion temperature of the flare): monitored according to the Monitoring Operational Procedure POP-01, which will be measured through the continuous temperature registration in the programmable logic controller (PLC). *$\mathbf{W_{site}}$ (average animal weight of a defined livestock population at the project site), monitored quarterly according to the Operational Procedure POP-016. ***Site inspection** (inspection on the site considering relevant regulation and the infrastructure of the site) annually monitoring includes the relevant regulation and the infrastructure of the site according to the Operational Procedure - POP-02. *$\mathbf{N_{LT,y}}$ (annual average number of animals of type "LT" in the year "y"), monitored monthly according to the procedure- POP-03. *$\mathbf{BG_{burnt,y}}$ (biogas flared or used as fuel in the		**OK**

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
				year y) monitored according to the operational procedure POP-04. The amount biogas will be measured by cumulative flow meter and reported monthly by the regional technician. In the control spreadsheet it is necessary to register the inspection day, hour of and the volume of the biogas. The information recorded in the PLC will be recovered using a pen drive and a excel spreadsheet from the system will be available to show the flow rate per minute per day. *$\mathbf{W_{CH4,y}}$ (methane content in biogas in the year "y")- monitored according to the operational procedure POP-05. The monitoring frequency will be determined to provide a confidence level of 95%. Monitored through calibrated portable gas analyzer. *$\mathbf{T_{biogas}}$ (temperature of the biogas at operation conditions)- monitored monthly according to the operational procedure POP-06. *$\mathbf{D_{CH4}}$ (density of the methane combusted at operational conditions)- calculated monthly according to the operational procedure POP-07, considering the parameters pressure, temperature and molecular mass of methane. *$\mathbf{Q_{DM}}$ (sludge soil application)- monitored according to the operational procedure POP-09. FE or ηflare,h (flare efficiency) is to be continuously monitored, according to the operational procedure POP-08, if flare		

Checklist Question	Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
			temperature >=500ºC, as per fabricant specification, and for more than 40 minutes: 90% efficiency; if flare temperature ≤ 500 ^{oC} and ≥ 100 ^{oC} or above 500% out of the flare specification: 50% efficiency, if temperature < 100ºC: 0%. The PDD just mentions that the efficiency is 90% if temperature is ≥500ºC and 0% if temperature is <500ºC. PPs shall clarify how the procedure POP-08 and the PDD will comply with the requirements of the methodology, that is: *continuous check of compliance with the manufacturer's specification of the flare device (temperature, biogas flow rate) should be done. If in any specific hour any of the parameters is out of the range of specifications, 50% of default value should be used for this specific hour. If at any given time the temperature of the flare is below 500ºC, 0% default value should be used for this period.* *$ER_{y,ex-post}$ (ex-post emission reductions achieved by the project activity based on monitored values for the year "y")- annually comparison of the baseline with the actual measured data according to the operational procedure POP-17. ***FFR** (formulated feed rations)- monitored and controlled annually according to animal category, as per the operational procedure POP-14. *P_{biogas} (pressure of the biogas at operational conditions)- monitored monthly according to the operational procedure POP-13 ***Genetic source** (genetic source from annex	~~CL 10~~	

Checklist Question	Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
			I Party) monitored annually according to the operational procedure POP-15 ***MS%$_{i,y}$** (fraction of manure handled in project emissions in system "I", year "y")- monitored annually according to the operational procedure POP-02 ***N$_{day,y}$** (number of days animal is alive in the farm, in year "y") and **N$_{p,y}$** (number of animals produced annually of type "LT" in year "y") number of animal per category will be monitored monthly according to the operational procedure POP-03. The PDD version 1 mentions that the days that animal are alive and the total number of animals will be monitored as per the POP-03, formulary 03.002. However, the procedure presented to RINA has just the formulary 03.001, to record the number of animals per category (NLT) and the formulary 03.003 to record the entrance and exit of animals. As per the methodology AMS-III.D, paragraph 30, the parameter *ndy* (Number of days in year "y" where the treatment plant was operational) shall be monitored. Therefore, PPs shall include the parameter in PDD's section B.7.1 and in the monitoring plan. As per PPs, the technical parts that will be powered by energy will be supplied by solar cells. The energy will be stored in 12 volts batteries. However, for conservativeness, PPs shall include in the PDD the monitoring of electricity consumption from the grid to assure that if electricity is consumed, related	~~CL 11~~ ~~CAR 13~~ ~~CAR 10~~	

<table>
<tr><th colspan="2">Checklist Question</th><th>Ref.</th><th>MoV1</th><th>Comments</th><th>Draft Conclusion</th><th>Final Conclusion</th></tr>
<tr><td></td><td></td><td></td><td></td><td>emissions will be considered.</td><td></td><td></td></tr>
<tr><td>B.7.1.3.</td><td>Is the measurement equipment described?
Is the accuracy of the measurement equipment addressed and deemed appropriate?
Are the requirements for maintenance and calibration of measurement equipment described and deemed appropriate?</td><td>/1/
/11/</td><td>DR</td><td>The maintenance of the project activity is described in the Operational procedure POP-12: General maintenance.
For instance, the calibrations frequencies described in the mentioned procedure are:
*The flow meter will be calibrated annually as per fabricant recommendations,
*The gas analyzer will be calibrated every six months, as per the fabricant recommendations.
Moreover, the procedure also describes the general maintenance of the flare and digester.

*BIOGAS equipment, for the biogas pressure and temperature, will be calibrated annually, defined in the procedure POP 13 and POP 6 respectively.

PPs shall provide the calibration frequency of the thermocouple (flare temperature).</td><td>~~CL 12~~</td><td>OK</td></tr>
<tr><td>B.7.1.4.</td><td>Is the monitoring frequency adequate for all monitoring parameters?
Is it in line with the monitoring methodology?</td><td>/1/
/11/</td><td>DR</td><td>Yes. See section B.7.1.1.
<table>
<tr><th>DATA</th><th>Data Variable</th><th>Frequency</th></tr>
<tr><td>T f</td><td>Flare Temperature</td><td>Every 1 minute</td></tr>
<tr><td>Site Inspection</td><td>----</td><td>Annually</td></tr>
<tr><td>$N_{LT,y}$</td><td>Nr, Of heads</td><td>Monthly</td></tr>
<tr><td>$BG_{burnt,y}$</td><td>Biogas produced</td><td>Monthly</td></tr>
<tr><td>$w_{CH4,y}$</td><td>Methane content</td><td>To be defined to attend a</td></tr>
</table></td><td></td><td>OK</td></tr>
</table>

<table>
<tr><th>Checklist Question</th><th>Ref.</th><th>MoV1</th><th>Comments</th><th>Draft Conclusion</th><th>Final Conclusion</th></tr>
<tr><td></td><td></td><td></td><td>
<table>
<tr><td></td><td></td><td>confidence level of 95%</td></tr>
<tr><td>T_{biogas}</td><td>Biogas Temperature</td><td>Monthly</td></tr>
<tr><td>D_{CH4}</td><td>Density</td><td>Monthly</td></tr>
<tr><td>FE</td><td>Temperature</td><td>Monthly</td></tr>
<tr><td>QDM</td><td>---</td><td>Every Batch Disposed</td></tr>
<tr><td>W site</td><td>Average Animal weight</td><td>Quarterly</td></tr>
<tr><td>$ER_{y,estimated}$</td><td>CO_2e</td><td>Annually</td></tr>
<tr><td>FFR</td><td>Feed Formulation</td><td>Monthly</td></tr>
<tr><td>P biogas</td><td>Biogas Pressure</td><td>Monthly</td></tr>
<tr><td>Genetic Source</td><td>genetic</td><td>Annually</td></tr>
<tr><td>MS% i,y</td><td>Manure handled</td><td>Annually</td></tr>
<tr><td>N day,y</td><td>days</td><td>Monthly</td></tr>
<tr><td>N p,y</td><td>Nr of heads</td><td>Monthly</td></tr>
</table>
</td><td></td><td></td></tr>
<tr><td>B.7.1.5.</td><td>Is the recording frequency adequate for all monitoring parameters?
Is it in line with the monitoring methodology?</td><td>/1/
/11/</td><td>DR</td><td>Yes. Please refer to section B.7.1.1
<table>
<tr><th>DATA</th><th>Data Variable</th><th>Frequency</th></tr>
<tr><td>T f</td><td>Flare Temperature</td><td>Every 1 minute</td></tr>
<tr><td>Site Inspection</td><td>----</td><td>Annually</td></tr>
</table>
</td><td></td><td>OK</td></tr>
</table>

Checklist Question		Ref.	MoV1	Comments			Draft Conclusion	Final Conclusion
				$N_{LT,y}$	Nr, Of heads	Monthly		
				$BG_{burnt,y}$	Biogas produced	Monthly		
				$w_{CH4,y}$	Methane content	To be defined to attend a confidence level of 95%		
				T_{biogas}	Biogas Temperatur e	Monthly		
				D_{CH4}	Density	Monthly		
				FE	Temperatur e	Monthly		
				QDM	---	Every Batch Disposed		
				W site	Average Animal weight	Quarterly		
				$ER_{y,estimated}$	CO_2e	Annually		
				FFR	Feed Formulation	Monthly		
				P biogas	Biogas Pressure	Monthly		
				Genetic Source	genetic	Annually		
				MS% i,y	Manure handled	Annually		
				N day,y	days	Monthly		
				N p,y	Nr of heads	Monthly		
B.7.2.	**Monitoring of sustainable development**							

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
	indicators/ environmental impacts					
B.7.2.1.	Is the monitoring of sustainable development indicators/ environmental impacts warranted by legislation in the host country?	/1/ /2/	DR	The simplified monitoring methodology AMS-III.D and the Brazilian DNA do not require the monitoring of social and environmental indicators.		**OK**
B.7.2.2.	Does the monitoring plan provide for the collection and archiving of relevant data concerning environmental, social and economic impacts?	/1/	DR	Please refer to section B.7.2.1.		**OK**
B.7.2.3.	Are the sustainable development indicators in line with stated national priorities in the host country?	/1/	DR	Please refer to section B.7.2.1.		**OK**
B.7.3.	**Management, quality assurance and quality control**					
B.7.3.1.	How it has been assessed that the monitoring arrangements described in the monitoring plan are feasible within the project design?	/1/ /11/	DR	At the time of site visit the project was not implemented/ operational yet. It was verified that the PPs have procedures to assure the proper monitoring of the project activity and they are feasible within the project design. The monitoring plan has to be checked during the verification. See section B.7.1.1.		**OK**
B.7.3.2.	Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)?	/1/ /11/	DR	Yes. PPs have procedures /11/ established for the monitoring of the monitored parameters. The procedures have specific formularies in order to assure data recording. All data will be sent to the Brascarbon office, which will manage the information from all project farms. These procedures have to be checked during the verification.		**OK**
B.7.3.3.	Are the data management and quality assurance and quality control procedures sufficient to ensure that the emission reductions achieved by/resulting from the project can be reported *ex post* and verified?	/1/ /11/	DR	There is established procedures /11/ for monitoring the project activity. Data will be monitored using calibrated equipments. Moreover, there is a procedure for training annually the personnel involved in the monitoring of the project activity. However, as the project is not implemented, these procedures have to be checked during the verification.		**OK**

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
B.7.3.4.	Will all monitored data required for verification and issuance be kept for two years after the end of the crediting period or the last issuance of CERs, whichever occurs later?	/1/ /4/ /11/	DR/CC	Archiving of data, as described in the published PDD, is not in accordance with the "Guidelines for completing the simplified project design document (CDM-SSC-PDD)". PPs shall revise the PDD according to the "Guidelines for completing the simplified project design document (CDM-SSC-PDD)" (data *monitored and required for verification and issuance are to be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later).*	~~CAR 14~~	**OK**
C. Duration of the project activity and crediting period						
C.1. Start date of project activity						
C.1.1.	What is the expected project's starting date of the project activity and how it has been determined? When was the first construction activity?	/1/	DR/CC	The project's starting date is 01/06/2010, as mentioned in the published PDD. The project's starting date (01/06/2010) presented in the PDD version 1 refers to the forecasted date to sign the contract(s) to start the site construction, when PPs are to commit to expenditures related to the implementation or to the construction of the project activity. However during the site visit (14/07/2010), it was verified that the contract(s) have not been signed. PPs shall update the starting date of the project activity.	~~CAR 4~~	**OK**
C.1.2.	What is the expected operational lifetime of the project activity? Is it deemed reasonable?	/1/	DR	The expected operational lifetime of the project was defined, in the published PDD, as 21 years (0 months). The expected operational lifetime of the project was defined in the published PDD as 21 years. PPs shall provide the evidence of the operational lifetime of the project's activity equipments.	~~CL 13~~	**OK**

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
C.2.	**Start date of crediting period**					
C.2.1.	What is the expected crediting period starting date of the proposed project activity?	/1/	DR	According to the published PDD, the expected crediting period starting date of the proposed project activity is 01/01/2012, or the date of registration, whichever is later.		**OK**
C.2.2.	What is the length of the crediting period? Is it clearly defined and deemed reasonable?	/1/	DR	As per the published PDD, a renewable crediting period of 7 years has been chosen, starting from 01/01/2012. or the date of registration, whichever is later.		**OK**
D.	**Environmental Impact**					
D.1.1.	Has an analysis of the environment impacts of the project activity been undertaken? Is it clearly and sufficiently described in the PDD?	/1/ /18/	DR	At the time of the site visit, the environmental agency of São Paulo state does not require any environmental license (confirmed in the CETESB web site (http://www.cetesb.sp.gov.br/licenciamentoo/cetesb/lic_previa_quem.asp), accessed on 13/08/2010. The project participants provided an "Environmental impacts assessment" for each farm included in the project activity. The project activity will bring environmental benefits to all farms. RINA verified that the procedure POP 2, includes the monitoring of the environmental licenses, so if in the future this is applicable, PPs shall present this monitoring in further verifications.	~~**FAR 1**~~	**OK**
D.1.2.	Will the project create any adverse environmental effects? Are transboundary environmental impacts considered in the analysis?	/1/ /18/	DR	No transboundary environmental impacts are expected. See section D.1.1.		**OK**
D.1.3.	Is the analysis of the environmental impacts required by the legislation of the host Country? If yes, has the EIA has been approved by local Government? Does the approval contain any conditions that need	/1/ /18/	DR	Please refer to section D.1.1.		**OK**

<table>
<tr><th colspan="2">Checklist Question</th><th>Ref.</th><th>MoV1</th><th>Comments</th><th>Draft Conclusion</th><th>Final Conclusion</th></tr>
<tr><td></td><td>monitoring?</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>D.1.4.</td><td>Is it the project in line with the current environmental legislation in the host Country?</td><td>/1/ /18/</td><td>DR</td><td>Yes. Please refer to section D.1.1.</td><td></td><td>OK</td></tr>
<tr><td colspan="7">E. Local stakeholder consultation</td></tr>
<tr><td>E.1.1.</td><td>Were the local stakeholders invited by the PP prior to the publication of the PDD in the UNFCCC website?</td><td>/1/ /10/</td><td>DR</td><td>Yes. Letters are dated 05/04/2010, therefore prior to the Global Stakeholder Consultation, dated 21/05/2010.</td><td></td><td>OK</td></tr>
<tr><td>E.1.2.</td><td>Have relevant stakeholders been adequately consulted / invited for comments (addresses provided / available)?</td><td>/1/ /10/ /24/</td><td>DR/CC</td><td>It was verified that the local stakeholders consultation followed the Brazilian DNA Resolution nº 7 requirements /24/ and letters were sent to the following stakeholders:

<table>
<tr><th>Stakeholders</th><th>ARs</th></tr>
<tr><td>Mr. Antonio Rossetto Neto</td><td>12/04/2010</td></tr>
<tr><td>Associação Paulista de criadores suínos (Paulista Association of swine producers)</td><td>12/04/2010</td></tr>
<tr><td>Camara Municipal de Cerqueira César (Cerqueira César city house)</td><td>12/04/2010</td></tr>
<tr><td>Mr. José Rossetto</td><td>12/04/2010</td></tr>
<tr><td>Mr. Clóvis Rossetto</td><td>12/04/2010</td></tr>
<tr><td>Mr. Valdomiro Rossetto</td><td>12/04/2010</td></tr>
<tr><td>Sindicato Rural Vale do Rio Pardo (Vale do Rio Doce Rural Union)</td><td>12/04/2010</td></tr>
<tr><td>Companhia de Tecnologia de Saneamento Ambiental de São Paulo (CETESB) (State Environmental agency)</td><td>12/04/2010</td></tr>
<tr><td>Secretaria de Meio Ambiente do Estado de São Paulo (State Environmental</td><td>12/04/2010</td></tr>
</table></td><td></td><td>OK</td></tr>
</table>

Checklist Question	Ref.	MoV1	Comments		Draft Conclusion	Final Conclusion
			Secretary)			
			Assembléia Legislativa de São Paulo (São Paulo state Legislative Assembly)	09/04/2010		
			Ministério Público Estadual de São Paulo (Public Ministry of the state of São Paulo)	12/04/2010		
			Dir. Meio Ambiente de Cerqueira César (Cerqueira César Environemntal director)	12/04/2010		
			Secretaria de Agricultura de Cerqueira César (Cerqueira César Agricultural Secretary)	12/04/2010		
			Prefeitura Municipal de Cerqueira César (Cerqueira César city council)	12/04/2010		
			Associação Brasileira do Ministério Público de Meio Ambiente (Brazilian Association of Environmental Ministry Public)	12/04/2010		
			Ministério Público Federal (National Ministry Public)	12/04/2010		
			IBAMA (National Environmental Agency)	12/04/2010		
			EMBRAPA- Empresa Brasileira de Pesquisa Agropecuária (Brazilian Enterprise for Agricultural Research)	13/04/2010		
			FBOMS- *Fórum Brasileiro de ONGs e Movimentos*	26/04/2010		

Checklist Question		Ref.	MoV1	Comments	Draft Conclusion	Final Conclusion
				Sociais (Brazilian Fórum of NGOs)		
				PDD in Portuguese is available on http://www.brascarbon.com.br/bca-bra-15brazil.pdf		
E.1.3.	Is the summary of the comments received from the stakeholders provided in the PDD (provided / available)?	/1/	DR	No comments were received.		**OK**
E.1.4.	Has due account been taken by the project participants of any stakeholder comments received?	/1/	DR	No comments were received.		**OK**
E.1.5.	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?	/1/ /10/ /24/	DR	It was verified that the letters sent to the stakeholders followed the Brazilian DNA Resolution nº 7 /24/. Letters were sent in Portuguese and PDD was made publicly available, in Portuguese, in the following web link: http://www.brascarbon.com.br/anexo3PDD15.pdf. Information about the sustainable development is available in Portuguese in the web link: http://www.brascarbon.com.br/bca-bra-15brazil.pdf.		**OK**

TABLE 3 RESOLUTION OF CORRECTIVE ACTION REQUESTS AND CLARIFICATION REQUESTS

Corrective action and/ or clarification requests	Reference to Table 2	Response by project participants	Validation Conclusion
~~**CAR 1**~~ As verified during site visit, the farms do not have any identification (the names of the farms were informed during the site visit). Through the geographical coordinates presented in the PDD it is possible to check the farms (Google maps) and confirm the existence of the lagoons visited during the site visit, except for the farms Sítio Água Do Rosário and Granja Colorado, as the available image is not clear and therefore is not possible to find/confirm the farms location and their open lagoons. PPs are requested to provide evidences/ information on how it is possible to confirm the geographical coordinates of these two farms.	A.4.1	The geographical coordinates of the farms Granja Colorado and Sítio Água do Rosário were, by mistake, wrongly taken. The right ones were included in the PDD.	The revised PDD presents the following geographical coordinates for the farms: Sítio Água Do Rosário: S 23º 00' 10,4'' W 049º 04' 58,0'' Granja Colorado: S 23º 05' 58,4'' and W 049º 06' 10,5'' Rina confirmed the Geographical Coordinates in the Google Earth. This CAR is closed.
~~**CAR 2**~~ Regarding the retention time, PP mentions in the PDD version 1 a report from Embrapa with general data (not specific to the retention time of the project activity). PP shall present the calculation of the retention time of the baseline scenario anaerobic lagoons for each farm, considering the volume of the lagoons and the manure flow.	B.2.1	The calculation of the retention time of the project activity is presented in annex to this document.	PP has demonstrated that in the baseline scenario the retention time is greater than 30 days. The calculus is presented in the spreadsheet "*calculo tempo retencao.xlsx*" and considers data provided by the farmer's producer (Declaracao Rossetto Animais.pdf; Declaracao Rossetto Lagoas.pdf). This CAR is closed.
~~**CAR 3**~~ PPs shall clarify why the generators were not included in the project boundary.	B.3.2	The inclusion of the generator, as a future possibility in the PDD, outside the project boundary was due to an old request by the producers of our former and already registered PDD, which was copied to the present one. The generators were included as a possibility, at the producer's expenses, in order to provide a reduction of their energy	PP has decided to exclude the generator from the project activity. No electricity generation is considered in the PDD version 2. This CAR is closed.

		consumption by combusting the biogas in that kind of equipment. However and as part of the PPs experience in the development of these type of projects (the PP has already 6 PDDs registered in the UNFCCC and performing) it is possible to assess that after the implementation of the project (some have already more than two years operating) no producer has decided to request the installation of a generator. Therefore and in order to avoid possible misunderstanding in the evaluation of the project, the PP has decided to remove all references regarding the generator and energy savings from the PDD.	
~~**CAR 4**~~ The project's starting date (01/06/2010) presented in the PDD version 1 refers to the forecasted date to sign the contract(s) to start the site construction, when PPs are to commit to expenditures related to the implementation or to the construction of the project activity. However during the site visit (14/07/2010), it was verified that the contract(s) have not been signed. PPs shall update the starting date of the project activity.	B.5.3.1 C.1.1	As for the last version of the PDD (version 2) the starting date of the project was changed to 15/06/2011, date when is estimated that Brascarbon will sign the construction contract of the sites.	The project starting date was revised in the PDD version 2. The date of signature contract of construction /36/. This CAR is closed.
~~**CAR 5**~~ First paragraph of section B.5 of the PDD version 1 shall be revised. The start of the validation is 21 May 2010 (PDD published in the UNFCCC website) and not September 2009.	B.5.3.2	As for the last version of the PDD (version 2) the start date of validation was corrected accordingly.	PDD was revised accordingly. This CAR is closed.
~~**CAR 6**~~ In the Financial Analysis spreadsheet project participants are using the NPV (Net Present Value) to compare the three different Scenarios. The NPV of a time series of cash flows, both incoming and outgoing, is defined as the sum of	B.5.5.2 B.5.5.3	As for the last version of the PDD and the last version of the NPV calculation Spreadsheet (version 2) the calculation was corrected accordingly.	In the version 2 of Project Financial Analysis (IRR PDD15_version 2 .xls) project participants properly recalculated the NPV of the two scenarios (Baseline Scenario and Biodigestor+Flare). RINA has checked that the corrections have

the present values (PVs) of the individual cash flows. The PV is calculated by the formula $PV_t = R_t / (1+i)^t$, where the "R_t" is the net cash flow; the "*i*" is the discount rate (defined in % / period of time [per day, per month or per year]; and the "*t*" is the time of the cash flow. In the spreadsheet *"IRR PDD 15 version 1.xls*" project participants included the discount rate in the formula with the value of 8.65, this number was not divided by 100, so the formula "*(1+i)"* has the value 9.65 and not the value 1.0865, resulting in an underappreciated value of NPV. PP shall clarify the NPV calculations used in the spreadsheet version 1, including the financial analysis and the sensitivity analysis). .			been incorporated and calculations found to be correct This CAR is closed.
~~**CAR 7**~~ The equipments' investment and the energy price of the proposed project (Scenario 2) were submitted to the sensitivity analysis. Project participants should include in the sensitivity analysis of the equipments' costs the value of the installation costs (equipment costs + installation cost + purchase cost). Moreover, project participants should create a third analysis with the Maintenance Costs.	B.5.5.2 B.5.5.3	As for the last version of the PDD and the last version of the Excel Spreadsheet (version 2) it is not being considered the scenario with electricity generation once is not going to be used under the project activity (as referred on CAR 3). Only two scenarios are being considered: baseline scenario and project scenario. Once there are no revenues from the project, no sensibility analysis was made	The sensitivity analysis was carried out and presented in the last version of the PDD. This CAR is closed
~~**CAR 8**~~ Regarding the annual average number of animals of type LT in the year "y" ($N_{LT,y}$), during site visit, RINA assessed the farmer's control related to the number of animals and verified that for Sítio Mirante do Macuco the numbers of guilts and boars are exchanged. PP shall revise table B2 and related information presented in the PDD. In addition, PP shall present all the figures in English (comma for thousands).	B.6.1.1	The number of animals in the farm Sitio Mirante do Macuco was corrected in the last version of the PDD (version 2). Also, all figures were corrected and presented with comma for thousands. **Second response:** All tables regarding the number of animals (B2 and Annex 3), as well as all the remaining CER calculation, were updated in the last version of the PDD (version 3). Also, a new Excel spreadsheet with the CER calculation	The number of animals was revised in the table B.2, however, the related information also needs to be revised. Please, note that in the same table the sum of boars and guilts needs to be revised. Moreover, the CER's calculation also needs to be updated. This CAR remains open. **Second response:** Documents were revised accordingly. RINA has confirmed with the evidences provided. This CAR is closed.

		was also revised.	
~~**CAR 9**~~ Project participants shall include in the PDD the formula to determine project emissions from flaring ($PE_{flare,y}$), according to the "Tool to determine project emissions from flaring gases containing methane".	B.6.2.1 B.6.2.2 B.6.4.1	The formula to determine project emissions from flaring ($PE_{flare,y}$), according to the "Tool to determine project emissions from flaring gases containing methane" was included as Equation B7 in the PDD.	The revised PDD include the formula to determine project emissions from flaring ($PE_{flare,y}$), according to the "Tool to determine project emissions from flaring gases containing methane" as follows: $PE_{flare,y} = \sum_{h=1}^{8760} TM_{RG,h} \times (1 - \eta_{flare,h}) \times \frac{GWP_{CH4}}{1000}$ **$PE_{flare,y}$:** Project emissions from flaring of the residual gas stream in year y (tCO_2e) **$TM_{RG,h}$:** Mass flow rate of methane in the residual gas in the hour h (Kg/h) **$\eta_{flare,h}$:** Flare efficiency in hour h (-) **GWP_{CH4}:** Global Warming Potential of methane valid for the commitment period (tCO_2e/t_{CH4}) This CAR is closed.
~~**CAR 10**~~ As per PPs, the technical parts that will be powered by energy will be supplied by solar cells. The energy will be stored in 12 volts batteries. However, for conservativeness, PPs shall include in the PDD the monitoring of electricity consumption from the grid to assure that if electricity is consumed, related emissions will be considered.	B.6.2.1 B.6.2.2 B.6.4.1 B.7.1.2	As it was confirmed during the site visit, the project has no energy connection to the grid. All energy consumption during the project life cycle will be originated through solar cells and stored in 12 volt batteries which will supply the energy needed to the normal function of the project.	The project activity was not implemented during the site visit, therefore, it was not possible to confirm that there is no connection to grid. PP assures that no electricity will be consumed in the project activity, which the energy will be provided by 12 volt batteries. This CAR is closed and FAR #2 was raised.
~~**CAR 11**~~ Regarding the ex-post emission reduction calculation, as per the methodology AMS-III.D, version 16, the emissions reductions achieved in any year are the lowest value of the following: $ER_{y,\ expost} = min\ [(BE_{y,\ ex\ post} - PE_{y,\ ex\ post}),\ (MD\text{-}PE_{power,\ y,\ ex\ post})]$. Besides that, the formula that is presented in the procedure "POP-17 Ex-post calculation of emissions reductions" (from Portuguese "Cálculo das reduções de emissões ex-post") shall be	B.6.4.1	The formula to determine the ex-post emission reduction calculation was revised in Equation B4 of the PDD, according with methodology AMS-III.D, version 17. The formula to determine the MDy, as in the POP-17, was also included in the PDD, following Equation B4.	PDD was revised accordingly and includes the emission reductions ex-post formula as per the applied methodology requirements. This CAR is closed.

mentioned in the PDD.			
~~**CAR 12**~~ PP shall in include in section B.6.2 of the PDD the parameter UF_b (Model correction factor to account for model uncertainties).	B.6.5.1	The parameter UF_b (Model correction factor to account for model uncertainties) was included in the PDD, in section B.6.2 (last table of the section).	The parameter UF_b (Model correction factor to account for model uncertainties) was included in the section B.6.2 of the revised PDD as per the requirements of the methodology. This CAR is closed.
~~**CAR 13**~~ As per the methodology AMS-III.D, paragraph 30, the parameter nd_y (Number of days in year "y" where the treatment plant was operational) shall be monitored. Therefore, PPs shall include the parameter in PDD's section B.7.1 and in the monitoring plan.	B.7.1.2	The parameter nd_y (Number of days in year "y" where the treatment plant was operational) was included in the PDD's section B.7.1 and in the monitoring plan. A new procedure was created (POP24) to guarantee the monitoring of this parameter.	PDD was revised accordingly. Moreover PP has provided a procedure to assure the monitoring of the parameter. Monitoring will be based on the records of the Control Logic Program (CLP). This CAR is closed.
~~**CAR 14**~~ PPs shall revise the PDD according to the "Guidelines for completing the simplified project design document (CDM-SSC-PDD)" (*data monitored and required for verification and issuance are to be kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later*).	B.7.3.4	PDD was revised according to the "Guidelines for completing the simplified project design document (CDM-SSC-PDD". According with operational procedures developed by Brascarbon data monitored and required for verification and issuance is kept for two years after the end of the crediting period or the last issuance of CERs for this project activity, whichever occurs later. **Second response:** The archiving time was revised in the last version of the PDD (version 3), according to the guidelines to "Until end of Crediting Period or Last issuance + 2 years".	Section B.7 of the PDD was revised as per the Guidelines, regarding the data archiving. However, the table B.9 presented in the section B.7.2 is not in accordance with the guidelines requirements for archiving time. This CAR remains open. **Second response:** PDD was revised accordingly. Data will be kept as per the "Guidelines for completing the simplified project design document (CDM-SSC-PDD)" This CAR is closed.
~~**CAR 15**~~ PPs shall provide the table in section A.3 of the PDD as per the table presented in the "Guidelines for completing the simplified project design document (CDM-SSC-PDD) and the form for proposed new small scale methodologies (CDM-SSC-NM)", version 5 of 15/09/2007.	A.3.1	The table in section A.3 of the PDD was updated as per the table presented in the "Guidelines for completing the simplified project design document (CDM-SSC-PDD) and the form for proposed new small scale methodologies (CDM-SSC-NM)", version 5 of 15/09/2007.	PDD was revised accordingly, and presents table in the section A.3 as per "Guidelines for completing the simplified project design document (CDM-SSC-PDD) and the form for proposed new small scale methodologies (CDM-SSC-NM)", version 5 .

			This CAR is closed.
~~CAR 16~~ Project participants shall provide the project's LoA and the written approval of voluntary participation from the Designated National Authority from Portugal.	A.3.3	The LoA of both countries (Brasil and Portugal) will only be obtained after the Final Validation Report is closed. This is a requirement of the host country DNA (Brazilian MCT). By the other hand, the LoA of Portugal will only be obtained after the LoA of the host country. Therefore, since the Validation Report is a required document for the publication of the LoA, this document cannot be presented for the closure of this CAR.	As the LoA from Portugal depends on the approval of the Brazil, prior to the submission of the Project Design Document and the Validation Report to the CDM Executive Board, the Project will have to receive the written approval of voluntary participation from the DNA of Brazil and Portugal. The letter of approval from Portugal and Brazil has not been received and request for registration will not be submitted until it has been received. **This** CAR is closed.
~~CAR 17~~ PDD's (version 1) section B.4 did not list/discuss any national and/or sectoral policies relevant to the baseline scenario of the project activity. PPs are requested to add information related to regulatory and legal requirements and provide documented evidence/s	B.4.4	The State of São Paulo does not have any legislation of other guidelines in order to regulate and to legislate the swine farm activities. Therefore there are no documented evidences of the compliance with the regulatory and legal requirements since there are none for the location of the project activity.	At the time of validation the environmental agency does not require licensing for the swine farms. The references of the environmental agency were excluded in the revised PDD. Section B.2 of the revised PDD clarifies that the state of São Paulo does not have any specific environmental legislation for the handling of manure. Therefore, the baseline scenario is in accordance with national regulatory and legal requirements. This CAR is closed
~~CAR 18~~ PPs are requested to ensure with proper conditions and procedures that the applicability criteria *(b) Manure or the streams obtained after treatment are not discharged into natural water resources (e.g., river or estuaries)* and condition *(a) (The final sludge must be aerobically. In case of soil application of the final sludge the proper conditions and procedures (not resulting in methane emissions) will be ensured after the project implementation*	B.2.1	The manure or streams obtained after the treatment will not be discharged in to natural water resources once the biodigestor will be connected to the existing open lagoons (which were accessed during the site visit). The sludge in the biodigestor will be handled according with methodology guidelines, which were considered in the Brascarbon POP 9 - BIODIGESTER SLUDGE REMOVAL.	PP has provided the procedure POP-9 to assure that the manure stream after treatment will not be discharged into natural water resources. The procedure also gives orientation to assure that the final sludge be used aerobically as fertilizer in the soil. This CAR is closed.

		In this POP the PP states that the operation is held by the suction of the sludge located in the biodigester bottom, using a hose connected in cleaning tubes located in the biodigester side. Connect one of the hose extremes in the cleaning tube, downloading it until the biodigester bottom. The other extreme should be connected in a repression pump or in a "chorumeiro" (residual waste) truck, that will pump the sludge aerobically to the crop or the tank truck's inside. The cleaning process should be monitored in order to avoid the sludge dump in existing secondary lagoons or other confined spaces, keeping off the methane production. Whenever possible, it is used the existing pumping system to send the waste aerobically to the crop.	
~~**CAR 19**~~ The PP is requested to discuss the technology barrier in accordance with the latest version Guidelines for objective demonstration and assessment of barriers.	B.5.5.6 B.5.5.7	Please refe to ~~CL 7~~	The technology barrier was removed from the PDD version 3. This CAR is closed.
~~**CL 1**~~ Section B.2 of the PDD mentions in items: "*(a) The livestock population in the farm is managed under confined conditions"* and "*(b) Manure or the streams obtained after treatment are not discharged into natural water resources (e.g., river or estuaries)"*, that the conditions can be confirmed in the environmental licenses, however PPs did not provided the environmental licenses for the farms.	B.2.1	The State of São Paulo does not have any legislation of other guidelines in order to regulate and legislate the swine farm activities. Therefore there are no documented evidences of the compliance with the regulatory and legal requirements since there are none for the location of the project activity. That statement was removed from the PDD.	At the time of validation the environmental agency does not require licensing for the swine farms. PDD was revised accordingly. This CL is closed.
~~**CL 2**~~ The published PDD mentions that the average temperature for the São Paulo state is 23-25°C and PPs provided two web links to check the	B.2.1	The average temperature at São Paulo can be verified using the stated web links. The following web link was used to aggregate the data on maximal and minimal temperature of	Rina has verified the web link mentioned in PP's response, where it is possible to confirm the temperatures in São Paulo state.

temperature. Nevertheless, PPs shall clarify how this average was calculated.		the last years (2007-2010) in the southwest region (São Paulo) where the project sites are located: http://www.inmet.gov.br/html/clima.php . To access the requested database we went to "Mapa de Condições Registradas". With this information it was possible to calculate an average value of temperatures for each month in the stated period. The average range is stated in the PDD (23-25º C).	This CL is closed.
~~**CL 3**~~ PPs are requested to evidence/confirm that no public funding from Parties included in Annex I is used for the project activity.	A.4.3	There is no public funding in this project. All funding was provided by the PPs which are private entities. The PDD was revised to clarify this CL.	PPs have clarified that they are private entities and that no public funding is used in the project activity. This CL is closed.
~~**CL 4**~~ In the Scenario 2 (Digester + Flare + Generator) presented in the financial analysis, all investment is applied in the first year of the project. Project participants also presented in the first year the same levels of revenues of electricity (savings due the on site energy production) that are presented in another years of the financial analysis. PPs shall clarify why the time required to prepare, build and install all facilities and equipments of the project activity is not considered in the financial analysis.	B.5.5.2 B.5.5.3	As for the last version of the PDD and NPV calculation spreadsheet (version 2), the investment and construction of the sites is applied in the year '0'. This year (2011) is used for investment on equipment and physical implementation of the project. There are not any maintenance costs. Also, as referred in response to CARs 3 and 7, no electricity generation scenario was included. Therefore there is not any electricity generation in the project scenario.	The Scenario 2 is no longer being considered by project participants. For other 2 Scenarios there are not any maintenance costs being considered in the same year of the investments. This CL is closed.
~~**CL 5**~~ Project participants presented the evidences about investments for all project's farms, however there is a large volume of information and it is not possible to compare these evidences with the values presented in the spreadsheet *"IRR PDD 15 version 1.xls*". Project participants should prepare a summary containing the project investments, detailing the farms, scenarios and	B.5.5.2 B.5.5.3	According to the last version of the PDD (version 2) only two scenarios are being considered: baseline scenario and project scenario. For the project scenario it is available for validation the estimated budget for equipment, installation and maintenance costs for each farm. The costs stated in the baseline scenario are average values based on the PPs large experience in the	For project scenario, project participants presented the documents "orcamento instalacao.pdf" and "orcamento manutencao.pdf" with the quotations of supplier A&P Pezzato Construções Ltda. as evidences for the installation and maintenance of biodigestor + flare. Project participants should present the evidences about investments and maintenance

type of investments (i.e.: flare equipments, generator equipments, digester equipments, buildings, etc) in order to better cross check the evidences against these figures. In addition, when applicable, PPs shall present the conversion rate used (BRL x USD), in order to cross check against the values presented in the financial analysis spreadsheet. Moreover, PPs shall provide evidences for maintenances and other costs.		development of these type of projects (like it was already mentioned, the PP has already 6 PDDs registered in the UNFCCC and performing). The conversion rate used is stated in the PDD in the section B.5 (premises adopted for the investment analysis calculation). It is also mentioned in the sheet 'Summary' in the NPV calculation spreadsheet. This conversion rate was used for the cost values (maintenance, equipment costs and installation costs). **Second response:** Evidences of the investment and maintenance costs for the baseline scenario were presented.	for baseline scenario. This CL remains open. **Second response:** PP presented the evidences for the baseline scenario, as listed in the proposal from A&P Pezzato Construções Ltda., "orcamento instalacao manutenção lagoa.pdf". This CL is closed.
~~**CL 6**~~ Since the 10% variation for all parameters didn't presented an NPV for the proposed project activity scenario more favorable than the baseline scenario it would be more useful to show how large should be these variations to make the proposed project NPV equal the baseline scenario. Then a second analysis should be applied to discuss the likelihood of occurrence of these scenarios.	B.5.5.2 B.5.5.3	According to the last version of the PDD (version 2) sensibility analysis is not going to be made once there is not any source of revenues for the project. Therefore, NPV is always going to be negative and the baseline scenario is the more economical option.	As discussed in the CAR 7, the sensitivity analysis was carried out and presented in the last version of the PDD. This CL is closed.
~~**CL 7**~~ PPs are requested to clarify why the Barrier due to prevailing practice (National Policies and Circumstances), presented in the published PDD, is discussing practices and actions in Santa Catarina state and not in São Paulo state, where the project activity is located. Moreover, PP did not demonstrate how the CDM alleviates the barrier due prevailing practice.	B.5.5.6 B.5.5.7	By mistake it was mentioned the State of Santa Catarina when all the farms included in the project are in the State of São Paulo. The PDD was revised in order to correct that mistake. The demonstration of how the CDM alleviates the barrier due prevailing practice was also included in the PDD in section B.5 in the item *Barrier Due to Prevailing Practice (National Policies and Circumstances)*.	PP has revised the barrier due prevailing practice. It is mentioned that few bio-digester exist. However, without the common practice analysis it can not be verified if the prevailing practice is a barrier. PP is requested to include the common practice analysis in order to make possible to confirm the barrier due to prevailing practice. As per the Guidelines for objective demonstration and assessment of barriers,

		Second response: The Barrier due Prevailing Practices was removed from the last version of the PDD (version 3). The project has no need to include this barrier since it is a small scale project (where only one barrier is needed) and other barriers are already demonstrated in the document (investment and technical barriers).	(guideline 3) in order to evaluate the barrier, it is requested to PP to demonstrate that in similar circumstances (in similar industries/sectors, in companies of similar size and ownership structure, in similar projects) the barriers actually prevented the implementation of other project(s). This CL remains open. **Second response:** The prevailing practice was removed from the PDD. This CL is closed.
~~**CL 8**~~ PPs provided a farm's owner (Empresa José Rosseto e Outros) letter dated 05/03/2010, confirming that the genetics are Agroceres and Topigs. PPs shall confirm if these genetics (evidence/s) are the same for all farms included in the project activity since the letter mentions only the farms Sítio Barreiro, Santa Rosa and Mirante, among others that are not part of this project activity (farms not mentioned: Sítio São Francisco, Fazenda Bom Retiro, Sítio Água do Rosário and Granja Colorado). The letter clarifies that Sítio Barreiro is responsible to purchase the animals and transfer them to the others farms. Moreover, PPs shall confirm the genetics of Topigs and provide purchase invoices. Finally, the web link provided in the PDD for the Associação Brasileira dos Criadores de Suinos" (Brazilian Swine Association) can not be accessed.	B.6.1.1	A new document from the producer was gathered where all the farms included in the project have their genetics confirmed. Also the new web link for the Associação Brasileira dos Criadores de Suinos" (Brazilian Swine Association) was included in the PDD. http://www.abcs.org.br/	The farms' producer has presented a declaration confirming that the Agroceres and Topigs genetics are used in all farms included in the project activity. The letter clarifies that Sítio Barreiro is responsible to purchase the animals and transfer them to the others farms. This CL is closed.
~~**CL 9**~~	B.6.1.1	The number of animals in the PDD was	PP has clarified that the number of animals

A comparison of the annual average number of animals as per farmers control /17/ and numbers described in the PDD is presented bellow: 	Reference	Farm/Site	Anual Average Number of Animals of Type LT in year y - $N_{LT,y}$					
		Sows	Finishers	Nursery/ Weaners	Boars	Gilts	Total
PDD	Sitio Barreiro	3,300	-	-	15	660	**3,975**
Farmer's control - 2009		2,891			37	579	**3,507**
PDD	Sitio Santa Rosa	3,000	-	-	15	600	**3,615**
Farmer's control - 2009		2,643			37	526	**3,206**
PDD	Sitio Mirante do Macuco	3,200	-	-	1,000	15	**4,215**
Farmer's control - 2009		2,814			13	2471	**5,297**
PDD	Faz São Francisco	-	12,400	11,000	-	-	**23,400**
Farmer's control - 2009			11,500	2,258			**13,758**
PDD	Fazenda Bom Retiro	-	16,400	10,000	-	-	**26,400**
Farmer's control - 2009			15,213	2,065			**17,278**
PDD	Sitio Agua do Rosario	-	20,000	8,000	-	-	**28,000**
Farmer's control - 2009			18,567	1,647			**20,215** | PPs shall clarify how the annual average number of animals of type LT in the year "y" ($N_{LT,y}$), presented in the PDD was determined.		determined according with the information received from the swine producer, which was accessed during the site visit. The PP has an operational procedure exclusive for the assessment of the number of animal, POP – 3, where it is its own animal control system. Both the POP and the tables required for this control were delivered in annex to this CL.	used in the *ex-ante* estimative was based on swine producer declaration, dated 01/03/2010 (Declaracao Rossetto Animais.pdf). The declaration provided the Number of animals produced annually of type "LT" in year "y" ($N_{p,y)}$). Data is used to calculate the annual average number of animals of type "LT" in year "y" ($NL_{T,y}$), considering the Number of days animal is alive in the farm, in year "y" ($N_{day,y}$). This CL is closed.
~~**CL 10**~~ FE or $\eta_{flare,h}$ (flare efficiency) is to be continuously monitored, according to the operational procedure POP-08, if flare temperature >=500ºC, as per fabricant specification, and for more than 40 minutes: 90% efficiency; if flare temperature ≤ 500 °C and ≥ 100 °C or above 500% out of the	B.7.1.2	The calculation of the flare efficiency was revised and corrected in order to be in compliance with the methodology requirements. The PP considers efficiency 90% for the hour with all temperature measurements above or	The revised PDD and procedure do not comply with the requirement of the tool: *50%, if the temperature in the exhaust gas of the flare (T_{flare}) is above 500 °C for more than 40 minutes during the hour h, but the manufacturer's specifications on proper*

flare specification: 50% efficiency, if temperature < 100ºC: 0%. The PDD just mentions that the efficiency is 90% if temperature is ≥500ºC and 0% if temperature is <500ºC. PPs shall clarify how the procedure POP-08 and the PDD will comply with the requirements of the methodology, that is: *continuous check of compliance with the manufacturer's specification of the flare device (temperature, biogas flow rate) should be done. If in any specific hour any of the parameters is out of the range of specifications, 50% of default value should be used for this specific hour. If at any given time the temperature of the flare is below 500ºC, 0% default value should be used for this period*.		equal to 500º Celsius and 0% efficiency for the hour with any temperature measurements that are below 500º Celsius. **Second response:** The Tool requirement was included in the last version of the PDD (version 3), stating that "*The temperature measurement and its registration in the programmable logic controller system (PLC) is every minute. Brascarbon considers efficiency 90% for the hour with all temperature measurements above or equal to 500º Celsius or 50% if the temperature in the exhaust gas of the flare (T_{flare}) is above 500 °C but the manufacturer's specifications on proper operation of the flare are not met at any point in time during the hour h. It will consider 0% efficiency for the hour h if any temperature measurement is below 500º Celsius."*	*operation of the flare are not met at any point in time during the hour h.* This CL remains open. **Second response:** PDD was revised to comply with the requirements of the tool. This CL is closed.
~~**CL 11**~~ The PDD version 1 mentions that the days that animal are alive and the total number of animals will be monitored as per the POP-03, formulary 03.002. However, the procedure presented to RINA has just the formulary 03.001, to record the number of animals per category (N_{LT}) and the formulary 03.003 to record the entrance and exit of animals.	B.7.1.2	The forms in POP were revised and corrected according with the CL.	Documents were revised accordingly. PDD mentions the formulary 03.003, that is available in the established procedure (POP 3) This CL is closed.
~~**CL 12**~~ PPs shall provide the calibration frequency of the thermocouple (flare temperature).	B.7.1.3	The thermocouple calibration frequency will occur according with the POP 23 which was provided in annex to answer this CL. **Second response:** POP 23 was revised in order to comply with the guideline requirements regarding the thermocouple calibration period. The POP 12	The provided procedure POP 23, mentions that the thermocouples will be calibrated every two years, however it is not in accordance with the *"Tool to determine project emissions from flaring gases containing methane"* that establishes in the QA/QC procedure that the "*Thermocouples should be replaced or calibrated every year"*. Moreover the procedure POP 23 establishes that the flow meter will be calibrated every two

		was also revised to include the 2 year calibration period for the flow meter.	years and the procedure POP 12, establishes that the calibration frequency is annually as per fabricant recommendations. This CL remains open. **Second response:** PDD and procedure were revised accordingly. POP 23 was revised in order to comply with the QA/QC procedure that of the *Tool to determine project emissions from flaring gases containing methane*: "*Thermocouples should be replaced or calibrated every year.*. The POP 12 was also revised to include the 2 year calibration period for the flow meter. This CL is closed.
~~**CL 13**~~ The expected operational lifetime of the project was defined in the published PDD as 21 years. PPs shall provide the evidence of the operational lifetime of the project's activity equipments.	C.1.2	The project will be installed in open air and therefore will be submitted to external variables that are impossible to predict. In case of equipment replacement during the project life cycle, the PP assures that the new equipments will have the same characteristics as the ones presented to the DOE during the validation process.	PP assures that if any equipment needs to be replaced, it will have the same characteristics of the equipment described in the PDD, not impacting/changing the project activity. This CL is closed.
~~**CL 14**~~ PPs shall include in the PDD, for each farm, the dimensions of the biodigesters and the flare and generator specifications.	A.2.1	Both the draws as well as the excel spreadsheets with the calculation for the biodigestors dimensions were provided to the DOE as evidences of this CL. **Second response:** A more detailed description regarding the project specifications was included in the new PDD version (version 3). The technical characteristics of the equipments thermocouple, flow meter and biogas analyzer) where already provided to RINA.	PP did not include the information requested in the revised PDD. This CL remains open. **Second response:** PP included in the revised PDD that each farm will have one biodigester which will send the biogas through a pipe where it will be located the flow meter. The biogas will then be burned in an enclosed flare and all data stored in a Control Logic Program (CLP). Moreover, the dimensions of the biodigester were also

			presented in the revised PDD. This CL is closed.

TABLE 4 FORWARD ACTION REQUESTS

Forward action request	Reference to Table 2	Response by project participants	Verification Conclusion
~~**FAR 1**~~ RINA verified that the procedure POP 2, includes the monitoring of the environmental licenses, so if in the future this is applicable, PPs shall present this monitoring in further verifications.	D.1.1	The POP 2 is related to all PP operation and therefore the procedure to monitor environmental licenses and all compliance with the regulatory requirements is already assured for other projects with that requirement. Once São Paulo state has the same legislation, the monitoring of environmental licenses will be made and presented in further verifications.	PP has committed to follow the monitoring of environmental licenses that can be applicable to the project activity. This FAR is closed and will be confirmed in the verification.
~~**FAR 2**~~ The project activity was not implemented during the site visit; therefore, it was not possible to confirm that there is no connection to grid. During the validation, PP assures that no electricity will be consumed in the project activity and the energy will be provided by 12 volt batteries. The energy supply for the project activity has to be confirmed during the verification.		The Project Participant assures that no energy from the grid will be consumed during the project lifetime since it is one of the project assumptions.	PP assures that no energy will be consumed in the project activity. This assumption will be confirmed during the verification. This FAR is closed and will be confirmed in the verification.