



**Validation report form for renewal of crediting period for CDM project activities**  
(Version 01.0)

**VALIDATION REPORT FOR RENEWAL OF CREDITING PERIOD (RCP)**

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| <b>Title of the project activity</b>   | BRASCARBON Methane Recovery Project BCA-BRA-05, Brazil   |
| <b>Reference number of the project activity</b>  | 3455   |
| <b>Number and duration of the next crediting period</b>  | Second (2 <sup>nd</sup> ) crediting period, seven (7) years from 21/08/2017 to 20/08/2024  |
| <b>Version number of the validation report for RCP</b>   | 1.2  |
| <b>Completion date of the validation report for RCP</b>  | 31/01/2018   |
| <b>Version number of PDD to which this report applies</b>  | 5  |
| <b>Project participant(s)</b>  | Brascarbon Consultoria, Projetos e Representação S/A   |
| <b>Host Party</b>  | Brazil   |
| <b>Sectoral scope(s), selected methodology(ies), and where applicable, selected standardized baseline(s)</b>           | Sectoral Scope 13: Waste handling and disposal<br>CDM Methodology: AMS-III.D.: Methane recovery in animal manure management systems (version 20.1) |
| <b>Estimated annual average GHG emission reductions or net anthropogenic GHG removals in the next crediting period</b> | 57,067 tCO <sub>2</sub> e  |
| <b>Name of DOE</b>   | Instituto Colombiano de Normas Técnicas y Certificación – ICONTEC Internacional  |
| <b>Name, position and signature of the approver of the validation report for RCP</b>                                   | <b>Monica Vivas</b><br>Director of Conformity Assessment   |

## SECTION A. Executive summary

Brascarbon Consultoria, Projetos e Representação S/A commissioned ICONTEC in order to perform the validation assessment for renewal of the crediting period of the project activity “BRASCARBON Methane Recovery Project BCA-BRA-05, Brazil” (registration number 3455), located in Brazil the State of São Paulo in São Gabriel do Oeste city. The validation assessment for the renewal of the crediting period was carried out through a process of document review based on the revised PDD Version 3 /2/ dated on 28/04/2017 initially submitted for validation and the subsequent resolution of outstanding issues (findings raised and described in appendix 4 further in this validation report, and the subsequent modifications to the revised PDD version 3 are visible on the PDD version 4 /3/ dated 20/09/2017).

The purpose of the validation assessment was to have an independent third-party assessment of the proposed renewal of the crediting period (second crediting period from 21/08/2017 to 20/08/2024). The validation was performed by the audit team on the basis of UNFCCC criteria for the Clean Development Mechanism by competent professionals as described on sections B.2 and Appendix 2 of the present report. The validation consisted of the following phases: i) a desk review of the project design and the baseline and monitoring plan; ii) the resolution of outstanding issues and the issuance of the final validation report and opinion. In the course of the validation process 7 findings were raised, all of the successfully closed.

The scope of the validation is defined as an independent and objective review of the PDD (version 3 /2/ and 4 /3/), the baseline of the proposed project activity and the monitoring plan and other relevant documents presented further in appendix 3 of this validation report. The information in these documents was assessed against CDM Validation and Verification Standard /5/, Kyoto Protocol Requirements, UNFCCC rules and the applicable methodology /4/. Moreover, the audit team assessed the post registration changes processed together with the renewal of the crediting period and motivated by the withdrawal of 4 of the farms originally included in the baseline scenario. The validation team, based on the specific instructions in the VVS, employed a risk-based and step-wise approach when conducting the validation, focusing on the identification of significant risks for project implementation and the calculation of the emission reductions.

The project activity examined under this validation process involves the GHG emission reductions through an animal waste management system. The system was put in place as a mean to treat animal waste generated from swine confined feed operations. Effluents generated from swine production are treated in biodigesters which, on its turn, consists of a covered in-ground anaerobic reactor capable of anaerobically treat effluent originated at the swine production operation. Finally, effluents treated on biodigesters produce biogas to be destroyed through a flaring system. The validation for the renewal of crediting period included an assessment on those specific features of the project activity.

The validity of the baseline scenario was part of the analysis following the stepwise approach stated in the methodological Tool Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period (Version 03.0.1), since the proposed project activity withdrawn four farms.

“BRASCARBON Methane Recovery Project BCA-BRA-05, Brazil” (registration number 3455 applied the methodology “AMS-III.D: Methane recovery in animal manure management systems (version 20.1)” /4/ in order to determine the baseline, project emission, leakage emissions and the total emission reductions *ex ante*.

In conclusion, the Project Participant and the documents attached as part of the validation for the renewal of the crediting period meet all the relevant UNFCCC and host Party requirements for the renewal of the crediting period.

**SECTION B. Validation team, technical reviewer and approver****B.1. Validation team member**

| No. | Role                             | Type of resource | Last name  | First name | Affiliation<br>(e.g. name of central or other office of DOE or outsourced entity) | Involvement in |                    |              |                     |
|-----|----------------------------------|------------------|------------|------------|---|----------------|--------------------|--------------|---------------------|
|     |                                  |                  |            |            |   | Desk review    | On-site inspection | Interview(s) | Validation findings |
| 1.  | Team Leader and Technical Expert | IR               | Carrizales | Jacobo     | Internal  | X              | N/A                | X            | X                   |

**B.2. Technical reviewer and approver of the validation report for RCP**

| No. | Role               | Type of resource | Last name | First name | Affiliation<br>(e.g. name of central or other office of DOE or outsourced entity) |
|-----|--------------------|------------------|-----------|------------|---|
| 1.  | Technical Reviewer | ER               | Aubad     | Ana Isabel | Freelance-ICONTEC   |
| 2.  | Approver           | IR               | Vivas     | Monica     | Director of Conformity Assessment-ICONTEC   |

**SECTION C. Means of validation****C.1. Desk review**

The present validation assessment is based on the PDD version 3 provided by the PP on 28/04/2017 /2/ and the PDD version 4 dated on 20/09/2017/3/, generated by the PP in response to the findings raised during the validation process. Furthermore, the registered PDD (version 4) /1/, its validation report, the previous verification report /6/ were reviewed by ICONTEC for this request for renewal of the crediting period process.

In addition to the documentation provided by the project proponent, ICONTEC reviewed:

- Methodology: Methane recovery in animal manure management systems (AMS-III.D, version 20.1) /4/
- Methodological Tool: "Project and leakage emissions from anaerobic digesters", version 2.0 /10/
- Methodological Tool: "Project emissions from flaring", version 02.0.0/11/
- CDM project standard, version 01.0 /7/
- CDM validation & verification standard, version 01.05/
- CDM Project Cycle Procedure, version 01.0 /8/
- Calculation file /9/
- Methodological Tool: "Assessment of the validity of the original/current baseline and to update the baseline at the renewal of a crediting period" (version 03.0.1) /14/.

A complete list of all documents reviewed is shown in Appendix 3.

## C.2. On-site inspection

According to the CDM validation and Verification Standard /5/, it is optional to conduct an on-site visit. Since the VVS does not explicitly require the validation team to conduct an on-site inspection during the validation, the validation assessment did not include an on-site visit. Therefore, the audit team focused on the information provided in the revised PDD version 4 /3/. ICONTEC and the audit team has performed validation and verification activities of projects of similar characteristics, knowing beforehand the technical features, technologies and implementation in several locations within the local and regional context. The audit team is a qualified group of professionals with experience in the same category of projects.

As part of the activities carried out as alternative means of validation the audit team assessed the information provided by the latest verification report of the first crediting period (from 21<sup>st</sup> of August 2010 to 20<sup>st</sup> of August 2017) /6/, as well as the registered PDD /1/ against the information provided by PDD version 4 /3/ and previous versions of the PDD /2/, among others documents listed in Appendix 3. Furthermore, the audit team assessed the calculation file /9/ regarding the baseline emissions, Project Emissions, Leakage Emissions, and Emission Reductions. The desk review of documents allowed the audit team to conclude the changes in the monitoring plan are related to the update of the methodology AMS-III.D version 20.1 /4/, and the changes in the emissions of the baseline scenario are accounted and correctly calculated in the calculation file /9/ referring to the baseline scenario.

Taking into account the information previously stated the audit team determines that, the validation of the renewal of the crediting period can be implemented and complete without an on-site inspection. The knowledge of the audit team as well as the sectoral expertise of ICONTEC on projects of the equal essence and technical characteristic, contributes to an assessment based on the desk review of the relevant documents and the telephonic interview with the project representatives.

| Duration of on-site inspection: N/A to N/A |                            |               |      |             |
|--|----------------------------|---------------|------|-------------|
| No.  | Activity performed on-site | Site location | Date | Team member |
| 1.   | N/A                        | N/A           | N/A  | N/A         |

### C.3. Interviews

ICONTEC interviewed Mr. David Garcia, Brascarbon CDM Manager, in order to confirm all information provided to renew the second crediting period (seven years from 21/08/2017 to 20/08/2024). The dates and subjects of the discussed telephonic and Skype based interviews conducted with the PP are described as follows:

| No. | Interviewee |            |                        | Date       | Subject  | Team member       |
|-----|-------------|------------|------------------------|------------|--|-------------------|
|     | Last name   | First name | Affiliation            |            |  |                   |
| 1.  | Garcia      | David      | Brascarbon CDM Manager | 12/09/2017 | Information regarding Monitoring plan, emission reductions and baseline scenario | Jacobo Carrizales |
|     |             |            |                        | 20/09/2017 | Application of the methodology and emission reduction calculations               | Jacobo Carrizales |
|     |             |            |                        | 25/09/2017 | Resolution of findings and final version of the documents                        | Jacobo Carrizales |

### C.4. Clarification requests, corrective action requests and forward action requests raised

| Area of validation findings  | No. of CL | No. of CAR | No. of FAR |
|--|-----------|------------|------------|
| Compliance with PDD form   | -         | -          | -          |
| Application of baseline and monitoring methodology and standardized baseline | 1         | -          | -          |
| Validity of original baseline or its update                                  | -         | 2          | -          |
| Estimated GHG emission reductions or net anthropogenic GHG removals          | -         | -          | -          |
| Validity of monitoring plan  | -         | 1          | -          |
| Crediting period   | 1         | -          | 1          |
| Project participants   | 1         | -          | -          |
| Others (please specify)  | -         | -          | -          |
| <b>Total</b>   | <b>3</b>  | <b>3</b>   | <b>1</b>   |

## SECTION D. Validation findings

## D.1. Compliance with PDD form

|                            |   |
|----------------------------|---|
| <b>Means of validation</b> | In order to validate the compliance of the PDD /3/ with the valid version of the PDD form /12/, the validation team cross-checked the revised PDD /3/ against the latest version of the <b>CDM-PDD-FORM</b> ( <i>Project Design Document Form</i> , which incorporates <b>CDM-SSC-PDD-FORM</b> form, applicable to the proposed project activity).  |
| <b>Findings</b>            | <b>N/A</b>  |
| <b>Conclusion</b>          | The audit team assessed the revised PDD version 4 /3/, provided by PP and cross-checked the form version against the latest version available of the form <b>CDM-PDD-FORM</b> /12/. The PP correctly made use of the correct PDD form. It is the conclusion of the audit team that the final version of the revised PDD /3/ was completed by using the latest version of the applicable <b>CDM-PDD-FORM</b> and correctly followed the instructions stated within the form. |

## D.2. Application of baseline and monitoring methodology and standardized baseline

|                            |  |
|----------------------------|--|
| <b>Means of validation</b> | <p>The applicability of the baseline and monitoring methodology was assessed through document review of the revised PDD version 3 /2/ against the requirements stated on the methodology AMS-III.D version 20.1 /4/, the valid version of the approved baseline and monitoring methodology for the project activity. In addition, the assessments of the calculation file /9/ provided by the PP as part of the desk review documentation.</p> <p>The specific applicability conditions of the methodology /4/ were cross-checked and assessed against the revised PDD version 3 /2/ and the fulfilment of these methodological requirements was assessed in the calculation of the baseline emissions as well as the project emissions and emission reductions.</p> <p>The audit team crosschecked the monitoring procedures including the proposed monitoring activities (measurement and calculation of parameters procedures) in order to determine its compliance with the methodological requirements set out in the methodology /4/ and applicable tool /10/ /11/, as well as the monitoring procedures described in the registered PDD /1/. When assessing the information, the audit team identified the PP stated the option to determine the flare efficiency (provisions described to determine Flare efficiency in the revised PDD /4/), the audit team found compliance in the methods, procedures and methodological choices state by the proposed project activity.</p> <p>Procedures and methods stated to determine the parameter (flare efficiency) are in line with the methodological requirements set out in the Methodological tool "Project emissions from flaring" (Version 02.0.0) /11/. Option A is chosen and therefore, the flare efficiency is determined as a default value of 90% efficiency when temperature is higher than 500°Celsius. Furthermore, the monitoring system in place measures combustion temperature on minutely basis as stated in the registered PDD version 3/1/, allowing determining the flare efficiency. On the other hand, the methodological choice and monitoring procedures stated to determine the mass flow rate of methane in the residual gas, as described in the revised PDD /3/, comply with provisions of the Methodological tool "Project emissions from flaring" (Version 02.0.0) The PP measures the temperature of the gas stream as a mean to determine the flow rate of methane in the residual gas.</p> |
| <b>Findings</b>            | <b>CL 3:</b> The audit team identified the sampling plan described in the registered PDD version 3 /2/ stated a 95% of confidence/precision level to sample parameters determined by sampling approach. Nevertheless, the sampling plan described in section B.7.2 of version 3 of the PDD /2/ states a sampling approach based on 90/10 confidence /precision level.  |
| <b>Conclusion</b>          | The audit team concluded, in the first place, the sampling approach used to sample   |

parameters in the sampling plan included in the PDD version 4 /3/ is in accordance with the requirements of the methodology /4/ and the guideline Sampling And Surveys For CDM Project Activities And Programmes of Activities version 04.0/13/. Lastly, The audit plan includes the necessary parameters to monitor the baseline emission, project emissions and leakage emissions, therefore, the monitoring plan is correctly set up to fulfil the methodological requirements. The parameters to be monitored are:

- $T_f$
- Site Inspection
- $N_{LT,y}$
- $BG_{burnt,y}$
- $W_{CH4,y}$
- $T_{biogas}$
- $D_{CH4}$
- FE
- QDM
- $W_{site}$
- $ER_{y,ex-post}$
- $P_{biogas}$
- $MS\%_{i,y}$
- $FV_{RG,h}$
- $fv_{CH4,RG}$
- $F_{CH4,RG,m}$
- $N_{da,y}$
- $N_{p,y}$
- $n_{dy}$
- $VS_{LT,y}$
- $Q_{manure\ LT,y}$
- $SVS_{jLT,y}$
- ASH
- $B_{0,LT}$

Provisions described in the monitoring plan for each parameter are in line with the methodological requirements /4/ as well as are viable to carry out in during the second crediting period, subject of the validation assessment. Lastly, the audit team assessed the methodological assumption of using Western European genetics to determine the parameters maximum methane producing potential ( $B_{0,LT}$ ) and volatile solids ( $VS_{LT,y}$ ) and. the project assumptions includes the genetic source of livestock is closely related to the western Europeans breeds and, therefore,  $VS_{LT,y}$  and  $B_{0,LT}$  are closely related as well to the genetic source. Swine production in Brazil has its genetic basis on western European genetics since Western Europe has been a recognizable provider on animal genetics, the audit team understands, based on professional experience, the genetic component of animal type present in the area of influence of the project is primarily European in its origins.

The four conditions to apply  $B_{0,LT}$  and  $VS_{LT,y}$  values of developed countries are fully applicable to developed countries can be used provided the following four conditions are satisfied:

- *The genetic source of the livestock originates from an Annex I Party;*

Genetics and nutrition adopted for these farms as so as in western Europe. More details or information of the genetics can be obtained at the producers or at the Associação Brasileira dos Criadores de Suínos (Brazilian Swine Association) – <http://www.abcs.org.br/>.

The genetic source of the livestock is therefore in compliance with this methodology requirement, which can be confirmed and verified by the genetic documents of the animals of each farm. These evidences were provided and assessed to assure their applicability to this requirement.

- *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;*

The formulated feed rations are created according with the characteristics of the animals, their stage of growth, category, weight gain and genetics. Each farm

|  |  |
|--|--|
|  | <p>possesses their FFR composition according with the type of animal(s) accommodated, which was confirmed and verified. These evidences were provided and assessed to assure their applicability this requirement.</p> <p>- <i>The use of FFR can be validated (through on-farm record keeping, feed supplier, etc.);</i></p> <p>The formulated feed rations are part of the management system of the farms and therefore, each site possesses on-farm records which attest the FFR used. These evidences are also monitored on a monthly basis, according monitoring plan for the parameter FFR, as described in section B.7.1, and the PP internal procedure POP 14.</p> <p>- <i>The project specific animal weights are more similar to developed country IPCC default values.</i></p> <p>The <math>W_{site}</math> value considered for each category of swine is the result of an average weight of the animals of all farms included in the project, and this value was applied in the baseline calculation.</p> <p><i>Finishers</i> is the animal category that represents the totality of all animals from the farms included in this PDD. Finishers are considered to be “market swine” and presented an average weight of 90kg among all farms included in the PDD by the time of the project’s registration (and this was the value adopted for the parameter <math>W_{site}</math>). Taking into account the figures presented in Tables 10 A-7 and 10 A-8 from the 2006 IPCC Guidelines for <i>National Greenhouse Gas Inventories, Volume 4, chapter 10</i>, the weights that are more similar to the project situation are those from the Western Europe region (50 kg) – the values from Latin America (28 kg), where the project is located, is even lower than Western Europe’s.</p> <p>Therefore, is fair to consider that “<i>the project specific animal weights are more similar to developed country IPCC default values</i>” condition is fulfilled and that the VS and B0 adopted values for developed countries is in full compliance with the methodology requirements.</p> <p><b>The proposed Project activity applies the methodologies requested in the general requirements /5/ /7/. In addition the baseline, emission reductions, and the monitoring plan stated in the latest version of the PDD /3/ are in line with the applicable requirements and the applicable versions of the methodology /4/ and mandatory tools /10/ /11/. It is the conclusion of the audit team that, methodological requirements have been fulfilled by the proposed project activity and the monitoring activities comply with the general /5/ /7/ /8/ and methodological requirements.</b></p> |
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### D.3. Validity of original baseline or its update

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|----------------------------|---|
| <b>Means of validation</b> | <p>The original baseline scenario of the registered PDD /1/ was cross-checked against the baseline scenario presented in the revised PDD /3/. The calculation procedures, application of formulae and correctness in the application of the methodological requirements were part of the assessment.</p> <p>The audit team assessed the latest legislation regarding solid waste management, therefore solid waste handled in swine production, finding the latest legislation available is the National Policy on Solid Waste Law 12,305 from 2010 /17/. The latest policy implemented regarding the national policy is the “Normative Instruction GM n°46 /18/ /19/, where no changes are specific to swine production, nor to animal manure management. Since no changes in the policies are applicable, the audit team concluded the baseline scenario remains the same for the proposed project activity</p> |
| <b>Findings</b>            | <ul style="list-style-type: none"> <li>• <b>CAR 1</b> was raised given that five farms withdrawn of the project activity, therefore changing the design of the project activity. Fazenda Agua Branca, Fazenda Rodeio - Gleba C, Fazenda Ponte Vermelha, and Fazenda Santa Catarina.</li> <li>• <b>CAR 3</b> The PP did not include an assessment of the validity of the baseline using the “Methodological Tool Assessment of the validity of the original/current</li> </ul>   |



|            |   |   |   |
|------------|---|---|---|
|            | baseline and update of the baseline at the renewal of the crediting period (Version 03.0.1)".   |   |   |
| Conclusion | The audit team concluded the baseline scenario for the renewal of the crediting period presented in the revised PDD /3/ is comparable to the scenario registered and described in the registered PDD /1/. Despite four (4) of the farms are no longer part of the project sites, the implementation as well as the calculation of the emission reductions in the baseline scenario are the same as those described in the registered PDD /1/. |   |   |
|            | Lastly, the PP used the "Methodological Tool Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period (Version 03.0.1)" to assess the validity of the baseline, and the audit team found this assessment complete and according to the methodological tool /14/:   |   |   |
|            | Step  | Requirement   | Conclusion of the Audit Team  |
|            | Step 1  | Assessing the impact of new relevant national and/or sectoral policies and circumstances on the baseline.   | Sectoral knowledge and literature review /17/ /18/ /19/   |
|            | Step 1.1  | Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies   | The audit team assessed the possibilities of implementation of policies regarding methane emissions from animal waste, finding no policies designed or implemented in the period from 2010 to present. Legislation does not state control over methane emissions from animal production facilities  |
|            | Step 1.2  | Assess the impact of circumstances  | The singular relevant circumstance is regarding the withdrawn of farms from the project activity. Nevertheless, the audit team did not find the withdrawal of farms affects the baseline scenario.  |
|            | Step 1.3  | Assess whether the continuation of use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested. | The baseline scenario is the same as the one identified in the registered PDD /1/ therefore the audit team finds compliance in the continuation of the proposed baseline scenario   |
|            | Step 1.4  | Assessment of the validity of the data and parameters   | The update in the methodology version /4/ allowed PP to maintain the same monitoring procedures as well as the same monitoring equipment. Those parameters new to the monitoring plan have been successfully included by the PP once the corresponding findings were answered to the audit team and the latest version of the PDD /3/ was available and verified by the audit team. |
| Step 2     | Update the current baseline and the data and parameters   | The baseline was updated using relevant methodological guidelines, the calculations are   |   |

|  |  |                                |  |
|--|--|--------------------------------|--|
|  | Step 2.1   | Update the current baseline    | a reflection of the actual baseline scenario and the figures of emission reduction, baseline emissions, project emission, and leakage emissions are correctly determined using the available information as well as the proper calculation method, as verified in the calculation file /9/ |
|  | Step 2.2   | Update the data and parameters | The monitoring plan was updated and corrected according to the methodological requirements /4/ /10/ /11/   |
|  | In conclusion, the proposed baseline follows the methodological and technical assumptions followed by the original baseline, changing the figures according to the changes in the proposed project activity. |                                |  |

#### D.4. Estimated GHG emission reductions or net anthropogenic GHG removals

|                     |   |
|---------------------|---|
| Means of validation | <p>The validation team assessed whether all data sources and assumptions are appropriate, and calculations are correct and applicable to the proposed CDM project activity, and will result in an accurate or otherwise conservative estimate of the emission reductions. With respect to the data and parameters which will be monitored or estimated on implementation and hence become available only after renewal of the crediting period of the project activity, the validation team confirmed that the estimates provided in the revised PDD /3/ for these data and parameters are reasonable.</p> <p>It was confirmed that the updated value for GWP of CH<sub>4</sub> is appropriate through reviewing the decision 4/CMP 7 as prescribed by the "Standard for application of the global warming potentials to CDM PA and PoA for the second commitment period of the Kyoto protocol" Version 1.0 (EB 69 Annex 3).</p> <p>The estimated amount of GHG emission reductions of the project is 399,469 tCO<sub>2</sub>e for the second crediting period (7 years) from 21/08/2017 to 20/08/2024, resulting in estimated annual average GHG emission reductions of 57,067 tCO<sub>2</sub>e. These figures were calculated using the methodology AMS-III.D /4/ and the applicable tools /11/ /10/ as follows:</p> <p><b>Emission Reductions:</b></p> $ER_{y,estimated} = BE_y - PE_y$ <p>The emission reductions which will be achieved by the project activity ex post will be determined through direct measurement of the amount of methane flared. The emission reductions achieved in any year will be the lowest value of the following:</p> <p><b>Equation B4.1</b></p> $ER_{y,ex-post} = \min[(BE_{y,ex-post} - PE_{y,ex-post}), (MD_y - PE_{power,y,ex-}$ <p>Where:</p> <p><math>ER_{y,ex-post}</math> Emission reductions achieved by the project activity based on monitoring (tCO<sub>2</sub>e)</p> <p><math>BE_{y,ex-post}</math> Baseline emissions calculated using equation 1 and using ex post monitoring data <math>N_{LT,y}</math> and if applicable <math>VS_{LT,y}</math> for year y (tCO<sub>2</sub>e)</p> <p><math>PE_{y,ex-post}</math> Project emissions calculated using equation 3 using ex post monitoring data <math>MS\%_{i,y}</math> and if applicable <math>VS_{LT,y}</math> for year y (tCO<sub>2</sub>e)</p> <p><math>MD_y</math> Methane captured and destroyed or used gainfully by the project activity</p> |
|---------------------|---|

$PE_{power,y,ex}$   
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<sub>2</sub>e)

The flaring/combustion MD<sub>y</sub> will be measured using the conditions of the flaring process and according the following equation:

#### Equation B4.2

$$MD_y = BG_{burnt,y} * W_{CH_4,y} * D_{CH_4} * FE * GWP_{CH_4}$$

Where:

$BG_{burnt,y}$  Biogas flared or combusted in year y (m<sup>3</sup>)

$W_{CH_4,y}$  Methane content in biogas in the year y (volume fraction)

$FE$  Flare efficiency in the year y (fraction)

$GWP_{CH_4}$  Global Warming Potential (GWP) of CH<sub>4</sub> (25)

$D_{CH_4}$  Density of methane at the temperature and pressure of the biogas in the year y (t/m<sup>3</sup>).

#### Baseline Emissions:

$$BE_y = GWP_{CH_4} * D_{CH_4} * UF_B * \sum MCF_J * B_{0,LT} * N_{LT,y} * VS_{LT,y} * MS\%_{BI,j}$$

Data regarding the annual average number of animals (NLT,y) are going to be kept in the forms 03.003 and 03.001 /20/, in accordance with the operational Procedure POP 3 as described in the revised PDD/3/. Calculations /9/ are carried out using data of the forms /20/ and therefore are traceable and subject to verification during the crediting period.

#### Project Emissions:

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

#### Emissions from flaring:

$$PE_{flare,y} = GWP_{CH_4} \times \sum_{m=1}^{525600} F_{CH_4,RG,m} \times (1 - \eta_{flare,m}) \times 10^{-3}$$

The audit team assessed how the proposed project activity calculated the emissions from flaring gases in the ex ante scenario /9/. It was crosschecked the proposed monitoring activities and provisions to determine emissions from flaring gases described in the monitoring plan/e/, against the requirements set out in the methodological framework /11/, the tool to determine emissions from flaring gases. The PP correctly implements formulae as well as assumptions in order to determine the emissions from flaring gases. In addition, the monitoring of the variables necessary are in line with the tool. Lastly, the proposed implementation of the measurement procedures of the flare efficiency as well as mass flow of methane in the residual gas are in accordance with the methodological requirements /4/ /11/.

According with the version 02 of the tool Project emissions from flaring, in its step 2 – Determination of flare efficiency, for determining the efficiency of combustion of enclosed flares there is the option to apply a default value or determine the efficiency based on monitored data.

In the case of enclosed flares, project participants may choose between two options to determine the flare efficiency for minute m ( $\eta_{flare,m}$ ). The PP has chosen Option A – Apply a default value for flare efficiency.

The flare efficiency for the minute  $m$  ( $\eta_{flare,m}$ ) is 90% when the following two conditions are met to demonstrate that the flare is operating:

- (1) The temperature of the flare ( $T_{EG,m}$ ) and the flow rate of the residual gas to the flare ( $F_{RG,m}$ ) is within the manufacturer's specification for the flare ( $SPEC_{flare}$ ) in minute  $m$ ; and
- (2) The flame is detected in minute  $m$  ( $Flame_m$ ).

Otherwise  $\eta_{flare,m}$  is 0%.

The PP considers 90% efficiency for the hour with all temperature measurements above or equal to 500° Celsius and with the parameters of flare operation met, and 0% efficiency for the hour with any temperature measurement below 500° Celsius.

All data and parameters that are required to monitor whether the flare operates within the range of operating conditions according to manufacturer's specifications will be continuously monitored. The temperature and biogas flow rate will be monitored minute by minute by a sensor installed in the enclosed flare and are registered by a CLP. The data stored in the CLP is recovered monthly by the use of a pendrive and the file containing the information will be sent to the QA/QC officer to manage the information.

The PP developed the formulary 08.001 in the operational procedure to monitor the hourly flare efficiency according to the criteria above mentioned (temperature and parameters of flare operation).

According with the step 1 – Determination of the methane mass flow in the residual gas of this tool, this parameter should be determined using another tool, namely *Tool to determine the mass flow of a greenhouse gas in a gaseous stream*. In second tool, there are several options to determine the Mass flow rate of methane in the residual gaseous stream. Option 2 - Simplified calculation without measurement of the moisture content was chosen by the PP.

Within this option, option A will be applicable by the demonstration that the gaseous stream is dry. The PP will demonstrate that the temperature of the gaseous stream ( $T_t$ ) is less than 60°C (333.15 K) at the flow measurement point.

Hence this parameter will be calculated according with Equations 5 and 6 of the tool. This means:

$$F_{i,t} = V_{t,db} \times v_{i,t,db} \times \rho_{i,t} \quad \text{Equation (5)}$$

With:

$$\rho_{i,t} = \frac{P_t \times MM_i}{R_u \times T_t} \quad \text{Equation (6)}$$

Where:

|              |   |  |
|--------------|---|--|
| $F_{i,t}$    | = | Mass flow of greenhouse gas $i$ in the gaseous stream in time interval $t$ (kg gas/h)  |
| $V_{t,db}$   | = | Volumetric flow of the gaseous stream in time interval $t$ on a dry basis (m <sup>3</sup> dry gas/h)   |
| $v_{i,t,db}$ | = | Volumetric fraction of greenhouse gas $i$ in the gaseous stream in a time interval $t$ on a dry basis (m <sup>3</sup> gas $i$ /m <sup>3</sup> dry gas) |
| $\rho_{i,t}$ | = | Density of greenhouse gas $i$ in the gaseous stream in time interval $t$ (kg gas $i$ /m <sup>3</sup> gas $i$ )   |
| $P_t$        | = | Absolute pressure of the gaseous stream in time interval $t$ (Pa)  |
| $MM_i$       | = | Molecular mass of greenhouse gas $i$ (kg/kmol)   |
| $R_u$        | = | Universal ideal gases constant (Pa.m <sup>3</sup> /kmol.K)   |
| $T_t$        | = | Temperature of the gaseous stream in time interval $t$ (K)   |

|                   |   |
|-------------------|---|
|                   |   |
| <b>Findings</b>   | N/A   |
| <b>Conclusion</b> | The audit team assessed Section B.6 of the updated PDD /3/ and the ER calculation spreadsheet /9/. It was confirmed that the steps taken, and the equations and parameters applied in the updated PDD to calculate project emissions, baseline emissions, leakage and emission reductions comply with the requirements of the applicable methodology AMS-III.D /4/) and applicable tools /11/ /10/. Among others, the changes in the emission reductions are well justified and due to circumstances, such as changes implemented in the <b>GWP<sub>CH4</sub></b> , changes in the livestock inventory and reduction in the total number of project sites. Nevertheless, the GHG emission reductions are determined in accordance with the requirements /5/ /7/ /8/ /4/ /10/ /11/ /13/. |

#### D.5. Validity of monitoring plan

|                            |   |
|----------------------------|---|
| <b>Means of validation</b> | The validation team assessed the revised PDD version 3 /2/, in order to determine whether the PDD updated the monitoring plan section in accordance with all relevant applicable requirements set out on PS /7/, the number of parameters was confirmed against the methodology /4/ and relevant methodological tools /11/ /10/; for data collection/archiving, QA/QC procedures.   |
| <b>Findings</b>            | <b>CAR 2:</b> The audit team identified missing parameters in the monitoring plan. The parameters identified were: $SVS_{jLT,y}$ , $AI_i$ , $GE_{LT}$ , $DE_{LT}$ , $UE$ , $ASH$ , $ED_{LT}$ , $EG_y$ , and $EE_y$ .  |
| <b>Conclusion</b>          | The PP included the parameters necessary to meet the requirements set out in the methodology /4/ and the methodological tools used to determine de baseline emissions, emission reductions, project emissions and leakage emersions. The audit plan is valid since includes those parameters included in the original monitoring plan described on revised PDD /4/ and includes those parameters required by the methodology and relevant methodological tools /11/ /10/. |

#### D.6. Crediting period

|                            |   |
|----------------------------|---|
| <b>Means of validation</b> | The audit team assessed whether the revised PDD version 3 /2/ presented the start date correctly. On section C.2.2 of the PDD version the start date shall be the day after the ending of the previous crediting (first crediting period), this is to say, 08/11/2017 the first date of the second crediting period. The validation was carried out by means of a document review and interviews with relevant personnel by phone.  |
| <b>Findings</b>            | <ul style="list-style-type: none"> <li>• <b>CL 1:</b> Regarding the inaccuracy in the start date of the crediting period on section C.2.2 on the PDD version 4 /2/. The start date on section previously mentioned referred to the start date of the first crediting period.</li> <li>• <b>FAR 1</b> The first seven years renewable crediting period was from 21/08/2010 to 20/08/2017; the PPs notified applying the intention of renewal for the second renewable crediting period, which is 7 years (21/08/2017 to 20/08/2024).The project participant notified the EB Secretariat on 30/05/2017 and therefore, beyond the 270 and 180 days prior to the date of expiration of the current crediting period.</li> </ul> |
| <b>Conclusion</b>          | As per the requirement of VVS /5/ and based on the findings response of the PP to the finding above, the audit team confirmed that the notification regarding to the request for renewal of crediting period of the project meets the requirements of PCP and the next crediting period of the registered CDM project activity commences on the day immediately after the expiration of the current crediting period.<br><br>Lastly, the PP acknowledges since the notification was beyond the 270 and 180 days prior to the date of expiration of the current crediting period, not being able to  |

|  |  |
|--|--|
|  | claim the emission reductions equivalent to the delay of the notification. |
|--|--|

### D.7. Project participants

|                            |  |
|----------------------------|--|
| <b>Means of validation</b> | The audit team verified the name of the project participant in accordance with the information of the project activity in the UNFCCC website ( <a href="http://cdm.unfccc.int/Projects/DB/DNV-CUK1267175509.52/view">http://cdm.unfccc.int/Projects/DB/DNV-CUK1267175509.52/view</a> ) and taking into account the withdrawn of one of the PP (withdrawn as of 24/11/2016). In addition, it was double checked the name of the farms and the farm owners |
| <b>Findings</b>            | <ul style="list-style-type: none"> <li><b>CL2:</b> Regarding the name of the project participant in the PDD version 3 /2/ and the name of the PP in the registered PDD /1/ and the MoC Statement /15/.</li> </ul>  |
| <b>Conclusion</b>          | The audit team verified the correctness of the name of the PP in the revised version of the PDD /3/ as well as the MoC /15/ statement in accordance with the names provided in the UNFCCC website, . It is the conclusion of the audit team the PDD version 4 /3/ presents the name of the PP in a correct manner.   |

### D.8. Post-registration changes

| Type of post-registration changes (PRCs)  | Confirmation (Y/N) | Validation report for PRCs |                 |
|---|--------------------|----------------------------|-----------------|
|   |                    | Version                    | Completion date |
| Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline | N                  | N/A                        | N/A             |
| Corrections   | N                  | N/A                        | N/A             |
| Inclusion of a monitoring plan to a registered project activity   | N                  | N/A                        | N/A             |
| Permanent changes from registered monitoring plan, monitoring methodology or standardized baseline        | N                  | N/A                        | N/A             |
| Changes to the project design of a registered project activity  | Y                  | Revised PDD version 4      | 20/09/2017      |
| Types of changes specific to afforestation and reforestation project activities                           | N/A                | N/A                        | N/A             |

Together with the request for renewal of the crediting period the PP submitted a Post Registration Changes request regarding the changes in the design of the project since Sites Fazenda Agua Branca, Fazenda Rodeio - Gleba C, Fazenda Ponte Vermelha, and Fazenda Santa Catarina have withdrawn of the project activity. The audit team provides a detailed validation opinion around the requested PRC.

## SECTION E. Internal quality control

As part of the measures taken to assure a due internal quality control, the audit team generated a Draft version of the Validation report form for renewal of crediting period for CDM project activities, version 1 /16/. The draft report and other documents needed for the review were subject of a Technical Review performed by qualified professionals as described in sections B.2 and Appendix 2 of the present report.

Following the assessment completion, the reviewer verified whether the draft report and validation conclusion /16/ for the renewal of the crediting period and its procedures were in line with the specific requirements /5/ /7/ /8/ and methodological framework /4/ /10/ /11/ /13/. The reviewer reported on 10/10/2017 the review results to the audit team including comments associated to the means of validation and reporting requirements. The audit team generated the final version of the report (19/10/2017) in response to comments of the reviewer. Lastly the team sent the final version of the present report to approval and subsequent submission.

**SECTION F. Validation opinion**

The audit team performed the validation of the renewal of the crediting period of the project “BRASCARBON Methane Recovery Project BCA-BRA-05, Brazil” (registration number 3455” located in Brazil. The validation was performed on the basis of UNFCCC criteria and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the project design documentation submitted to ICONTEC by the PP provided enough evidence to determine the validity of the original baseline scenario since The PP followed the stepwise approach stated in the methodological Tool Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period (Version 03.0.1) /14/, while the audit team validated its correct application and the update of the baseline.

The project correctly applies the baseline and monitoring methodology “AMS-III.D: Methane recovery in animal manure management systems (version 20.1)” /4/, identifying the parameters to be monitored and the monitoring plan necessary to correctly monitor the project emissions, leakage emissions and emission reductions. Furthermore, the figures of the calculations of the total baseline emissions (521,920 t CO<sub>2</sub>e), Project emissions (122,451 t CO<sub>2</sub>e), Leakage emission (0 t CO<sub>2</sub>e)) and Emission Reductions (399,469 t CO<sub>2</sub>e), of the entire period to be renewed (second crediting period, seven 7 years from 21/08/2017 to 20/08/2024) are obtained following the applicable methodology /4/ as well as the methodological tools /10/ /11/ applicable. Complementary the calculations of the emission reductions are consistent and do not present material misstatements in accordance to section 9.1.2.3 of the VVS /7/.

As a result of our assessment, the audit team is able to confirm that the request for the renewal of the crediting period and the changes in the PDD version 4 /3/ comply with the relevant requirements in CDM Project standard /6/ related to the renewal of the crediting period. In summary, the fulfilment of the specific requirements /5/ /7/ /8/ and methodological framework requirements /4/ /10/ /11/ /13/ were satisfactory assesses. Hence, it is the ICONTEC validation opinion to recommend the approval of the renewal of the crediting period. The project maintains the installations fixed in the first crediting period and operates the same technologies and characteristics as a project.

**Appendix 1. Abbreviations**

| <b>Abbreviations</b> | <b>Full texts</b>                                     |
|----------------------|---|
| GHG                  | Green House Gas                                       |
| VVS                  | CDM validation and Verification Standard              |
| UNFCCC               | United Nations Framework Convention on Climate Change |
| PDD                  | Project Design Document                               |
| CDM                  | Clean Development Mechanism                           |
| CAR                  | Corrective Action Request                             |
| PRC                  | Post Registration Changes                             |
| GWP <sub>CH4</sub>   | Global Warming Potential of Methane                   |
| BRC                  | Brascarbon  |
|                      |   |

## Appendix 2. Competence of team members and technical reviewers

**Jacobo Carrizales**

**CDM Lean Auditor and Technical Expert (Sector 13)**

### Professional Profile

Bilingual Zootechnician (animal husbandry) with postgraduate studies in Environmental Management and Sustainable Development. Experience in areas related to animal production, animal management and wildlife. Marketing and research knowledge also team work and group management skills. Particular interest for reforestation type projects and productive process improvement.

### Work Experience

Date: 6th of December 2011 – Present

Position: Technical expert – Lead Auditor

Duties: Lead auditor of Clean Development Mechanism under the Kyoto Protocol, VCS and Gold Standard projects in validation and verification activities and technical expert in Agricultural issues. Experience in scopes of: Energy industries renewable / non-renewable sources, Chemical industry, Waste handling and disposal and Agriculture. Carbon Footprint and Carbon Neutral auditor.

Employer: ICONTEC (DOE). Private – Environmental

Date: 3d to 24th of December 2011 and y 2nd to 10th of January 2012. Paz de Rio –Boyacá-Colombia.

Position: Field Assistant.

Duties: Soil associated fauna recognition as part of environmental impact studies.

Employer: Estudios Técnicos Diana Rauchwerger. Private – Environmental Consultancy.

Date: 15th to 30th of November 2011. Bogotá.

Position: Loan Reviewer.

Duties: Credit requests documentation inspection.

Employer: Corporación Colombia Internacional -CCI-. Private – NGO.

Date: 7th of March to 9th of June 2011. Bogotá.

Position: Public server. Professional responsible of wildlife traffic prevention.

Duties: Lectures on sensitizing about wildlife traffic on district public schools. Complementary

Complementary Duties: 13th of November to 3d of December 2010. Bogotá, lecturer at the course “Good environmental practices in Animal Commercialization”. Escuela de Altos estudios -OPEL- (Secretaría Distrital de Ambiente). Wildlife legal use monitoring, lectures sensitizing public schools about wildlife traffic.

Employer: Secretaría Distrital de Ambiente, Public – Environmental.

Date: 8th of September 2010 to 7th of January 2011. Bogotá.

Position: Public server. Professional responsible of wildlife traffic prevention.

Duties: Wildlife legal use monitoring, lectures sensitizing public schools about wildlife traffic.

Employer: Secretaría Distrital de Ambiente. Public – Environmental.

Date: 10th of April 2007 to 2th of June 2007. Cundinamarca, Colombia

Position: Assistant, Professional services.

Duties: Dairy Farm data management and data updating.



Employer: Agrominera Zelandia S.A. Farm – Ricardo Arenas. Private – Animal Husbandry, Zootechnics.

Date: 5th of February to 15th of May 2007. Bogotá, Villa de Leyva -Boyacá-.

Position: Lecturer. Professional supporting the Project “Contributions to the natural history of Fauna and Flora of Villa de Leyva (Boyacá, Colombia)”.

Duties: Lectures to public students from Antonio Nariño school at Villa de Leyva school. The main subject was: traditional productive techniques and rustic poultry races.

Employer: Universidad Nacional de Colombia - Facultad de Ciencias, Departamento de Geociencias. Grupo: Centro De Estudios Historia Natural De Colombia. Profesora Cristina Garzón. Public – Education

Date: August to December 2006. La Calera, Vereda el Volcán – Cundinamarca.

Position: Professional of protection and forest conservation..

Duties: Silvopastoral productive system design and reforestation. Animal husbandry, animal production, reforestation.

Employer: Farm Sevilla– Raul Behar.

Date: December 2005 to March 2006. La Calera Vereda Jerusalén – Cundinamarca.

Position: Professional of protection and forest conservation.

Duties: Silvopastoral productive system design, wetlands protection and reforestation.

Employer: Tres Esquinas Farm – Gloria de Luque. Private – animal husbandry, animal production, reforestation.

Date: February to December 2004. Simijaca – Cundinamarca-.

Position: Professional Practice.

Duties: Productive duties and stock control. Productive, sanitary, and reproductive records updating. Advisory in animal nutrition and management.

Employer: Juncas Farm. – Philip George. Private – Animal production, animal husbandry.

### Voluntary Experience

Date: 9th of June to 27th of June 2016

Employer: WWF UK.

Duties: Desk research

### Academic Background

Date: September 2015 – September 2016.

Degree: Water Science and Governance, MSc, pending

Professional skills: Masters focused on research, water science and water policy

Institution: King’s College of London.

Date: 2010 to 2012 – 14th of December 2012-.

Degree: Environmental Management and Sustainable Development. Magister.

Professional skills: Masters focused on research, self-deepening on economic valuation of natural resources and environmental economy.

Institution: Universidad Distrital Francisco José de Caldas, Bogotá Colombia.

Dissertation Title: Potential use and management, and valuation of game wildlife associated to beef cattle productive areas in Orinoquia Region. Case of study: White-Tailed Deer (*Odocoileus virginianus* Zimmermann, 1780) y *Capybara* (*Hydrochoerus hydrochaeris* Linnaeus, 1766) harvesting in “Pénjamo” farm of Hato Corozal county (Casanare).

Date: 1999 a 2005 – 27th of October 2005-.

Degree: Zootechnician (animal husbandry specialist)

Professional skills: Domestic animal productive methods, wildlife breeding, quality process analysis and agricultural business management.

Institution: Universidad De La Salle, Bogotá Colombia.

Dissertation Title: Relationship between age, weight and reproductive efficiency in competition Brahman Cattle females.

JUAN JACOBO CARRIZALES MONTEALEGRE

### Additional Studies

August to October 2009.

Market Research.

Market Research.

City University of London. London.

February to April 2009.

Advanced Marketing.

Marketing

City University of London. London.

June to December 20007.

General English.

English

Avalon School of English. London.

February 2006.

Emprendimiento y Empresarismo.

Business administration.

SENA. Bogotá.

June 2000.

Artificial Insemination.

Bovine reproduction.

Asociación Club Bovino Lasallista. Universidad De La Salle. Bogotá.

Inseminación Artificial - Junio 2000

## **EXPERIENCE IN CDM AND VOLUNTARY MARKETS ACTIVITIES**

### **Lead Auditor**

- Validation of Thuan Nhlen Phong Wind Farm, Viet Nam
- Validation of Phuong Mai 3 Wind Power Project, Viet Nam
- Validation of SHPs Tambaú, das Pedras and Rio do Sapo CDM Project (JUN1132), Brazil
- Validation of SHPs Poço Fundo and Providência CDM Project (JUN1133), Brazil
- Validation of San Lorenzo Hydroelectric Plant, Panamá
- Validación of Hidroeléctrico MIRA (HIDROMIRA), Ecuador
- Validation of Conservation and reforestation of degraded areas in Barbosa, Colombia
- Validation and Verification of Caruquia 9.76 MW hydroelectric project, Colombia
- Verification of Monomeros nitrous oxide abatement project, Colombia
- Verification of MIO Cali, Colombia
- Verification of BRT Bogotá, Colombia: TransMilenio Phase II to IV
- Verification of BRT Macrobus Guadalajara, Mexico
- Verification Post Registration Changes: BRASCARBON Methane Recovery Project BCA-BRA-09
- Verification Post Registration Changes: BRASCARBON Methane Recovery Project BCA-BRA-15
- Verification of Carbon Footprint Expreso Del Futuro

- Verification of Carbon Footprint Cerdito De La Corte
- Verification of Carbon Footprint Sigra
- Verification of Carbon Footprint Transportes Loyola
- Verification of Carbon Footprint Transportes Loyola
- Verification of Carbon Footprint Europharma
- Verification of Carbon Footprint Procables
- Verification of Carbon Footprint Hotel De Bogota
- Verification of Carbon Footprint Gascol
- Verification of Carbon Footprint Symrice
- Verification of Carbon Footprint Pacific
- Verification of Carbon Footprint Challenger
- Verification of Carbon Footprint Promigas
- Verification of Carbon Footprint Propilco
- Verification of Carbon Footprint Inversiones Pinzón Martínez
- Verification of Carbon Footprint Ladrillera La Clay
- Verification of Carbon Footprint Arcillas De Colombia
- Verification of Carbon Footprint Gimnasio La Fontana
- Verification of Carbon Footprint Red de Salud de Ladera ESE
- Verification of Carbon Footprint RECKITT BENCKINER Colombia
- Verification of Carbon Footprint Carvajal Tecnología y servicios S.A.S.
- Verification of Carbon Footprint INGREDION Colombia S.A
- Verification of Carbon Footprint INDUSTRIA NACIONAL DE GASEOSAS
- Verification of Carbon Footprint MANITOBA LTDA
- Pre-Verification of Carbon Footprint Gascol
- Pre-Verification of Carbon Footprint Helistar
- Pre-Verification of Carbon Footprint Somos K
- Pre-Verification of Carbon Footprint Symrice
- Pre-Verification of Carbon Footprint Challenger
- Pre-Verification of Carbon Footprint Procables
- Pre-Verification of Carbon Footprint Expreso Del Futuro
- Pre-Verification of Carbon Footprint Hotel De Bogota
- Pre-Verification of Carbon Footprint Multidimensionales
- Pre-Verification of Carbon Footprint General Motors
- Pre-Verification of Carbon Footprint Clínica San Rafael
- Pre-Verification of Carbon Footprint Vilaseca

### Technical expert

- Validation of CGR Catanduva Landfill Gas Project, Brazil
- Verification of Macaubas Landfill Gas Project, Brazil
- Verification of Ciudad Juarez Landfill Gas to Energy Project, México
- Verification of SUPERCERDO PAISA S.A.S., Colombia
- Verification of Palmeras POME Co-composting Project, Colombia
- Verification of BIORGANICOS S.A.S., Colombia
- Validation Cururos win farm project, Chile.

### Technical reviewer

- Verification of BRASCARBON Methane Recovery Project BCA-BRA-02, Brazil
- Verification of BRASCARBON Methane Recovery Project BCA-BRA-03, Brazil
- Verification of BRASCARBON Methane Recovery Project BCA-BRA-05, Brazil
- Verification of BRASCARBON Methane Recovery Project BCA-BRA-07, Brazil

- Verification of BRASCARBON Methane Recovery Project BCA-BRA-05, Brazil, Brazil
- Verification of Biogas energy plant from palm oil mill effluent, Guatemala
- Verification of Co-composting of EFB and POME project, Guatemala
- Validation VCS of BRASCARBON Methane Recovery Project BCA-BRA-02, Brazil
- Validation VCS of BRASCARBON Methane Recovery Project BCA-BRA-03, Brazil
- Validation VCS of BRASCARBON Methane Recovery Project BCA-BRA-05, Brazil
- Validation VCS of BRASCARBON Methane Recovery Project BCA-BRA-07, Brazil
- Validation VCS of BRASCARBON Methane Recovery Project BCA-BRA-05, Brazil, Brazil
- Verification VCS of BRASCARBON Methane Recovery Project BCA-BRA-02, Brazil
- Verification VCS of BRASCARBON Methane Recovery Project BCA-BRA-03, Brazil
- Verification VCS of BRASCARBON Methane Recovery Project BCA-BRA-05, Brazil
- Verification VCS of BRASCARBON Methane Recovery Project BCA-BRA-07, Brazil
- Verification VCS of BRASCARBON Methane Recovery Project BCA-BRA-05, Brazil, Brazil
- Verification Post Registration Changes: BRASCARBON Methane Recovery Project BCA-BRA-04A
- Verification Post Registration Changes Brascarbon Methane Recovery Project BCA-BRA-14, Brazil
- Verification of Carbon Footprint Cámara y Comercio de Bogotá

**Ana Isabel Aubad**

**Technical Reviewer and and Technical Expert**

#### MAIN PROFESSIONAL EDUCATION

International Master (MSc.) “Material and Energy Flow Management”. Universidad Trier, Germany. Area of study in depth: “Use of solid waste for energy generation”. Master's thesis with the biogas company Kompogas. 2005

“ISO 14000 and ISO 9000 Quality Auditor”. Universidad de Antioquia in association with Bureau Veritas, Medellin, Colombia. 1999

“Environmental Engineer”. Escuela de Ingeniería de Antioquia, Envigado, Colombia. 1998

Internship - November 2009: company specialized in design, construction and operation of biogas plants: Chfour Biogas Inc. Ontario, Canada.

Internship- September 2008: company specialized in design, construction and operation of biogas plants: Agraferm Ag-Luxemburgo.

Internship- April-May 2007: companies specialized in design, construction and operation of biogas plants (Agraferm, Biogasnord, Ökobit). Germany.

Practical training – November 2004: “Local Administration of the Environment, Agenda 21 and sustainable development (2 phase)”. Life Academy, San José, Costa Rica.

Practical training – April-May 2002: “Local Administration of the Environment, Agenda 21 and sustainable development (1 phase)”. Life Academy, Karstad, Sweden.

Internship – July- August 1999: “Practical training on Environmental Management Systems and Cleaner Production”. Federal Swiss Institute for Research and Materials Testing (EMPA). St. Gallen, Switzerland.

#### PROFESSIONAL EXPERIENCE

- Environmental engineer and project management company G.P.R. S.A., Chile. (2006–2011). Project Manager (main subjects: energy, biogas and waste management projects).
- ICONTEC S.A. (2006–Today). External professional ISO 9001/14001/Chilean Technical Standards/Education/Climate Change (CDM, voluntary programs, carbon footprint).
- Deuman S.A., Chile. (2007). Team work engineering for development and implementation of CDM – Kyoto Protocol projects.
- ISAGEN S.A. E.S.P, Colombia (2000–2006). Analysts of the national energy company.
- Fulda-Südwest“. Öko Institut (German Ecology Institute), Darmstadt-Germany. (July to September 2004). Co-realization of the feasibility study for the construction of an energy plant from the biomass potential of the region of Fulda.
- MVR Müllverwertung Rugenberger Damm GmbH & Co. KG, Hamburg-Germany. (December 2003 to February 2004). Environmental engineering (professional internship), waste incineration with co-generation plant.
- National Center of Cleaner Production and Environmental Technologies (CNPMLTA), Medellín-Colombia. (1999 – 2000). Environmental engineering.
- ISAGEN S.A. E.S.P, Colombia. (1997 – 1998). Professional practice, work team member responsible for designing the EMS based on ISO 14001.

## EXPERIENCE IN CLIMATE CHANGE ACTIVITIES

### Technical Reviewer:

- Verification of three periods for “Agua Fresca Multipurpose and Environmental Services Project”
- Validation of “Fuel Switching through change of furnaces at Imusa S.A.”
- Validation of “Pirgua Landfill Gas Recovery and Flaring”
- Validation of “Installation of a high-pressure/high-efficiency bagasse boiler to cogenerate heat and power”
- Validation of “Methane Gas Capture and Fuel Switching at Compañía Argentina de Levaduras S.A.I.C. Plant Project”
- Validation of “Cueva Maria Hydroelectric Expansion Project”
- Validation of “Montenegro Landfill Gas Recovery and Flaring”
- Validation of “La Vegona Hydroelectric project”
- Validation of “Chamalecón 280 Hydroelectric project”
- Validation of “Metaldom Fossil fuel switch from reheat furnace”
- Verification of four periods for “Doña Juana Landfill gas-to-energy project”
- Verification of “La Vuelta and la Herradura hydroelectric project”
- Validation “Pardos Small Hydro Plant and LOGICarbon CDM Project”
- Validation “Pequi and Sucupira SHPs and LOGICarbon CDM Project”
- Validation “Cambará and Embaúba SHPs and LOGICarbon CDM Project”
- Validation “Rio Bonito and Baitaca SHPs and LOGICarbon CDM Project”
- Verification of “Landfill Gas to Energy Facility at the Nejapa Landfill Site, El Salvador”
- Verification of “Co-composting of EFB and POME project”
- Verification of “Biogas Project, Olmeca III, Tecun Uman”
- Verification of “Los Algarrobos hydroelectric project”
- Verification of “La Venta II Project2
- Valitation of “Toachi – Pilaton Hydroelectric Project”
- Validation “EMGEA Small Hydropower (SHP) Run-of-the-River CDM Project Bundle”

- Validation “Marañón Hydroelectric Project”
- Verification “Los Algarrobos hydroelectric project”
- Verification “Bio energy in General Deheza –Electric power generation from peanut hull and sunflower husk-”
- Verification of VCS Scheme “Fuel-Switching Project from Fossil Fuels to Biomass in La Providencia, Arcor”
- Verification “BRASCARBON Methane Recovery Project BCA-BRA-02, Brazil”
- Verification “BRASCARBON Methane Recovery Project BCA-BRA-03, Brazil”
- Validation and Verification VCS “BRASCARBON Methane Recovery Project BCA-BRA-02, Brazil”
- Validation and Verification VCS “BRASCARBON Methane Recovery Project BCA-BRA-03, Brazil”
- Validation of “CTR Teresina landfill gas project”
- Validation of “CTR Maceio landfill gas project”
- Validation of “Santa Rita Hydroelectric Plant”
- Validation “Biogas Recovery And Heat Generation From Palm Oil Mill Effluent (Pome), Coopeagropal”
- Verification CDM “BK Energia Itacoatiara Project”
- Verification Gold Standard “BK Energia Itacoatiara Project”
- Validation Gold Standard “Cururos Wind Power Project-Chile” (Sustainability expert)
- Validation “Nuevo Mondoñedo Landfill Gas Recovery, Flaring and Energy Production”

Specialist (onsite visit)-Auditor:

- Verification of two periods “Biogas energy plant from palm oil mill effluent”
- Validation “Los Angeles Landfill Gas Flaring Project”
- Verification of two periods “Doña Juana Landfill gas-to-energy project”
- Verification “Landfill Gas to Energy Facility at the Nejapa Landfill Site, El Salvador”
- Verification “La Joya hydroelectric project”
- Verification “Hydroelectric Santa Ana”
- Verification “Biogas Project, Olmeca III, Tecún Uman”
- Displacement of the electricity of the national electric grid by the auto-generation of renewable energy in the Cañaveralejo Wastewater Treatment Plant of BRASCARBON in Cali, Colombia

Lead Auditor:

- Verification “BRASCARBON Methane Recovery Project BCA-BRA-05, Brazil”
- Verification “BRASCARBON Methane Recovery Project BCA-BRA-07, Brazil”
- Verification “BRASCARBON Methane Recovery Project BCA-BRA-05, Brazil, Brazil”
- Verification “BRASCARBON Methane Recovery Project BCA-BRA-13, Brazil”, two verifications
- Verification “BRASCARBON Methane Recovery Project BCA-BRA-14, Brazil”, two verifications
- Validation “Biogas Project, Olmeca I, Santa Rosa”
- Verification “Co-composting of EFB and POME project”
- Validation “CTR Rosario Landfill Gas Project”
- Validation “CTR Feira de Santana Landfill Gas Project”
- Validation “SHP Itaguaçu CDM project (JUN 1146), Brazil”
- Verification “Doña Juana Landfill gas-to-energy project”, two periods
- Verification of two periods for “Biogas Project, Olmeca III, Tecún Uman”
- Verification “Methane recovery and effective use of power generation project Norte III-B Landfill”
- Introduction of the recovery and combustion of Methane in the existing sludge treatment system of the Cañaveralejo Wastewater Treatment Plant of BRASCARBON in Cali, Colombia (Post registration change PDD and three Verifications)

- Assessment Report for CDM proposed standardized baseline: “Standardized baseline for the sector of brick production in Colombia”. Client: Climate Change Division of the Ministry of Environment and Sustainable Development of Colombia.
- Post Registration Changes (PRC) for PDDs “BRASCARBON Methane Recovery Project BCA-BRA-04A, Brazil”, BRASCARBON Methane Recovery Project BCA-BRA-13, Brazil” and BRASCARBON Methane Recovery Project BCA-BRA-14, Brazil”

Lead auditor in voluntary schemes:

- Validation and verification of VCS “BRASCARBON Methane Recovery Project BCA-BRA-05, Brazil”
- Validation and verification of VCS “BRASCARBON Methane Recovery Project BCA-BRA-07, Brazil”
- Validation and verification of VCS “BRASCARBON Methane Recovery Project BCA-BRA-05, Brazil, Brazil”
- Verification VCS of “Montañitas hydroelectric project”

## Appendix 3. Documents reviewed or referenced

| No | Author     | Title  | References to the document  | Provider        |
|----|------------|--|---|-----------------|
| 1  | Brascarbon | Registered PDD Version 3, 25 <sup>th</sup> of June 2009  | <a href="http://cdm.unfccc.int/filestorage/Z/N/W/ZNWTBVGIA43MO6YHPRCK2Q19USL7EF/PDD%203455.pdf?t=WU18b3g5YjgyfDACtuXRS8FcC9G3tBQBBypQ">http://cdm.unfccc.int/filestorage/Z/N/W/ZNWTBVGIA43MO6YHPRCK2Q19USL7EF/PDD%203455.pdf?t=WU18b3g5YjgyfDACtuXRS8FcC9G3tBQBBypQ</a>                                   | UNFCCC Website  |
| 2  | Brascarbon | PDD version 3, dated on: 28/04/2017  | PDD version 3(clean and track changes versions)   | PP              |
| 3  | Brascarbon | Revised PDD version 4, dated on: 20/09/2017<br><br>Revised version of the PDD (version 5) in response to the request                                   | PDD version 4 (clean and track changes versions)<br><br>PDD version 5 (clean and track changes versions) dated on the 4 <sup>th</sup> of December 2017  | PP              |
| 4  | UNFCCC     | Methodology: AMS-III.D Methane recovery in animal manure management systems, version 20.1  | <a href="http://cdm.unfccc.int/methodologies/DB/H9DVS24O7GEZQYLYNWUX23YS6G4RC">http://cdm.unfccc.int/methodologies/DB/H9DVS24O7GEZQYLYNWUX23YS6G4RC</a>   | UNFCCC website  |
| 5  | UNFCCC     | CDM validation & verification standard Version 01.0  | <a href="https://cdm.unfccc.int/filestorage/e/x/t/extfil e-20170502114945594-reg_stan06.pdf/reg_stan06.pdf?t=cWV8b3d3Y21zfDA5hwH76ARS1o_usZjyj4Ra">https://cdm.unfccc.int/filestorage/e/x/t/extfil e-20170502114945594-reg_stan06.pdf/reg_stan06.pdf?t=cWV8b3d3Y21zfDA5hwH76ARS1o_usZjyj4Ra</a>           | UNFCCC website  |
| 6  | DNV        | Verification report of the CDM project activity Brascarbon Methane Recovery Project BCABRA-08, dated on 2 <sup>nd</sup> of July 2013 and issued by DNV | <a href="http://cdm.unfccc.int/filestorage/w/p/2/WP27QFL41RT56OZKDXB0MAY9SUEV8I/3455%20VR2%2031%20Jul%2013.pdf?t=Uk18b3g5ZG55fDBPFT_xDzsUmQBjJG GD2a_k">http://cdm.unfccc.int/filestorage/w/p/2/WP27QFL41RT56OZKDXB0MAY9SUEV8I/3455%20VR2%2031%20Jul%2013.pdf?t=Uk18b3g5ZG55fDBPFT_xDzsUmQBjJG GD2a_k</a> | UNFCCC website  |
| 7  | UNFCCC     | CDM project standard Version 01.0  | <a href="https://cdm.unfccc.int/filestorage/e/x/t/extfil e-20170307130848253-reg_stan04.pdf/reg_stan04.pdf?t=NEx8b3d3ZDF0fDDEKA81STnd4VeT4TjwLh-a">https://cdm.unfccc.int/filestorage/e/x/t/extfil e-20170307130848253-reg_stan04.pdf/reg_stan04.pdf?t=NEx8b3d3ZDF0fDDEKA81STnd4VeT4TjwLh-a</a>           | UNFCCC website  |
| 8  | UNFCCC     | Clean Development Mechanism Project Cycle Procedure Version 01.0   | <a href="https://cdm.unfccc.int/filestorage/e/x/t/extfil e-20170307130803944-pc_proc03.pdf/pc_proc03.pdf?t=TDI8b3d3azdlfDCeUKJsjiFZOMispS8rLGCA">https://cdm.unfccc.int/filestorage/e/x/t/extfil e-20170307130803944-pc_proc03.pdf/pc_proc03.pdf?t=TDI8b3d3azdlfDCeUKJsjiFZOMispS8rLGCA</a>               | UNFCCC homepage |
| 9  | Brascarbon | Calculation file of the renewal of crediting period including baseline emissions   | <i>CER Sheet 3222 BCA-BRA-05-V1.xls</i><br><br><i>CER Sheet 3455 BCA-BRA-05_v2CER Sheet 3222 BCA-BRA-05-V2.xls</i>  | PP              |
| 10 | UNFCCC     | Methodological Tool: "Project and leakage emissions from anaerobic digesters" version 2.0  | <a href="http://cdm.unfccc.int/methodologies/Pame thodologies/tools/am-tool-14-v2.pdf">http://cdm.unfccc.int/methodologies/Pame thodologies/tools/am-tool-14-v2.pdf</a>   | UNFCCC website  |
| 11 | UNFCCC     | Methodological Tool: "Project emissions from flaring" version 02.0.0   | <a href="http://cdm.unfccc.int/methodologies/Pame thodologies/tools/am-tool-06-v2.0.pdf">http://cdm.unfccc.int/methodologies/Pame thodologies/tools/am-tool-06-v2.0.pdf</a>   | UNFCCC website  |
| 12 | UNFCCC     | <b>CDM-PDD-FORM Project Design Document Form</b> (which incorporates <b>CDM-SSC-PDD-FORM</b> form  | <a href="https://cdm.unfccc.int/filestorage/e/x/t/extfil e-20170628103247392-PDD-Form05.pdf/PDD-Form05.pdf?t=UE18b3d5MXk2fDDtCafJe">https://cdm.unfccc.int/filestorage/e/x/t/extfil e-20170628103247392-PDD-Form05.pdf/PDD-Form05.pdf?t=UE18b3d5MXk2fDDtCafJe</a>   | UNFCCC website  |



|    |  |  |   |                |
|----|--|--|---|----------------|
|    |  |  | bgj8JI-ZZvdTEYU   |                |
| 13 | UNFCCC   | Guideline Sampling And Surveys For CDM Project Activities And Programmes Of Activities version 04.0  | <a href="https://cdm.unfccc.int/filestorage/e/x/t/extfile-20151023152925164-Meth_GC48-ver04.0-.pdf/Meth_GC48_%28ver04.0%29?t=ZDh8b3d5Zno3fDBjY0Hki7eMcxXRcaceJGEq">https://cdm.unfccc.int/filestorage/e/x/t/extfile-20151023152925164-Meth_GC48-ver04.0-.pdf/Meth_GC48_%28ver04.0%29?t=ZDh8b3d5Zno3fDBjY0Hki7eMcxXRcaceJGEq</a> | UNFCCC website |
| 14 | UNFCCC   | Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period (Version 03.0.1) | <a href="https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-11-v3.0.1.pdf">https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-11-v3.0.1.pdf</a>   | UNFCCC website |
| 15 | Brascarbon   | MoC Statement  | <i>ren_form_BCA-BRA-05(3455)).pdf</i>   | PP             |
| 16 | ICONTEC  | Draft version of the Validation report form for renewal of crediting period for CDM project activities   | <i>Renewal ValReport BRASCARBON 05 JC Draft Sep.doc</i>   | Audit team     |
| 17 | Presidência da República. Brazil   | National Policy on Solid Waste; amends Law No. 9,605 of February 12, 1998  | <a href="http://www.planalto.gov.br/ccivil_03/_ato2007-2010/2010/lei/12305.htm">http://www.planalto.gov.br/ccivil_03/_ato2007-2010/2010/lei/12305.htm</a>   | Others         |
| 18 | Ministério Da Agricultura , Pecuária E Abastecimento   | REGULATORY INSTRUCTION No. 46, OF OCTOBER 6, 2011  | <a href="http://aao.org.br/aao/pdfs/legislacao-dos-organicos/instrucao-normativa-n46.pdf">http://aao.org.br/aao/pdfs/legislacao-dos-organicos/instrucao-normativa-n46.pdf</a>   | Others         |
| 19 | Rachael D. Garrett, Meredith Niles, Juliana Gil, Philip Dy , Julio Reis, and Judson Valentim | Policies for Reintegrating Crop and Livestock Systems: A Comparative Analysis  | <a href="https://ainfo.cnptia.embrapa.br/digital/bitstream/item/157974/1/26289.pdf">https://ainfo.cnptia.embrapa.br/digital/bitstream/item/157974/1/26289.pdf</a>   |                |
| 20 | BRASCARBON   | POP 3  | forms 03.003 and 03.001, .xls files   | PP             |

## Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1. CL from this validation

| CL ID   | 1 | Section no. | Appendix 7 | Date: | 15/09/2017 |
|---|---|-------------|------------|-------|------------|
| Description of CL   |   |             |            |       |            |
| Section C.2.2 of PDD version 3 does not describe the start date of the second crediting period, which is the crediting period to be renewed. The PP is requested to state the crediting period to be renewed. |   |             |            |       |            |
| Project participant response  |   |             |            |       | Date:      |
|   |   |             |            |       | 20/09/2017 |

|  |                         |
|--|-------------------------|
| <i>The revised version 4 of the PDD has included the start date of the second crediting period.</i>  |                         |
| <b>Documentation provided by project participant</b>   |                         |
| Revised PDD  |                         |
| <b>DOE assessment</b>  | <b>Date: 25/09/2017</b> |
| Section C.2.2 was subject of a request since referred to the first crediting period. Since the renewal of the crediting period regards to the second crediting period, the start date according to the VVS shall be the day before the ending of the previous crediting period. The start date on revised PDD version 4 /3/ is adequate and follows relevant requirements of the project activity. |                         |

|   |   |                    |     |                         |
|---|---|--------------------|-----|-------------------------|
| <b>CL ID</b>  | 2 | <b>Section no.</b> | A.4 | <b>Date: 15/09/2017</b> |
| <b>Description of CL</b>  |   |                    |     |                         |
| As stated in the MoC statement as well as the registered PDD version 03, the name of the PP is: Brascarbon Consultoria, Projetos e Representação <b>Ltda.</b> Meanwhile, the name of the PP in the PDD version 4 is: Brascarbon Consultoria, Projetos e Representação <b>S/A.</b>   |   |                    |     |                         |
| <b>Project participant response</b>   |   |                    |     | <b>Date: 20/09/2017</b> |
| <i>The revised version 4 of the PDD has the PP name corrected - Brascarbon Consultoria, Projetos e Representação Ltda.</i>  |   |                    |     |                         |
| <b>Documentation provided by project participant</b>  |   |                    |     |                         |
| Revised PDD and Moc Statement.  |   |                    |     |                         |
| <b>DOE assessment</b>   |   |                    |     | <b>Date: 25/09/2017</b> |
| The audit team compared the MoC statement the revised PDD version 4 and the information provided in the UNFCCC website ( <a href="http://cdm.unfccc.int/Projects/DB/DNV-CUK1267175509.52/iProcess/DNV-CUK1366982087.33/view">http://cdm.unfccc.int/Projects/DB/DNV-CUK1267175509.52/iProcess/DNV-CUK1366982087.33/view</a> ) finding correctness and coherence along the different documents in the name of the unique PP. The audit team in addition cross-checked the PP name in the notification of intention of renewal of the crediting period finding the name of the PP is <b>Brascarbon Consultoria, Projetos e Representação Ltda.</b> |   |                    |     |                         |

|   |   |                    |     |                         |
|---|---|--------------------|-----|-------------------------|
| <b>CL ID</b>  | 3 | <b>Section no.</b> | B.4 | <b>Date: 15/09/2017</b> |
| <b>Description of CL</b>  |   |                    |     |                         |
| Sampling plan described in the revised PDD version 2 states a 95% of confidence level to calculate the parameters determined by sampling. Nevertheless the sampling plan described in section B.7.2 states a sampling approach based on 90/10 Confidence /precision level.  |   |                    |     |                         |
| <b>Project participant response</b>   |   |                    |     | <b>Date: 20/09/2017</b> |
| <i>At the time of the registration of the PDD (version 2) the methodology version was v14. In this version, the sampling plan could state a 95% of confidence level to calculate the parameters determined by sampling approach. However, the version 20.1 of the methodology requires the application of the Guidelines for Sampling and Surveys for CDM Project Activities and Programme of Activities. In these guidelines, the collected data should be analyzed in order to assess compliance with the 90/10 confidence/precision level. Hence, the revised version 4 of the PDD considers the approach from the guidelines, meaning 90/10 confidence/precision level.</i> |   |                    |     |                         |
| <b>Documentation provided by project participant</b>  |   |                    |     |                         |
| Revised PDD   |   |                    |     |                         |
| <b>DOE assessment</b>   |   |                    |     | <b>Date: 25/09/2017</b> |
| The audit team is aware that, by the time the project activity was registered the provisions for sampling parameters were different to those required in the methodology applicable to the project activity. In this sense, the approach of the sampling plan in the revised PDD version 4 is in line with the requirements of the methodology as well as the sampling and survey guidelines.   |   |                    |     |                         |

Table 2. CAR from this validation

|  |   |                    |     |                         |
|--|---|--------------------|-----|-------------------------|
| <b>CAR ID</b>  | 1 | <b>Section no.</b> | B.4 | <b>Date: 15/09/2017</b> |
| <b>Description of CAR</b>  |   |                    |     |                         |
| The number of farms within the project boundary is not the same as it was described in the registered PDD (version 2). A total of four (4) have been withdrawn of the project activity including: Fazenda Agua Branca, Fazenda Rodeio - Gleba C, Fazenda Ponte Vermelha, and Fazenda Santa Catarina. |   |                    |     |                         |

|   |                         |
|---|-------------------------|
| <b>Project participant response</b>   | <b>Date:</b> 20/09/2017 |
| <i>The referred farms were withdrawn from the project activity since they have terminated their swine production operation. Since this is a change which requires a post registration notification, the revised version 4 of the PDD has considered this requirement and as solicited a notification for a post registration change for the removal of those four farms.</i>  |                         |
| <b>Documentation provided by project participant</b>  |                         |
| Revised PDD   |                         |
| <b>DOE assessment</b>   | <b>Date:</b> 25/09/2017 |
| The audit team assessed the baseline scenario and baseline emission calculations in the revised PDD version 4 and the calculation files, taking into account withdrawn of four farms. The baseline scenario remains the same since the technologies, implementation, and quantification of the baseline of the project activity are maintained. Withdrawn of Fazenda Agua Branca, Fazenda Rodeio - Gleba C, Fazenda Ponte Vermelha, and Fazenda Santa Catarina (changes to de design of the project) do not affect the baseline scenario. In addition, PP submits a PRC together with the request for renewal of the crediting period in accordance with PCP /8/, PS /7/ and VVS /5/. |                         |

|   |   |                    |     |                         |
|---|---|--------------------|-----|-------------------------|
| <b>CAR ID</b>   | 2 | <b>Section no.</b> | B.4 | <b>Date:</b> 15/09/2017 |
| <b>Description of CAR</b>   |   |                    |     |                         |
| According to the methodology AMS-III.D as part of the monitoring plan parameters $SVS_{jLT,y}$ , $AI_i$ , $GE_{LT}$ , $DE_{LT}$ , $UE$ , $ASH$ , $ED_{LT}$ , $EG_y$ , and $EE_y$ shall be monitored. Nevertheless, the monitoring plan stated on the PDD version 3, does not include the parameters previously mentioned in section B.7.1 Data and Parameters to be monitored.  |   |                    |     |                         |
| <b>Project participant response</b>   |   |                    |     | <b>Date:</b> 20/09/2017 |
| <i>The revised version 4 of the PDD has included the referred parameters in its section B.7.1.</i>  |   |                    |     |                         |
| <b>Documentation provided by project participant</b>  |   |                    |     |                         |
| Revised PDD   |   |                    |     |                         |
| <b>DOE assessment</b>   |   |                    |     | <b>Date:</b> 25/09/2017 |
| The monitored plan on PDD version 4 /3/, generated by the PP as a response to the findings of the validating process, included the parameters to be monitored as described in the methodology, and the methodological tool to calculate Project emissions from flaring and the methodological tool Project and leakage emissions from anaerobic digesters. In addition the provisions described in the parameter information matches as well the methodological requirements. |   |                    |     |                         |

|  |   |                    |       |                         |
|--|---|--------------------|-------|-------------------------|
| <b>CAR ID</b>  | 3 | <b>Section no.</b> | B.7.1 | <b>Date:</b> 13/09/2017 |
| <b>Description of CAR</b>  |   |                    |       |                         |
| The revised PDD version 4 does not include an assessment of the validity of the baseline scenario in accordance with the "Methodological Tool Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period (Version 03.0.1)". |   |                    |       |                         |
| <b>Project participant response</b>  |   |                    |       | <b>Date:</b> 20/09/2017 |
| <i>The revised PDD version 4 has included an assessment of the validity of the baseline scenario in accordance with the Methodological Tool Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period (Version 03.0.1)</i> |   |                    |       |                         |
| <b>Documentation provided by project participant</b>   |   |                    |       |                         |
| Revised PDD  |   |                    |       |                         |

|  |                         |
|--|-------------------------|
| <b>DOE assessment</b>  | <b>Date:</b> 25/09/2017 |
| The audit team assessed the application of the Methodological Tool Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting periodic (Version 03.0.1) in the revised PDD (version 4) finding compliance with the inclusion of the methodological tool. |                         |

**Table 3. FAR from this validation**

|   |   |                    |               |                         |
|---|---|--------------------|---------------|-------------------------|
| <b>FAR ID</b>   | 1 | <b>Section no.</b> | PDD version 4 | <b>Date:</b> 15/09/2017 |
| <b>Description of FAR</b>   |   |                    |               |                         |
| Notification date exceeds in 76 days the 180 to 270 Days previous the end of the crediting period, therefore the claim of issuance must be adjusted once the crediting period has been renewed in order to not to take into account the days of the delay of 76 days when assessing the emission reductions of the crediting period starting 21/08/2017 |   |                    |               |                         |
| <b>Project participant response</b>   |   |                    |               | <b>Date:</b> 20/09/2017 |
| <i>The PP is aware of the delay on the submission of the notification of intention of renewal of the crediting period. Hence, the 76 days between the deadline and the submission will not be considered in the further verification for the year 2017, The CER correspondent to this period will not be considered in the CER calculation.</i>         |   |                    |               |                         |
| <b>Documentation provided by project participant</b>  |   |                    |               |                         |
| Revised PDD   |   |                    |               |                         |
| <b>DOE assessment</b>   |   |                    |               | <b>Date:</b> 25/09/2017 |
| FAR 1 shall be assessed by the time the proposed project activity be verified. The delay on the notification of intention of renewal of the crediting period implies the PP will not be able to claim the emission reductions equivalent to the delay of the notification.  |   |                    |               |                         |