Validation report form for renewal of crediting period for CDM project activities

(Version 03.0)

Complete this form in accordance with the instructions attached at the end of this form.

BASIC INFORMATION	
Title and UNFCCC reference number of the project activity	BRASCARBON Methane Recovery Project BCA-BRA-09, Brazil (Registration number: 5492)
Number and duration of the next crediting period	Second (2nd) crediting period 01/11/2019 to 31/10/2026
Version number of the validation report	03
Completion date of the validation report	30/09/2020
Version number of PDD to which this report applies	13
Project participants	SPCarbono Créditos de Carbono S.A. Norwegian Ministry of Climate and Environment
Host Party	Brazil
Applied methodologies and standardized baselines	AMS-III.D.: Methane recovery in animal manure management systems (version 21.0)
Mandatory sectoral scopes	Sectoral Scope 13: Waste handling and disposal
Conditional sectoral scopes, if applicable	N/A
Estimated amount of annual average GHG emission reductions or GHG removals by sinks in the next crediting period	51,191 tCO2e
Name and UNFCCC reference number of the DOE	Instituto Colombiano de Normas Técnicas y Certificación – ICONTEC Internacional, E-0024
Name, position and signature of the approver of the validation report	 Juan Sebastian Salazar Technical Director

SECTION A. Executive summary

SPCarbono Créditos de Carbono 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-09, Brazil” (registration number 5492), located in Brazil the State of in the cities located at the Mato Grosso do Sul state, central Brazil. The validation assessment for the renewal of the crediting period was carried out through a process of document review based on the PDD Version 10/01/ dated on 06/03/2020 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 10 are visible on the PDD version 11/1/dated 01/06/2020, version 12/1/ dated 20/08/2020 and on one last version PDD version 13/1/ dated 29/09/2020

The purpose of the validation assessment was to have an independent third-party assessment of the proposed renewal of the second crediting period form 01/11/2019 to 31/10/2026. 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 13 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 12 and 13/1/, 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, Kyoto Protocol Requirements, UNFCCC rules and the applicable methodology. 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)

“BRASCARBON Methane Recovery Project BCA-BRA-09, Brazil” (registration number 5492 applied the methodology “AMS-III.D: Methane recovery in animal manure management systems (version 21.0)” 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 (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interview(s)	Validation findings
1.	Team Leader and Technical Expert	EI	Bermudez	Adriana	ICONTEC`s Freelance	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 (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Urrego	Erika	ICONTEC
2	Approver	IR	Salazar	Juan Sebastian	ICONTEC

SECTION C. Means of validation

C.1. Desk/document review

The present validation assessment is based on the PDD version 10 provided by the PP on 06/03/2020 /1/, PDD version 11 dated on 01/06/2020 /1/, PDD version 12 dated on 20/08/2020 /1 and the PDD version 13 dated on 29/09/2020 /1 generated by the PP in response to the findings raised during the validation process. Furthermore, the registered PDD (version 9) /2/, its validation report/21/, the previous verification report /3/ 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 21.0)
- Methodological Tool14: “Project and leakage emissions from anaerobic digesters”, version 2.0
- Methodological Tool 6: “Project emissions from flaring”, version 03.0.
- Methodological Tool 8: “Tool to determine the mass flow of a greenhouse gas in a gaseous stream ”, version 03.0.
- Methodological Tool 11:“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)
- Clean Development Mechanism Validation and Verification Standard, version 02.0
- Clean Development Mechanism Project Cycle Procedure, version 02.0
- Clean Development Mechanism Project Standard, version 02.0
- Checklist for requests for renewal of crediting period of project activities, version 02.0

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, 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 versions 12 and 13. 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.

As part of the activities carried out as alternative means of validation the audit team assessed the information provided by the latest verification report /3/ of the first crediting period from 01/11/2012 to 31/10/2019 as well as the registered PDD against the information provided by PDD version 13/1/ and previous versions of the PDDs/1/ and /2/, among others documents listed in Appendix 3. Furthermore, the audit team assessed the calculation file 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 21, and the changes in the emissions of the baseline scenario are accounted and correctly calculated in the calculation 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 01/11/2019 to 31/10/2026). The dates and subjects of the discussed telephonic and WhatsApp based interviews conducted with the PP are described as follows.

No.	**Interviewee**			**Date**	**Subject**	**Team member**
	Last name	**First name**	**Affiliation**			
1.	Garcia	David	CDM Manager	29/04/2020 – 30/04/2020	Opening Meeting And assessment coordination. Verification Plan Telephonic interview with Mr David García (Brascarbon Manager) regarding: • PDD proposal • Description	Adriana Bermudez

					of project • Activity Application of selected approved baseline and monitoring methodology and standardized baseline • General conditions of the monitoring of the project activity -Monitoring equipment in operation	
2				29/04/2020 – 30/04/2020	Application of the methodology and emission reduction calculations and consults about tables and data base	
3				22/05/2020	Findings and resolutions - requests	
4				29/05/2020	Final version documents	

C.4. Sampling approach

The validation for renewal of crediting period at 09 project, no applied any sampling approach, and the DOE does not conduct an on-site inspection in this case because was not required it, as well was explain in the item C.2. in this report.

C.5. Clarification requests (CLs), corrective action requests (CARs) and forward action requests (FARs) raised

Area of validation findings	No. of CL	No. of CAR	No. of FAR
Compliance with PDD form	CL 2, CL 3 and CL 4	-	-
Application and selection of methodologies and standardized baselines	CL 7 and CL 9	-	-
Validity of original baseline or its update	-	-	-
Estimated emission reductions or net anthropogenic removals	CL 5, CL 6, and CL 8	-	-
Validity of monitoring plan	CL 10 and CL 11	CAR 1	-
Crediting period	CL 12	-	-
Project participants	CL 1	-	-
Post-registration changes	-	-	-
Others (please specify):	-	-	-

Total	12	1	-

SECTION D. Validation findings

D.1. Compliance with PDD form

Means of validation	In order to validate the compliance of the PDD with the valid version of the PDD form, the validation team cross-checked the revised PDD /1/ against the latest version of the CDM-PDD-FORM (Project Design Document Form, which incorporates CDM-SSC-PDD-FORM form, applicable to the proposed project activity).
Findings	In the PDD/1/ version 10 were finding the follow: CL 2 - The name of the project is 09 and it is presented as 4A, please make the change and review throughout the PDD. CL 3 – In PDD version 10 it was found that in table A1 the bibliographic source is mentionet in Portuguese, when Checklist For Requests For Renewal Of Crediting Period Of Project Activities/8/ 1.1.4 item ”Are all documents prepared in English or do they contain a full translation of relevant sections into English?” CL 4 - In section A.2. Location of the project activity. The farms do not correspond to the farms of project SPCarbono 09, the information is project SPCarbono 4A. Please, clarify and review all the information contained in PDD especially pages 5 to 7.
Conclusion	The audit team assessed the revised PDD version 11 /1/, provided by PP as a response to the finding raised, and cross-checked the form version against the latest version available of the form CDM-PDD-FORM. The PP correctly modified the revised PDDs /1/ according to the correct form version; therefore, CL 2, CL 3 and CL 4 were closed. It is the conclusion of the audit team verified that the final version of the revised PDD /1/ was completed by using the latest version of the applicable CDM-PDD-FORM and correctly followed the instructions stated within the form. The information transferred to the later valid version of the PDD form/20/ is materially the same as that in the registered PDD.

D.2. Application and selection of methodologies and standardized baselines

Means of validation	The applicability of the baseline and monitoring methodology was assessed through document review of the revised PDD /1/ against the requirements stated on the methodology AMS-III.D version 21.0, the valid version of the approved baseline and monitoring methodology for the project activity. In addition, the assessments of the calculation file /4/ provided by the PP as part of the desk review documentation. The specific applicability conditions of the methodology /5/ were cross-checked and assessed against the revised PDD /1/ 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.

The applicability criteria of this methodology, was verified by ICONTEC, as follows:

Applicability Condition	Means of Validation
This methodology is applicable to: a) The livestock population in the farm is managed under confined conditions b) The manure, after treatment, will not be discharged into natural water resources c) The annual average temperature of baseline site where anaerobic manure treatment facility is located is higher than 5°C d) In the baseline scenario the retention time of manure waste in the anaerobic treatment system is greater than one month, and if anaerobic lagoons are used in the baseline, their depths are at least 1 m e) No methane recovery and destruction by flaring, combustion or gainful use takes place in the baseline scenario	ICONTEC verified this statement by means of: - Interview telephonic with the CDM manager - Documental Review PDD version 10/1/ - AMS-III.D version 21 /5/ a) and b) All farms included in this project activity are managed under confined conditions and will not be discharged into natural water resources. Additionally, the location and the complementary PP´s documentation and the association, were verified on the website and google maps. c) The audit team verified in INPE website and the farms´s location complies with request (https://www.cptec.inpe.br/pb/mato-grosso) 22-33ºC range d) The PP, had has proven to be more than 1 month as recommended by EMBRAPA (from 30 to 40 days) embrapa´s publication. e) The baseline scenario is a Confined Animal Feed Operation with open anaerobic lagoons for the manure treatment system. No methane recovery and destruction by flaring, combustion or gainful use takes place in the baseline scenario.
The methodology is applicable under the following conditions: 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 b) Technical measures will be used ensuring that all biogas produced by the digester is used or flared c) The storage time of the manure after removal from the	ICONTEC verified this statement by means of: - Interview telephonic with the CDM manager - Documental Review (PDD version 10/1/) - AMS-III.D version 21 /5/) a) The PP indicate on PDD, that *the final sludge will be handled aerobically. It will be applied in the soil, according with the proper conditions and procedures, being assured that no methane emissions are resulting from this application. The project involves the use of treated effluent for irrigation in farms and application of stabilized sludge on crops irrigation in farms, without any anaerobic conditions. The practice is to distribute the sludge over the field according the usual practice to improve the field*

	animal barns, including transportation, will not exceed 45 days before being fed into the anaerobic digester	*fertilization.* This complies with paragraph 2.2.4(a) of AMS-III.D version 21.0. b) On PDD, The PP indicates that: *The project involves facilities to burn (flaring) the biogas generated by the digester. This complies with para 4(b) of AMS-III.D version 21.0 An enclosed flare will be used in the project and also sized to support high temperatures. A continuous sparkling system is installed in the combustion chamber of the flare. In adequate conditions, the project activity will install electricity generator for in site electricity supply of farm needs according to conditions established on para 4 of AMS-III.H version 19.0, although no claims for emissions reductions by the electricity generation will be requested during the entire project activity, only by the emissions reductions of the biogas destroyed in the generators*. This comply with paragraph 2.2.6 of AMS-III.D version 21.0. c) On PDD, mentioned it that this situation is assured due to the fact that the barns are directly connected to the biodigesters and considering the common farms practices where each day the barn is washed and all waste is removed by the water flushing system sent to the digester and following The Confined Animal Feed Operation Practices follows recommendations from EMBRAPA (Empresa Brasileira de Agricultura e Agropecuária). The PP comply with paragraph 2.2.6 of AMS-III.D version 21.0.
	Complementary on PDD/1/ is mencioned the follows commitments: -the project doesn't involve any landfill activity. This complies with paragraph 5 of AMS-III.D version 21.0. -Utilization of the recovered biogas in one of the options detailed in AMS-III.H is also eligible under this methodology -New facilities (Greenfield projects) and project activities involving capacity additions compared to the baseline scenario are only eligible if they comply with the related and relevant requirements in the "General guidelines for SSC CDM methodologies".	ICONTEC verified this statement by means of: - Interview telephonic with the CDM manager - Documental Review PDD version 10/1/ - AMS-III.D version 21 /5/ The PP complies with what is described in the methodology AMS- III.D version 21.0 /5/ and General guidelines on SSC CDM methodologies that were applied for the construction of the commitments.

	The requirements concerning demonstration of the remaining lifetime of the replaced equipment shall be met as described in the "General guidelines for SSC CDM methodologies". The project activity is a Type III: other project activities not included in Type I or Type II that result in GHG emission reductions not exceeding 60kt CO2e per year in any year of the crediting period. this is clearly demonstrated in Tables B.7 and B.8 of Section B.6.
	specifically and in response to the UNFCCC secretariat in relation to the proper use of the methodology AMS-III.D (ver 21), the following is confirmed: The internal procedure POP-03 is referred in the updated PDD version 12 for parameters Nda,y and Np,y. The DOE compared this internal procedure POP -03 Vs methodology AMS-III.D (ver. 21) the data/parameter tables 2 and 3, and confirmed that PP has included the basic information to the system for monitoring the number of livestock: the internal procedure contains objective, definition and frecuency directly related to with methodology AMS.III.D version 21, presents attached forms to be filled out on the amounts of pigs entering, leaving and their productive stage that must be completed by both the farm y PP; general inventory managenment per farm. the parameters MS%,i,y, Np,y, ndy and Qmanure,LT,y was adjusted to the monitoring frequency according the methodology AMS-III.D (ver 21) and is mentioned on D.5 item. The parameter WCH4 – in PDD´s monitoring frequency, the default value was corrected to 60% for methane content, according the methodology AMD-III.D (v.21)
Findings	CL 7. The PP described the version 18.0 of Methane recovery in wastewater, the updated is version 19.0/15/ CL 9 – The Methodological tool: Project emissions from flaring was described on the PDD with version 02.0; the version updated is 03.0.
Conclusion	The audit team concluded, that, the sampling approach used to sample parameters in the sampling plan included in the PDDs versions 12 and 13 are in accordance with the requirements of the methodology AMS.III-D version 21.0 /5/, Tool 06 Methodological tool: Project emissions from flaring version 03.0 /6/ and the Guidelines for sampling and surveys for CDM project activities and programmes of activities version 04.0/7/. Provisions described in the monitoring plan for each parameter are in line

	with the methodological requirements /5/ as well as are viable to carry out in during the second crediting period, subject of the validation assessment. The PP corrected on PDD version 12, the CLs 7 and 9 were closed.

D.3. Validity of original baseline or its update

Means of validation	The baseline determination has been developed using methodology AMS-III.D, version 21.0/5/ and Tool for the Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period – Version 03.0.1/13/ The original baseline scenario of the registered PDD /1/ was cross-checked against the baseline scenario presented in the revised PDDs /1/ /16/. The calculation procedures, application of formula and correctness in the application of the methodological requirements were part of the assessment. According to the Tool 11 /13/ the PP applied correctly the following steps: **Step 1: Assess the validity of the current baseline for the next crediting period** **Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies:** There are no changes in the relevant national and/or sectoral policies since the date of registration of the PDD /1/, which impacts the baseline scenario. ICONTEC verified the legislation portal of Ministry of environment of Brazil /18/ and confirm that at the time there is not national policies related with installation of biodigesters or biogas. As conclusion current baseline still complies with all relevant Brazilian policies. **Step 1.2: Assess the impact of circumstances:** At moment of request the renewal of crediting period, on the farms there is change in yours inventory of animals, some farms terminated their activity and therefore were withdrawn from the project activity. Also, GWP was updated of 21 to 25. However, the conditions used to determine the baseline emissions in the previous crediting period are still valid. The PP´s assessed the impact of circumstances existing at the time of requesting renewal of the crediting period on the current baseline emissions, in which the baseline GWP_{CH4} has been updated based on the 2nd commitment period of the Kyoto Protocol. (See development of Step 2.2 on this report). **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:** ICONTEC confirmed that the baseline scenario does not need to be updated because is the continuation of the current practice without any investment, there's no current baseline equipment or an investmen, for this reason the current baseline is mantained**.** **Step 1.4: Assessment of the validity of the data and parameters:** The data and parameters that were determined at the start of the crediting period were monitored during the crediting period , however the change of

	methodology of version 18.0 to version 21.0 included parameters new and eliminated others, for this reason some of data and parameters as presented in the latest version of the PDD valid for the 1st crediting period, not any longer valid. The Global Warming Potential of methane GWP_{CH4} was updated to 25 and the PP used the new default values have been adopted and published by the IPCC /19/. **Step 2: Update the current baseline and the data and parameters** **Step 2.1: Update the current baseline** The PP´s updated the baseline according to new version of methodologies and tools /5/, /6/, /14/, /15/, /17/. **Step 2.2: Update the data and parameters** The value of the GWP_{CH4} was updated and used on the figures of the new calculations on spreadsheet /4/. Please see explanation on previous step 1.4.
Findings	No findings was raised on this issue.
Conclusion	The audit team concluded the baseline scenario for the renewal of the crediting period presented in the revised PDDs /1/ is comparable to the scenario registered and described in the registered PDD /1/. 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.

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

Means of validation	The validation team assessed weather 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 /1/ for these data and parameters are reasonable. The estimated amount of GHG emission reductions of the project is 358,337 tCO2e for the second crediting period (7 years) from 01/11/2019 to 31/10/2026, resulting in estimated annual average GHG emission reductions of 51,191 tCO2e. These figures were calculated using the methodology AMS-III.D version 21.0 /5/ and the applicable tools /6/, /14/, /17/ as follows: Emission Reductions. $ER_{y,estimated} = BE_y - PE_y$ Baseline Emissions

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

Project Emissions

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

Emissions from flaring

According with the tool Project emissions from flaring version 3/6/, the PDD describes that the calculation procedure in this tool determines the project emissions from flaring the residual gas ($PE_{flare,y}$) based on the flare efficiency ($\eta_{flare,m}$) and the mass flow of methane to the flare ($F_{CH4,RG,m}$). The flare efficiency is determined for each minute *m* of year *y* based either on monitored data or default values.

The PP determined the use the project emissions calculation procedure (Tool 06)/6/ is given in the following three steps:

STEP 1: Determination of the methane mass flow of the residual gas - where option d was selected by PP; This correspond to: (d) The simplification offered for calculating the molecular mass of the gaseous stream is valid (equations 3 and 17 in the tool);

The flow measurement on a dry basis is not doable for a wet gaseous stream. Therefore, it is necessary to demonstrate that the gaseous stream is dry to use this option. According with the tool, there are two ways to do this:

(a) Measure the moisture content of the gaseous stream (CH2O,t,db,n) and demonstrate that this is less or equal to 0.05 kg H2O/m3 dry gas; or

(b) Demonstrate that the temperature of the gaseous stream (Tt) is less than 60ºC (333.15 K)d at the flow measurement point.

The temperature of the biogas is less than 60ºC, and that will be demonstrated during the monitoring of the parameter, according with the MP.

(b) STEP 2: Determination of the flare efficiency;

The flare efficiency depends on the combustion efficiency of in the flare and the time that the flare is operating. For determining the efficiency of enclosed flares project participants shall choose to determine the efficiency based on monitored data or the option to apply a default value. For open flares a default value must be applied. The time the flare is operating is determined by using a flame detector and, for the case of enclosed flares, in addition the monitoring requirements provided by the manufacturer's specifications for operating conditions shall be met.

In the case of enclosed flares, project participants may choose between the

following two options to determine the flare efficiency for minute m (ηflare,m) and shall document in the CDM-PDD which option is selected:

(a) Option A: Apply a default value for flare efficiency; (b) Option B: Measure the flare efficiency.

Option A was chosen

Option A: Default value

The flare efficiency for the minute m (*ηflare,m*) is 90% when the following two conditions are met to demonstrate that the flare is operating:

(a) The temperature of the flare (*TEG.m*) and the flow rate of the residual gas to the flare (*FRG,m*) is within the manufacturer's specification for the flare (*SPECflare*) in minute m; and

(b) The flame is detected in minute m (Flamem).

Otherwise ηflare,m is 0%.

It is important to highlight that the flares are considered a low height so, in line with the tool, a conservative approach should be applied, and 10 percentile points should be subtracted to the flare efficiency. Hence the flare efficiency adopted in the current PDD will be the default value of 80%.

In line with the monitoring plan, if any minute of any hour presents a temperature value below 500ºC the entire hour will be discount form the CER calculation. This discount will be applied to the volume of that specific hour since it is a more conservative approach than to discount in the average of the flare efficiency percentage.

STEP 3: Calculation of project emissions from flaring.

Project emissions from flaring are calculated as the sum of emissions for each minute m in year y, based on the methane mass flow in the residual gas (FCH4,RG,m) and the flare efficiency (ηflare,m), as follows:

$$PE_{flare\,y} = GWP_{CH4} \times \sum_{m=1}^{525600} F_{CH4,RG,m} \times \left(1 - \eta_{flare\,m}\right) \times 10^{-3}$$

Relative to parameters

The parameter SPECflare is found according to table 2 in tool 06 version.3, and where the Value(s) applied correspond to: "The flare optimal conditions are, according the manufacturers specifications: Flow: between + 40% of the estimated flow (in m3/h) for any giving farm; Temperature: between 500oC and 800oCMaintenance: Annually, recommended by the manufacturer. The PP preforms monthly maintenance, both preventive and corrective, if needed". And additional

	comment: “The maintenance schedule is not required if Option A is selected to determine flare efficiency of an enclosed flare “. As additional comment the PP indicate that the maintenance schedule is not required if Option A is selected to determine flare efficiency of an enclosed flare. The parameter FE or ηflare, h, was corrected in relation to the tool 06 version 3 - Measurement methods and procedures, where it is explained that enclosed flare (low height) is used in the entire project: . Brascarbon registers the gas flow sent to the flares and the combustion temperature of the flares every minute. A 80% efficiency for a specific hour is considered if the following conditions are met for all minutes in that specific hours: (i) all temperature records are above or equal to 500º Celsius and (ii) the temperature of the flare (TEG.m) and the flow rate of the residual gas to the flare (FRG,m) are within the manufacturer's specification for the flare (SPECflare). Otherwise, a 0% efficiency for the specific hour is applied if at any minute the records of temperature measurement are below 500º Celsius or the flare is operating outside of the manufacturer's specification (SPECflare). This discount will be applied to the volume of that specific hour since it is a more conservative approach than to discount in the average of the flare efficiency percentage for any giving hour. The same way, the monitoring frecuency this parameter was clarified to every 1 minute data.
Findings	CL 5 - On equation B1 and B6 is missing the summation sign the correspondent sub-index. CL 6 – The PDD version 10 had errors in the sums of the follow tables: • Table B2 – Parameters and factors for the specific animal category – some sums no correspond • Table B6 – Total project activity emissions for the first CP renewal year – 2019 - some sums no correspond • Table B.6.3. Ex ante calculation of emission reductions • Table B.7 – Total project activity emissions per year CL 8 - On section B.6.3 Ex ante calculation of emission reductions, should be clarified, your number of the table correspond it.
Conclusion	The audit team assessed Section B.6 of the updated PDD version 11 /1/ and the ER calculation spreadsheet /4/. 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 version 21.0 /5/) and applicable tools /6/, /14/, /17/. Among others, the changes in the emission reductions are well justified and due to

	circumstances, such as changes implemented in the GWP_{CH4}, 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 /5/6/10/11/12/13/14/. The audit team also confirms that: • All assumptions and data used by the project participants are listed in the revised PDD and its annexes, including their references and sources; • All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the revised PDD and its annexes; • All values used in the revised PDD and its annexes are considered reasonable in the context of the proposed CDM project activity; • The baseline methodology and applicable tools have been correctly applied to calculate baseline emissions, project emissions, leakage and emission reductions; • All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD and its annexes CL's 5, 6 and 8 were closed. In conclusion, the DOE determine that was it adequate justification has been provided and that the equations and parameters are correct, in accordance with the applied methodology and Tool, and the other applied methodological regulatory documents, according to VVS- the paragrapah 110-112

D.5. Validity of monitoring plan

Means of validation	The validation team assessed the monitoring plan on revised PDD version 11 /1/, in order to determine whether this section is in accordance with all relevant applicable requirements set out on VVS /10/, the number of parameters was confirmed against the methodology /5/ and relevant methodological tools /6/, /14/ /17/; for data collection/archiving, QA/QC procedures. The PP In response to the request of the CDM team UNFCCC secretariat, was realiced adjustments the parameters, relative to **monitoring frecuency** both in the parameter and the B9 table as follow: $FCH4_{,m}$ - Every minute and aggregated monthly $MS\%_{i,y}$ - Annually, based on daily measurement and monthly aggregation, $Np_{,y}$ - Annually, based on monthly records, ndy - Annually, based on daily records and monthly aggregation,

	Qmanure LT,y - Annually, based on daily measurement and monthly aggregation. Relative to the parameter Wsite (Average animal weight of a defined livestock population at the project site in year), in Measurement methods and procedures that, about on a random sampling approach applied in each category, it is important to mention that PP explain: "*The quarterly weight of the animals for each producer of the PDD is made following COOASGO's internal procedure, that is not under the PP's control";* However the PP each one projects on site *presents the actual animal weight by using Brascarbon form 16.001 after a cross-check by the PP, using the real information after each batch of animals exits each farm; the template was designed to quarterly report animal weight per category. It is important to highlight that this approach is made only to attend the quarterly report frequency. Since the 100% of the animals are weighted around 5 to 6 months and the PP has access to all those records, the information reported quarterly is. than crosschecked with the actual data and corrected if needed.* The DOE consider that the PP´s procedures, the description correspond to basic steps and documents complies with the required methodologies; In this case, is not mandatory for the DOE to conduct an on-site inspection at validation for the proposed CDM project activity because Its *estimated annual average of greenhouse gas (GHG) emission reductions or net anthropogenic GHG removals is less than 100,000 t CO_2 eq* (VVS v.2, paragraph 30.(a)), thus, this parameter will shall be verified on site future inspections to be applied, and with the use compared lists, records, conducting interviews, documents, check list, cross-check files, in accordance with (VVS-PA v.2, paragraphs 117-119). ICONTEC verified through of virtual interviews with relevant personnel, that the project is equipped with equipments that operate over monitoring operational procedures to measure of the parameters. Also, the PP provided training to the operational staff with respect to the monitoring plan has been established to maintain installed equipments, as well as to ensure the measurement´s accuracy of data reported.
Findings	CL 10- There are errors on parameters Methane content in biogas in the year "y" - $WCH_{4,y}$ and 2) "FCH4, ,m Mass flow rate of methane in the residual gaseous stream in the minute m. CL 11- The reference Methodological tool: Project emissions from flaring it, no corresponds to the last version available on the web page of the UNFCCC. CAR 1-The PP does not used the version 03.0 of the Tool 06 methodological tool: Project emissions from flaring, that is the actual version available on the web page of the UNFCCC as to: - On section B.6.2 Data and parameters fixed ex ante, the PP does not include the parameter SPECflare established on the version 3.0 of the tool 06 Methodological tool: Project emissions from flaring. - On section B.7.1 Data and parameters to be monitored, the PP does not include the parameter Flamem established on the version 3.0 of the tool 06 Methodological tool: Project emissions from flaring.

	The PP was requested to introduce two parameters: - In B.6.2 $SPEC_{flare}$ Manufacturer's flare specifications for temperature, flow rate and maintenance schedule - In B.7.1. $Flame_m$ Flame detection of flare in the minute m
Conclusion	ICONTEC confirmed that the PP included the parameters necessary to meet the requirements set out in the methodology /5/ and the methodological tools used to determine the baseline emissions, emission reductions, project emissions and leakage emissions. The monitoring plan is valid since includes those parameters included in the original monitoring plan described on revised PDD version 12 /1/ and includes those parameters required by the methodology and relevant methodological tools /6/ /14/ /17/ appropriately. The PP corrected the monitoring plan on PDD version 12 and the CL 10, CL 11 and CAR 1 were closed. The description of the monitoring plan contains all necessary parameters, that they are described, and that the means of monitoring described in the monitoring plan comply with the requirements.

D.6. Crediting period

Means of validation	The audit team assessed whether the revised PDD version 12 /1/ presented the start date correctly. On section C.3.2 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, 01/11/2019 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 virtual call. The type of crediting period for this project activity is renewable three times by 7 years.The first crediting period of the project activity was 01/11/2012 to 31/10/2019. Therefore, it is expected that second crediting period commences on the day immediately after the expiration of the first crediting period (November 1st, 2019).
Findings	CL 12 – On section C.3.1 the PDD version 11/1/ was found error in the type of crediting period, the PP indicate as first period.
Conclusion	As per the requirement of VVS /10/ 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. The PP corrected on PDD version 12 and the CL 12 was closed.

D.7. Project participants

Means of validation	The audit team verified the name of the project participant in accordance with the information of the project activity in the UNFCCC website and taking into account the withdrawn of one of the PP (withdrawn as of 09/01/2018). In addition, it was checked the name of the farms and the farm owners.
Findings	In the PDD/1/ version 10 was finding the follow:

	CL 1 - Project Participants was not updated in the PDD(version 10,page 1), relative to SP Carbono because the parties Brascarbon Consultoria, Projectos e Representacao S.A. was withdrawn as of 09/01/2018 however, it had not changed it.
Conclusion	The audit team verified the correctness of the name of the PP as well as the correctness in the names of the owners of the sites and the names of the different sites of the project activity. It is the conclusion of the audit team the PDD version 12 /1/ presents the same of the PP in a correct manner as well as the project sites names and owners are correctly referred. The PP correctly modified the revised PDDs /1/ according to the correct form version 11.0 /19/; therefore, CL 1 was closed.

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, applied methodologies, standardized baselines or other methodological regulatory documents[1]	N	N/A	N/A
Corrections	N	N/A	N/A
Change to the start date of the crediting period	N	N/A	N/A
Inclusion of a monitoring plan	N	N/A	N/A
Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines, or other methodological regulatory documents	N	N/A	N/A
Changes to the project design	N	N/A	N/A
Changes specific to afforestation and reforestation project activities	N	N/A	N/A

SECTION E. Internal quality control

This report includes the validation findings that underwent a technical review before being submitted to the project participants.

The technical review and the quality control of the process was performed by an internal technical reviewer in accordance with ICONTEC internal procedures for carrying out validation, verification and certification audits of CDM project activities. The technical reviewers are qualified in accordance with the professional qualification scheme for CDM validation and verification activities established by ICONTEC.

SECTION F. Validation opinión

The audit team performed the validation of the renewal of the crediting period of the project "BRASCARBON Methane Recovery Project BCA-BRA-09, Brazil" (registration number 5492) 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.

[1] Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied(selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

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) /13/, 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 21) /5/, 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 (538,573 t CO2e), Project emissions per year (180,236 t CO2e), Leakage emission (0 t CO2e)) and Emission Reductions (358,337 t CO2e), of the entire period to be renewed (second crediting period, seven (7) years from 01/11/2019 to 31/10/2026) are obtained following the applicable methodology as well as the methodological tools 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.

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 13 comply with the relevant requirements in CDM Project standard related to the renewal of the crediting period. In summary, the fulfilment of the specific requirements and methodological framework requirements were satisfactory assesses. ICONTEC thus, requests the renewal of the crediting period of the project as a CDM project activity.

Appendix 1. Abbreviations

Abbreviations	Full texts
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
CL	Clarification request
CAR	Corrective Action Request
MP	Monitoring Plan
PRC	Post Registration Changes
PP	Project Participants
GWP_{CH4}	Global Warming Potential of Methane
BRC	Brascarbon

Appendix 2. Competence of team members and technical reviewers

Curriculum Vitae

Adriana Mercedes Bermúdez Bedoya

CDM LEAN AUDITOR AND TECHNICAL EXPERT (SECTOR 13)

Profile
Leader Professional with broad experience in the agricultural and environmental sector, in both technical and administrative areas, with emphasis on Innovation and Quality, inspections and audits of norms in the certification of managerial processes, services and products, on oversight of compliance in the execution of publicly funded projects, on services related to consultancy, planning, managing and developing projects in the field of agricultural sustainability, agro-industrial and environmental sustainability, production and commercialization of organic products, resource management and knowledge management.

Undergraduate	Veterinary Medicine/ Zootechnics, University of Caldas, Manizales, Colombia, 1992
Postgraduate	Master's Degree in Agroecology, University of Caldas, Manizales, Colombia, 2003 Specialization in Management, University Externado de Colombia, Bogotá, Colombia, 2014

Specialized Courses last 7 years

- Online Course – Overview of the Risk Management standard NTC ISO 31000: 2011 (virtual 16 hours – 16 hours self-employment) Certification Icontec Internacional Bogota D.C: - August 26, 2019 – September 16, 2019.

- Certificate Of Traininig – FSPCA (Food Safety Controls Alliance), FSPCA PREVENTIVE CONTROL FOR HUMAN FOOD – given by IICA – Universidad Javeriana and TFFC approved by the FSPCA Alliance – the course has a certificate of attendance and approval as a "Qualified Individual in Preventive Food Controls for Humans "Approach of the Food Safety Modernization Law (FSMA). BogotaD.C. February 19, 2019 to February 21, 2019. The certificate has an approval date of March 4, 2019.
- Internal Auditor Course – ISO 27001: 2013 – Information Security Management Systems (virtual 32 hours) Certifying SGS Colombia Bogotá D.C: - October 8, 2018 – November 5, 2018.
- Program of Leader Corpoica – EDIME (INALDE Bussines School Universidad de La Sabana) 60 hours Bogota D.C. – October 21 – December 2, 2015.
- Academic Mission: Beca Excelencia Académica -Curso Sobre Capital Intelectual Y Gestión Del Conocimiento – Universidad Externado De Colombia – Ica 2- Universidad Autónoma De Madrid - Madrid España 5 AL 9 de september, 2016 – □ate d □ate do , september 12 – 18, 2016
- Academic Mission: PROGRAM "SILICON VALLEY – THE HEART OF THE HIGH-TECH WORLD IN THE 21 st CENTURY", Universidad Externado de Colombia (Facultad de Administración de Empresas – Especialización en Gerencia) – IDATeam (IDA International Development Accelerator) San Francisco, California, EEUU, □ate 14 – 19, 2013.

Work Experience and Accomplishments

Organization ICONTEC – (DOE). Private – Environmental – Bogotá D.C. Position Lead Auditor (July 2019 – present).
Position: Lead auditor freelance of Clean Development Mechanism under the Kyoto Protocol, VCS and Gold Standard projects in validation and verification activities and technical expert in Agricultural issues.

Organization Alexander von Humboldt Institute for Biological Research **-**Bogotá D.C. Consultant (January 2020 – present)
Position: Consultant - Elaboration of the thematic and methodological contents of the document: "Guide of Productive Reconversion of agricultural activities in paramos", to the productive systems of bovine milk and meat in wasteland "

Organization SENA (Regional Coordination Group for Professional Training), Regional Directorate
Position Support for the Supervision and Auditing of agreements of the Strategy of Expansion of Coverage of the Regional Directorate (April, 2019 – December 2019)
Monitoring and comprehensive control of the derived agreements and framework agreements of the Expansion of Coverage program – both for the technical, administrative and legal components, as well as financial of the agreements.Systemic and comprehensive supervision

Organization GARSSA CONSULTING SAS. Audit and Oversight
Position Oversight Manager (August 2017 – January 2019)
Management and Coordination of Auditing of Public Projects (Leading work teams, which includes monitoring and control of agreements assigned to the Audit in the agricultural **-** Coordination of technical oversight team for over 20 projects co-financed by Ministries Commercial and Agricultural in subsectors such as animal husbandry, agroindustry, and environmental productive

sector assigned by the firm - Support in Consulting services on Project Evaluation issues, as well as Training on related, audit, Supervision and Interventory topics – Planning, monitoring and evaluation of Technical Program – Technical support and orientation for oversight personnel

Organization AGROSAVIA (Colombian Agricultural Research Corporation)
Positio. Regional Innovation Coordinator (July 2015-June 2017)- Research Center Rionegro (Ant.)
-To promote the relations and articulation of actors of the SNCTA (National System of science agro-industrial technology), in regions and systems of innovation in the territories, - To promote networks in the centers among the actors of the system, in accordance with the guidelines of the corporation – To contribute to the implementation of the model of knowledge management in networks, updating of national Agenda of Research, technological Development and innovation - To incorporate innovation in terms of research, transfer and linkage activities of the corporation to be in the region “applied to measure”. Director in charge of the Research Center 1. Period from December 17, 2015 to January 8, 2016 2. Period from 18 July to 7 October 2016

Organization SENA (National Vocational Training Service), General Directorate Area of Innovation, Technology Development and Competitiveness
Position Group Leader Innovation and Technology Development (January 2012 – July 2015)
Support to the program coordinator for Innovation, Technology Development and Competitiveness in managing and designing SENA’s agreements. – Support for the Supervision and Auditing - Review and quality check of legal advisors technical reports to the program coordinator. – Analyze information relevant for control and monitoring of contracting parties and follow-up on oversight mechanisms. Equally, support and adv- ise the SENA on issues like technology corridors, innovation and technology development policies and roundtable on biotechnology and represent the organization in events related to those fields.

Position Support Group Coordinator Agreement Oversight (November 2011 – December 2012)
-Technical supervision of agreements by the group Innovation and Technology Development. – Coordination of technical and financial reports presented by the group’s contractors. – Monitor agreements, elaborate status reports and issue corresponding recommendations. – Verify existing quality management systems and implementation of best practices in manufacturing, agriculture and environmental.

Organization Certificadora SGS Colombia SA Bogotá D.C.,
Position Tutor and Auditor, freelance (2007 – 2015) – Participation in product certification processes of quality standards in the agricultural and environmental sector. – Trainer and internal auditor for GlobalG.A.P., private sector associations and national regulations. – Elaboration of training material and conduct training in Audit Leadership and Internal Audits for private sector associations and public entities within the GlobalG.A.P and ICA (Colombian Institute of Agriculture) best practices framework.

Organization Universidad Nacional de Colombia – Centro de Investigación y Desarrollo (CID) de la Facultad de Ciencias Económicas Oversight Office for SENA Projects
Position Oversight Coordinator (July 2009 – July 2011) – Coordination of technical and financial oversight team for over 80 projects co-financed by the SENA in subsectors such as animal husbandry, agroindustry and mining. – Planning, monitoring and evaluation of Innovation Program. – Technical support and orientation for oversight personnel. – Representing the Office Director.

Organization Alcaldía de Bogotá (Office of the Mayor) Secretaria de Desarrollo Económico – Dirección de Desarrollo Económico Rural y Abastecimiento Alimentario (DERAA)

Position. Consultant (March 2007 – June 2009) – Development of policy guidelines and proposals for rural life in Bogotá, oriented towards sustainable production and valuation of environmental services within the implementation of the Public Policy on Rural Life and Food and Nutrition Security.- Support of grassroots organizations for the farmer's market platform, organic production, seed banks and conversion of production. Implementation of inter-agency agreements with District Secretaries of Environment and Health, the Alpina Foundation, Ministry of Agriculture, the Regional Environmental Authority of Cundinamarca (CAR), the National Institute of Food and Drug Surveillance and universities in areas such as green markets and organic production. – Technical advisory in sustainable practices for rural life in Bogotá and the Central Andean Region.

Organization Corporación Colombiana Internacional (CCI) Bogotá D.C.,
Position. Coordinator of Certification Unit (September 2005 – January 2007) – Management of the unit, accredited to certify organic products complying with national and international standards. – Advisory to the Ministry of Agriculture and Rural Development on elaboration of ecologic production standards. – Advisory to private sector animal husbandry on implementation of best practices, i.e. Pig Farmers Association's Guide on Best Practices, participant in the National Roundtable on Best Practices in Animal Husbandry of the Ministry. – Monitoring of companies, audits of over 60 projects, as well as training of inspectors and auditors working for animal production companies.

Position. Coordinator of Certification Program in the Area of Innovation and Quality (January 2005 August 2005) – Coordination tasks of the program that later became an independent business unit Certification Unit (see above).
Position Consultant Macro process Innovation and Quality (February 2004 – December 2005) – Field trips as auditor for the Certification of Ecological Products Program and diffusion of the program. – Elaboration of proposals for co-financing of activities related to the Macro process.

Organization Worker Cooperative of Environmental Professionals (PROAM) – Activities assigned by the Subdirectorate of Natural Resource Administration of the Regional Environmental Authority of Caldas (CORPOCALDAS) Manizales (Caldas)
Position. Project Coordinator Education and Participation of Citizens for the Protection of the Environment (February 2003 – December 2003) – Coordination and orientation of the project in accordance with legal guidelines contained in the National Policy on Environmental Education and based on the National Development Plan. – Lead technical advisory team. – Elaboration of proposals and management of the Technical Secretariat of the Department's Technical Interinsitutional Committee of Environmental Education. – Coordination of Community Environmental Promoters Project. – Advisory on land use planning in areas such as clean production, alternative agricultural production, agroecology in rural communities and agroindustries, and wildlife.

Organization. El Alcaravan Foundation – Association Cravo Norte (Occidental de Colombia: OXY Ecopetrol) – Position Coordinator Livestock (July 2002 – February 2003) – Coordination of technical staff in the Foundation's livestock projects and corresponding monitoring in municipalities of Saravena, Toledo, Arauquita and Arauca. – Coordination of activities of the farm owned by the Foundation and technical advisory on projects and the Foundation's users in the region. – Tutoring the veterinary medicine students that did their internship on the farm. – Establish and promote agroecological guidelines for the Foundation's lines of action in the rural sector.

Organization SENA, Regional Office Caldas -Manizales
Position. Teacher Area of Agriculture and Environment (April 2002 – May 2002) Teaching the course Captivity as part of the specialization program Technical Professional in Natural Resource Management.

Organization University of Caldas – Faculty of Agricultural Sciences – Degree Program Environmental Education. Manizales, Caldas
Position Teacher (April 2001 – March 2002) Teaching Environmental Resources Management I, planning and advisory on student's investigations.

Organization Empresa de Servicios Ambientales E.S.A. Ltda. Barranquilla,Atlántico
Position Support Professional Environmental Services (July 2000 – December 2000)
-Advisory on and elaboration of a document for environmental services and land use plans of riverside municipalities of the Magdalena River (Departments Atlántico, Bolívar and Cesar) and presentation of results to local authorities and contractors. – Elaboration of maps and documents related to the agricultural land use in the municipalities, both as diagnose and as an outlook (use, aptitude, conflicts, systems of production), using GIS and doing fieldtrips for data recollection, with emphasis environmental law.

Organization Alcaldía Municipal de Quinchía, Risaralda
Position Coordinator Land Use Plan (July 1998 – December 1999) – General coordination tasks in the elaboration of the municipal land use plan on accordance with the relevant legal framework.
Position. Director of UMATA – Unidad Municipal de Asistencia Técnica Agropecuaria (July 1993 January 1998) – As Director: Project Management, agricultural planning, project design and coordination of technical and □ate don□nal staff for the assistance to 500 small farmers in the municipality. – As Veterinary Zootechnician: Direct technical assistance in animal health and animal production (all relevant species) to livestock projects.
Position Veterinary Zootechnician, support professional (March 1993 – June 1993) – Livestock diagnosis and inventory and technical assistance (animal health and animal production).

Organization Las Malvinas Farm. – Marquetalia, Caldas
Position. Farm Manager (October 1992 – February 1993) – Administrative and technical tasks of general management, animal health and animal production (pure-blooded Brown Swiss and pigs in phases from breeding to fattening).

Publications

- Contribution of articles, technical notes and general information on Certified Ecological Production, Green Markets and Best Practices in Animal Husbandry to national newspapers, *Revista IFOAM* and national journals, i.e. *Carta Ganadera*, *Acovez*, *Fedegan* and on the CCI´s website (2005 – 2007).
- "Guía de Buenas Prácticas Pecuarias para el Subsector Porcícola" (2005 – 2006); Co-author and Coordinator of the Agreement CCI – Asoporcicultores – FNP.
- "Protocolo de Buenas Prácticas Pecuarias" (2005); Co-author and tutor; Agreement CCI – Colciencias.
- "Guía para el Montaje de Sistemas de Control Interno dentro de un Sistema de Producción Ecológica" (2004), Co-author; Ministerio de Ambiente, Vivienda y Desarrollo Territorial, Grupo de Mercados Verdes – CCI, Subdirección de Innovación y Calidad; Bogotá.
- "Nuevas Especies de Bejucos 'Mataganados' en el Magdalena Medio" (Enero-Junio 2004); Revista Veterinaria y Zootecnia de Caldas, vol. 12, no. 1; Manizales.
- Articles on ecological stockbreeding in the journal of the *Comité de Ganaderos de Caldas* (Manizales) and the journal of *ANALAC (Sede Bogotá)*, from February to March 2003.
- Academic Module "Gestión Ambiental I" (2001); Co-author; Programa de Educación Ambiental de la Facultad de Ciencias Agropecuarias de la Universidad de Caldas; Manizales.
- "Alimentación Alternativa en Sistemas de Producción Piscícola en Fincas de Pequeños Productores" (1998-2000); Master's □ate .
- "Estudio del Complejo Mataganado en el Oriente Del Departamento de Caldas" (1992); Undergraduate □ate .

Coursework and Seminars, by subject (2007 – 2013)

Quality and Innovation

- Update: *ISO 19011:2011*; Centro de Capacitación SGS, Bogotá D.C.; February 2012.
- Training Workshop: *Módulo Base para Cultivos* and *Curso GRASP – Normativa GlobalG.A.P., versión 4*; Organized by FoodPLUS GmbH, GlobalG.A.P.; Hotel Ramada Herradura, San José de Costa Rica, Costa Rica; November 2010.
- Seminary: *Segundo Seminario Taller para la Industria Alimentaria Colombiana* – INNOVAL 2010: *Innovación en la Industria Alimentaria*; Alimentos, Axioma, LOGyCA; Bogotá D.C.; June/July 2010.
- Internal Training SGS: *International Food Standard (IFS), □ate do 5*; Centro de Capacitación SGS, Bogotá D.C.; August 2008.
- Course: *Auditor Líder ISO 14001:2004*; Centro de Capacitación SGS, Bogotá D.C.; July 2008.
- Course: *Inspector Interno EUREPGAP*; Centro de Capacitación SGS, Bogotá D.C.; June 2007.

Competitiveness

- Course: *Competencias de la Empresa Porcícola Moderna*; Asociación Colombiana de Porcicultores – Fondo Nacional de la Porcicultura; Hotel Los Héroes, Bogotá D.C.; June 2008.

Fair Trade and Green Markets

- Forum: *Primer Foro Nacional e Internacional de Agricultura Ecológica*; Cámara de Comercio de Bogotá, Federorgánicos; Bogotá D.C.; May 2013.
- Forum: *Segundo Foro y Feria Regional de Comercio Justo*; Secretaría Distrital de Desarrollo Económico, Alcaldía Mayor de Bogotá; Centro de Convenciones Gonzalo Jiménez de Quesada, Bogotá D.C.; October 2007. (Participation in organizing team).

Rural Economic Development

- Course: *Elementos para la Formulación de un Plan de Desarrollo en Turismo Rural, con Participación Comunitaria*; IICA Colombia; Auditorio IICA, Bogotá D.C.; November 2007.

Oversight Action

- Seminary: *Seminario Internacional de Interventoría y Seguimiento de Proyectos Públicos "Control Eficiente con Compromiso Social"*; Centro de Investigaciones para el Desarrollo (CID), Facultad de Ciencias Económicas, Universidad Nacional de Colombia; Bogotá D.C.; August 2009.

Cleaner Production

- Seminary: *Seminario Internacional de Producción Más Limpia*; UNAD y Corporación Autónoma de Cundinamarca (CAR); Bogotá D.C.; October 2011.

Corporate Social Responsability (CSR)

- Congress: *Tercer Congreso Pacto Global – Liderazgo en la Construcción de Desarrollo Sostenible*; Cámara de Comercio de Bogotá, Red Colombiana del Pacto Global; Bogotá D.C.; May 2013.

Food Security

- Seminary: *La Seguridad Alimentaria en Riesgo: La Perspectiva de las Ciudades*; Secretaría Distrital de Desarrollo Económico, Alcaldía Mayor de Bogotá; Bogotá D.C.; September 2008. (Participation in organizing team.)
- Exhibition (with academic agenda): *Segunda Feria de la Alimentación*; Secretaría Distrital de Desarrollo Económico, Alcaldía Mayor de Bogotá; Bogotá D.C.; October 2011. (Participation in organizing team.)

ERIKA LUCIA URREGO ORTIZ
Lead auditor and Technical Expert in Sectoral Scope 13

MAIN PROFESSIONAL EDUCATION

MSc on Quality and integral management. Universidad Santo Tomas en Convenio con ICONTEC. Bogotá, Colombia. April, 2013.

Magister Environmental Management Systems. Universidad Externado de Colombia. Bogotá D.C. September 2002

Zootechnician, Universidad Agraria de Colombia, Bogotá D.C. Colombia. August 1997.

Lead Auditor on Energy management systems under ISO 50001:2011 and version 2018. Bogotá, Colombia. Since July 2015.

Lead auditor on Quality Management Systems under ISO 9001, ICONTEC, Bogotá, Colombia. Since 2006.

Lead auditor on OHSAS 18001 and ISO 45001, ICONTEC, Bogotá D.C. Since July 2005.

Lead auditor Environmental management system under ISO 14001, ICONTEC, Bogotá, Colombia. Since 2002.

Updating on CDM Course, Ministry of Environment, Housing and Territorial Development, Bogotá D.C, Colombia. 2006

PROFESSIONAL EXPERIENCE

• ICONTEC (2006 – Actual)

To prepare and perform the certification services assigned as per her career plan qualification, according to the stated on the procedures. To provide guidance to the certification costumers about the technical aspects of the assigned services provision. To participate in changing or designing certification services, by changing or creating the respective procedures. Perform audits on schemes of ISO 9001, ISO 14001, OHSAS 18001, ISO 45001, ISO 50001. Validation and verification of CDM projects like technical expert and lead auditor to scope 13.

• ASOCIACION COLOMBIANA DE PORCICULTORES-FNP (2003 – 2006) (Colombian Association of Pig Farmers)

To coordinate the activities to be performed by the Environmental Window Program in the various country areas. To allocate and execute resources engaged under the Cleaner Production agreements signed together with several environmental authorities. To lead the CDM project, focused to reduce methane (CH4) emissions issued by animal waste.

To be aware of the Ecuadorian and Chilean methodologies already approved by the CDM's Executive Board for Hog Breeding Sector to elaborate a proposal for the hog breeding sector together with the Ministry of Environment, Housing and Territorial Development in order to join farms to CDM projects.

- FICHTNER GmbH & Co. KG (2001 – 2002)

To prepare, design and apply surveys focused to identify power consumption in the sector of slaughter, processed meat and food concentrate for animals

- Regional Environmental Authority (CAR Sumapaz) 1998 – 2001

To support the environmental management unities on technical concepts of processes, permissions, sanctions, control, monitoring and assessment in the proper and timely management of the Sumapaz area's natural resources.

EXPERIENCE IN CDM ACTIVITIES

Lead auditor on validation MDL:

1. Validation of Macano Small Hydro Power Plant, Panamá
2. Validation of Montenegro Landfill Gas Recovery and Flaring, Colombia
3. Validation of Monteria Landfill Gas Recovery and Flaring, Colombia
4. Validation of Pirgua Landfill Gas Recovery and Flaring, Colombia
5. Validation of Tunjita Diversion Hydroelectric Project, Colombia
6. Validation of El Toqui wind power project, Chile
7. Validation of Los Angeles Landfill Gas Flaring Project, Colombia
8. Validation of Ferreira Gomes Hydro Power Plant CDM Project, Brazil
9. Validation of BRASILM 1 - Avoidance of Methane Emissions through Composting of Manure Waste, Brazil
10. Validation of CGR Catanduva Landfill Gas Project, Brazil
11. Validation of Macaubas Landfill Gas Project, Brazil
12. Validation of Palmaceite Wastewater Treatment and Biogas Utilization Project, Colombia
13. Validation of Teresina Landfill Gas Project, Brazil
14. Validation of Maceio Landfill Gas Project, Brazil
15. Validation of SHP Morro Azul CDM Project (JUN1164), Colombia
16. Validation Doña Teresa Small hydro prower plant, Colombia
17. Validation Biogas recovery and heat generation from Palm Oil Mill Effluent (POME), Coopeagropal. Costa Rica.
18. Validation Panuco Bagasse Cogeneration Project. México.

Lead auditor on verification MDL:

1. Verification of Biogas energy plant from palm oil mill effluent, Guatemala 2
2. Verification of Doña Juana Landfill gas-to-energy project, Colombia
3. Verification of Tres Valles Cogeneration Project, Honduras
4. Verification of Landfill Gas to Energy Facility at the Nejapa Landfill Site, El Salvador, El Salvador
5. Verification of La Venta II, México
6. Verification of Jepirachi Wind Power Project, Colombia
7. Verification of Santa Ana Hydroelectric Project, Colombia
8. Verification of BRASCARBON Methane Recovery Project BCA-BRA-01, Brazil
9. Verification of BRASCARBON Methane Recovery Project BCA-BRA-02, Brazil
10. Verification of BRASCARBON Methane Recovery Project BCA-BRA-03, Brazil

11. Verification of Ciudad Juarez Landfill gas-to-energy Project, México.

Lead auditor renewal crediting period:

1. Monte Rosa Bagasse Cogeneration Project (MRBCP)

Lead auditor on other schemes:

1. Validation VCS de Reforestación de áreas de pastura en la Sociedad Agrícola de Interés Social "José Carlos Mariátegui" – Proyecto Joven Forestal, Perú.
2. Validation Gold Standard Energy Efficiency at Ladrillera Alcarraza, Colombia.
3. Validation Gold Standard de Paramonga Bagasse Boiler Project, Perú.
4. Validation and Verification VCS of BRASCARBON Methane Recovery Project BCA-BRA-02, Brazil
5. Validation and Verification VCS of BRASCARBON Methane Recovery Project BCA-BRA-03, Brazil
6. Validation and Verification VCS of BRASCARBON Methane Recovery Project BCA-BRA-05, Brazil
7. Validation and Verification VCS of BRASCARBON Methane Recovery Project BCA-BRA-07, Brazil
8. Validation and Verification VCS of BRASCARBON Methane Recovery Project BCA-BRA-08, Brazil

Specialist

1. Validation of ECC methane capture and combustion from AWMS at dairy farms in Mexico – I, México
2. La Calera Biodigesters Project, Perú

Technical Review

1. Validation of Fuel Switching through change of furnaces at Imusa S.A., Colombia
2. Validation of Cervecería Hondureña Methane Capture Project, Honduras
3. Validation of Paysandú Clean Energy, Uruguay
4. Validation of Securitization and Carbon Sinks Project, Chile
5. Validation of METALDOM Fossil fuel switch from reheat furnace, República Dominicana
6. Validation of Reforestation of degraded/degrading land in the Caribbean Savannah of Colombia, Colombia
7. Validation of Co-composting of organic residues in ORO ROJO's Palm Oil Mill at Sabana de Torres, Colombia
8. Validation of EMGEA Small Hydropower (SHP) Run-of-the-River CDM Project Bundle, Colombia
9. Validation of Energy efficiency at Malvinas Gas Plant, Perú
10. Validation of Marañon Hydroelectric Project, Perú
11. Validation of Santa Rita Hydroelectric Plant, Guatemala
12. Verification of Bio energy in General Deheza –Electric power generation from peanut hull and sunflower husk-, Argentina
13. Validation of Biogas project, Olmeca I, Santa Rosa, Guatemala
14. Validation of CTR Rosario Landfill Gas Project, Brazil
15. Validation of SHP Itaguacu CDM Project (JUN 1146), Brazil
16. Validation of Taurichuco Hydropower Project, Perú
17. Validation of Feira de Santana Landfill Gas Project, Brazil
18. Validation of Doña Juana Landfill gas-to-energy Project, Colombia
19. Renovación Inversiones Hondurenas Cogeneration Project

20. Validación SHPs Tambaú, das Pedras and Rio do Sapo CDM Project (JUN1132), Brazil
21. Validación SHPs Poço Fundo and Providência CDM Project (JUN1133), Brazil
22. Validación Santa Rita Hydroelectric Plant, Colombia
23. Validation Conservation and reforestation of degraded areas in Barbosa, Colombia
24. Verification Doña Juana Landfill gas-to-energy Project, Bogotá, Colombia.
25. Verificación Monomeros nitrous oxide abatement project. Barranquilla, Colombia.
26. Verification BRT Bogotá, Colombia: TransMilenio Phase II to IV
27. Verification BRT Macrobus Guadalajara, Mexico
28. Verification Inversiones Hondurenas Cogeneration Project, Honduras.
29. Verification Incauca S. A. Fuel Switch from Coal to Green Harvest Residues CDM Project. Colombia.
30. Verification Brascarbon 14, -Brazil.

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1	BRASCARBON	PDD version 10 PDD version 11 PDD version 12 PDD version 13	date done: 06/03/2020 date done: 01/06/2020 date done: 20/08/2020 date done: 29/09/2020	Project participant
2	BRASCARBON	Registered PDD (version 9) Date on: 20/01/2017	https://cdm.unfccc.int/filestorage/A/I/0/AI0Y9HWB3E1KJCFVL2GO6PN4ZUD7MT/BCA-BRA-09_20012017_v9_clean.pdf?t=Qkh8cWJtdWQ1fDDWemqm5PLfnWP79B0i_qQz	UNFCCC web page
3	ICONTEC	Verification report 1.1 10/01/2020	https://cdm.unfccc.int/filestorage/T/N/W/TNWCHQBAS91K856G4F32YZMERLDP7X/VerRep%20Draft%20BCR%2009%2029%20Jan%20Answer%20Findings%20JC%20clean.pdf?t=d2p8cWJtdWk3fDAm96S1Y6sje6htCjO7CMpt	UNFCCC web page
4	BRASCARBON	CER Sheet 5492 BCA-BRA-09 CER Sheet 5492 BCA-BRA-09_v2	Excel file Excel file	PP
5	UNFCCC	Methodology AMS.III-D version 21.0	https://cdm.unfccc.int/filestorage/1/A/W/1AWXEKHVTYF423LCN56Z9GIMQOS8JR/EB96_repan09_AMS-III.Dv21.pdf?t=QXh8cWJiaWl4fDDOSL74-3iz4X_Qm5UNH3T3	UNFCCC web page

6	UNFCCC	Tool 06 Methodological tool: Project emissions from flaring version 03.0	https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-06-v3.0.pdf	Others
7	UNFCCC	Guidelines for sampling and surveys for CDM project activities and programmes of activities version 04.0	https://cdm.unfccc.int/filestorage/e/x/t/extfile-20151023152925164-Meth_GC48_-ver04.0-.pdf/Meth_GC48_%28ver04.0%29?t=SGh8cWI4YTJ1fDDWspqgG_y3ZXY_SM3U_hN-	Others
8	UNFCCC	Checklist For Requests For Renewal Of Crediting Period Of Project Activities Version 02.0, 23 august 2019	https://cdm.unfccc.int/filestorage/e/x/t/extfile-20190823092954226-RCP_PA_check01.pdf/RCP_PA_check01.pdf?t=VW58cTlpbWN3fDAoci3ErBCEneq7jSTBk_k8	ICONTEC
9	UNFCCC	Validation report form for renewal of crediting period for CDM project activities (Version 03.0) - CDM-RCPV-FORM	https://cdm.unfccc.int/filestorage/e/x/t/extfile-20190531074312212-Ren_form05v3.pdf/Ren_form05v3.pdf?t=VFl8cTlpb2dlfDBFY1EgN3cr3_N6WxvsTdnl	ICONTEC
10	UNFCCC	CDM Validation and Verification Standard – CDM-EB93-A05-STANv02.0	https://cdm.unfccc.int/filestorage/e/x/t/extfile-20181221092105822-Reg_stan06v02.pdf/Reg_stan06v02.pdf?t=T2l8cWIwb29qfDC5ygtUAMxj5k93ze9R50qo	Others
11	UNFCCC	CDM project standard Version 02.0	https://cdm.unfccc.int/Reference/Standards/index.html	UNFCCC website
12	UNFCCC	Clean Development Mechanism Project Cycle Procedure Version 03	https://cdm.unfccc.int/Reference/Procedures/pc_proc01.pdf	UNFCCC website
13	UNFCCC	Too 11- Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting periodî (Version 03.0.1)	https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-11-v3.0.1.pdf	UNFCCC website
14	UNFCCC	Tool 14 -Methodological Tool: “Project and leakage emissions from anaerobic digesters” version 2.0	https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-14-v2.pdf	UNFCCC website

15	UNFCCC	AMS-III.H. Small-scale Methodology. Methane recovery in wastewater treatment Version 19.0	https://cdm.unfccc.int/filestorage/I/2/P/I2PQUV5XSB1O3H7EW6DJ0ANTKRYF9G/EB103_repan08_AMS-III.H.pdf?t=eFp8cWJiMTJ1fDCguuLnZt8XBj2E3eL3SajX	UNFCCC website
16	UNFCCC	CDM project standard for project activities Version 02.0	https://cdm.unfccc.int/filestorage/e/x/t/extfile-20181221092046529-Reg_stan04v02.pdf/Reg_stan04v02.pdf?t=Z1J8cWJia25nfDCHPKZ3GiX2pe_XehroVZgb	UNFCCC website
17	UNFCCC	Tool 8. Tool to determine the mass flow of a greenhouse gas in a gaseous stream	https://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-08-v3.0.pdf	UNFCCC website
18	Brazil Environmental Ministery https://www.mma.gov.br/	Legislation portal.	http://aacpdappls.net.ms.gov.br/appls/legislacao/secoge/govato.nsf	Others
19	IPCC	The value is updated according to EB69 Annex 3,COP/MOP Decision 4/CMP.7 and table 2.14 of the errata to the contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Commitment Period from 2013 onwards.	EB69 Annex 3,COP/MOP Decision 4/CMP.7.	Others
20	UNFCCC	Project Design Document form, version 11.0	https://cdm.unfccc.int/Reference/PDDs_Forms/index.html	UNFCCC website
21	UNFCCC	Validation Report No. 2009-1410 Det Norske Veritas	https://cdm.unfccc.int/filestorage/4/1/KFR28VUIANSO6H1BJPLMQ3TDYXW905.pdf/5492-FVR-1%20Nov-12.pdf?t=NHJ8cWJtdW94fDAfZ5TqKNPN2k3_GUyZKXZE	UNFCCC website

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

Table 1. CL from this validation

CL ID	1	Section no.	D.7.	Date: 30/04/2020
Description of CL				
Please clarify the host parties, according with the information on the webpage UNFCCC, Brascarbon Consultoria, Projetos e Representacao S/A was withdrawn as of 09/01/2018; actually is SPCarbono Créditos de Carbono S.A. VVS Version 02.0, paragraph 406.				
Project participant response				**Date:** 22/05/2020
This situation was a typo and was corrected in revised version 11 of the PDD.				
Documentation provided by project participant				
Revised PDD version 11.				
DOE assessment				**Date:** 29/05/2020
The audit team compared the revised PDD version 10 corrected, the information provided the MoC statement, in the UNFCCC website (https://cdm.unfccc.int/Projects/DB/DNV-CUK1323422275.71/view) and 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 Authorization date May 12, 2017. (https://cdm.unfccc.int/filestorage/M/7/R/M7RTBH3O1F6L2KE58N4CZUJWI0AQXV/5484_LoA_Brazil_merged_2017.pdf?t=Nkd8cWE2YTJwfDA4V0LdrXjt58cae_MYTFXE), the name of the PP is SPCarbono Créditos de Carbono S.A., this finding is closed.				

CL ID	2	Section no.	D.1.	Date: 30/04/2020
Description of CL				
The name of the project is 09 and it is presented as 4A, please make the change and review throughout the PDD.				
Project participant response				**Date:** 22/05/2020
This situation was a typo and was corrected in revised version 11 of the PDD.				
Documentation provided by project participant				
Revised PDD version 11.				
DOE assessment				**Date:** 29/05/2020
The PDD was corrected, the audit team verified on PDD version 11 the correction of the name of the project. This finding is closed.				

CL ID	3	Section no.	D.1.	Date: 30/04/2020
Description of CL				
The. bibliography source used in table A.1. page 3 of the PDD version 10, is in the Portuguese language; as indicated at RCP_PA check 01-1.1.4. All documents are prepared in English.				
Project participant response				**Date:** 22/05/2020
The. bibliography source used in table A.1. page 3 of the PDD, is in the Portuguese language since it refers to a study. However, in order to attend the English requirement, the English translation was also provided in. Version 10 of the revised PDD.				
Documentation provided by project participant				
Revised PDD version 11				
DOE assessment				**Date:** 29/05/2020
The PDD was corrected, the audit team verified PDD version 11 and the PP found added the translation in English. This finding is closed.				

CL ID	4	Section no.	D.1.	Date: 30/04/2020
Description of CL				
In section A.2. Location of the project activity. The farms do not correspond to the farms of project SPCarbono 09, the information is project SPCarbono 4A. Please, clarify and review all the information contained in PDD especially pages 5 to 7				
Project participant response				**Date:** 22/05/2020
This situation was a typo and was corrected in revised version 11 of the PDD.				
Documentation provided by project participant				
Revised PDD version 11.				
DOE assessment				**Date:** 29/05/2020
The PDD was corrected, the audit team verified on PDD version 11 the correction of farm's name of the project. This finding is closed.				

CL ID	5	Section no.	D.4	Date: 30/04/2020
Description of CL				
In **Establishment and description of baseline scenario:** - The equation B1 *BEy* a(Baseline emissions in year y (t CO2e), described in PDD, is not in accordance with AMS-III.D version 21.0; missing in the summation sign the correspondent sub-index. Please to clarify in all document. /PDD/18 page - The equation B6./ 32/Emissions due to physical leakage of biogas is not in accordance with AMS-III.D version 21.0; missing in the summation sign the correspondent sub-index.				
Project participant response				**Date:** 22/05/2020
The equations were corrected in the revised version 11 of the PDD.				
Documentation provided by project participant				

Revised PDD version 11.
DOE assessment **Date:** 29/05/2020
The Audit Team, verified that the equation B1 and B6 were replaced by the equations accordance with AMS-III.D version 21.0. The finding was closed.

CL ID	6	**Section no.**	D.4.	**Date:** 30/04/2020
Description of CL				
On section B. *Establishment and description of baseline scenario* the sumatory of each/one parameters no correspond with the data of CER Sheet 5492 BCA-BRA-09 xls. Tables as follow: • Table B2 – Parameters and factors for the specific animal category – some sums no correspond • Table B6 – Total project activity emissions for the first CP renewal year – 2019 - some sums no correspond • Table B.6.3. Ex ante calculation of emission reductions • Table B.7 – Total project activity emissions per year Please review all information of data on tables of PDD.				
Project participant response				**Date:** 22/05/2020
The tables were corrected in the revised version 11 of the PDD.				
Documentation provided by project participant				
Revised PDD version 11.				
DOE assessment				**Date:** 29/05/2020
Once the revised PDD version 11 was assessed by the audit team, it was verified the tables were corrected. The finding was closed.				

CL ID	7	**Section no.**	D.2.	**Date:** 30/04/2020
Description of CL				
On section B.6. Equation B7.is mentioned annex 13. *"Tool to determine project emissions from flaring gases containing methane.* This annex is inactive. Please to clarify				
Project participant response				**Date:**22/05/2020
That clarification was corrected in the revised version 11 of the PDD				
Documentation provided by project participant				
Revised PDD version 11.				
DOE assessment				**Date:** 29/05/2020
Once the revised PDD version 11 was assessed by the audit team, it was verified that the references were corrected. The finding was closed.				

CL ID	8	**Section no.**	D.4.	**Date:** 30/04/2020
Description of CL				

On section B.6.3 Ex ante calculation of emission reductions, mentioned that (*i) According to the baseline description in the section B.4, the results from the equations are summarized in the following table B3*. Should be clarified, your number of the table correspond it.

On section B.6.3 Ex ante calculation of emission reductions, should be clarified if the names and dates of the tables and information are not correct:
Table B3 – Baseline emissions for the second CP renewal year – 2017
Table B5 – Total baseline emission per year
Table B7 – *Total project activity emissions per year* – the years mentioned are since 2012 to 2018. Please clarify the monitoring period.

Project participant response	**Date:** 22/05/2020
The tables were corrected in the revised version 11 of the PDD.	

Documentation provided by project participant
Revised PDD version 11.

DOE assessment	**Date:** 29/05/2020
B.6.3. Ex ante calculation of emission reductions was corrected in the PDD version 11. The finding was closed.	

CL ID	9	**Section no.**	D.2.	**Date:** 30/04/2020
Description of CL				
On section B.7. Monitoring plan, the version 18.0 of AMS-III.H. (https://cdm.unfccc.int/methodologies/DB/K7FDTJ4FL3432I1UKRNKLDCUFAMBX7) Methane recovery in wastewater treatment it, no corresponds to the last version available on the web page of the UNFCCC. Please clarify. /45/				

Project participant response	**Date:** 22/05/2020
That methodology reference was updated in the revised version 11 of the PDD	

Documentation provided by project participant
Revised PDD version 11

DOE assessment	**Date:** 29/05/2020
On section B.7. Monitoring plan was corrected in the PDD version 11. The finding was closed.	

CL ID	10	**Section no.**	D.5.	**Date:** 30/04/2020
Description of CL				

Data and parameters to be monitored:

1) Methane content in biogas in the year "y" - $WCH_{4,y}$ = the Data unit is %, it´s not Fraction /52/ and the formula transcription without is "y". Review according to the methodology AMS.III-D version 21.0./18/

2) "$F_{CH4,,m}$ Mass flow rate of methane in the residual gaseous stream in the minute m, clarify the formula - check if they affect the values in the calculation CER's /59/. Review according to the tool Project emissions from flaring Version 03.0.

Project participant response	**Date:** 22/05/2020
The parameters were corrected in the revised version 11 of the PDD	
Documentation provided by project participant	
Revised PDD version 11.	
DOE assessment	**Date:** 29/05/2020
The audit team reviewed the PDD version 11 and verified that was corrected the parameter 2) Mass flow rate of methane in the residual gaseous stream in the minute m.; and the same way that was the parameter 1) methane content in biogas was corrected as for data is WCH4. The finding was closed.	

CL ID	11	**Section no.**	D.5.	**Date:** 30/04/2020
Description of CL				
On section B.7.3. *Other elements of monitoring plan*, in Flare efficiency item, the reference used to the Methodological tool: Project emissions from flaring Version 02.0 it does not the actual version applicable. PDD/ page 66/ Please to clarify in all document.				
Project participant response				**Date:** 22/05/2020
The correct version of the tool was updated in the revised version 11 of the PDD				
Documentation provided by project participant				
Revised PDD version 11.				
DOE assessment				**Date:** DD/MM/YYYY
The audit team verified the corrected in the PDD 11 version, relative to the number version of Tool 06. The finding is closed.				

CL ID	12	**Section no.**	D.6.	**Date:** 30/04/2020
Description of CL				
The section Type of crediting period the PP indicate that the *Renewable crediting period* as the first crediting period. Please clarify in all PDD.				
Project participant response				**Date:** 22/05/2020
The type of crediting period was corrected in the revised version 11 of the PDD				
Documentation provided by project participant				

Revised PDD version 11
DOE assessment **Date:** 29/05/2020
The audit team verified the changes relative to section C.3.1. PDD. The version 11 account the second crediting period. The finding is closed.

Table 2. CAR from this validation

CAR ID	01	**Section no.**	D.5.	**Date:** 30/04/2020
Description of CAR				
On section B.6. *Estimation of emission reductions* of PDD and the section B.7.1 *Data and parameters to be monitored,* the PP does not used the version 03.0 of the Tool 06 Methodological tool: Project emissions from flaring, that is the actual version available on the web page of the UNFCCC. Evidences: - On section B.6.2 *Data and parameters fixed ex ante,* the PP does not include the parameter *SPECflare* established on the version 3.0 of the tool 06 Methodological tool: Project emissions from flaring. - On section B.7.1 *Data and parameters to be monitored,* the PP does not include the parameter $Flame_m$ established on the version 3.0 of the tool 06 Methodological tool: Project emissions from flaring.				
Project participant response				**Date:** 22/05/2020
The correct version of the Tool was updated and the referred parameters included in the revised version 11 of the PDD.				
Documentation provided by project participant				
Revised PDD version 11.				
DOE assessment				**Date:** 29/05/2020

The audit team verified were added two parameters in PDD (version 11), according to the Methodological tool 06: “Project emissions from flaring,

The SPECflare. The PDD/10/page 42 indicates that N/A the Choice of data or Measurement methods and procedures and Purpose of data. The Additional comment mentiones that: “Only applicable in case of enclosed flares. The maintenance schedule is not required if Option A is selected to determine flare efficiency of an enclosed flare”

The parameter Flamem the PDD/10/page 66 indicates in Measurement procedures (if any) that: the PP explain QA/QC procedures like: check the registers in the generated documents.The enclosed flare will regularly undergo a maintenance process subject to the appropriate industrial standards and/or manufacturer´s specifications in order to ensure measurement accuracy.The Monitoring Operational Procedure POP-08 was developed to calculate the flame and it can be found at the Brascarbon Operational Procedure Manual.

The audit team considered this findings are closed.

Table 3. FAR from this validation

FAR ID	N/A	**Section no.**		**Date:** DD/MM/YYYY
Description of FAR				
Project participant response				**Date:** DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				**Date:** DD/MM/YYYY

Document information

Version	*Date*	*Description*
03.0	31 May 2019	Revision to: • Ensure consistency with version 02.0 of the “CDM validation and verification standard for project activities” (CDM-EB93-A05-STAN) and version 02.0 of the “CDM project cycle procedure for project activities” (CDM-EB93-A06-PROC); • Make editorial improvements.

Version	*Date*	*Description*
02.0	31 October 2017	Revision to align with the requirements of the “CDM validation and verification standard for project activities” (version 01.0).
01.0	23 March 2015	Initial publication.

Decision Class: Regulatory
Document Type: Form
Business Function: Renewal of crediting period
Keywords: crediting period, project activities, validation report