



COMPOSTING PROJECT IN SANTA CATARINA



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Summary:

Brief summary of the project activity

The project activity involves replacement of Animal Waste Management System (AWMS) in 13 confinement swine farms in Brazil. The common practice for AWMS is the use of anaerobic lagoons for the manure treatment. These lagoons are high CH₄ emitters. The project activity consists in the installation of mechanized composting units for the manure treatment, which consist in an aerobic treatment, thus, reducing the CH₄ emissions.

During the current monitoring period, only 4 out of 13 swine farms monitored their parameters, and consequently, only these are part of this monitoring period. And they are:

- Altenor Farm
- Granja Silva Farm
- Ramella Farm
- Secco Farm

The project applies the CDM approved methodology AMS-III.F. – “Avoidance of methane emissions through composting”, version 10 for ER calculations and AMS-III.D. – “Methane recovery in animal manure management systems”, version 18 for baseline emission calculations.

Scope of verification

Sustainable Carbon – Projetos Ambientais Ltda. has contracted ESPL to conduct the 4th verification of the project “Composting Project in Santa Catarina” for the period from 01/05/2019 to 31/12/2020 (both days included).

The scope of the verification is to establish/verify that:

- the latest available MR template was used and correctly filled up;
- the project activity has been implemented and operated as per the registered PD and that all physical features (technology, project equipment and monitoring and metering equipment) of the project are in place;
- the monitoring report and other supporting documents provided are complete in accordance with the latest applicable version of the completeness checklist for requests for issuance of VCUs, verifiable, and in accordance with applicable VCS Version 3 requirements;
- the actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan, the approved methodology including applicable tool(s) and/or, where applicable, the approved standardized baseline;
- the data are recorded and stored as per the monitoring methodology including applicable tool(s) and, where applicable, the standardized baseline.

In addition, ESPL has also been contracted to conduct the verification of SOCIALCARBON Standard of the project activity at Point three (3), with regard to its relevant requirements, for the same monitoring period.

Conclusion

ESPL has performed the verification of the VCS project “Composting Project in Santa Catarina”, with VCS Project ID 1144, for the monitoring period from 01/05/2019 to 31/12/2020 (both days included).

During the present VCS verification, 03 CARs and 02 CLs were raised and successfully closed. For the SOCIALCARBON verification, also 1 CL and 1 CAR were raised and successfully closed. Also, one FAR has been closed which was raised during the previous verification

The verification team has confirmed the implementation of the project as per description in the VCS-PD, the monitoring plan of the PD and the application of the monitoring methodology (AMS-III.F – version 10 and AMS-III.D version 18). In addition, it was confirmed that the monitoring system is in place and the emission reductions are calculated without material misstatements.

The verified emission reductions amount to **4,100 tCO₂e** in the above mentioned monitoring period.

In addition, the verifier states that project meets all relevant requirements established by the SOCIALCARBON Standard. The SOCIALCARBON report identifies the social economic and environmental impacts of the project activity and presents the results obtained by meeting the “Santa Catarina Composting Project Indicators” – version 1.1.

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1 INTRODUCTION

1.1 Objective

Sustainable Carbon – Projetos Ambientais Ltda. has contracted ESPL to conduct the verification of the 4th verification of the project “Composting project in Santa Catarina” for the period from 01/05/2019 to 31/12/2020 (both days included) according to the requirements of the VCS Standard Version 4.4.

1.2 Scope and Criteria

The scope of the verification is to establish/verify that:

- the project activity has been implemented and operated as per the registered PD and that all physical features (technology, project equipment and monitoring) of the project are in place;
- the monitoring report and other supporting documents provided are complete in accordance with the latest applicable version of the completeness checklist for requests for issuance of VCUs, verifiable, and in accordance with applicable VCS Version 4 requirements;
- the actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan, the approved methodology including applicable tool(s) and/or, where applicable, the approved standardized baseline;
- the data are recorded and stored as per the monitoring methodology including applicable tool(s) and, where applicable, the standardized baseline.

The verification of this monitoring period is based on the registered VCS-PD, MR and GHG emission reduction calculation spreadsheet and supporting documents.

In addition, the scope of the SOCIALCARBON verification is to establish/verify that:

- to have an independent third party assessment in order to evaluate the accuracy and consistency of the SOCIALCARBON Standard – version 5.0 and “*Santa Catarina Composting Project Indicators*” – version 1.1, for this specific point in time – Point three; and
- to verify the consistency of these Indicators and their evolution since last evaluation, with the established criteria to maintain the designation as SOCIALCARBON, following the SOCIALCARBON Standard.

1.3 Level of Assurance

The verification of this monitoring period achieved a reasonable level of assurance. 100% of the parameters were monitored.

The verification of this monitoring period has achieved a reasonable level of assurance. Moreover, the threshold for materiality with respect to the aggregate of errors, omissions and misrepresentations relative to the total reported GHG emission reductions and/or removals was below 5% from Project scales, which is required by VCS Standard.

Monitoring Report	MR Version (Public)	MR Version (Revised/Final)
Emission Reductions Achieved (tCO ₂ e) in this monitoring period	5,419	4,100
Applicable Threshold (%) as VCS Standard para 4.1.8	(5%)	(5%)

The verification team has identified errors during the verification as below.

Monitored Parameter (Symbol / Description)	Reporting Frequency	Number of Discrete Data (Total) Total (100%)	Sample selected for verification Sample (100%)	Type of error identified	Impact on ERs	
					ERs impacted (Sample)	ERs impacted (Population based on extrapolation)
VS _{LT,y}	Values determined based on default, but adjusted according to the animals weight (data from integrators – third parties)	90 ¹	90	Not applicable	No impact	No impact.
ndy	Monitored every batch and annualized	90	90	CAR 01	No impact	No impact.

¹ Amount of available raw data along the monitoring period

	(data from integrators – third parties)					
W_{site}	Monitored every batch and annualized (data from integrators – third parties)	90	90	N/A	No impact	No impact.
$N_{da,y}$	Monitored every batch and annualized (data from integrators – third parties)	90	90	N/A	No impact	No impact.
$N_{p,y}$	Monitored every batch and annualized (data from integrators – third parties)	90	90	N/A	No impact	No impact.
$N_{LT,y}$	Monitored every batch and annualized (data from integrators – third parties)	90	90	N/A	No impact	No impact.
$Q_{y,treatment}$	Yearly based on monthly records	20 (once a month)	20 (once a month)	CL 05	no impact	Not applicable as 100% of data was checked

<i>EC_{PJ,J,y}</i>	Calculation based on daily equipment usage	600 data aggregated in one spreadsheet	600 (100%)	N/A	N/A	Not applicable as 100% of data was checked
<i>EF_{EL,J,y}</i>	Annual based on public data	2	2	CAR 03	No impact	Not applicable as 100% of data was checked
<i>Qy</i>	Annually based on every batch (records from third parties)	90	90	N/A	No impact	No impact.
<i>Condition of the composting process</i>	Continuously for composting quality (based on knowledge) and measurements occurred every 15 days	40 (twice a month)	40 (twice a month)	N/A	No impact	No impact.

1.4 Summary Description of the Project

The project activity involves replacement of Animal Waste Management System (AWMS) in 13 confinement swine farms in Brazil. The common practice for AWMS is the use of anaerobic lagoons for the manure treatment. These lagoons are high CH₄ emitters. The project activity consists in the installation of mechanized composting units for the manure treatment, which consist in an aerobic treatment, thus, reducing the CH₄ emissions.

The project is listed at VCS and can be accessed by the following link:
<https://registry.verra.org/app/projectDetail/VCS/1144>

Apart from the GHG emission reductions, SOCIALCARBON Methodology is being applied as a sustainability tool. It monitors the social and environmental performances of projects and their long-term improvement.

2 VERIFICATION PROCESS

2.1 Method and Criteria

The verification process is conducted as per internal CDM Quality Manual and in accordance with criteria laid down by VCS. It includes the following steps:

- contract with PP for the scope and appointment of verification team and technical review team;
- completeness check of Monitoring Report;
- desk review of Monitoring Report and corresponding ER sheet by verification team and planning of onsite audit as well as applied methodologies and tools;
- physical on-site inspection by verification team;
- follow up activities e.g., interviews;
- reporting and closure of findings (CARs/CLs/FARs) and preparation of draft verification report;
- independent technical review of the draft verification report and final/revised documentation (e.g., Monitoring Report, corresponding ER sheet and evidences);
- reporting and closure of TR comments/findings (CARs/CLs/FARs) and final approval for the decision made;
- issuance of final verification report to contracted PP (or authorized representatives).

2.2 Document Review

A desk review was conducted by the verification team that included:

- a review of the data and information presented to verify its completeness;
- a review of the registered monitoring plan, the monitoring methodology including applicable tool(s) and, where applicable, the applied standardized baseline, paying particular attention to the frequency of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures;
- an evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions;
- supporting documents.

A complete list of documents/evidences reviewed is included as Appendix I.

A complete list of documents/evidences reviewed for SOCIALCARBON purposes is included as Appendix II.

2.3 Interviews

#	Interviewee		Date	Subject	Interview	Team member
	Name	Affiliation and Role				
1.	Lenize Tomazi	Colonia Suspiro Farm / farmer	28/09/2022	Farm Operation, monitored parameters	Site visit / Direct questions	Marcelo Sebben
2.	Renato Baccin	Baccin Farm / farmer and Director of LPC Tecnologia Ambiental (composting machine)	28/09/2022 29/09/2022	Project activity main aspects Farm Operation, Composting equipment operation	Site visit / Direct questions and evidences presentation	Marcelo Sebben
3.	Lucas Faustino	Sustainable Carbon / Analyst	28/09/2022 29/09/2022	MR description, ER calculations, monitored parameters	Site visit / Direct questions and evidences presentation	Marcelo Sebben
4.	Arlei Basso	Altenor Farm / Farmer (brother of owner)	28/09/2022	Farm Operation, monitored parameters	Site visit / Direct questions	Marcelo Sebben

5.	Altenor Basso	Altenor Farm / Farmer	28/09/2022	Farm Operation, monitored parameters	Site visit / Direct questions	Marcelo Sebben
6.	Jair Silva	Silva Farm / Farmer	28/09/2022	Farm Operation, monitored parameters	Site visit / Direct questions	Marcelo Sebben
7.	Everaldo Secco	Santa Lucia Farm / Farmer	29/09/2022	Farm Operation, monitored parameters	Site visit / Direct questions	Marcelo Sebben
8.	Pedro Cardoso	Santa Lucia Farm / Farmer	29/09/2022	Farm Operation, monitored parameters	Site visit / Direct questions	Marcelo Sebben
9.	Antonio Ramella	Ramella Farm / Farmer	29/09/2022	Farm Operation, monitored parameters	Site visit / Direct questions	Marcelo Sebben

2.4 Site Inspections

Duration of on-site inspection: 21 and 22/10/2019				
#	Activity performed on-site	Site location	Date	Team member
1.	Opening Meeting: Introduction, scope and objective of work, roles and responsibilities of audit team, resources required, and timetable of the onsite audit including venue for closing meeting and any concerns from PP.	Chapecó/SC	28/09/2022	Marcelo Sebben
2.	Fazenda Colônia Suspiro (Nova Erechim/SC) Site visit to installations (facilities, technology) Visit measurement equipment Project Activity (Technology, Location and Implementation) Physical inspection of the site Checking parameters to be monitored	Nova Erechim/SC	28/09/2022	Marcelo Sebben
3.	Fazenda Altenor Site visit to installations (facilities, technology) Visit measurement equipment	Nova Erechim/SC	28/09/2022	Marcelo Sebben

	Project Activity (Technology, Location and Implementation) Physical inspection of the site Checking parameters to be monitored			
4.	Fazenda Granja Silva Site visit to installations (facilities, technology) Visit measurement equipment Project Activity (Technology, Location and Implementation) Physical inspection of the site Checking parameters to be monitored	Concórdia/SC	28/09/2022	Marcelo Sebben
5.	Sítio Santa Lúcia Site visit to installations (facilities, technology) Visit measurement equipment Project Activity (Technology, Location and Implementation) Physical inspection of the site Checking parameters to be monitored	Jaborá/SC	29/09/2022	Marcelo Sebben
6.	Fazenda Ramella Site visit to installations (facilities, technology) Visit measurement equipment Project Activity (Technology, Location and Implementation) Physical inspection of the site Checking parameters to be monitored	Herval d'Oeste/SC	29/09/2022	Marcelo Sebben
7.	Fazenda Baccin No site visit was carried out to this Farm as it was not operating during this site visit. Nevertheless, interviews with farm owner has been carried out for the sake of renewal of CP.	Concordia /SC	29/09/2022	Marcelo Sebben

2.5 Resolution of Findings

The findings may be of following types: CAR – Corrective Action Request, CL – Clarification Request and FAR – Forward Action Request.

During the present verification, 03 CARs and 02 CLs were raised and successfully closed. No FAR has been raised.

For the SOCIALCARBON verification, also 01 CL and 01 CAR were raised and successfully closed. No FAR has been raised.

The list of findings and their resolution are presented at Appendices IV and V of this report.

2.5.1 Forward Action Requests

During the previous verification period, no FAR has been raised.

2.6 Eligibility for Verification Activities

ESPL holds the accreditation for verification of the sectoral scope.

3 VERIFICATION FINDINGS

3.1 Participation under Other GHG Programs

The project activity has no participation under any other GHG program.

3.2 Methodology Deviations

The project applies the CDM approved methodology AMS-III.F. – “Avoidance of methane emissions through composting”, version 10 for ER calculations and AMS-III.D. – “Methane recovery in animal manure management systems”, version 18 for baseline emission calculations.

The project participants have applied the following deviations from the applied methodology (AMS-III.D):

- **Parameter $N_{LT,y}$** (Annual average number of animals of type LT in year y): The valid version of PD (version 06.1) considered a deviation of the methodology for the determination of this parameter. Nevertheless, during the current monitoring period, this deviation has been discontinued, ensuring conservativeness. Therefore, no deviation from the applied methodology will be applied during the current monitoring period and the parameter $N_{LT,y}$ will be determined in accordance with equation 3 of the methodology AMS-III.D version 18. Therefore, the determination of this parameter complies now with applied methodology and deviates from the applied version of the PD. .
- **Parameter $EC_{PJ,y}$** (Quantity of electricity consumed by the project electricity consumption source j in year y): for determining this parameter, instead of direct monitoring as required by the methodology, the project participants monitored the

- parameter by manually registering the operational hours of the manure pump and the UMAC equipment which are the equipment used for the compost project. Then, the total electricity consumption is estimated. In case the PPs do not register the parameter, a default value given by the equipment provider (LPC) with a 125% correction factor is applied. This measure is considered reliable considering that is not feasible for the farmers to monitor separately only the electricity from the composting project. Moreover, as observed during site visit, the farmers have a routine of using the manure pump and the UMAC equipment and it would make no sense to use it longer than estimated by equipment provider. This change is appropriately described and justified in the MR. The project remains in compliance with VCS Program rules. The change does not negatively impact the conservativeness of the quantification of GHG emission reductions or removals. This deviation has already been used in the previous verification periods.
- **Parameter $Q_{y,Treatment}$** (Quantity of manure treated in the year y) and **Parameter $Q_{y,Treatment}$** (Quantity of compost produced in the year y): the methodology establishes that the parameters shall be monitored by weighbridges. However, this equipment is not viable nor available in the farms location. Moreover, the farmers do not transport these residues. The manure is pumped to the buffer tanks to be sprinkled over the compost and the compost is spread mainly in their own farm, being used as fertilizer. Thus, in order to estimate the amount of manure treated, the project proponents applied default values of maximum manure production per animal based on literature^{/9-2/}. The applied value is considered conservative as it was taken from studies made specifically at this region, being considered an accurate estimative, and maximizing the project emissions. Regarding the compost quantity ($Q_{y,treatment}$), values are informed directly by the farmers, by manual spreadsheets. This measure is considered reliable, also considering that this parameter does not affect the ER calculations. This change is appropriately described and justified in the MR. The project remains in compliance with VCS Program rules. The change does not negatively impact the conservativeness of the quantification of GHG emission reductions or removals. This deviation has already been used in the previous verification periods.

3.3 Project Description Deviations

A deviation from registered PD is being applied during this monitoring period. In accordance with applied methodology AMS III.D, version 18, Paragraph 25 (b) the information on genetic source of the livestock and formulated feed rations should be provided in case developed countries VS default value is used. In this project activity, VS default value was used to adjust VS value according to paragraph 10 (c) of this methodology. Nevertheless, the information required by paragraph 25 (b) is not available. Therefore, the following changes have been carried out:

1. Parameter $B_{0,LT}$ (Maximum methane producing potential of the volatile solid generated for animal type LT). As per registered PD, the value to be applied for breeding swine is equal to value from Western Europe, which is equal to $0.45 \text{ m}^3 \text{ CH}_4/\text{kg dm}$ (IPCC 2006, volume 4,

- chapter 10, table 10.A-7 and 10A-8). However, as the information required by methodology AMS III.D, version 18, Paragraph 25 (b) is not available, the values have been replaced by IPCC default values from Latin America, which is equal to 0.29 m³ CH₄/kg dm
2. Parameter W_{default} (Default average animal weight of a defined population). As per registered PD, the value to be applied for breeding swine is equal to value from Western Europe, which is equal to 198 kg (IPCC 2006, volume 4, chapter 10, table 10.A-7 and 10A-8). However, as the information required by methodology AMS III.D, version 18, Paragraph 25 (b) is not available, the values have been replaced by IPCC default values from Latin America, which is equal to 28 kg.
 3. Parameter VS_{default} (Default value for the volatile solid excretion rate per day on a dry-matter basis for a defined livestock population). As per registered PD, the value to be applied for breeding swine is equal to value from Western Europe, which is equal to 0.46 Kg dm/animal/day (IPCC 2006, volume 4, chapter 10, table 10.A-7 and 10A-8). However, as the information required by methodology AMS III.D, version 18, Paragraph 25 (b) is not available, the values have been replaced by IPCC default values from Latin America, which is equal to 0.3 Kg dm/animal/day.
 4. As explained in the section 3.2 above, parameter $N_{\text{LT},y}$ is now being determined in accordance with applied methodology AMS-III.D version 18, equation 3. As a deviation from this equation was proposed in the original PD, the determination of this parameter now is in compliance with applied methodology but it deviates from the information from the PD section 06.1. The change for the determination of parameter $N_{\text{LT},y}$ to be now calculated in accordance with applied methodology is conservative.

The change of the parameters $B_{0,\text{LT}}$, W_{default} and VS_{default} from the ones indicated in the PD is conservative as it reduces the baseline emissions from animal manure ($BE_{\text{CH}_4,\text{manure},y}$).

Moreover, this correction does not affect the applicability of the methodology, as the application of Latin America (local) default values for the above parameters does not require the monitoring of genetic source of the livestock and formulated feed rations as per AMS III.D, version 18, Paragraph 25 (b). Therefore, this change complies with applied methodology.

No impact in the additionality is observed as it has been carried out through barrier analysis and therefore, the correction of above parameters does not impact the additionality of the project activity.

And finally, no impact in the baseline scenario is observed due to this change as the baseline scenario remains as the installation of anaerobic lagoons to store and stabilize the wastes for later soil application.

Therefore, in accordance with VCS Standard, v.4.4, section 3.20.2, item 2), as the changes do not impact the applicability of the methodology, additionality or the appropriateness of the baseline scenario, and the project remains in conformance with the applied methodology, the deviation has been described and justified in the monitoring report, section 3.2.2 and information could be duly observed in MR section 4.1 and ER calculations spreadsheet.

3.4 Grouped Projects

The project activity is not a grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The project activity involves replacement of Animal Waste Management System (AWMS) in 13 confinement swine farms in Brazil. The common practice for AWMS is the use of anaerobic lagoons for the manure treatment. These lagoons are high CH₄ emitters. The project activity consists in the installation of mechanized composting units for the manure treatment, which consist in an aerobic treatment, thus, reducing the CH₄ emissions.

During the current monitoring period, only 4 out of 13 swine farms monitored their parameters, and consequently, only these are part of this monitoring period.

There are no material discrepancies between the actual monitoring system, and the monitoring plan set out in the project description and the applied methodology apart from the ones mentioned in sections 3.2 and 3.3 above.

In addition, the GHG emission reductions generated by the project have not become included in any emissions trading program or any other mechanism that includes GHG allowance trading. Moreover, the project has not received nor sought any other form of environmental credit, and neither has become eligible to do so since validation or previous verification. Finally, the project has not participated nor been rejected under any other GHG programs since validation or previous verification.

Some of the features of the project activity are described below:

- Project Proponents: Sustainable Carbon – Projetos Ambientais Ltda, Fazenda Sítio Pickler², Fazenda Altenor, Fazenda Ramela, Sítio Santa Lúcia, Fazenda Helena², Fazenda Gilmar², Fazenda Suruvy², Fazenda Granja Silva, Fazenda Colônia Suspiro², Fazenda Colônia Zuffo², Fazenda Pissaia², Fazenda Baccin² and Fazenda Andretta²;
- Project Category: project ($\leq 300,000$ t CO₂e/y);
- Methodology: AMS-III.F. – “Avoidance of methane emissions through composting”, version 10 for ER calculations and AMS-III.D. – “Methane recovery in animal manure management systems”, version 18 0 for baseline emission calculations;
- Start Date: 21/05/2010 – date on which the first farm began reducing GHG emissions by applying the composting unit under full operation;
- Crediting Period: 1st Crediting Period – from 01/01/2011 to 31/12/2020 – 10 years – renewable;
- Project Location (referring only to the farms participating of this monitoring peiroad):

² All these Farms did not monitor their parameters and did not participate of this monitoring period

Farm Name	Address	Town	Global Positioning System ³	
			S	W
Fazenda Altenor	Linha Pinheirinho, S/N	Nova Erechim	-26.913729	-52.932355
Fazenda Ramela	Linha Barreiros, S/N	Herval d'Oeste	-27.187098	-51.395069
Sítio Santa Lucia	Linha Banhado Grande, S/N	Jaborá	-27.128526	-51.688554
Fazenda Granja Silva	Linha Gomercindo, S/N	Concórdia	-27.293422	-51.900758

- Technical Data: all farms that are being considered in this monitoring period have installed the followign equipment
 - o Manure pump that collects the manure from the swine confinement and transfer it to buffer lagoons.
 - o Mechanized composting units where liquid wastes are incorporated with dry solid substrate which are then mixed for the anaerobic decomposition.
- Additional information
 - o This project is a non-AFOLU project.
 - o There is no commercially sensitive information that could not be included in this report
- The main sustainable development contributions, which are related to SOCIAL CARBON Standard are:
 1. SDG 13: Climate action – GHG reduction and encouraging regional integration and the development of similar projects with a view to sustainable development: The indicator is “Project performance” and the results achieved is “Satisfactory”, i.e, the score achieved for the Project performance is 3.
 2. SDG 3: Good health and well-being; SDG 6: Clean Water and Sanitation; SDG 12: Responsible consumption and production - Better treatment and stabilization of the organic matter for later soil application, Reduction of the surface runoff risk of the waste and leaching into the soil, Odor reduction, Combating vector proliferation: The resource connected to this achievement is Technology resource, through indicators Maintenance of composting site” and “Compost quality”
 - o Technology Resource - evaluates the conditions of access to new technologies, as well as its contribution to the economic development; Indicators - “Maintenance of composting site” and “Compost quality” and the results achieved are “Satisfactory” for “Maintenance of composting site” and “Critical” for “Compost quality”, i.e, the score achieved for the them are 4 and 2 respectively.

³ All GPS coordinates were taken near the location where the composting machines are installed.

- Natural Resource - The stock of natural resources (soil, water, air, etc.) and environmental services (soil protection, maintenance of hydrological cycles, pollution sinks, pest control, pollination, among others), from which resources for livelihoods are derived; The indicator measured is “Physical and chemical analysis of the compost” and the result achieved is “Critical”, i.e, the score achieved for the Project performance is 1.5.
 - Human Resource - The skills, knowledge, capacities for work and good health that people have. Taken together, these become fundamental for the successful pursuit of different strategies; The indicator measured is “Disease agents” and the results achieved is “Sustainable”, i.e, the score achieved for the Project performance is 5.
3. SDG 8: Decent work and economic growth – Improved working conditions, Net generation of jobs, Income distribution, Access to technology, Capacity building of the people involved:
- Financial Resource - The basic capital in the form of cash, credit/debt and other economic goods which are available or potential; The indicator chosen are “Commercialization of carbon credits” and “Generation and commercialization of the compost”. and the results achieved are “Sustainable” for “Commercialization of carbon credits” and “Satisfactory” for “Generation and commercialization of the compost”, i.e, the score achieved for them are 6 and 4.25 respectively.
 - The Social Resource – The working networks, the social duties, social relations, relationships of trust, affiliations, and associations; the indicator chosen is “Economic dependency”. The result achieved is “Satisfactory” and the score achieved is 5.

The project activity uses the SOCIAL CARBON methodology for determining the sustainable contributions of the project activity. Therefore, by checking the information from section 5.1 for each resource and the overall result presented in the Social Carbon Spreadsheet^{15/}, the project has achieved an overall score of 3.81, and the performance is “Satisfactory”.

4.2 Safeguards

4.2.1 No Net Harm

The impacts observed during the site visit are positive due to improvement of farm conditions when it comes to odors, potential risk of leakage in the anaerobic lagoons and accumulation of vectors. Moreover, there are also the possibility of income increase due to commercialization of compost, which is not yet a common practice in all farms.

The negative impact is said to be the slightly higher costs of compost when compared to anaerobic lagoons which are mitigated by the reduction of risks stated in the paragraph above.

The positive social, environmental and economic impacts are being evaluated by SOCIALCARBON standard.

4.2.2 Local Stakeholder Consultation

The formal local stakeholder consultation was carried out during the validation of the crediting period. Regarding communication with stakeholders, the project participant has a good relationship with local community and has open channels in order to receive comments from local stakeholders. Thus, the project activity has a stakeholder communication access in place and working. No complaints/suggestions have been registered during the current monitoring period.

4.2.3 AFOLU-Specific Safeguards

Not applicable as it does not comprehend an AFOLU project

4.3 Accuracy of GHG Emission Reduction and Removal Calculations

- the approved methodology AMS-III.F. – “Avoidance of methane emissions through composting”, version 10 determines the ER calculations whereas the methodology AMS-III.D. – “Methane recovery in animal manure management systems”, version 18 is used for the baseline emission calculations;
- project emissions associated to the project activity are the following:
 - Project emission due to Electricity consumption ($PE_{y,power}$)
 - Project emissions from compost ($PE_{y,compost}$)
- no leakage is considered for this kind of project, in accordance with the applied methodology as there is no transference of equipment;
- all methods and formulas used in the calculations of emission reductions have been followed in accordance to the applied methodology and monitoring plan of the validated at VCS-PD;
- all monitored data is traceable.

Fixed parameters (as per Section 4.1 of VCS-PD):

- Annual average temperature: 18°C as per National Institute of Meteorology (INMET)
- GWP_{CH_4} (Global warming potential of methane): according to the VCS Standard, version 4.4, section 3.15.4, “For GHG emission reductions occurring on or before 31 December 2020, all ex-ante estimates and ex-post calculations may be converted to CO₂e using either the GWP values from the *IPCC Fourth Assessment Report* (AR4) or those from AR5”. Considering that the standard give option of choosing the value of the parameter, value of AR5 for GWP_{CH_4} has been used. The applied value is equal to 28 t_{CO_2}/t_{CH_4} .
- D_{CH_4} (Density of CH₄): value applied is equal to 0.00067 t/m³ as per AMS-III.D
- UF_b (Correction factor to account for model uncertainties): value applied is equal to 0.94 as per AMS-III.D

- MCF_j (Annual methane conversion factor for the baseline animal manure management system j): value applied for uncovered anaerobic lagoon equal to 77% as per 2006 IPCC Guidelines for National Greenhouse Gas Inventories, volume 4, chapter 10, table 10.17.
- $B_{o,LT}$ (Maximum methane producing potential of the volatile solid generated for animal type LT) - value applied for market swine equal to 0.29 m^3CH_4/kg dm (dry matter) and breeding swine equal to 0.29 m^3CH_4/kg dm (dry matter) as per 2006 IPCC Guidelines for National Greenhouse Gas Inventories, volume 4, chapter 10, table 10A-7 and 10A-8. Default values apply to Latin American countries. Refer to Project deviation, section 3.3.
- $MS\%_{oBL,y}$ (Fraction of manure handled in baseline animal manure management system j): the value applied is 100% as in the baseline all waste was used in anaerobic lagoons.
- $W_{default}$ (default average animal weight of a defined population): value applied for market swine equal to 28 kg and breeding swine equal to 28 kg as per 2006 IPCC Guidelines for National Greenhouse Gas Inventories, volume 4, chapter 10, table 10A-7 and 10A-8. Default values apply to Latin American countries. Refer to Project deviation, section 3.3.
- $VS_{default}$ (Default value for the volatile solid excretion rate per day on a dry-matter basis for a defined livestock population): value applied for market swine equal to 0.3 kg dm/animal/day and breeding swine equal to 0.3 kg dm/animal/day as per 2006 IPCC Guidelines for National Greenhouse Gas Inventories, volume 4, chapter 10, table 10A-7 and 10A-8. Default values apply to Latin American countries. Refer to Project deviation, section 3.3.
- $EF_{composting}$ (Emission factor for composting of manure): value applied is 4 g CH_4/kg waste treated on a wet basis as per 2006 IPCC Guidelines for National Greenhouse Gas Inventories, volume 5, chapter 4, table 4.1
- $TDL_{j,y}$ (average technical transmission and distribution losses for providing electricity to source j in year y): value applied equal to 10% as per AMS-III.F.
- MD (Manure density): value applied equal to 1,016 kg/m^3 ;

Monitored parameters:

- VS_{LT} (Volatile solids for livestock LT entering the animal manure management system in year y) – This parameter is calculated as per applied methodology based on data provided by the Integrators. Refer to Section 4.2 of the MR
- $n_{d,y}$ (number of days in year y where the animal manure management system is operational) – this parameter is provided directly from integrators as it is considered as the number of days which there are live animals in the farm. The calculation method is clear to the verification team and corresponds to the exact difference between the entry and exit dates of each batch, without overlapping dates, and is calculated by measuring the difference between the 1st entry and the last exit dates for each batch, ensuring that no date is counted more than once (due to high number of animals, batches does not arrive and leave all in the same days as it can be seen in ER calculations, tab Animal data – [FARM]). The calculation methods and calculation has been made available to the verification team. Refer to Section 4.2 of the MR and ER calculation spreadsheet.
- W_{site} (Average animal weight of a defined livestock population at the project site (kg) - the value of this parameter is provided directly from integrators for market swine

(actually measured by them), whereas default values from IPCC have been applied for Breeding swine as measured values are not available. The calculations were made available to the verification team. Refer to Section 4.2 of the MR.

- $N_{da,y}$ (Number of days animal is alive in the farm in the year y) - this parameter is calculated based on information provided directly from integrators for both market swine and breeding swine. The calculation method corresponds to a weighted average value of the days the animal batches remain on the farm throughout the year. Both parameters use the same data source (entry and exit dates of each batch, provided by integrators). It is important to point out that for market swine, the period is the total period they remain in the farm, whereas for the breeding swine, as they spend the whole life in the farm, the period considered is the monitoring period. The calculation and the calculation methods has been made available to the verification team. Refer to Section 4.2 of the MR and ER calculation spreadsheet.
- $N_{p,y}$ (Number of animals produced annually per type of LT for the year y) - this parameter is provided directly from integrators. The calculations were made available to the verification team. Refer to Section 4.2 of the MR
- $N_{LT,y}$ (average number of animals type LT in year y) - this parameter is provided directly from integrators. The calculations were made available to the verification team. The parameter was determined in accordance with applied methodology AMS-III.D Version 18, equation 3. Refer to Section 4.2 of the MR
- $Q_{y,treatment}$ (quantity of compost produced in year y) – These values are monitored by manual records provided by the farmers. This parameter is not directly applied in the ER calculations. Refer to Section 4.2 of the MR
- $EC_{PJ,j,y}$ (quantity of electricity consumed by the project activity electricity consumption source j in year y). This parameter is not directly measured (see section 3.2) This parameter is either based on the available information provided by the farmers or by estimated electricity consumption provided by the equipment manufacturer. The most conservative value is applied. The comparison is provided in the calculations spreadsheet.
- $EF_{EL,j,y}$ (Emission factor for electricity generation source j in year y) – These values are published yearly by Brazilian DNA which are calculated in accordance with applied version of CDM TOOL07. Refer to Section 4.2 of the MR
- Q_y (quantity of manure treated in year y) – This value is estimated based on the amount of animals that are being raised in the farm. The parameter is an estimative per animal given by technical literature^{/09/}. Refer to Section 4.2 of the MR
- Conditions of the composting process – This parameter is continually monitored by the farmers, who manually record it. The evidences were provided to the verification team. Refer to Section 4.2 of the MR. It is important to highlight that, as duly evidenced during the on-site inspection, the compost produced is not stored under anaerobic conditions and/or disposed of in landfills. The purpose of the compost is soil application. The compost is stored under roof with open walls, which is subject to low humidity, frequent mixing, and high temperatures (due to insulation and microbial activity). The compost is used under demand and it is not used to be stored for more than a month, following recommendations from LPC and Sustainable Carbon to avoid anaerobic storage or disposal. Hence, both the composting activity and the technical aspects of the

composting units prevent anaerobic conditions. Validation could duly confirm this information during interviews and on-site inspection.

- Soil application of the compost for agricultural purposes - The parameter is controlled by manual recordings. However, most of farms apply it directly in their own farm. Refer to Section 4.2 of the MR

The emission reduction spreadsheet is transparent, traceable and correct, with no manual transposition errors.

Baseline emissions (BE_y)

The baseline emissions are calculated as follows:

$$BE_y = GWP_{CH_4} * D_{CH_4} * UF_b * \sum_{j,LT} MCF_j * B_{0,LT} * N_{LT,y} * VS_{LT,y} * MS\%_{BL,j}$$

Where:

BE _y :	Baseline emissions during the year y;
GWP _{CH₄} :	Global warming potential of methane;
D _{CH₄} :	Density of CH ₄ ;
UF _b :	Correction factor to account for model uncertainties;
MCF _j :	Annual methane conversion factor for the baseline animal manure management system j.
B _{0,LT} :	Maximum methane producing potential of the volatile solid generated for animal type LT
N _{LT,y} :	Average number of animals type LT in year y
VS _{LT} :	Volatile solids for livestock LT entering the animal manure management system in year y
MS% _{BL,y} :	Fraction of manure handled in baseline animal manure management system j

So, **BE_y = 5,837 tCO₂e.**

Project emissions (PE_y)

Project emissions associated to the project activity are the following:

- Project emission due to Electricity consumption (PE_{y,power})

$$PE_{y,power} = \sum_j EC_{PJ,j,y} \times EF_{EL,j,y} \times (1 + TDL_{j,y})$$

Where

EC _{PJ,j,y}	Quantity of electricity consumed by the project activity electricity consumption source j in year y
EF _{EL,j,y}	Emission factor for electricity generation source j in year y

$TDL_{j,y}$ average technical transmission and distribution losses for providing electricity to source j in year y

- Project emissions from compost ($PE_{y,compost}$)

$$PE_{y,comp} = Q_y * EF_{composting} * GWP_{CH_4}$$

Where

$Q_{y,treatment}$ Quantity of compost produced in year y
 $EF_{composting}$ Emission factor for composting of manure
 GWP_{CH_4} Global warming potential of methane

Thus, $PE_y = PE_{y,power} + PE_{y,compost} = 1,737 \text{ tCO}_2\text{e}$

Leakage emissions (LE_y)

No leakage is associated to the project activity

Thus, $LE_y = 0 \text{ tCO}_2\text{e}$

Emission Reductions

Therefore, according to the applied methodology, ER_y are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y$$

Where:

ER_y : Emission reductions in year y;
 BE_y : Baseline reductions in year y;
 PE_y : Project reductions in year y;
 1) LE_y : Leakage reductions in year y.
 2)

Thus, $ER_y = BE_y$. So, $ER_y = 4,100 \text{ tCO}_2\text{e}$.

The verification team confirms that the monitored procedures employed for calculation of emission reductions are in accordance with applied methodologies, registered PD and are considered accurate. All evidences have been provided and were reliable. The calculations are conservative.

4.4 Quality of Evidence to Determine GHG Emission Reductions and Removals

- records were submitted by the project proponent as evidences to determine emission reduction;

- the records, data and information provided were found valid for the current verification period. The documents were verified during site visit and when possible, were checked directly from its source;
- interviews were performed during site visit with involved personnel and PP's representatives;
- the GHG emission reduction calculations were check step by step with PP's representatives;
- the quality of evidences was found of adequate level by the verification team to ensure an accurate quantification of the emission reductions.

4.5 Non-Permanence Risk Analysis

Not applicable for this project type

4.6 SOCIALCARBON Results

4.6.1 Social Resource

Indicator	1. Association and Cooperatives				
Situation	Nine farm owners (Sítio Pickler, Pissaia Farm, Fazenda Andretta, Fazenda Colônia Zuffo, Fazenda Gilmar, Fazenda Helena, Fazenda Suruvy, Fazenda Baccin and Fazenda Colônia Suspiro) decided not to participate in the current monitoring period. All the Four swine farmers included in this monitoring period showed active involvement with local associations and cooperatives. Almost all swine farmers believe that associations and cooperatives generate some benefit to the farm. The main organizations that have some involvement with the swine farmers are: Altenor Farm: Alfa, Itaipu and Coperaguas cooperative; Ramella Farm: Copérdia cooperative; Santa Lucia Farm: Coperavisa cooperative; Silva Farm: Coopermarc cooperative.				
Absence of associations or cooperatives; individualism is predominant	There are associations and cooperatives in the region, though the swine farmer is not involved in any of them.	The swine farmer is involved in associations or cooperatives, though it was observed internal conflicts and/or lack of structure among	The swine farmer is involved in associations or cooperatives, though his participation is not active.	The swine farmer is actively involved in associations and cooperatives.	In addition to the last item, the participation in associations or cooperatives resulted in positive benefits for the

	these organizations.			farmer's business.
Score	5.50 (five point fifty) – this score is the average of the 4 farms considered in this MP. The rationale is presented in the SCR Spreadsheet.			
Justification	It is a common practice in the region the swine farmers to be associated with association or cooperatives			
Evidence	Interviews performed with farmers.			

Indicator	2. Economic Dependency				
Situation	All the four swine farmers (Santa Lucia Farm, Ramella Farm, Silva Farm and Altenor Farm) practice subsistence or depend on other economic activities that generate income, such as: Altenor Farm: milk production; Ramella Farm: cattle production and corn farming; Santa Lucia Farm: aviary and cattle productions and rentals; Silva Farm: agroindustry and eucalyptus wood sale.				
The farmer relies only on the swine production and this activity brought him injuries.	The farmer relies only on the swine production and this activity brought him financial instability (some months the performance brought injuries and others, incomes).	The swine production is not generating profit and carries on: - Subsistence activities; OR Depend on another economic activity.	The swine farmer relies on swine production, which is not generating profit and carries on: - Subsistence activities; AND - Depend on another economic activity.	The swine farmer relies on swine production, which is generating profit, and carries on: - Subsistence activities; OR - Depend on another economic activity.	The swine farmer relies on more than two economic activities (in addition to the swine production).
Score	5 (five) – this score is the average of the 4 farms considered in this MP. The rationale is presented in the SCR Spreadsheet.				
Justification	It is a common practice in the region the swine farmers to have additional activities.				
Evidence	Pictures and interviews performed during site visit.				

Indicator	3. Satisfaction of the Farmer				
Situation	All the Four swine farmers are satisfied with the composting activity. The main reason is due to the fact that the proposed technology is a solution to the swine waste and reduces the environmental impacts, so they can still practice their profession while preserving it for future generations. Another benefit is that it adds economic value to their properties.				
The swine farmer is not satisfied at all and is planning to quit: - The composting activity, AND - The carbon markets.	The swine farmer is not satisfied at all and is planning to quit: - The composting activity, OR - The carbon markets.	The swine farmer is indifferent to the composting and/or the carbon Project.	The swine farmer is satisfied with composting, but it was observed difficulty to apply to carbon markets.	The swine farmer is satisfied with the carbon Project and composting.	In addition to the last item, the swine farmer shares his experience and support with other farmers to use the same technology.
Score	5 (five) – this score is the average of the 4 farms considered in this MP. The rationale is presented in the SCR Spreadsheet.				
Justification	The implementation of the project brought socio-economic and life quality benefits to the farmers				
Evidence	Interviews and site visit.				

4.6.2 Human Resource

Indicator	Control of microorganisms				
Situation	The Four swine farms used to have biological analysis of the compost undertaken. However, after having all tests' results negative for these parameters for some time, they stopped in order to save money.				
There is no concern in undertaking biologic analysis of the compost.	The swine farmer is looking for resources to undertake the biologic analysis of the compost; currently barriers, such as prices, hinder this possibility	The biologic analysis is undertaken sporadically, though it presents irregularities regarding the patterns recommended by Public Health Agencies.	The biologic analysis is undertaken periodically, but the parameters analyzed do not accomplish Public Health Official Standards all the time.	The biologic analysis is undertaken periodically and the parameters analyzed accomplish Public Health Official Standards all the.	In addition to the last item, the analysis results are available for the public.

Score	1 (one) – this score is the average of the 4 farms considered in this MP. The rationale is presented in the SCR Spreadsheet.
Justification	These analyses have a high cost to be done periodically and it is known that once it is done and the parameters gave good results, the farm will maintain its results throughout the time. Therefore, the farmers carried out analysis at the start of the project but did not keep analyzing it.
Evidence	Interviews and site visit.

Indicator	Diseases Agents				
Situation	All swine farms presented some control of diseases agents. Among the possibilities to control such diseases, the mechanical and chemical one was the most used, being almost all four producers that undertake this action, i.e. using disinfectants. As mechanical control, two farmers mentioned practices that refer to the use of PPE materials.				
There is no concern regarding the control of diseases agents.	The swine farmer is trying to overcome barriers to undertake control of diseases agents (i.e. obtaining financial resources).	There are some initiatives to control diseases agents, though they are not sufficient; since presence of diseases agents was observed.	The control of diseases agents includes one of the following actions: mechanical, chemical or biologic.	The diseases agents control uses at least two kinds of actions: mechanical, chemical and biologic.	There is a structured program for controlling diseases agents, with Performance Indicators and/or Monitoring Plan.
Score	5 (five) – this score is the average of the 4 farms considered in this MP. The rationale is presented in the SCR Spreadsheet.				
Justification	The procedure adopted is the common practice within swine farms				
Evidence	Pictures, interviews with farmers and site visit				

Indicator	Health and Safety Practices
Situation	All the four producers carried out actions to promote hygiene in the swine farm (since most of them follow requirements from integrators) such as washing, blower sweep and disinfection. The swine farms operate within the norms that regulate this category, thus complying with workers' regulation and providing PPEs, as much as searching to maintain the work environment as healthy as possible. However, regarding safety practices, most safety equipment is available, though it is used inadequately and without withdraw control.

Safety equipments are not available. There are no hygiene and health practices regarding the swine unit.	Safety equipments are not available OR there are no hygiene and health practices regarding the swine unit.	The safety equipments are available, though they are used inadequately (i.e. there are no control of the use and withdraw). AND there are few actions geared towards Hygiene OR Health issues in the swine unit.	The safety equipments are available, though they are used inadequately (i.e. there are no control of the use and withdraw). AND there are few actions geared towards Hygiene AND Health issues in the swine unit.	The swine unit undertakes a program for disinfection and cleaning in order to guarantee a healthy environment OR all the safety equipments are available and are used correctly.	The swine unit undertakes a program for disinfection and cleaning in order to guarantee a healthy environment AND all the safety equipments are available and are used correctly.
Score	3.00 (three) – this score is the average of the 4 farms considered in this MP. The rationale is presented in the SCR Spreadsheet.				
Justification	The farmers are controlled by the integrators to apply hygiene and health and safety measures. However it is not common practice to report the application of these measures.				
Evidence	Equipment control data sheet, interviews and pictures.				

4.6.3 Financial Resource

Indicator	Number of animals				
Situation	Three of the four swine farms had an increase in the number of animals (Altenor Farm, Ramella Farm and Silva Farm), the othe farm (Secco) had an decrease in the number of animals. Altenor Farm: In this monitoring period, the average of animals produced annually on the farm was 4,395, while in the last monitoring was 3,452 animals. (increased less than 1,000 animals) (Score 5) Ramella Farm: In this monitoring period, the average of animals produced annually on the farm was 3,023, while in the last monitoring was 3,007 animals. (increased less than 1,000 animals) (Score 5) Silva Farm: In this monitoring period, the average of animals produced annually on the farm was 6,642, while in the last monitoring was 5,589 animals (increased more than 1,000 animals) (Score 6) Secco Farm: In this monitoring period, the average of animals produced annually on the farm was 3,771, while in the last monitoring was 4,172 animals (decreased less than 1,000 animals) (Score 3)				
There is no control of the	There was a significant	There was an insignificant	Amount of animals is the	The amount of animals	The amount of animals

amount of animals in the swine farm.	decrease in the number of animals.	decrease in the number of animals.	same as project baseline.	increased insignificantly after the project implementation.	increased significantly after the Project implementation.
Score	4.75 (four point seventy five) – this score is the average of the 4 farms considered in this MP. The rationale is presented in the SCR Spreadsheet.				
Justification	The farmer can opt to increase or decrease its production based on their operational license. They also can request by Environmental Agency an increase of their upper limit by changing their licensing.				
Evidence	Records from integrators.				

Indicator	Generation and commercialization of the compost				
Situation	In this monitoring period, about 661 tonnes of compost was generated. All the four swine farms, commercialize the compost, with an average commercialization rate in the market about 40% of the total compost produced. T				
There was no generation of compost.	The compost generated was not commercialized, since its characteristics were not adequate.	The compost was generated but it was not commercialized due to lack of buyers, or because it was used to supply internal demand.	A part of the compost was commercialized.	More than 50% of the compost was commercialized.	In addition to last item, demand for the compost increased.
Score	4.25 (four point twenty five) – this score is the average of the 4 farms considered in this MP. The rationale is presented in the SCR Spreadsheet.				
Justification	Depending on their distance from city and their other activities in the farm, the farmers decide to sell or use the compost in their own land.				
Evidence	Interviews to the representatives.				

Indicator	Commercialization of carbon credits
Situation	All carbon credits generated during the last monitoring periods were sold. In addition, future credits that will be generated during this monitoring period (which the present SOCIALCARBON Report – Point 03 corresponds to) will be available for negotiation

During current period, no credits were commercialized.	During current period, credits were already negotiated, though no sales were concluded.	During current period, less than 50% of the credits were sold.	During the current period, more than 50% of the credits were commercialized.	During the current period, all the credits were sold.	In addition to last item, the Project has its future credits already in process of negotiation.
Score	6 (six) – this score is the average of the 4 farms considered in this MP. The rationale is presented in the SCR Spreadsheet.				
Justification	The credit's commercialization is fundamental for the viability and continuation of the project.				
Evidence	Receipts of payment of the VCUs and spreadsheet with total received and total invested.				

4.6.4 Natural Resource

Indicator	Environmental management				
Situation	None of the swine farms has an environmental management system. The majority of them have just two or three procedures regarding environmental management. The main activities carried out by farmers are related to feed and energy, water control and correct waste disposal (Ex. garbage removal on the property).				
None of the environmental aspects of the swine farm are considered in the management plan.	Less than 50% of the environmental aspects of the swine farm are considered through the implementation of some actions, but with no documentation.	More than 50% of the environmental aspects of the swine farm are considered through the implementation of some actions, but with no documentation.	There is a management system, though it is difficult to implement the actions.	There is an environmental management system efficient with periodic reports.	There is an environmental management system certified by third part.
Score	2.00 (two) – this score is the average of the 4 farms considered in this MP. The rationale is presented in the SCR Spreadsheet.				
Justification	It was evidenced by the performed interviews with farmers' representatives and at the site visit that the farms have implemented some environmental management measures.				
Evidence	Interviews, documents provided by the integrators and site visit.				
Indicator	Environmental Legislation				

Situation	Altenor and Secco (Santa Lucia) farms have operational licenses and accomplish with Forest Code. Ramella Farm and Silva Farm have operational licenses but they are not in compliance with the Forest Code..				
The entrepreneur is not aware of the Brazilian environmental legislation.	The entrepreneur is aware of his legal duties, though he has no License, or the License was suspended since the demands were not accomplished.	During the period analyzed, the swine farm needs to accomplish a Term for Conduct Adjustment (in Portuguese, TAC); this means that the farm has some pre-defined deadline for accomplishing the environmental legislation.	There is an environmental license, though the entrepreneur faces difficulties to accomplish the demands. The License does not accomplish, temporarily, the demands.	There is an environmental license and all the demands are accomplished, though the entrepreneur faces difficulties to accomplish other Brazilian legislations (i.e. forest code).	The swine farmer accomplishes all Brazilian environmental rules and legislation.
Score	5.50 (five point fifty) – this score is the average of the 4 farms considered in this MP. The rationale is presented in the SCR Spreadsheet.				
Justification	All licenses are up to date and. Almost all conformity conditions to require their renovations are in place.				
Evidence	Licenses.				

Indicator	Chemical and Physical Analysis of the Compost				
Situation	During this monitoring period only Altenor swine farm carry out chemical or physical analysis of the compost in his own field and stated that the result was positive. In order to save money, especially during the COVID-19 Pandemic crisis, all the others 3 farms did not carry out the analysis formally.				
There is no concern in regard with chemical and physical analysis of the compost.	The swine farmer faces difficulties to obtain resources to undertake chemical and physical analysis of the compost. The farmer is looking for possible alternatives.	Either a chemical or a physical analysis of the compost is undertaken.	Chemical and Physical Analysis of the compost are undertaken sporadically.	Physical and Chemical analysis of the compost are undertaken periodically.	In addition to this, information regarding chemical and physical parameters analyzed are available to the public.

Score	1.5 (one point five) – this score is the average of the 4 farms considered in this MP. The rationale is presented in the SCR Spreadsheet.
Justification	These analyses have a high cost to be done periodically and it is known that once it is done and the parameters gave good results, the farm will maintain its results throughout the time. Therefore, the farmers carried out analysis at the start of the project but did not keep analyzing it.
Evidence	Interviews and site visit.

4.6.5 Biodiversity/Technology Resource

Indicator	Compost quality					
Situation	The compost is considered an organic fertilizer mixed of Class “A”, which means an organic fertilizer from animal or vegetal source without the use of toxic material, resulting in a product of safe use in agriculture⁴. The Normative Instruction of Ministry of Agriculture, Livestock and Supply⁵ establish specifications about the physical and chemical characteristics of the compost. All producers tested the compost generated in their own crops and stated that the result was positive at the beginning of project implementation. The swine farmers evaluated conditions such as dry matter, presence of heavy metal and concentration of nutrients, which indicated that they had around 1.5mg/L for N, 2.5 to 3mg/L for P 2.5mg/L for K and between 30% and 40% of organic matter. After having all tests’ results turn out positive and the same for these parameters for some time, they made the decision to keep producing the compost with the same specifications, saving the budget for testing „especially in times of crisis. As the specifications and conditions of the compost are always the same, it is possible to guarantee the quality of the compost, since the objective is to make them available for sale to generate a source of income.					
The quality of the compost was never assessed.	The quality of the compost was not assessed by laboratorial tests, however	The compost is not in accordance with the specifications of water levels	The compost is not in accordance with the specifications of water levels OR	The compost is in accordance with the specifications of water levels AND levels of	In addition to this, information regarding quality of compost is	

⁴ EMBRAPA. Regulamentação de Insumos - Fertilizantes orgânicos, condicionadores de solo e

substratos agrícolas. Available at: http://www.cnpma.embrapa.br/eventos/2007/workshop/organica/download/insumos_fertilizantes.pdf. Last visit on: 16-October-2019.

⁵ BRAZIL. Ministry of Agriculture, Livestock and Supply. Normative Instruction nº 46, from 06 January 2011. Estabelece O Regulamento Técnico Para Os Sistemas Orgânicos de Produção Animal e Vegetal. Brasília, Available at: <<http://www.legisweb.com.br/legislacao/?id=78910>>. Last visit on: 25-August-2015.

	it was tested in crops and it was positive.	and levels of nutrients (C, N, P2O5, K2O, Ca e Mg).	levels of nutrients (C, N, P2O5, K2O, Ca e Mg).	nutrients (C, N, P2O5, K2O, Ca e Mg).	available to the public.
Score	2 (two) – this score is the average of the 4 farms considered in this MP. The rationale is presented in the SCR Spreadsheet.				
Justification	These analyses have a high cost to be done periodically and it is known that once it is done and the parameters gave good results, the farm will maintain its results throughout the time. Therefore, the farmers carried out analysis at the start of the project but did not keep analyzing it.				
Evidence	Interviews and site visit.				

Indicator	Maintenance of the composting site				
Situation	Some producers stated that they had no difficulties in carrying out the maintenance of the composting site. Occasionally maintenance is also carried out by a specialized company, in case of reform. However, the financial cost of maintenance is very high, which was highlighted by farmers. The other producers said they had some difficulties in maintaining the composting site, as it requires a lot of control. During the period of the COVID-19 Pandemic, the difficulty became even greater				
It was not observed maintenance practices in the composting site.	The swine farmer carries on practices towards the maintenance of the composting site, though he faces difficulties, for instance: bad smell due to lack of water or problems during aeration.	The swine farmer carries on practices towards maintenance of the composting site, with no difficulties.	The swine farmer carries on practices towards maintenance of the composting site, and sporadically, the maintenance is made by a specialized company.	The maintenance of the composting site is made regularly by a specialized Company.	In addition to last scenario, the equipments are calibrated according to established deadlines.
Score	4 (four) – this score is the average of the 6 farms considered in this MP. The rationale is presented in the SCR Spreadsheet.				
Justification	It is the common practice the own farmers carry out their maintenance of composting site. In case needed, the composting unit provider carry out more complex maintenance.				
Evidence	Interviews with machine provider, with farmer and site visit.				

Indicator	Technology Diffusion
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Situation	Three farmers have just informally explained the composting technology to neighbors and friends (Altenor Farm, Ramella Farm and Silva Farm), at schools and municipal departments (Basso Farm)				
The swine farmer is not committed with technology diffusion.	The swine farmer would commit to support technology diffusion, though he is not aware which procedures should be undertaken.	The technology diffusion approaches are informal.	Project contributes for technology diffusion through knowledge transfer, through formal methods.	Besides contributing with knowledge transfer, it also contributes for technology diffusion through the implementation of Technologies which differs from baseline scenario.	In addition to previous scenario, the project contributes for the technical capacitating and implementation and operation of these technologies.
Score	3.00 (three) – this score is the average of the 4 farms considered in this MP. The rationale is presented in the SCR Spreadsheet.				
Justification	In general, only informal approaches are used for technology diffusion.				
Evidence	Interviews and site visit.				

4.6.6 Carbon Resource

Indicator	Project Performance				
Situation	Comparing the estimates from VCS PD and the 4th Monitoring period, it is possible to affirm that the performance of the project was directly affected by the nine proponents that not participate on this monitoring period, as the emission reductions achieved during the current monitoring period were only 29% from those estimated in the VCS PD. The main reasons of this difference were: - Nine farm owners (Sítio Pickler, Pissaia Farm, Fazenda Andretta, Fazenda Colônia Zuffo, Fazenda Gilmar, Fazenda Helena, Fazenda Suruvy, Fazenda Baccin and Fazenda Colônia Suspiro) decided not to participate in the current monitoring period.				
0% of emission reductions were verified.	Very Low. From 1 to 25% of the emission reductions during the period were verified.	Low. From 26 to 50% of the emission reductions of the period were verified.	Reasonable. From 51 to 75% the emission reductions of the period were verified.	Great. From 76 to 95% of the emission reductions of the period were verified.	Excellent. More than 95% of emission reductions were verified.
Score	3 (three) – this score is the average of the 4 farms considered in this MP. The rationale is presented in the SCR Spreadsheet.				

Justification	The performance of the farmers that decided to carry out the monitoring is very good. However there are several farms that decided not to continue the project.
Evidence	Interviews and ER calculations spreadsheet.

Indicator	Stakeholders Consultation					
Situation	Before implementing any farm or composting unit, a consultation with the environmental agency is carried out and only with the release of the licenses is the project undertaken. The formal consultation was carried out during the validation of the project with letters sent for the mainly community stakeholders. During this monitoring period, as all farms included in the project are mostly composed of small families, informal conversations was the most common way of informing about the project activity. In addition, the farmers and the Sustainable Carbon team kept the main general communication channels available via telephone, email and even personally to receive any kind of suggestions and comments from the community. No complaints, suggestions and/or comment about the project was received through them.					
Stakeholders are not aware of the project activities.	Stakeholders were informally communicated, though they did not have access to send comments and suggestions for the project developers.	Stakeholders were communicated through formal letters, and they had opportunity to send comments and suggestions to the Project developers.	In addition to the letters, other methods were carried out for engaging stakeholders, such as lectures, group activities, and others.	In addition to previous scenario, the project provides permanent channels for stakeholder's consultation.	There are evidences that the stakeholder's suggestions and comments were considered and realized by the project developer.	
Score	2 (two) – this score is the average of the 4 farms considered in this MP. The rationale is presented in the SCR Spreadsheet.					
Justification	Due to the farms decentralization, the farmers were only informally requested to provide comments or suggestions..					
Evidence	Interviews.					

Indicator	Validation and Verification
------------------	------------------------------------

Situation	The Composting Project in Santa Catarina was validated and verified by a third part accredited by the UNFCCC. Currently, this project is under verification by another third part accredited by the UNFCCC.				
The Project was not validated/verified by a third part.	Only some aspects of the Project were validated/verified.	The Project was validated/verified by a third part, which is not accredited to UNFCCC.	The Project was validated by a third part, but it is registered in more than one GHG Program.	The validation and verification are made by a DOE, accredited by the UNFCCC.	The validation and verification are made by DOE, using methods and procedures recognized internationally.
Score	6 (six) – this score is the average of the 4 farms considered in this MP. The rationale is presented in the SCR Spreadsheet.				
Justification	Apart from the accreditation, the VVB (DOE) applies the VCS and CDM procedures and standards for validation and verification processes .				
Evidence	Interviews, site visit, VCS-PD, MR from previous periods, etc.				

5 ANALYSIS OF SOCIALCARBON RESULTS

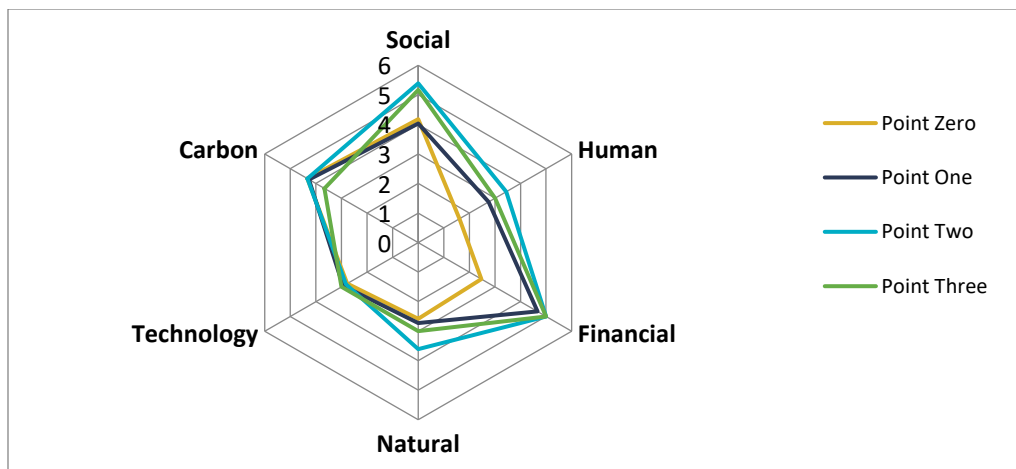
5.1 Current Performance

Resource	Critical	Satisfactory	Sustainable	Average Score	Performance
Social	0.0%	66.7%	33.3%	5.17	Sustainable
Human	33.3%	66.7%	0.0%	3.00	Satisfactory
Financial	0.0%	66.7%	33.3%	5.00	Satisfactory
Natural	66.7%	0.0%	33.3%	3.00	Satisfactory
Biodiversity/Tech	33.3%	66.7%	0.0%	3.00	Satisfactory
Carbon	33.3%	33.3%	33.3%	3.67	Satisfactory

5.2 Historical Performance

Social	Point Zero	Point One	Point Two	Point Three
	4.18	4.03	5.39	5.17
Historic Analysis: the decrease corresponds to the smaller quantity of farms participating from this period, resulting in smaller diversification of activities for generation of profit.				
Human	Point Zero	Point One	Point Two	Point Three
	1.61	2.76	3.44	3.0
Historic Analysis: The decrease corresponds to the small quantity of farms that participated from this period and reduction of control of diseases agents.				
Financial	Point Zero	Point One	Point Two	Point Three
	2.47	4.67	5.00	5.0
Historic Analysis: the score remained still due to the maintenance of commercialization of carbon credits and of compost.				
Natural	Point Zero	Point One	Point Two	Point Three
	2.58	2.73	3.61	3.00
Historic Analysis: the decrease corresponds especially need of complying with environmental legislation.				
Biodiversity	Point Zero	Point One	Point Two	Point Three
	2.77	2.94	2.83	3.00
Historic Analysis: There was a small decrease especially due to the lack of technology diffusion approaches. Moreover, due to COVID-19 pandemic, less compost analysis have been carried out.				
Carbon	Point Zero	Point One	Point Two	Point Three
	4.33	4.27	4.33	3.67
Historic Analysis: The decrease corresponds especially due to project performance, considering less farms participated from this monitoring period.				

5.3 Performance Hexagon



6 VERIFICATION CONCLUSION

ESPL, contracted by Sustainable Carbon – Projetos Ambientais Ltda., has performed the independent verification of the emission reductions of the VCS project “Composting Project in Santa Catarina”, with VCS Project ID 1144, for the monitoring period 01/05/2019 to 31/12/2020 (both days included).

Sustainable Carbon – Projetos Ambientais Ltda. is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity.

ESPL commenced the verification based on the baseline and monitoring methodologies AMS-III.F. – “Avoidance of methane emissions through composting”, version 10 for ER calculations and AMS-III.D. – “Methane recovery in animal manure management systems”, version 18 for baseline emission calculations, the monitoring plan contained in the VCS-PD and draft Monitoring Report.

ESPL’s verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. ESPL planned and performed the verification by obtaining evidence and other information and explanations that ESPL considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

The verification team confirms that:

- the project activity was found completely implemented as per the description given in the registered VCS-PD; and
 - the actual operation conforms to the description in the VCS-PD.
- 3) Thus, the GHG emissions reductions reported for the project activity for the period from 01/05/2019 to 31/12/2020 (including both days) are fairly stated in the final version of the Monitoring Report. The GHG emission reductions were calculated correctly based on the approved baseline and monitoring methodology AMS-III.F – version 10.0, AMS-III.D version 18 and the monitoring plan contained in the VCS-PD.

Therefore, ESPL is able to certify that the emission reductions from the VCS project “Composting project in SC”.

In addition, as a result of the SOCIALCARBON verification, the verifier confirms that:

- the indicators and reports are in accordance with SOCIALCARBON Standard and “Santa Catarina Composting Project Indicators” – version 1.1;
- the project is being periodically monitored and Point Zero is being used as the baseline;
- there are perspectives of improvement and the efforts to seek for this improvement are being done. However, a decrease in the performance have been verified in the following resources for this monitoring period: Social, Human, Natural and biodiversity/technology, being this last one decrease two consecutive times in the last two monitoring periods.
- the report has been validated by an accredited entity, an on-site visit has been carried out and this verification report has been issued.

In addition, the verifier confirms that the indicators for “Santa Catarina Composting Project Indicators” – version 1.1 are accurate, and the calculations are correct. The SOCIALCARBON template and SOCIALCARBON Guidelines were correctly used.

ESPL herewith states that the project is not totally in line with SOCIALCARBON requirements considering that the Biodiversity/technology resource have decrease two consecutive times in the last two monitoring periods. All applicable criteria for the verification are in accordance with applicable rules and requirement.

The characterization of the Point Three for the project as “SATISFACTORY”, as described in the referenced documents, is accurate.

Verification period: From 01/05/2019 to 31/12/2020

SOCIALCARBON verification period: From 01/05/2019 to 31/12/2020

Verified GHG emission reductions and removals in the above verification period:

Year	Baseline emissions or removals (tCO2e)	Project emissions or removals (tCO2e)	Leakage emissions (tCO2e)	Net GHG emission reductions or removals (tCO2e)
2019 ⁶	1,938	776	0	1,162
2020	3,899	961	0	2,938
Total	5,837	1,737	0	4,100

⁶ From 01/05/2019 to 31/12/2019

Year	Net GHG ERs estimated in PD (tCO ₂ e) (A)	Net GHG ERs achieved during this MP (tCO ₂ e) (B)	% difference (B/A)
Total	22,341	4,100	18

When comparing to the estimated values in the VCS-PD, the project activity achieved approximately only 18% of the ERs estimated for the period. The main reason is that only 4 out of 13 farms have monitored their parameters.

Approved by



Dr. Kaviraj Singh

Managing Director
Earthood Services Private Limited

Date: 18-12-2024
Place: Gurugram, Haryana

APPENDIX I: REFERENCES

No.	Title	References
1.	<u>Methodologies</u> AMS-III.F. – “Avoidance of methane emissions through composting” AMS-III.D. – “Methane recovery in animal manure management systems”	version 10.0 version 18.0
2.	<u>Production report</u> - Altenor Farm: Integrators report - Ramella Farm: Integrators report - Secco Farm: Integrators report - Granja Silva Farm: Integrators report - Tomazi Farm: Integrators report - Baccin Farm: Integrators report	From 2019 to 2020
3.	<u>Licenses</u> - Altenor Farm: LO swine creation (Finishers) # 5891/2020 issued on 24/09/2020 by IMA - Ramella Farm: LO swine creation (Finishers) # 6442/2020 issued on 20/10/2020 by IMA - Secco Farm: LO swine creation (Finishers) # 8142/2019 issued on 06/12/2019 by IMA - Granja Silva Farm: LO swine creation (piglet) # 3881/2022 issued on 05/10/2022 by IMA - Suspiro Farm: LO swine creation (Finishers) # 4466/2020 issued on 29/07/2020 by IMA - Baccin Farm: LO swine creation (Finishers) # 0986/2022 issued on 06/04/2022 by IMA	Validity: 23/09/2024 Validity: 19/10/2024 Validity: 05/12/2023 Validity: 04/10/2026 Validity: 28/07/2024 Validity: 05/04/2026
4.	MR and social Carbon Report – draft	version 01 – 16/09/2022
5.	MR and social Carbon Report – revised / final	version 02 – 10/03/2023 version 03 – 29/05/2023 version 04 – 23/05/2024 version 05 – 25/09/2024 version 06 – 10/12/2024
6.	ER Spreadsheet – draft (apart from consolidated spreadsheet, spreadsheet from each farmer was provided, where the fine calculations are available)	version 1
7.	ER Spreadsheet – revised / final	version 6
8.	VCS-PD (Registered)	version 06.1 – 10/01/2014
9.	Embrapa – Brazilian Agricultural Research Company 1. Study regarding the performance and quality of swine – This report was used to evaluate the proportion of carcass from the whole swine weight.	Oct/1987

	2. Article regarding average daily production of swine manure - OLIVEIRA, Paulo Armando V. de. Produção e manejo de dejetos de suínos. Concórdia: Embrapa, 2003. 83 p. Information taken from Table 1. Value adopted to the current monitoring for the amount of solid waste (in kilogram): average daily production of swine manure, including manure and urine, according to animals weight.	2003
10.	<u>Social Resource:</u> - List of cooperatives and association of swine farmers Interviews with farmers regarding extra income/other activities	2019 to 2020 for all evidences
11.	<u>Human Resource:</u> - Pictures of diseases agents control obtained during site visit Personal protection equipment (PPE) control (when available)	2019 to 2020 for all evidences
12.	<u>Financial Resource:</u> - Records of animals provided by integrators - Interviews regarding application of compost Spreadsheet with control of payment of the VCUs	2019 to 2020 for all evidences
13.	<u>Biodiversity/technology resource</u> - Interviews with farmers and with equipment provider regarding maintenance plans Interviews regarding technology diffusion	2019 to 2020 for all evidences
14.	<u>Carbon Resource:</u> - Comparison between MR and PD regarding performance Contract between VVB and PP for conducting the verification	2019 to 2020 for all evidences
15.	<u>Social carbon Calculation Spreadsheet</u> - SC_Composting Project in Santa Catarina_Point3	Version 02
16.	<u>VCS Requirements</u> 1. VCS Standard 2. VCS Program Guide	Version 4.4 Version 4.3
17.	Santa Catarina Composting Project Indicators	version 1.1
18.	Guidance for Completing SOCIALCARBON Reports	version 4.0
19.	SOCIALCARBON Standard	version 5.0
20.	SOCIALCARBON	http://www.socialcarbon.org/
21.	IPCC publications	www.ipcc-nggip.iges.or.jp
22.	UNFCCC	http://cdm.unfccc.int
23.	VCS	verra.org
24.	<u>Parameter Conditions of the composting process</u> <i>Evidences have been provided to the verification team as follows:</i> 1. Belmirro Secco - Projeto Compostagem (spreadsheet of composting process monitoring during the monitoring period) 2. Dados monitorados Altenor Basso (spreadsheet of composting process monitoring during the monitoring period) 3. Granja Silva - planilha 2019 and 2020 (spreadsheet of composting process monitoring during the monitoring period)	<u>2019 - 2020</u>

	4. Ramella_Planilha de Monitoramento – 2019 e 2020 (spreadsheet of composting process monitoring during the monitoring period)	
25.	Parameter <i>Soil application of the compost for agricultural purposes</i> <i>The following evidences have been provided to the verification team</i> 1. File Altenor Basso - Compost destination spreadsheet 2019 – 2020 2. File Questão 8 do SC - Granja Silva - questionnaire where the compost Destination is being described 3. File Ramela – Composto – spreadsheet with control of internal consumption of the compost 4. File Santa Lucia - spreadsheet with control of internal consumption of the compost (Secco Farm)	

APPENDIX II: ABBREVIATIONS

Abbreviations	Full texts
BE	Baseline Emission
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CO ₂	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
CL	Clarification Request
DOE	Designated Operational Entity
DOF	Document of Forest Origin
ER	Emission Reduction
ESPL	Earthood Services Private Limited
FAR	Forward Action Request
GHG	Greenhouse gas(es)
MP	Monitoring Plan
MR	Monitoring Report
PA	Project Activity
PE	Project Emission
PP	Project Participant
PPE	Personal Protection Equipment
QA/QC	Quality Assurance / Quality Control
SC	SOCIALCARBON
SCR	SOCIALCARBON Report
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCS-PD	VCS – Project Description
VCU	Verified Carbon Unit
XLS	Emission Reduction Calculation Spread Sheet

APPENDIX III: FINDINGS

Table 1. CL from this verification

CL ID	01	Section no.	5.4	Date: 15/12/2022
Description of CL				
MR section 5.4: a comparison of emission reductions estimated in PDD for the monitoring period with actual ERs achieved during this monitoring period has not been done in the section. Moreover, apart from the comparison, the reasons for increase/decrease in the ERs achieved has also not been justified.				
Project participant response				Date: 10/03/2023
Information regarding emission reductions estimated in PDD for the monitoring period with actual ERs achieved during this monitoring period was included in the section 5.4. Moreover, apart from the comparison, the reasons for increase/decrease in the ERs was also justified.				
Documents provided by Project Participant				
VCSsocialCarbon_MR_Composting Project in Santa Catarina_4th_01 05 2019_31 12 2020_v2				
DOE assessment				Date: 11/04/2023
The comparison between estimated and achieved ERs have been duly included in the MR section 5.4. The decrease in the achieved ERs is mainly due to the fact that several farms did not participate from this monitoring period due to financial or other issues.				
Information is in accordance with VCS requirements.				
<u>CL is closed</u>				

CL ID	02	Section no.	4.1	Date: 05/05/2023
Description of CL				

MR section 2.2. As per instructions for completing the MR, the following information has not been clearly described:

the process for, and the outcomes from, ongoing communication with local stakeholders conducted prior to verification. Include details on the following:

- The procedures or methods used for engaging local stakeholders (e.g., dates of announcements or meetings, periods during which input was sought).
- The procedures or methods used for documenting the outcomes of the local stakeholder communication.
- The mechanism for on-going communication with local stakeholders.
- How due account of all and any input received during ongoing communication has been taken. Include details on any updates to the project design or justify why updates are not appropriate.

Project participant response	Date: 29/05/2023
The following details was included in Section 2.2 of the Monitoring Report regarding the Local Stakeholder Consultation conducted at the Validation process and the on-going communication with local stakeholders during the monitoring period.	
Documents provided by Project Participant	
n/a.	
DOE assessment	Date: 16/06/2023
Information has been updated as required by instructions for completing the MR. Ongoing communication procedure is in place and it was evidenced during the on-site inspection. No complaints have been received during the current monitoring period.	
<u>CL is closed</u>	

Table 2. CAR from this verification

CAR ID	01	Section no.	4.3	Date: 15/12/2022
Description of CAR				
ER calculations - tab baseline emissions: the parameter Number of days where animal manure management system is operational (ndy) for the farm Altenor Basso is not calculated in accordance with applied methodology (and with spreadsheets from other Farms)				
Project participant response				Date: 10/03/2023
The parameter Number of days where animal manure management system is operational (ndy) for the farm Altenor Basso was revised in accordance with applied methodology (and with spreadsheets from other Farms)				

Documents provided by Project Participant	
VCS MR Calculations_Altenor Basso_Farm_Period 04_01-05-2019_31-12-2020_v2	
DOE assessment	Date: 11/04/2023
Corrections have been observed in the ER calculation spreadsheet. The formula now is consistent with other spreadsheets and it is considered accurate by the verification team.	
<u>CAR is closed</u>	

CAR ID	02	Section no.	4.3	Date: 15/12/2022
Description of CAR				
The values reported in the aggregated spreadsheet (VCS MR Calculations_Period 04_01-05-2019_31-12-2020_v1) for farms Ramella, Granja Silva, Basso and Secco (all farms participating from this monitoring period) are not in accordance with calculations carried out in the individual spreadsheet (VCS MR Calculations_[FARM]_Period 04_01-05-2019_31-12-2020_v1)				
Project participant response				Date: 10/03/2023
The values reported in the aggregated spreadsheet was corrected in accordance with calculations carried out in the individual spreadsheet for all farms.				
Documents provided by Project Participant				
VCS SocialCarbon_MR_Composting Project in Santa Catarina_4th_01 05 2019_31 12 2020_v2				
DOE assessment				Date: 11/04/2023
Values aggregated are now in accordance with individual spreadsheets. The values have been conservatively round down (baseline emissions) and round up (project emissions) in the aggregated spreadsheet.				
<u>CAR is closed</u>				

CAR ID	03	Section no.	4.3	Date: 05/05/2023
Description of CAR				
<i>Section 4.2: parameter EFELi,y:</i> 1. the value of EFBM for 2020 is not in accordance with DNA's webpage. 2. The statement "The emission factor of the grid - Year 2019 is not available yet. Therefore, the same value of the year before (2018) was used." is not correct for the present MP 3. Calculation method: The link visited in 2015 (http://cdm.unfccc.int/methodologies/PAMethodologies/tools/am-tool-07-v3.0.0.pdf) is not reasonable for this verification;				
Project participant response				Date: 29/05/2023

Section 4.2: parameter EFELi,y:	
1. the value of EFBM for 2020 was corrected in the individual VCS MR Calculations Spreadsheets of the farmers and now are in accordance with DNA's webpage. 2. The statement was excluded of the Monitoring Report. 3. The information was revised in the Monitoring Report.	
Documents provided by Project Participant	
n/a.	
DOE assessment	Date: 16/06/2023
1. The parameter is now in accordance with evidence provided and the calculations are now accurate 2. The information has been correctly excluded from the ER calculations as it was not applicable. 3. Information has been duly revised in the MR.	
<u>CAR is closed</u>	

Table 3. FAR from this verification

Not applicable.

Table 4. FAR from previous verification

Not applicable

APPENDIX IV: FINDINGS – SC

Table 1. CL from this verification

CL ID	01	Section no.	4.6	Date:	05/05/2023
Description of CL					
The following clarifications are being requested for Social Carbon indicators; 1. 6.1.2 – Health and safety practices: if “two farmers have control of use and withdraws”, shouldn’t they score 4 or 5 and change the average, if evidence is provided?; 2. 6.1.3 – Number of animals: by the description of the scenario “Three of the four swine farms had an increase in the number of animals, the other farm had a decrease in the number of animals” it is not possible to check if the scores by farm are correct (5 / 6 / 5 / 3); 3. 6.1.3 – Generation and commercialization of the compost: the score indicated in the MR is not correct based on score’s result; 4. 6.1.4 – Environmental legislation: it is not clear which Brazilian Legislation the entrepreneurs are not achieving, as per score 5 description. 5. 6.1.4 – Chemical and Physical Analysis of the Compost: as per described scenario, it is not clear why Altenor is scored 3; 6. 6.1.5 – Compost quality: as per described scenario, it is not clear why Altenor is scored 2; 7. 6.1.6 – Stakeholder consultation: as per described scenario, it is not clear why two farms are scored 2; 8. 6.2.2 – Carbon: it is not reasonable that a decrease in the score, with the lowest score of the 4 verifications, has accomplished with the expectations for this period, as stated by PP; 9. 6.3.3: several prospects are described in the section, which is not consistent with section 6.1 above, where no prospects are foreseen for any indicator.					
Project participant response					Date:
					29/05/2023

The following clarifications are being answered for the Social Carbon indicators;

1. The mentioned information, "two farmers have control of use and withdraws," was revised in the MR, as neither of the producers has control over the withdrawal of PPEs, as described in each farm's individual reports;
2. The description of the scenario was detailed citing the difference in the number of animals in each monitoring period. The Score of each farm is obtained by analyzing the average of animals produced annually, comparing the number in this monitored period with the number of the last monitoring period. This number is presented in the individuals calculation spreadsheets as the parameter N_{PY} (Animals produced annually), calculated through the data registered by each farm integrating the project;
3. The correct score "4" was selected and now are aligning with the average score of 4.25;
4. Silva and Ramella farms are not in compliance with the Forest Code, and that is why their score are corresponding to 5. This information can be verified in the questionnaire answered by the farmers. The remaining producers are complying with both Brazilian legislations and therefore obtained a score of 6. The MR description were also revised and now indicate the real scenario;
5. As verified in the questionnaire answered by the farmer and in the interview, Altenor Farm was the only one that undertook initiatives for chemical and physical control analysis of the compost. Although conducted informally, this activity qualifies as an initiative for analyzing the compost. The MR was also detailed following this information;
6. As per described scenario, there was an inconsistency in the evaluation of the score of the other farmers since they all have made the analysis of the quality of the compost in their own crops. In addition, to be classified as such, the compost must meet minimum technical specifications. With that, for the implementation of the project, the swine farmers evaluated all the conditions to satisfy them, such as dry matter, presence of heavy metal and concentration of nutrients, enabling their commercialization. In this way, all farms obtain a score 2 in this indicator, since all are able to commercialize the compost generated in this technology, as they are in accordance with the minimum specifications established in previous analyzes. The MR was revised to detailed this information;
7. Regarding the indicator "Stakeholders consultation", all scores were reviewed and updated to a score 2. The stakeholders were formally communicated about the project with the letters sent at the Validation. In addition, in this monitoring period, the project proponents maintain open the channels available to submit comments and suggestions at any time. The description was also revised in the MR and now are in accordance with the real scenario of all farms;
8. The information was corrected in Section 6.2.2 and now is in accordance with the real scenario of the project in this monitored period;
9. The prospects described in section 6.3.3 was included in section 6.1 of the Monitoring Report corresponding to your specific indicators.

Documents provided by Project Participant

n/a.

DOE assessment

Date: dd/mm/yyyy

1. 6.1.2 – Health and safety practices: information has been duly revised in the MR and it is now in accordance with real situation.
2. 6.1.3 – Number of animals: information has been duly detailed in the MR and it is now clear which farm has increase and which has decreased the amount of animals.
3. 6.1.3 – information has been duly corrected in the MR;
4. 6.1.4 – Environmental legislation: information has now being detailed in the MR. Assessment is now clear.
5. 6.1.4 – Chemical and Physical Analysis of the Compost: the reason for the score of each farm is now clear in the MR and in accordance with real situation;
6. 6.1.5 – Compost quality: Altenor farm situation has now been clarified and it is in compliance with observations carried out during on-site inspection;
7. 6.1.6 – Stakeholder consultation: justification has now been provided. Information is in accordance with situation observed during the on-site inspection.
8. 6.2.2 – Carbon: information has been clarified in the MR. Assessment is now accurate;
9. 6.3.3: information has been duly adjusted in the MR.

CL is closed

Table 2. CAR from this verification

CAR ID	01	Section no.	4.6	Date:	15/12/2022
Description of CAR					
The results of social carbon presented in the MR were not related to the current monitoring period as it could be observed during the on-site inspection and interviews to project proponents.					
Project participant response				Date:	10/03/2023
The results of social carbon presented in the MR were revised for the current monitoring period as it could be observed during the on-site inspection and interviews to project proponents.					
Documents provided by Project Participant					
VCSsocialCarbon_MR_Composting Project in Santa Catarina_4th_01 05 2019_31 12 2020_v2 SC_Composting Project in Santa Catarina_Point3_v02 Draft evidence> Relatórios Individuais das Granjas					
DOE assessment				Date:	11/04/2023
The results of social carbon presented in the MR are now in accordance with current monitoring period. Evidences were duly obtained through interviews and reliable documents provided.					
<u>CAR is closed</u>					

Table 3. FAR from this verification

Not applicable.

APPENDIX V: TEAM COMPETENCE

Competence Statement			
Name	Marcelo Sebben		
Country	Brazil		
Education	M.Sc. (Sustainable Energy System) B. Eng. (Chemical Engineering)		
Experience	+12.5 Years		
Field	Chemical process industry, CDM, Energy, Climate Change		
Approved Roles			
Team Leader	Yes		
Validator	Yes		
Verifier	Yes		
Methodology Expert	Yes (ACM0001, ACM0002, ACM0006, AM0065, AMS ID, AMS-I.E, AMS-I.C, AM0026, AMS-I.A, AMS-I.F, AMS-III.E, AMS-III.H, AMS-III.I. AMS-III.J. GS: Ecologically Sound Fuel Switch to Biomass with Reduced Energy Requirement, GS: Technologies and Practices to Displace Decentralized Thermal Energy Consumption)		
Local expert	Brazil, Chile, Honduras, Colombia		
Financial Expert	Yes		
Technical Reviewer	No		
TA Expert	Yes (TA 1.1, 1.2, 4.1, 5.1, 9.1, 13.1)		
Reviewed by	Shreya Garg	Date	29/07/2020
Approved by	Anshika Gupta	Date	29/07/2020

Competence Statement	
Name	Kaviraj Singh
Country	India
Education	Ph.D. (Environmental Engineering), IIT Delhi Masters (Energy & Environmental), DAVV Indore
Experience	15 Years +
Field	Climate Change & Environment
Approved Roles	
Team Leader	YES
Validator	YES
Verifier	YES
Methodology Expert	AMS-I.D., AMS-II.D., ACM0006, AMS-I.A., AMS-I.C., AMS-II.B., AMS-III.H, ACM0002, ACM0001, AM0080, ACM0018, AM0056
Local expert	YES (India)
Financial Expert	YES

Technical Reviewer	YES		
TA Expert	YES (TA 1.1, TA 1.2, TA 3.1, TA 13.1, TA 13.2)		
Reviewed by	Shreya Garg	Date	12/02/2020
Approved by	Anshika Gupta	Date	12/02/2020