

SOCIALCARBON REPORT

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ATTACHMENTS

1. Identifying the Project

Basic Information

Indicators	Version used for the diagnosis and for completing the report: Santa Catarina Composting Project Indicators.
Project Name	Composting Project in Santa Catarina
Year-Point of Project	Two
Monitoring period (SOCIALCARBON)	July 01 st , 2015 to April 30 th , 2019
Version + Date of report completion	Version 03 March 11 th , 2020
Corresponding Monitoring Report (Carbon Accounting Standard)	3 rd Monitoring Report, from July 01 st , 2015 to April 30 th , 2019
Location	State of Santa Catarina, Brazil

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2. Project Details

2.1. Summary Description of Project

Brazil is the fourth country in the world to export swine meat. During 2017, Brazilian swine farmers produced 3.75 million tons of pork. This sector is responsible for the economical and social development of various cities of Brazil. Practically half of the Brazilian pig herd is concentrated in the South of Brazil. Moreover, Santa Catarina State is the one with the largest pig herd and also presents the largest number of heads per unit area (ABPA, 2018)¹

The project proponents are mostly composed of small family farms. The families are part of an integrated production system, which is a partnership between swine farmers and industries (integrators). Farmers are responsible for all installations and the necessary manpower for the production; meanwhile integrators provide animals, veterinary assistance, and animal food, and others.

All farms composing the present project have their production destined to industries. According to the Brazilian Association of Producers and Exporters of Swine Meat Report, most swine farms in the country have the same type of production. In the year of 2008, from the total production of 3,029 thousand tons of swine, only 342 thousand tons were destined to subsistence (ABIEPCS, 2008).² Another characteristic of swine farms is that all farms in the project have intensive production and all animals are kept in confinement.

In the year of 2017 the production of swine meat in Brazil was about 3,75 million tons. In the same year, swine meat per capita was 14.7 kg/person. The top five destinations for Brazilian pork exports in 2017 are: Russia, Hong Kong, China, Singapore and Argentina³.



Picture 1. Mr. Altenor José Basso, swine farmer included in the project, and his family.

¹ ABPA. Associação Brasileira de Proteína Animal. **Relatório Anual 2018**. Available at: <http://abpa-br.com.br/storage/files/relatorio-anual-2018.pdf>. Link last visited on: 26/09/2019.

² ABIPECS. Associação Brasileira da Indústria Produtora e Exportadora de Carne Suína. **Relatório ABIPECS, 2008**. Available at: <http://abpa-br.com.br/files/publicacoes/246219dbb388659091cdfae9ec00e83.pdf> Link last visited on: 24/08/2015

³ A.C.C.S. Associação Catarinense de Criadores de Suínos. **Exportações de Carne Suína 2017**. Available at: <https://www.accs.org.br/exportacoes> Link last visited on: 27/09/2019

- **Characteristics of the Composting Project in Santa Catarina**

Sustainable Carbon - Projetos Ambientais Ltda. is developing a sustainability program along with 6 swine confinement farms in Brazil.

Aiming to improve animal manure management systems, reduce greenhouse gases (GHG) emissions associated to swine waste management, and improving the livelihood of families in farms, the present project activity therefore contributes to sustainable development.

According to the First Brazilian Inventory of anthropogenic GHG emissions from the Ministry of Science and Technology and EMBRAPA⁴, Brazilian swine manure systems can be divided into two distinct groups. The first group (occurring mainly in the states of São Paulo, Goiás and Mato Grosso) is composed of large farms, over one thousand swine, where the usual treatment system consists of several stabilization lagoons. And the second group (occurring mainly in the west of the state of Santa Catarina, state of Paraná and northwest of the state of Rio Grande do Sul) is composed of small farms, distributed as follows: small (up to 100 swine), medium (100 to 300 swine) and large (over 300 swine).

The treatment system commonly used by the second group described above is the open tank (single anaerobic lagoon), with a retention time that varies from 20 to 90 days. After that period, the final product is applied on the soil within the farm or in neighboring areas, as illustrated by the picture below.



Picture 2. Swine manure being applied to the soil

⁴ First Brazilian Inventory of anthropogenic GHG emissions. Ministry of Science and Technology and EMBRAPA. Available at: <http://www.mct.gov.br/upd_blob/0005/5206.pdf>. Last visit on: 24/08/2015.

According to the Normative Instruction nº 11 (IN 11) of FATMA⁵ (Fundação do Meio Ambiente, which is the environmental authority in the State of Santa Catarina), swine manure must be stored for at least 120 days in anaerobic lagoons in all farms where there is no other waste treatment system. Following the applicable law, swine farms are not obligated to change their current swine manure system.

Nevertheless, the project faces difficulties concerning the current lack of more rigorous legislation, which stimulates the predominance of the common practice (anaerobic lagoons) within the farms' region. Therefore, without the incentive of carbon credits, the farms involved in the project would install or maintain anaerobic lagoons to treat manure, instead of installing a mechanized composting system. This scenario would ensure compliance with local regulations but would result in higher GHG emissions.

Anaerobic lagoons are significantly more economically attractive than the AWMS proposed by the present project activity. In addition, these lagoons were already built in accordance with Santa Catarina environmental law in Brownfield farms. Even where there is the need for further investments, anaerobic lagoons would be more economically attractive, since the investment is lower than implementing the new AWMS.

Alterations and adaptations were necessary in order to stop treating animal manure with anaerobic lagoons and start using the composting technology. It is estimated that the project will reduce **126,239** tons equivalent of CO₂ in a period of ten years.

2.2. Project Location

The project was implemented in the municipalities of *Nova Erechim*, *Herval d'Oeste*, *Jaborá* and *Concórdia*, as showed in the figure below:

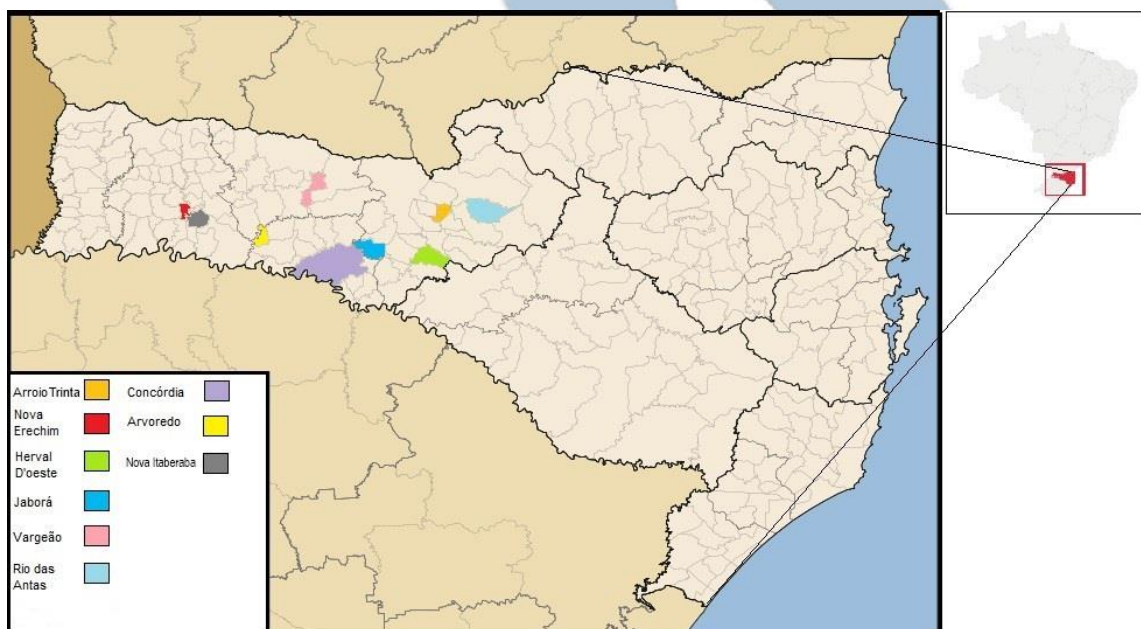


Figure 1. Location of farms participating in the project activity

⁵ Normative instruction available at:
<http://www.fatma.sc.gov.br/images/stories/Instrucao%20Normativa/IN%2011/in_11.pdf>. Last visit on 24/08/2015.

The project proposes to replace the baseline Animal Waste Management Systems (AWMS) by a lower-GHG emitting AWMS. All farms are located in the state of Santa Catarina, in the southern region of Brazil.

3. Method of applying SOCIALCARBON Methodology

3.1. Social, economic and environmental impacts of the emission reductions project

Table below shows the major social, economical, and environmental impacts of the swine farm activity. The relevant environmental impacts, which are specifically related to emission reductions, are described at the Project Description, in the Section 5 - Environmental Impact.

Table 1. Main social, economical and environmental impacts

Activity	Aspect	Impact	Impacts Classification		Comments/ Observations
			Positive	Negative	
Aerobic decomposition during composting	Reduction of GHG emissions and Hydrogen Sulfide	- Changes in air quality - Reduction of smell due to decomposition	X		Carbon Resource: - Project Performance Technology Resource: - Maintenance of Composting site
Aerobic decomposition during composting	Reduction of Liquid Waste	- Reduction of smells - Reduction of diseases agents - Reduction of soil pollution - Reduction of water pollution - Possibility of increasing animal production - Benefits for stakeholders	X		Technology Resource: - Maintenance of Composting site - Compost Quality Natural Resource: - Physical and chemical analysis of the compost Human Resource: - Diseases Agents Financial Resource: - Number of animals
Aerobic	Production of	Generation of compost	X		Financial Resource:

decomposition during composting	minerals and water				- Generation and commercialization of compost
Carbon Credits Project	Commercialization of the credits	- Income generation for families involved in the project	X		Financial Resource: - Commercialization of carbon credits
Aerobic decomposition during composting	Technology changes for treating swine wastes	- Less leaching and percolation into water bodies - Diffusion of technology - Reduction of Health Risks for humans and animals	X		Human Resource: - Control of microorganism Natural Resource: - Physical and chemical analysis of the compost Technology Resource: - Compost Quality - Technology Diffusion
Aerobic decomposition during composting	Addition of value to the final product	- Income generation for families involved in the project	X		Financial Resource: - Generation and commercialization of the compost - Income generation due to carbon credits Social Resource: - Satisfaction of small farmers - Economic dependency
Installation of a mechanized composting system	Costs of the installation and substratum	- Demand of financial investments		X	Financial Resource: - Credit
Composting project	Third part validation and verification	- Rigidity during evaluation of Brazilian legislation	X		Carbon Resource: - Validation/ Verification Natural Resource: - Environmental Legislation
Composting project	Empowerment	- Increase of autonomy for swine units(farms)	X		Social Resource: - Association/ Cooperative - Economic Dependency
Composting project	Application of Social Carbon Methodology	- Incitement to better practices - Stakeholders consultation	X		Human Resource: - Health and Safety Practices Natural Resource: - Environmental

					Management Carbon Resource: - Technological diffusion - Stakeholders consultation
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3.2. Method used for obtaining information

The method used in the application of the SOCIALCARBON Standard indicators was carried through as follows:

Stage 01: Elaboration of a questionnaire.

Stage 02: The questionnaire was conducted by the people responsible for carrying out the SOCIALCARBON Methodology. It was completed by conducting semi-structured interviews with project participants. The questionnaires aimed to obtain information about the six resources of the SOCIALCARBON Standard.

Stage 03: Obtainment of evidences, such as interviews, pictures and documents.

3.3. Actors involved

The following key representatives were identified and selected for participating in the diagnosis:

Table 2. Participants List

Relation of Participants	
Name	Function/Job
Renato Baccin	Swine farmer
Altenor Basso	Swine farmer
Everaldo Secco	Swine farmer
Wilian Rodrigo da Silva	Swine farmer
Lenize and Nóbile Tomazzi	Swine farmers
Antônio Carlos Ramella	Swine farmer

4. Results

4.1. Social Resource

4.1.1 Association and Cooperatives: Evaluates if the swine farmer is involved in sector associations or cooperatives.

Association: Group of two or more people that are organized for defending common interests, nonprofit with a legal personality (IE, 2011).

Cooperative: Organization of, at least, seven physical people, united through cooperation and mutual support, with democratic and participative management, with common social and economic goals, which legal aspects are distinct from other societies (IE, 2011).

Four of the six swine farmers 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:

- Cooperalfa: Promotes economic development in the agricultural sector;
- Cooperativa Eletrif Rural Vale Araçá: Promotes electric rural development;
- CERAÇÁ: Cooperative that promotes infrastructure development and energy distribution;
- CIDASC: Cooperative that promotes agricultural development in the state of Santa Catarina;
- Núcleo de Suinocultores de Nova Erechim;
- SINTRAF: The syndicate of family agriculture workers aims to guarantee family rural workers' rights and to improve working conditions in agriculture;
- SICOOB Crediauc: Provides financial assistance to members;
- Local agriculture associations: Aim to solve local agriculture issues.

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 these organizations.	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 farmer's business.
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Index: 5.00 (Five)

4.1.2 Economic Dependency: Evaluates financial dependency of the swine farmer regarding his production, as well as the income generated by new activities introduced due to the compost production.

Even though it generates profit, the swine farmers do not rely just on the swine activity. Two of them rely on more than two economic activities, and the other four either practice subsistence or depend on other economic activities that generate income, such as:

- Milk Production;
- Cattle;

- Aviary; - Agribusiness sales representation; - Treasuring at a credit cooperative system of Brazil; - Trading; - Salami Production; - Compost 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).
Index: 5.33 (Five-point-thirty-three)					
4.1.3 Farmer Satisfaction: Evaluates the satisfaction of the farmer regarding the GHG emissions reduction project.					
All 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.
Index: 5.83 (Five-point-eighty-three)					

4.2. Human Resource

4.2.1 Control of microorganisms: Evaluates biological characteristics of the compost regarding risks for human, animal and environmental health. The parameters evaluated are the presence and amount of the following: total amount of coliforms (bacteria that indicates contamination of the compost- CT), faeces coliform (bacteria commonly found in faeces-CF), faeces streptococcus (EF) and Salmonella (EMBRAPA, 2007; EMBRAPA, 2008).

The 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.
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Index: 1.00 (One)

4.2.2 Diseases Agents: Evaluate actions undertaken in order to control diseases within the swine farm boundaries.

Mechanical Control: Actions hindering the Access to diseases agents and that avoid that the agents enter the plant site through gaps in the physical structure.

Chemical Control: Use of chemical products, such as anticoagulant, poison, among others.

Biologic Control: Use of natural enemies of the diseases agents.

All swine farms presented some control of diseases agents. Among the possibilities to control such diseases, the chemical one was the most used, being five out of the six producers that undertake this action, i.e. using disinfectants. As mechanical control, two farmers mentioned isolating the compost, mainly through fences. And a bait holder; tube type 100mm, was used by a producer as biological control.

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.
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Index: 5.00 (Five)

4.2.3 Health and Safety Practices: Evaluates health and safety practices adopted in the swine farm.

All 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 (i.e. only two farmers have control of use and withdraws).

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).	The safety equipments are available, though they are used inadequately (i.e. there are no control of the use and withdraw).	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.
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Index: 4.33 (Four-point-thirty-three)

4.3. Financial Resource

4.3.1 Number of animals: Evaluates the control of the swine unit regarding amount of animals and if this amount is increasing or decreasing during the Project cycle.

Two of the six swine farms had an increase in the number of animals, the other farms kept their swine numbers the same as when the project started.

Producers have expectation that the correct swine waste management will make possible to increase the number of pigs allowed by the operational license.

There is no control of the amount of animals in the swine farm.	There was a significant decrease in the number of animals.	There was an insignificant decrease in the number of animals.	Amount of animals is the same as project baseline.	The amount of animals increased insignificantly after the project implementation.	The amount of animals increased significantly after the Project implementation.
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Index: 4.67 (Four-point-sixty-seven)

4.3.2 Generation and commercialization of the compost: Evaluates the amount of compost generated as well as its commercialization by the farmer.

Amongst the six swine farms, four commercialize the compost, with an average commercialization rate in the market about 50% of the total compost produced. The other two swine farms utilize all the compost in their own crops.

All producers affirm that there is demand for the compost; however, the price is very low, so they prefer to use it in their farms. The average price of compost varied in a range of R\$250

to R\$400 reais per ton, so the price fluctuated between R\$0.25/kg and R\$ 0.40/kg.

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.
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Index: 4.33 (Four-point-thirty-three)

4.3.3 Commercialization of carbon credits: Evaluates the context of the carbon credits commercialization during the period analyzed by the report.

All carbon credits generated during the second monitoring period were sold. In addition, future credits that will be generated during the third monitoring period (which the present SOCIALCARBON Report - Point 02 corresponds to) are already in process of 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.
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Index: 6.00 (Six)

4.4. Natural Resource

4.4.1 Environmental Management: Evaluates procedures for environmental management adopted by the swine farmer, including the organization and coordination of actions and documents regarding the swine activities: nutrition, water use, installations, energy and use of the waste for other activities.

All swine farms have environmental management systems established by the integrating companies, which comprise nutrition, water use, installations, energy and waste disposal. The majority of them has around three or so procedures regarding environmental management. The main activities carried out by farmers are related to nutrition, energy, water control and correct waste disposal.

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,	More than 50% of the environmental aspects of the swine farm are considered through the implementation of some actions,	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.
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	but with no documentation.	but with no documentation.			
Index: 3.83 (Three-point-eighty-three)					
4.4.2 Environmental Legislation: Evaluates if the swine farm is in accordance with Brazilian environmental standards and legislation (Ex: Operational License, Forestry Legislation Requirements, etc)					
All six swine farms have operational licenses. They also accomplish Forestry Code and all Brazilian environmental standards, as legislation predicts.					
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.
Index: 6.00 (Six)					
4.4.3 Chemical and Physical Analysis of the Compost: Evaluates if, during the period analyzed, chemical and physical analysis of the compost were undertaken.					
Among all swine farms, one did physical and chemical analysis of the compost; however, the technical report is not available. In addition, most of those analyses are carried out sporadically by the farmer.					
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.
Index: 1.00 (One)					

4.5. Biodiversity/Technology Resource

4.5.1 Compost quality: Evaluates the level of dry matter, the concentration of nutrients (C, N, P2O5, K2O, Ca e Mg), and the presence of heavy metal; and if these

parameters are adequate for maintenance of soil, water and vegetation quality.					
The compost is considered an organic fertilizer mixed of <i>Classe "A"</i>, which means an organic fertilizer from animal or vegetal source without the use of toxic material, resulting in a product of safe use in agriculture⁶. The Normative Instruction of Ministry of Agriculture, Livestock and Supply⁷ establish specifications about the physical and chemical characteristics of the compost. Among all the six producers, just two evaluated the compost quality in their own crops and stated that the result was positive. The swine farmers used to evaluate things 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 but, after having all tests' results turn out the same for these parameters for some time, they stopped in order to save money.					
The quality of the compost was never assessed.	The quality of the compost was not assessed by laboratorial tests, however it was tested in crops and it was positive.	The compost is not in accordance with the specifications of water levels and levels of nutrients (C, N, P2O5, K2O, Ca e Mg).	The compost is not in accordance with the specifications of water levels OR levels of nutrients (C, N, P2O5, K2O, Ca e Mg).	The compost is in accordance with the specifications of water levels AND levels of nutrients (C, N, P2O5, K2O, Ca e Mg).	In addition to this, information regarding quality of compost is available to the public.
Index: 1.33 (One-point-thirty-three)					
4.5.2 Maintenance of the composting site: Evaluates if the maintenance of the composting site (Mechanic and Automatic Composting Unit) is carried out periodically, even by the swine farmer or by an independent Company.					
Most producers stated that they have no difficulties in carrying out the maintenance of the composting site. Occasionally the maintenance is also carried out by a specialized company. However, the financial cost of the maintenance is very high, which was highlighted by the farmers.					
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	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.

⁶ 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.

⁷ 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.

	aeration.				
Index: 4.00 (Four)					
4.5.3 Technology Diffusion: Evaluates the contribution of the project for technology diffusion, which comprises knowledge diffusion and implementation of new Technologies.					
Five farmers have just informally explained the composting technology to neighbors and friends, at cooperatives and associations, events and by distributing pamphlets. And one farmer formally contributed to the technology diffusion, by distributing information about the composting project, the use of the compost, and the carbon credit project holding a lecture along with a slideshow during the monitored period to present the project and its results at fairs i.e. agronomy week, as well as through his website.					
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.
Index: 3.17 (Three-point-seventeen)					

4.6. Carbon Resource

4.6.1 Project Performance: Evaluates the Project performance analyzed by the corresponding Monitoring Report in comparison with the emission reductions estimated by the PD.					
Comparing the estimates from VCS PD and the 3 rd Monitoring period, it is possible to affirm that the performance of the project was great, as the emission reductions achieved during the current monitoring period were between 76 to 95% from those estimated in the VCS PD. The main reasons of this difference were:					
- Seven farm owners (Sítio Pickler, Pissaia Farm, Fazenda Andretta, Fazenda Colônia Zuffo, Fazenda Gilmar, Fazenda Helena and Fazenda Suruvy) 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	Low. From 26 to 50% of the emission reductions of the period were	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	Excellent. More than 95% of emission reductions were verified.

	verified.	verified.		verified.	
Index: 5.00 (Five)					
4.6.2 Stakeholders Consultation: Evaluates if stakeholders were informed and consulted regarding Project activity and its impacts, during the period analyzed.					
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. Stakeholders were informally informed and were not given the opportunity to make or send comments and suggestions.					
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.
Index: 2.00 (Two)					
4.6.3 Validation and Verification: Evaluates if the Project was partially or totally validated/verified by a third part and if the third part is accredited by the UNFCCC, as well as if the national and international Standards are being					
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.
Index: 6.00 (Six)					

5. Historic analyses

Table presenting historic performance of the Resources:

Resource	Point Zero	Point One	Point Two
Social	4.18	4.03	5.39

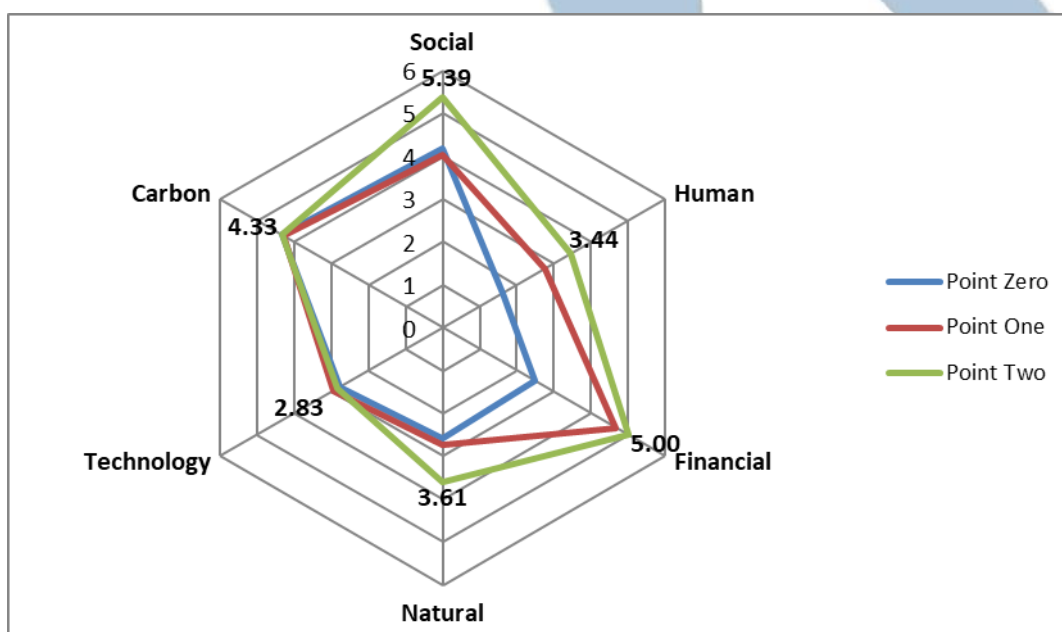
Human	1.66	2.76	3.44
Financial	2.47	4.67	5.00
Natural	2.58	2.73	3.61
Biodiversity/Technology	2.77	2.94	2.83
Carbon	4.33	4.27	4.33
General Performance	2.99	3.57	4.10

The general performance of the Composting Project in Santa Catarina was satisfactory, showing an increase of around 20% from the Point Zero to the Point 01. The most significant increase was the financial indicator, with almost 90% increase, followed by the human resource, with 70% increase. The worse result was in the social resource, with a 4% decrease. Table 3 below depicts the performance by resource. Furthermore, the Figure 2 below shows the historic performance of the six resources analyzed in this project.

Table 3. Performance of the Composting Project in Santa Catarina by resource

Performance by Resource					
Resources	Critical	Satisfactory	Sustainable	Average	Performance
Social	0.0%	33.3%	66.7%	5.39	Sustainable
Human	33.3%	66.7%	0.0%	3.44	Satisfactory
Financial	0.0%	66.7%	33.3%	5.00	Satisfactory
Natural	33.3%	33.3%	33.3%	3.61	Satisfactory
Technology	33.3%	66.7%	0.0%	2.83	Critical
Carbon	33.3%	33.3%	33.3%	4.33	Satisfactory
General	22%	50%	28%	4.10	Satisfactory

Figure 2. SOCIALCARBON hexagon of the Composting Project in Santa Catarina



6. Prospects

6.1. Status of the prospects from the last verified SCR

- Achieved prospects

Social Resource	
Indicator	Economic Dependency
Prospect	Farmers would like to make the swine production more profitable by improving the infrastructure and technology of the farms. This way, it would be possible to increase the number of animals produced per year. Furthermore, swine farmers would like to rely on more than two different economic activities (in addition to the swine production)
Details	Most swine farmers do not rely just on the swine activity. Therefore, most of them practice subsistence and other activities that generate income, such as milk production, cattle, aviary, agribusiness sales representation, treasuring at a credit cooperative system of Brazil, trading, among others.

Human Resource	
Indicator	Disease Agents
Prospect	Swine farmers would like to improve control methods of disease agents through fencing the farm, avoiding agents to enter inside the swine production site. This way, two kinds of actions would be used to control disease agents: mechanical and chemical.
Details	Besides fencing the farm, all swine farms presented at least two actions to control disease agents, which include mechanical, chemical and biological.

Financial Resource	
Indicator	Number of animals
Prospect	Swine farmers would like to expand the swine production by increasing the number of animals produced in the farm.
Details	

Financial Resource	
Indicator	Generation and commercialization of the compost
Prospect	Swine farmers would like to expand the commercialization of the compost, in order to achieve a trade rate of more than 50% of the total compost generated.
Details	

Natural Resource	
Indicator	Environmental management
Prospect	Swine farmers would like to improve environmental actions

	regarding the swine production, which mainly include: water control practices, waste disposal (increase recycling), and nutrition (improve the current way of feeding in order to reduce losses).
Details	Most swine farms have around three or so procedures regarding environmental management, the activities are directed to feed and energy matters, water control and correct waste disposal.

- Not achieved prospects

Human Resource	
Indicator	Health and Safety Practices
Prospect	Swine farmers would like to improve health and safety practices, by carrying out actions geared towards hygiene and health issues in the swine unit.
Details	All producers carried out actions to promote hygiene in the swine farm (since most of them follow requirements from integrators) but no improvements were made. Regarding safety practices, most safety equipment is available, though its use and withdraw is not controlled).
Follow up	The swine farmers intend to implement this by 2020.

Biodiversity/Technology Resource	
Indicator	Compost quality
Prospect	Swine farmers would like to analyze the compost quality, which would probably increase the commercialization rate of the compost.
Details	Among all the six producers, just one evaluated the compost quality. However, results are not available. Almost all producers tested the compost generated in their own crops and stated that the result was positive.
Follow up	The swine farmers intend to implement this by 2021.

Biodiversity/Technology Resource	
Indicator	Maintenance of the composting site
Prospect	Swine farmers intend to improve the structure and technology of the composting site.
Details	The swine farmers did not mention any improvements in the structure of the swine farms neither in their technology.
Follow up	The swine farmers intend to implement this by 2021.

Carbon Resource	
Indicator	Stakeholders Consultation
Prospect	Stakeholders consultation is planned to be carried out during the next analyzed period, where the main stakeholders will be communicated through formal letters, and they will have the opportunity to send comments and suggestions to Project

	developers.
Details	The producer assigned to take care of this kind of demand affirms to have carried out a formal stakeholder consultation in the form of letters, but also to have held a lecture along with a slideshow during the monitored period to present the project and its results. It is still not clear if there is record of the public's presence at the event or if they were given the opportunity to make or send comments and suggestions afterwards.
Follow up	The swine farmers intend to implement this by 2020.

6.2. Prospects

The main prospects identified during the diagnostic, including possible recommendations and goals to be reached, are described below.

Social Resource	
Indicator: Association and Cooperatives	Each farmer commits to be actively involved with at least one association or cooperative, using this as a tool to diffuse the composting technology.
Responsible	Swine farmers
Timescale	2020

Human Resource	
Indicator: Control of microorganisms	The producers commit to undertake at least 2 (two) biologic analyses during the next monitoring period.
Responsible:	Swine farmers
Timescale:	2020

Financial Resource	
Indicator: Generation and Commercialization of the Compost	The farmers will make efforts to commercialize more than 50% of the compost produced during the next monitoring period.
Responsible:	Swine farmers
Timescale:	2021

Natural Resource	
Indicator: Chemical and Physical analyses of the compost	Analyses of the compost will be undertaken twice in the next monitoring period. The first analysis will take chemical aspects into consideration, on the second time physical aspects must be considered.
Responsible:	Swine farmers
Timescale:	2020

Biodiversity/Technology Resource	
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Indicator: Quality of the compost	The swine farmers will have the quality of their compost assessed by laboratorial tests at least once during the next monitoring period.
Responsible:	Swine farmers
Timescale:	2021

Carbon Resource	
Indicator: Stakeholders Consultation	The implementation of a permanent channel for stakeholder's consultation will be studied and presented in the next monitoring period.
Responsible:	Swine farmers and Sustainable Carbon
Timescale:	2021

Social Resource				Human Resource			
Indicators		Score	Analysis	Indicators		Score	Analysis
1	Association and Cooperatives	✓5.00	SA	4	Control of microorganisms	✗1.00	C
2	Economic Dependency	✓5.33	SU	5	Diseases Agents	✓5.00	SA
3	Farmer Satisfaction	✓5.83	SU	6	Health and Safety Practices	⚠4.33	SA
Average		✓5.39	SU	Average		⚠3.44	SA
Indicators evaluated		3		Indicators evaluated		3	
C	Critical	0	0.0%	C	Critical	1	33.3%
SA	Satisfactory	1	33.3%	SA	Satisfactory	2	66.7%
SU	Sustainable	2	66.7%	SU	Sustainable	0	0.0%
Financial Resource				Natural Resource			
Indicators		Score	Analysis	Indicators		Score	Analysis
7	Number of animals	⚠4.67	SA	10	Environmental Management	⚠3.83	SA
8	Generation and Commercialization of the compost	⚠4.33	SA	11	Eenvironmental Legislation	✓6.00	SU
9	Commercialization of the carbon credits	✓6.00	SU	12	Chemical and Physical analyses of the compost	✗1.00	C
Average		✓5.00	SA	Average		⚠3.61	SA
Indicators evaluated		3		Indicators evaluated		3	
C	Critical	0	0.0%	C	Critical	1	33.3%
SA	Satisfactory	2	66.7%	SA	Satisfactory	1	33.3%
SU	Sustainable	1	33.3%	SU	Sustainable	1	33.3%
Biodiversity/Technology Resource				Carbon Resource			
Indicators		Score	Analysis	Indicators		Score	Analysis
13	Quality of the compost	✗1.33	C	16	Project Performance	✓5.00	SA
14	Maintenance of the composting site	⚠4.00	SA	17	Stakeholders Consultation	✗2.00	C
15	Technology Diffusion	⚠3.17	SA	18	Validation and Verification	✓6.00	SU
Average		✗2.83	C	Average		⚠4.33	SA
Indicators evaluated		3		Indicators evaluated		3	
C	Critical	1	33.3%	C	Critical	1	33.3%
SA	Satisfactory	2	66.7%	SA	Satisfactory	1	33.3%
SU	Sustainable	0	0.0%	SU	Sustainable	1	33.3%