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GOMES DE MATTOS CERAMIC FUEL SWITCHING PROJECT



Document Prepared by Sustainable Carbon – Projetos Ambientais Ltda

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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The project activity is Gomes de Mattos Ceramic Fuel Switching Project, which is a red ceramic factory located in Crato municipality, in the State of Ceará, northeast region of Brazil. The ceramic factory produces ceramic flagstone, tiles and bricks, destined mainly for the regional market in Ceará.

The objective of the implementation of this project activity in the Gomes de Mattos Ceramic Fuel Switching Project is to stop using the native firewood (without sustainable management plan), which is a non-renewable fuel, and completely substitute it with renewable biomasses to feed the ceramic kilns and fire their ceramic units, so that they can minimize environmental impacts related to the native wood deforestation and consumption.

This fuel switching project is reducing the greenhouse gas (GHG) emissions through the substitution of native wood for renewable biomasses to generate thermal energy. It was concluded that this is feasible when considering the income derived from commercializing the resulting carbon credits. This move was originally unattractive due to the high investment costs of the adaptation of machineries to the new biomass and other barriers.

Therefore, the emissions launched during the combustion of wood were not compensated by the replanting. An opposite scenario occurs with the renewable biomasses employed in this project activity, which have carbon neutral lifecycle.

In opposition to the identified baseline, the project activity generates thermal energy without stimulating deforestation and uses abundant renewable biomass.

The production process at Gomes de Mattos ceramic encompasses two Hoffman kilns and one Câmara kiln in order to burn the fuel and fire the ceramic units, which are mainly used in the construction sector.

The proposed project started the fuel switch in April of 2003 (which was defined as the project start date), and this was completely achieved by the end of April 2006. The project crediting period is 10 years, i.e., from 01-May-2016 to 30-April-2026.

The emission reductions due to the switching of non-renewable fuel (native wood) to renewable biomasses resulted in **155, 547 tCO₂e** during the monitoring period from 01-November-2017 to 31-July-2022. The contribution to sustainability will be monitored applying the SOCIALCARBON® Standard, which is based in six main pointers: Technology; Natural; Financial; Human; Social and Carbon Resources.

1.2 Sectoral Scope and Project Type

The project is associated to the following scope, as per UNFCCC definitions:

1 - Energy industries (renewable - / non-renewable sources).

This is not an AFOLU project. This is not a grouped project.

1.3 Project Proponent

The project proponents contributed to the current report by assigning the following roles and responsibilities to:

Organization name	CERÂMICA GOMES DE MATTOS LTDA - ME
Contact person	Mr. Stephenson Ramalho de Lacerda
Title	Mr. Stephenson Ramalho de Lacerda, Manager and monitoring data responsible: General data and information on inputs and outputs of the ceramic factory, detailed information on acquisition of renewable biomasses and how this data is kept by the controller's office.
Address	Rodovia CE 55, Km 06 Crato – Ceará – Brazil Postal Code: 63105-330
Telephone	+55 (88) 3521-6580
Email	ceramicacgm@yahoo.com.br

Organization name	Sustainable Carbon – Projetos Ambientais Ltda.
Contact person	Aline de Paulo Costa Lara de Paula Mariana Pereira Carriles
Title	Aline de Paulo Costa - Technical analyst Lara de Paula - Technical analyst Mariana Pereira Carriles – Technical consultant
Address	R. Doutor Bacelar. 368 – Conj. 23 – Vila Clementino Postal Code: 04.026-001 São Paulo – SP. Brazil
Telephone	+55 11 2649 0036

Email

tecnica@sustainablecarbon.com

1.4 Other Entities Involved in the Project

No other entity is involved in this project activity.

1.5 Project Start Date

According to version 05 of the VCS PD¹, project start date was defined as 01-April-2006. On this date, the project began reducing or removing GHG emissions, i.e. the ceramic started using renewable biomass as fuel.

1.6 Project Crediting Period

The crediting period for this project started on 01-May-2006 and ends on 30-April-2016. The second crediting period started on 01-May-2016 and ends on 30-April-2026.

VCS project crediting period: 10 years, two times renewable.

1.7 Project Location

According to the applied methodology, the project boundaries for the project are the physical, geographical areas of the renewable energy generation, thus, the limits Gomes de Mattos Ceramic Fuel Switching Project is located in Brazil, in the State of Ceará, which is indicated in Figure 01. The project site has the following postal address:

GOMES DE MATTOS CERAMIC

Rodovia CE 55, Km 06

Crato – Ceará – Brazil

Postal Code: 63105-330

¹ Document available at: <<https://registry.verra.org/app/projectDetail/VCS/64>>. Last visit on: November, 2022.



Figure 1. Geographic location of Gomes de Mattos Ceramic: 7° 10'36.50" S; 39° 24'49.23" W

1.8 Title and Reference of Methodology

The project applies a small-scale methodology approved under the Clean Development Mechanism, as follows:

Category AMS-I.E.: Switch from Non-Renewable Biomass for Thermal Applications by the User – Version 7.0, valid from 22-July-2016 to 31-October-2017². This category comprises small thermal appliances that displace the use of non-renewable biomass by introducing new renewable energy end-user technologies.

In addition, for SOCIALCARBON Standard, the indicators approved for Social Carbon Report Point Zero was “Indicators for the Ceramist Sector – Version 07 – 23 September, 2008”. Since 2013, specific indicators were developed for the Brazilian context, which resulted in updating the version used in this report.

Indicators Brazilian Red Ceramic factories Indicators September 2013. Version 1.1³ are being applied as a sustainability tool in association with VCS Standard.

1.9 Participation under other GHG Programs

The project activity is not registered under any other GHG program.

1.10 Other Forms of Credit

² This version of the methodology is available at:
<<https://cdm.unfccc.int/methodologies/DB/9LFOR81TCT5FLI1AJYP46CQY8O2J79>>. Last visit on: November 09th, 2022.

³ Brazilian Red Ceramic factories Indicators September 2013. Version 1.1 Available at:
<https://static1.squarespace.com/static/6161c89d030b89374bec0b70/t/618a25d16fa7b70681f284b6/1636443603506/Red-Ceramic-Indicators_v02_05_09_20131.pdf> Last visit on August 24th, 2023

- Emission Trading Programs and Other Binding Limits: The project activity is not included in an emission trading program or any other mechanism that includes GHG allowance trading.
- Other Forms of Environmental Credit: The project activity is not creating any other form of environmental credit under any specific program.

1.11 Sustainable Development

The project activity contributes to the reduction of greenhouse gas (GHG) emissions by avoiding the use of non-renewable fuels. In addition, the project activity will contribute to sustainable development of the host country, such as:

- The use of clean and efficient technologies through the use of renewable biomass as fuel. By these means, the project is in accordance with Agenda 21 and with Brazilian Sustainable Development Criteria;
- A pioneer initiative that encourages the development of new technologies throughout the country, which replaces the use of non-renewable fuels with renewable biomass which presents an efficient thermal energy generation potential as shown in the project demonstration.
- The use of renewable biomasses results in GHG emission reductions. This way the project does not cause any relevant negative impacts as all generated energy is a result of the best exploitation of the natural resources available. In addition, the project improves the local environmental conditions by establishing proper treatment for the renewable biomasses and also by contributing to the reduction on the use of non-renewable fuels.

2 SAFEGUARDS

2.1 No Net Harm

The only negative impact identified is that the project activity will generate ashes due to the burning of the biomass, but this impact will be mitigated by incorporating the ashes into the clay used as thermal insulator in the kilns entrance.

The burning of the new biomasses also emits particulate material and CO₂, as well as when using native wood. However, GHG emission reductions will be improved since they are renewable biomasses which have carbon neutral lifecycles.

In this way, the project does not cause any relevant negative impacts as all generated energy is a result of the best and unique exploitation of the natural resources available. On the contrary, the project will improve the local environmental conditions by contributing to avoid deforestation.

2.2 Local Stakeholder Consultation

The ceramic factory cares about the disclosure of the project for the community so they promote lectures to the stakeholders about the sustainability practices carried on in the ceramic. During the lectures, the factory consults the stakeholders' opinion and answer questions about the environmental initiatives. The factory has a trained team to perform the stakeholders' consultation. The stakeholders are also interested and concerned about the sustainability practices.

There was no registration of complaints.

2.3 AFOLU-Specific Safeguards

Not applicable. This is not an AFOLU project.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Activity

The VCS PD project was validated by the Designated Operational Entity Earthood Services Private Limited and this present monitoring report is being verified by RINA Services S.p.A

As described on the VCS PD version 09 the production process at Gomes de Mattos ceramic encompasses two Hoffman kilns and one Câmara kiln in order to burn the fuel and fire the ceramic units, which are mainly used in the construction sector.

The ceramic units that are cooked in the kilns can be dried using two drying systems. The first one is held in a covered area which allows the ceramic units to be naturally dried. The second is an artificial dryer which, besides using biomass as fuel to supply the energy that will dry the ceramic pieces, also reuses the energy generated by the kilns. In the current monitoring period, as renewable biomasses, the ceramic factory is employing native firewood from sustainable management plan.

This report represents point 7 of the SOCIALCARBON Standard, in which the project performed well, with an overall average of 4.7, which is in line with the satisfactory scenario. Of the six resources assessed, three performed satisfactorily (Social, Financial and Technological) and the others were assessed as sustainable (Human, Natural and Carbon).

In terms of social and environmental aspects, the ceramics factory has a wide range of activities, such as sponsoring Olympic jiu-jitsu athlete, a partnership with Geopark (a project aimed at preserving geological sites), where the ceramics company organizes excursions for students to visit the park. In addition, CGM has established a partnership with the NGO AQUASE to protect endangered bird species, and a bird observatory has been built on the site of the reserve, where the factory welcomes visitors free of charge to learn about the diversity of birds in the Caatinga biome.

CGM ceramic also has a partnership with a cooperative of recyclable material collectors from Crato municipality and, during the monitored period, the factory refurbished three wagons which the workers load up with cardboard, plastic, aluminium and other goods, and cart along the streets..

The ceramic factory also contributes to the quality of life of the local community, as it offers, through a partnership with SESI, access to leisure and medical services for employees and their families, as well as ophthalmologist consultations.

All these actions are possible thanks to CGM's financial organization, which has invested 100% of the funds obtained from the sale of credits in improvements for the company and the community. More details on the actions carried out at each resource can be found in section 6 of this report.

The table below demonstrates the emission reductions verified in the last monitored periods:

Emission Reduction (tCO _{2e})		
6° Monitoring Period	March to December of 2014	47,067
	January to December of 2015	58,614
	January to April of 2016	20,631
Total in the monitoring period		126,312
7° Monitoring Period	May to December of 2016	27,512
	January to October of 2017	33,163
Total in the monitoring period		60,675
Project Emissions		25.83
Emission Reduction		60,649

3.2 Deviations

3.2.1 Methodology Deviations

There were no methodology deviations during this monitoring period.

3.2.2 Project Deviations

There were no project deviations during this monitoring period.

3.3 Grouped Projects

Not applicable. This is not a grouped project.

3.4 Safeguards

Safeguards were addressed at Section 2 of the present VCS + SOCIALCARBON Monitoring Report.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	EF _{projected fossil fuel}
Data unit	tCO ₂ /TJ
Description	Emission factor for the substitution of non-renewable woody biomass by similar consumers.
Source of data	AMS-I.E.: Switch from non-renewable biomass for thermal applications by the user - Version 7.0. Available at: https://cdm.unfccc.int/methodologies/DB/9LFOR81TCT5FLI1AJYP46CQY802J79 Last visit on: Oct 17th, 2022.
Value applied	81.60 tCO ₂ /TJ
Justification of choice of data or description of measurement methods and procedures applied	In the baseline scenario, the fossil fuel that would probably be consumed in the absence of native wood without sustainable forest management would be the heavy oil. This fuel is more expensive than wood, however it can be a more plausible substitute of wood than natural gas due to the risks involving natural gas distribution.
Purpose of the data	The fossil fuel likely to be used by similar consumers is taken from the IPCC default value of residual fossil fuel. This parameter was used to calculate baseline emissions from the use of the fossil fuel that would be used in the baseline scenario, in the absence of non-renewable wood.
Comments	Applicable for stationary combustion in the manufacturing industries and construction.
Data / Parameter	ρ _{biomass}

Data unit	tonne/m ³
Description	Specific gravity of non-renewable wood
Source of data	Brazilian studies carried out with Caatinga wood: - LORENZI, H. Árvores Brasileiras: Manual de Identificação e Cultivo de Plantas Arbóreas Nativas do Brasil, vol.1. 4.ed. Nova Odessa, SP: Instituto Plantarum, 2002. - QUIRINO, W. F. et al. Poder Calorífico da Madeira e de Resíduos Lignocelulósicos. Biomassa & Energia, v.1, n.2, p. 173-182, 2004. Available at: < http://www.renabio.org.br/06-B&E-v1-n2-2004-173-182.pdf >. Last visit on: 19/05/2016. - IPCC: Intergovernmental Panel on Climate Change. Orientación del IPCC sobre las buenas prácticas para UTCUTS - chapter3 - Table 3A.1.9-2.LORENZI, H. Árvores Brasileiras: Manual de Identificação e Cultivo de Plantas Arbóreas Nativas do Brasil, vol.1. 4.ed. Nova Odessa, SP:Instituto Plantarum, 2002. - LORENZI, H. Árvores Brasileiras: Manual de Identificação e Cultivo de Plantas Arbóreas Nativas do Brasil, vol.2. 4.ed. Nova Odessa, SP:Instituto Plantarum, 2002. - OLIVEIRA, E. et al. Estrutura anatômica da madeira e qualidade do carvão de Mimosa tenuiflora (Willd.) Poir. Revista Árvore, Viçosa-MG, v.30, n.2, p.311-318, 2006. Available at: <http://www.scielo.br/pdf/rarv/v30n2/a18v30n2.pdf>. Last visit on: 19/05/2016 - IBAMA - Madeiras Brasileiras. <https://web.archive.org/web/20091226033704/http://www.ibama.gov.br/lpf/madeira/caracteristicas.php?ID=195&caracteristica=139>. Last visit on: 19/05/2016
Value applied	0.88 tonne/m ³
Justification of choice of data or description of measurement methods and procedures applied	The amount of wood used in the baseline was measured in volume unit. This datum was used for unit conversion.
Purpose of the data	Calculation of baseline emissions. The amount of wood used in the baseline was measured by volume units, so this data was used to the unity conversion.

Comments	species used to calculate the average value are typical trees of Caatinga Biome that are usually utilized as fuel in the ceramic industries of the region.
Data / Parameter	BF_y
Data unit	tonnes/tonnes of ceramic devices
Description	Consumption of non-renewable biomass per tonnes of ceramic pieces produced in year y
Source of data	Historical data from ceramic owner
Value applied	0.563
Justification of choice of data or description of measurement methods and procedures applied	The value was acquired through the average consumption and production of ceramic devices during the years when the ceramic used to consume non sustainable wood. This value is in accordance with the data acquired in other ceramics that employ the same type of kilns. The value is employed to calculate the real amount of wood displaced to maintain the ceramic production in the baseline scenario.
Purpose of the data	Calculation of baseline emissions. The value is utilized to calculate the real amount of wood displaced to maintain the ceramic production in the baseline scenario. This value is in accordance with the data acquired in other ceramics that employ the same type of kilns.
Comments	In the VCS PD V.09 the value applied was 0.64 m ³ /tonnes of ceramic devices. This value was converted to 0.563 tonnes/tonnes of ceramic devices. The value was acquired through the average consumption and production of ceramic devices during the years when the ceramic used to consume non-renewable wood.
Data / Parameter	EF_{co2, f}
Data unit	g CO ₂ /t km

Description	Default CO ₂ emission factor for freight transportation activity <i>f</i>								
Source of data	Methodological tool “Project and leakage emissions from transportation of freight”								
Value applied		<table><tr><th>Vehicle class</th><th>Emission factor (g CO₂/t km)</th></tr><tr><td>Light vehicles</td><td>245</td></tr><tr><td>Heavy vehicles</td><td>129</td></tr></table>	Vehicle class	Emission factor (g CO ₂ /t km)	Light vehicles	245	Heavy vehicles	129	
Vehicle class	Emission factor (g CO ₂ /t km)								
Light vehicles	245								
Heavy vehicles	129								
Justification of choice of data or description of measurement methods and procedures applied	The value is calculated by the multiplication of distance between the origin and destination, total mass of freight transported, emission factor and freight transportation activities. The value is employed to calculate the project emission by transportation of biomass over a distance of 200km.								
Purpose of the data	Calculation of project emissions. The value is utilized to calculate the emissions of the biomass transportation if the distance is over 200km.								
Comments	Applicable to Option B. The default CO ₂ emission factors take into account emissions generated by loaded outbound trips and empty return trips. The default emission factors have been obtained from two sources. For light vehicles, the emission factor was obtained from empirical data from European vehicles. For heavy vehicles, the emission factor has been derived based on custom design transient speed-time-gradient drive cycle (adapted from the international FIGE cycle), vehicle dimensional data, mathematical analysis of loading scenarios, and dynamic modelling based on engine power profiles, which, in turn, are a function of gross vehicle mass (GVM), load factor, speed/acceleration profiles and road gradient. The following assumptions on key parameters have been made: an average driving speed of 30 km/h, an average gradient of 1%, and a load factor attained when biomass is transported were assumed.								

4.2 Data and Parameters Monitored

Data / Parameter	PRy
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Data unit	Tonnes			
Description	Production of ceramic units			
Source of data	Controlled by the project proponent.			
Description of measurement methods and procedures applied	The amount of ceramic pieces produced is monitored by counting the total production of one year, based on data from last crediting period. This parameter will be monitored by the project proponent (meaning the ceramic owner). The amount will be acquired by counting the total production of the period considered for each ceramic factory and data will be aggregated on a monthly and yearly basis.			
Frequency of monitoring/recording	Annually			
Value monitored	<table><tr><td>Gomes de Mattos Ceramic</td></tr><tr><td>PRy - Production (tonnes of ceramic units)</td></tr><tr><td>245,781.40</td></tr></table> For detailed information please check Section “Appendix”- Table 07	Gomes de Mattos Ceramic	PRy - Production (tonnes of ceramic units)	245,781.40
Gomes de Mattos Ceramic				
PRy - Production (tonnes of ceramic units)				
245,781.40				
Monitoring equipment	No monitoring equipment is used to determine this parameter. Production is counted by trained personnel on Gomes de Mattos ceramic industry.			
QA/QC procedures applied	The ceramic has an internal control of the quantity of pieces produced. It will be rechecked according to the biomass employed and the kiln consumption of renewable biomass.			
Purpose of the data	This parameter is used to calculate baseline emissions and the total energy produced in order to compare to the thermal energy necessary in the VCS PD (QA/QC table).			
Calculation method	The ceramic industry has an internal control of the quantity of ceramic units produced. It was rechecked according to the biomass employed in the ceramic kilns.			

Comments	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.				
Data / Parameter	$Q_{renbiomass}$				
Data unit	Tonnes per year				
Description	Amount of renewable biomass utilized				
Source of data	Data will be monitored through all the receipts and invoices of biomass received by the ceramic company.				
Description of measurement methods and procedures applied	In order to convert m^3 to tonnes, the specific gravity values of some renewable biomasses are available below: <table data-bbox="680 879 1386 1102"> <tr> <th>Biomass</th><th>Specific gravity (tonnes/m^3)</th></tr> <tr> <td>Native wood from forest management</td><td>0.880</td></tr> </table> Source of data: - Renewable native wood Brazilian study carried out with Caatinga and Atlantic Forest wood utilized at the ceramic sector: NASCIMENTO, W. S. A. Avaliação dos Impactos Ambientais Gerados Por Uma Indústria Cerâmica Típica da Região do Seridó/RN; Dissertação (Mestrado em Engenharia Mecânica), Universidade Federal do Rio Grande do Norte, Natal, 2007. Available at: <http://bdt.d.bczm.ufrn.br/tesesimplificado/tde_busca/arquivo.php?codArquivo=1239>. Last visit on: July 04th, 2009. LORENZI, H. Árvores Brasileiras: Manual de Identificação e Cultivo de Plantas Arbóreas Nativas do Brasil, vol.1. 4.ed. Nova Odessa, SP: Instituto Plantarum, 2002. LORENZI, H. Árvores Brasileiras: Manual de Identificação e Cultivo de Plantas Arbóreas Nativas do Brasil, vol.1. 4.ed. Nova Odessa, SP: Instituto Plantarum, 2002.	Biomass	Specific gravity (tonnes/ m^3)	Native wood from forest management	0.880
Biomass	Specific gravity (tonnes/ m^3)				
Native wood from forest management	0.880				

	Associação de Plantas do Nordeste. Projeto Madeira. Available at: < http://www.plantasdonordeste.org/madeiras.pdf >.				
Frequency of monitoring/recording	Annually				
Value monitored	The applied value was based on the current monitoring period: <table border="1"> <thead> <tr> <th>Biomass</th><th>Amount of Biomass (tonnes/ Monitoring Period)</th></tr> </thead> <tbody> <tr> <td>Native wood from forest management</td><td>19,096</td></tr> </tbody> </table> For detailed information please check Section "Appendix"- Table O6	Biomass	Amount of Biomass (tonnes/ Monitoring Period)	Native wood from forest management	19,096
Biomass	Amount of Biomass (tonnes/ Monitoring Period)				
Native wood from forest management	19,096				
Monitoring equipment	No monitoring equipment is used to determine this parameter				
QA/QC procedures applied	The ceramic has monthly records of the quantity of biomass acquired. It will be rechecked according to the receipts of purchase.				
Purpose of the data	This parameter will be used to: a) Compare the total energy produced in the current monitoring period to the thermal energy that would be necessary according to the VCS PD estimates (QA/QC table); b) Demonstrate that the Project fits in small scale category for biomass renewable energy projects (capacity <45MWth); c) Calculation of leakage emissions due to competing use of biomass.				
Calculation method	The energy generated by the amount of renewable biomass will be calculated based on the Net Calorific Value of each biomass, as can be seen on the VCS MR Calculation spreadsheet. Values in the receipts from biomass providers may be described in m³, therefore it is necessary the conversion to tonnes through the specific gravity of each biomass. The specific gravity values of the renewable biomasses utilized in this project under the item				

	"Description of measurement methods and procedures to be applied".
Comments	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.

Data / Parameter	Origin of Renewable Biomass
Data unit	Not applicable.
Description	Renewable origin of the biomass.
Source of data	Controlled by the project developer.
Description of measurement methods and procedures applied	This information was given by the biomasses providers. The guarantee of acquiring renewable wood was achieved by invoices from the providers. The biomass native wood from forest management plan are considered renewable as fulfilling the options described in the methodology applied.
Frequency of monitoring/recording	Annually
Value monitored	Not applicable.
Monitoring equipment	No monitoring equipment is used to determine this parameter.
QA/QC procedures applied	The biomass is considered renewable as it is according to the definition given by the applied methodology.
Purpose of the data	Purpose of the data Not directly applied for the calculation. This parameter is used to guarantee that the amount of biomass acquired by the project proponent has a renewable origin. It is also necessary to comply with procedures required by the methodology AMS-I.E, Version 01.
Calculation method	Not applicable
Comments	All the renewable biomasses utilized in the monitoring period are in accordance with the definitions of renewable biomass set in the applied methodology. Data will kept for two years after the end of

	the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.
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Data / Parameter	Leakage of non-renewable biomass
Data unit	tCO ₂ e
Description	Leakage resulted from the non-renewable biomass
Source of data	Monitored
Description of measurement methods and procedures applied	The sources of leakages predicted in the applied methodology will be monitored. Scientific articles, official statistical data, regional and national surveys will be assessed in order to ensure that there was no leakage from non-renewable biomass (or to estimate the leakage) Please see Section 5.3: “Leakage”.
Frequency of monitoring/recording	Annually
Value monitored	0
Monitoring equipment	No monitoring equipment is used to determine this parameter.
QA/QC procedures applied	Data available regarding the ceramic industries fuel consumption will be used to monitor the leakage.
Purpose of the data	Calculation of leakage emissions. This parameter is used to evaluate if there is any source of indirect emission related to non-renewable biomass. If applicable, leakage emissions are used to adjust emission reduction resulting from the project.
Calculation method	Not applicable.
Comments	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.

Data / Parameter	f_{NRB-y}
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Data unit	Percentage
Description	Fraction of woody biomass used in the absence of the project activity in year Y that can be established as non-renewable biomass using survey methods or government data or approved default country specific fraction of non-renewable biomass (f_{NRB}) values available on the CDM website.
Source of data	Survey methods.
Description of measurement methods and procedures applied	The monitoring of this parameter will be based on national and international articles, databases and data monitored by the project developer such as project activities at the same region. The sources will provide information about the availability of woody biomass in the Caatinga biome.
Frequency of monitoring/recording	Annually
Value monitored	92%
Monitoring equipment	No monitoring equipment is used to determine this parameter.
QA/QC procedures applied	The monitoring of this parameter was based in national and international articles and database every monitoring period. The sources provided information about the sustainable use of Caatinga biome.
Purpose of the data	The purpose of the data is to determine the fraction of biomass (wood) which would be used in the absence of the project activity in year y.
Calculation method	The fraction of woody biomass used in the absence of the project activity in year y is essentially captured in the equation below: $f_{NRB} = \frac{NRB}{NRB + DRB}$ Where: f_{NRB} Fraction of non-renewable biomass (fraction or %) NRB Non-renewable biomass (t/yr) DRB Demonstrably renewable biomass (t/yr)

	Calculations are in accordance to “Default values of fNRB for LDCs and SIDs” ⁴ More detailed information please check the “fNRB,y” tab available in the “VCS MR Calculation CGM” spreadsheet.
Comments	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.

Data / Parameter	Renewable biomass surplus
Data unit	tonnes or m ³
Description	Amount of renewable biomass available.
Source of data	Monitored.
Description of measurement methods and procedures applied	It will be used to calculate the leakage of renewable biomass. The sources of leakages predicted in methodology applied will be monitored. The measurement of the leakage will be based in national and international articles and databases every monitoring period. These sources will provide information about the biomass availability in the project activity’s region. The bibliographic references are described on the section 5.3 “Leakage”.
Frequency of monitoring/recording	Annually
Value monitored	Detailed information in section 5.3 – “Leakage”
Monitoring equipment	No monitoring equipment is used to determine this parameter.
QA/QC procedures applied	Data available regarding the ceramic industry fuel consumption will be employed to monitor the leakage.
Purpose of the data	Calculation of leakage emissions due to competing use of biomass.

⁴ Available at: https://cdm.unfccc.int/Panels/ssc_wg/meetings/035/ssc_035_an20.pdf. Last visit on: 10/03/2023.

Calculation method	The amount of biomass used by the project activity in each year of the crediting period is compared to total biomass available, as estimated on the VCS PD V09.
Comments	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.

Data / Parameter	NCV _{biomass}
Data unit	TJ/tonne of wood
Description	Net Calorific Value of non-renewable woody biomass that is substituted.
Source of data	AMS-I.E.: Switch from non-renewable biomass for thermal applications by the user - Version 7.0. Available at: https://cdm.unfccc.int/methodologies/DB/9LFOR81TCT5FLI1AJYP46CQY802J79 Last visit on: July 17th, 2017. The value informed in the applied methodology is based on IPCC default for wood fuel.
Description of measurement methods and procedures applied	This parameter is record by the ceramic in a sheets with the distance between the ceramic and the furnisher. Information in section 3.2 – Project Emissions
Frequency of monitoring/recording	Annually
Value monitored	0.015 TJ/Tonne
Monitoring equipment	-
QA/QC procedures applied	-
Purpose of the data	This value provides the energy generated by the amount of wood that would be used in the absence of the project.
Calculation method	-

Comments	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.																					
Data / Parameter	D _{f, m}																					
Data unit	Kilometre																					
Description	Return trip road distance between the origin and destination of freight transportation activity f in monitoring period m.																					
Source of data	Records of vehicle operator or records by project participants.																					
Description of measurement methods and procedures applied	This parameter is record by the ceramic in a sheets with the distance between the ceramic and the furnisher. Information in section 5.2 – Project Emissions																					
Frequency of monitoring/recording	Annually																					
Value monitored	<table> <tr> <th>Provider</th> <th>Return trip distance (in kilometers) D_{f,m}</th> </tr> <tr> <td>ADA MARIA DE ALENCAR PINHO</td> <td>65.8</td> </tr> <tr> <td>ANTONIA IONARA GONÇALVES FREIRE</td> <td>109.8</td> </tr> <tr> <td>ANTONIO FERNANDES DE OLIVEIRA</td> <td>44.2</td> </tr> <tr> <td>ASSOCIAÇÃO COMUNITÁRIO DO SÍTIO FLOR DA AMÉRICA</td> <td>127.8</td> </tr> <tr> <td>JOSÉ DUARTE GRANGEIRO NETO</td> <td>65.8</td> </tr> <tr> <td>JACINTO ALVES TEIXEIRA FILHO</td> <td>414</td> </tr> <tr> <td>LUIS GLEIDIVAN TEIXEIRA</td> <td>262</td> </tr> <tr> <td>DIVERSOS</td> <td>414</td> </tr> <tr> <td>GOMES DE MATTOS CERÂMICA</td> <td>15.4</td> </tr> </table>		Provider	Return trip distance (in kilometers) D _{f,m}	ADA MARIA DE ALENCAR PINHO	65.8	ANTONIA IONARA GONÇALVES FREIRE	109.8	ANTONIO FERNANDES DE OLIVEIRA	44.2	ASSOCIAÇÃO COMUNITÁRIO DO SÍTIO FLOR DA AMÉRICA	127.8	JOSÉ DUARTE GRANGEIRO NETO	65.8	JACINTO ALVES TEIXEIRA FILHO	414	LUIS GLEIDIVAN TEIXEIRA	262	DIVERSOS	414	GOMES DE MATTOS CERÂMICA	15.4
Provider	Return trip distance (in kilometers) D _{f,m}																					
ADA MARIA DE ALENCAR PINHO	65.8																					
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LUIS GLEIDIVAN TEIXEIRA	262																					
DIVERSOS	414																					
GOMES DE MATTOS CERÂMICA	15.4																					
Monitoring equipment	Determined once for each freight transportation activity f for a reference trip using the vehicle odometer or any other appropriate sources (e.g., on-line sources).																					
QA/QC procedures applied	-																					
Purpose of the data	This parameter is used to calculate project emissions.																					

Calculation method	Information in section 5.2 – Project Emissions
Comments	Values will be monitored at Monitoring Report

Data / Parameter	FR _{f, m}						
Data unit	tonnes						
Description	Total mass of freight transported in freight transportation activity <i>f</i> in monitoring period <i>m</i> .						
Source of data	Records by project participants or records by truck operators.						
Description of measurement methods and procedures applied	This parameter is record by the ceramic in a sheets with the distance between the ceramic and the furnisher. Information in section 5.2 – Project Emissions						
Frequency of monitoring/recording	Annually						
Value monitored	FR _{f,m} in tonnes						
	Biomass	2017	2018	2019	2020	2021	2022
	Native wood from forest management	1,452	6,518	2,170	3,346	3,615	1,995
	TOTAL Monitoring Period	19,096					
	For detailed information please check Section “Appendix”- Table 08.						
Monitoring equipment	Not applicable.						
QA/QC procedures applied	-						
Purpose of the data	This parameter is used to calculate project emissions.						
Calculation method	Information in section 5.2 – Project Emissions						
Comments	Values will be monitored at Monitoring Report						

4.3 Data Monitored and SOCIALCARBON

Resource: Social

Indicator	Diversity
Data unit	Quantity of women, seniors (older than 60 years), disabled and illiterate employees.
Description	Evaluates the employment opportunities provided by the Ceramic industry to historically excluded social groups, such as: women, ex-convicts, the elderly, the indigenous, the illiterate and the disabled.
Source of data	RAIS (Annual Social Information Report), CAGED (General Register of Employed and Unemployed Persons) Social inclusion policies and programs that value diversity.
Description of methods to collect information and procedures to be applied	The Sustainable Carbon team conducts an interview with the ceramic personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Sustainable Carbon team collects the evidence provided by the ceramic personnel. Then, a cross-check is made in order to guarantee that all documentations were sent and complies with the information provided during the interview. For more Information, please verify section 6.1 below.
Purpose of the data	Identify the number of employment opportunities offered by the ceramics industry to historically excluded social groups, such as: women, ex-prisoners, the elderly, indigenous peoples, the illiterate and the disabled.
Comments	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.
Indicator	Community development

Data unit	Quantity of initiatives, frequency and partnership with public entities and/or civil organizations.
Description	Evaluates the existence of management practices that contribute to local community development.
Source of data	Interviews and / or questionnaires. Complementary or supplementary evidence may include receipts, invoices, partnership contracts, statements.
Description of methods to collect information and procedures to be applied	The Sustainable Carbon team conducts an interview with the ceramic personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Sustainable Carbon team collects the evidence provided by the ceramic personnel. Then, a cross-check is made in order to guarantee that all documentations were sent and complies with the information provided during the interview. For more Information, please verify section 6.1 below.
Purpose of the data	Identify the existence of management practices that contribute to the development of the local community.
Comments	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.

Indicator	Employee satisfaction surveys
Data unit	Existence of a system to evaluate employee satisfaction.
Description	Evaluates existing systems for employee feedback (questions, suggestions and complaints) and the measures taken in response to the feedback to make improvements.
Source of data	Suggestion slips, suggestion box, employee satisfaction surveys, meeting attendance lists, photos.

Description of methods to collect information and procedures to be applied	The Sustainable Carbon team conducts an interview with the ceramic personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Sustainable Carbon team collects the evidence provided by the ceramic personnel. Then, a cross-check is made in order to guarantee that all documentations were sent and complies with the information provided during the interview. For more Information, please verify section 6.1 below.
Purpose of the data	Detect whether there are employee feedback systems (doubts, suggestions and complaints) and actions taken in response to feedback to make improvements.
Comments	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.

Resource: Human

Indicator	Additional employee benefits
Data unit	Quantity of additional benefits, quantity of employees who receive additional benefits, and the existence award programs based on merit.
Description	Evaluates the additional benefits provided to employees. Benefits required by law are not considered.
Source of data	Questionnaires, invoices, receipts, statements, pay stubs and signed list by employees stating receipt of benefits.
Description of methods to collect information and procedures to be applied	The Sustainable Carbon team conducts an interview with the ceramic personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Sustainable Carbon team collects the evidence provided by the ceramic personnel. Then, a cross-check is made in order to guarantee that all

	documentations were sent and complies with the information provided during the interview. For more Information, please verify section 6.1 below.
Purpose of the data	Identify and qualify additional benefits provided to employees.
Comments	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.

Indicator	Health and safety practices
Data unit	Compliance to the Mandatory and/or complementary programs, and monitoring usage of PEE (Personal Protective Equipment).
Description	Evaluates the existing health and safety practices in the factories, including the distribution and supervised use of PPE (Personal Protective Equipment) by all employees as well as health and safety programs. Mandatory Programs: PPRA: Program for Prevention and Environmental Risks; PCMSO: Program for Controlling Medical and Occupational Health and CIPA: Internal Commission for Accident Prevention. Complementary programs: PPR: Respiratory Protection Program; PPRPS: Program for Protection from risks in presses and Similar and PCA: Hearing Conservation Program.
Source of data	Participatory meetings, interviews, PPE control records, health and safety programs (CIPA PCMSO, PPRA), supervised EPI use (warnings, suspension), participant sign-in lists for lectures, contracts with health and safety professionals.
Description of methods to collect information and procedures to be applied	The Sustainable Carbon team conducts an interview with the ceramic personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Sustainable Carbon team collects the evidence provided by the ceramic personnel. Then, a

	cross-check is made in order to guarantee that all documentations were sent and complies with the information provided during the interview. For more Information, please verify section 6.1 below.
Purpose of the data	Identify which health and safety practices exist in the factories, including the distribution and supervised use of PPE (Personal Protective Equipment) by all employees, as well as health and safety programs.
Comments	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.

Indicator	Training and capacity building programs
Data unit	Training and capacity building programs.
Description	Evaluates whether the factory encourages and invests in the professional development of its employees.
Source of data	Contracts, certificates, statements, planning controls.
Description of methods to collect information and procedures to be applied	The Sustainable Carbon team conducts an interview with the ceramic personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Sustainable Carbon team collects the evidence provided by the ceramic personnel. Then, a cross-check is made in order to guarantee that all documentations were sent and complies with the information provided during the interview. For more Information, please verify section 6.1 below.
Purpose of the data	Identify the actions that the factory encourages and invests in the professional development of its employees.
Comments	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.

Resource: Financial

Indicator	Biomass supply
Data unit	Control of the source and amount of renewable biomass.
Description	Evaluates the type, source and quantity of renewable biomass used as fuel, as well as the profile of suppliers.
Source of data	Questionnaires and monitoring report spreadsheets.
Description of methods to collect information and procedures to be applied	The Sustainable Carbon team conducts an interview with the ceramic personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Sustainable Carbon team collects the evidence provided by the ceramic personnel. Then, a cross-check is made in order to guarantee that all documentations were sent and complies with the information provided during the interview. For more Information, please verify section 6.1 below.
Purpose of the data	Identify forms of control over the types, sources and amounts of renewable biomass used as fuel, as well as the profile of suppliers.
Comments	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.

Indicator	Planning and Control
Data unit	Financial planning and control spreadsheet.
Description	Evaluates the existence of financial planning and controls in regards to carbon credits sold by factory.
Source of data	Planning and control spreadsheets.
Description of methods to collect information and procedures to be applied	The Sustainable Carbon team conducts an interview with the ceramic personnel and applies a questionnaire,

	aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Sustainable Carbon team collects the evidence provided by the ceramic personnel. Then, a cross-check is made in order to guarantee that all documentations were sent and complies with the information provided during the interview. For more Information, please verify section 6.1 below.
Purpose of the data	Identify the existence of financial planning and controls in relation to carbon credits sold by the factory.
Comments	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.

Indicator	Carbon credit Investments
Data unit	Carbon Credit Investments Percentual.
Description	Evaluates whether proceeds from the sale of carbon credits was invested in factory improvements or activities that benefit the local community.
Source of data	Questionnaire and/or control spreadsheets.
Description of methods to collect information and procedures to be applied	The Sustainable Carbon team conducts an interview with the ceramic personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Sustainable Carbon team collects the evidence provided by the ceramic personnel. Then, a cross-check is made in order to guarantee that all documentations were sent and complies with the information provided during the interview. For more Information, please verify section 6.1 below.
Purpose of the data	Identify whether the proceeds from the sale of carbon credits were invested in plant improvements or activities that benefit the local community.

Comments	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.
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Resource: Natural

Indicator	Environmental Management
Data unit	Quantity of initiatives and implementation of environmental management system.
Description	Evaluates initiatives and structured/certified environmental management systems in regards to managing waste, water, air, soil, energy and nature conservation. Note: the use of renewable fuel shall not be deemed an initiative, since it is a prerequisite for becoming a carbon project.
Source of data	Questionnaires, interviews, photos, site visits. Complementary or supplementary evidence main include receipts, invoices, partnership contracts, statements among other documents.
Description of methods to collect information and procedures to be applied	The Sustainable Carbon team conducts an interview with the ceramic personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Sustainable Carbon team collects the evidence provided by the ceramic personnel. Then, a cross-check is made in order to guarantee that all documentations were sent and complies with the information provided during the interview. For more Information, please verify section 6.1 below.
Purpose of the data	Identify structured environmental management initiatives and systems related to waste, water, air, soil, energy, and nature conservation management.
Comments	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.

Indicator	Brazilian environmental legislation
Data unit	Updated Licenses.
Description	Evaluates whether the factory has a water grant (for those making use of a well or pond), - federal technical registry, operating license and license for clay extraction and is in compliance with the conditions established by the documents. It also evaluates the promotion and fulfillment of agreements with local stakeholders.
Source of data	Licenses.
Description of methods to collect information and procedures to be applied	The Sustainable Carbon team conducts an interview with the ceramic personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Sustainable Carbon team collects the evidence provided by the ceramic personnel. Then, a cross-check is made in order to guarantee that all documentations were sent and complies with the information provided during the interview. For more Information, please verify section 6.1 below.
Purpose of the data	Identify whether the factory has a water grant (for those who use a well or pond), - Federal technical registration, operating license and license for clay extraction and follows the conditions established by the documents.
Comments	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.

Indicator	Voluntary environmental initiatives
Data unit	Quantity of voluntary environmental initiatives and benefits extension.
Description	Evaluates voluntary environmental initiatives that improve or establish new environmental assets and

	services, as well as those that raise environmental awareness of workers, their families and the surrounding community.
Source of data	Questionnaires, interviews, invoices, partnership contracts, photos, and any document that evidence established projects/initiatives.
Description of methods to collect information and procedures to be applied	The Sustainable Carbon team conducts an interview with the ceramic personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Sustainable Carbon team collects the evidence provided by the ceramic personnel. Then, a cross-check is made in order to guarantee that all documentations were sent and complies with the information provided during the interview. For more Information, please verify section 6.1 below.
Purpose of the data	Identify which voluntary environmental initiatives improve or establish new environmental goods and services, as well as those that increase the environmental awareness of workers, their families and the surrounding community.
Comments	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.

Resource: Technology

Indicator	Technological advances to improve efficiency of the production process
Data unit	Not applicable.
Description	Evaluates the general condition of infrastructure and machinery/equipment used in the production process, in regards to the following: - Brick drying methods: The factory possesses a dryer that recycles the heat from kilns or a small drying furnace.

	- Efficiency of kilns: The factory utilizes continuous furnaces (ex: hoffman, mobile, tunel) or the factory uses intermittent kilns, but which are adapted to improve their efficiency. - Kiln temperature control: The factory keeps a record of thermocouples or uses digital controls. - Kiln feeds: The factory feeds kilns using automatic or semi-automatic equipment. - Production: The factory control and records production at different stages of the production process (eg sales, ceramic devices that enter in the kiln). - Infrastructure: During the period analysed, infrastructural improvements in the factory were carried out, for instance: construction/renovation of toilets, refectory, cloakroom lecture hall, among others.
Source of data	Interviews with staff, receipts, contracts, photos.
Description of methods to collect information and procedures to be applied	The Sustainable Carbon team conducts an interview with the ceramic personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Sustainable Carbon team collects the evidence provided by the ceramic personnel. Then, a cross-check is made in order to guarantee that all documentations were sent and complies with the information provided during the interview. For more Information, please verify section 6.1 below.
Purpose of the data	Identifies the general state of the infrastructure and of the machines/equipment used in the production process, regarding brick drying methods, kiln efficiency, temperature control, kiln feeding, production, infrastructure, among others.
Comments	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.

Indicator	Technological advances to improve the general conditions of the working environment
Data unit	Not applicable.
Description	Evaluates the following general conditions of the working environment: cleanliness, noise, heat, lighting and appropriate signage. - Cleanliness: There is not excess dust and debris (ex: broken bricks and iron) around the factory. - Noise: The factory applies programs for noise control that comply with legislation. - Heat: The factory uses equipment to reduce employee exposure to heat (eg fans, exhaust, etc). - Lighting: The factory uses equipment to maintain a well-lit working environment (ex: translucent tiles, LED or mercury lamps, etc). - Appropriate signage: - Warning signs indicating danger, or caution; - Warning signs indicating inflammable liquids; - Warning signs encouraging PPE use; Signs identifying and indicating location of firefighting equipment.
Source of data	Questionnaires and interviews, on-site visits, evidence of existing respiratory protection, hearing conservation, or other relevant programs.
Description of methods to collect information and procedures to be applied	The Sustainable Carbon team conducts an interview with the ceramic personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Sustainable Carbon team collects the evidence provided by the ceramic personnel. Then, a cross-check is made in order to guarantee that all documentations were sent and complies with the information provided during the interview. For more Information, please verify section 6.1 below.

Purpose of the data	Identifies the general conditions of the work environment such as cleanliness, noise, heat, lighting and adequate signage.
Comments	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.

Indicator	Product quality
Data unit	Third party audit quality control reports.
Description	Evaluates whether the quality of the products was evaluated during the time period analyzed.
Source of data	Internal or third party audit reports.
Description of methods to collect information and procedures to be applied	The Sustainable Carbon team conducts an interview with the ceramic personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Sustainable Carbon team collects the evidence provided by the ceramic personnel. Then, a cross-check is made in order to guarantee that all documentations were sent and complies with the information provided during the interview. For more Information, please verify section 6.1 below.
Purpose of the data	Identify if it exists and which evaluation methods guarantee the quality of the products during the analyzed period.
Comments	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.

Resource: Carbon

Indicator	Stakeholder consultation
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Data unit	Stakeholder consultation meetings.
Description	Evaluates the existence of a stakeholder consultation system (local community, workers, suppliers, local authorities, civil society organizations, and other social parties involved).
Source of data	Informative letter, satisfaction questionnaire, occurrence book, etc.
Description of methods to collect information and procedures to be applied	The Sustainable Carbon team conducts an interview with the ceramic personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Sustainable Carbon team collects the evidence provided by the ceramic personnel. Then, a cross-check is made in order to guarantee that all documentations were sent and complies with the information provided during the interview. For more Information, please verify section 6.1 below.
Purpose of the data	Identify the existence of a stakeholder consultation system (local community, workers, suppliers, local authorities, civil society organizations and other social parties involved).
Comments	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.

Indicator	Green Marketing
Data unit	Green marketing strategy efficiency <i>and quantity</i> .
Description	Evaluates whether the factory has marketing strategies geared towards selling their products based on highlighting socio-environmental practices.
Source of data	Questionnaires, interviews and marketing material.

Description of methods to collect information and procedures to be applied	The Sustainable Carbon team conducts an interview with the ceramic personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Sustainable Carbon team collects the evidence provided by the ceramic personnel. Then, a cross-check is made in order to guarantee that all documentations were sent and complies with the information provided during the interview. For more Information, please verify section 6.1 below.
Purpose of the data	Identify whether the factory has marketing strategies aimed at selling its products based on the appreciation of socio-environmental practices.
Comments	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.

Indicator	Project Performance
Data unit	Level of satisfaction about the carbon project.
Description	Evaluates the factory's perception about the results of the project, considering the generation and sale of carbon credits and also external aspects of project.
Source of data	Questionnaires and interviews.
Description of methods to collect information and procedures to be applied	The Sustainable Carbon team conducts an interview with the ceramic personnel and applies a questionnaire, aimed to indirectly obtain information regarding the six SOCIALCARBON Standard resources. Moreover, the Sustainable Carbon team collects the evidence provided by the ceramic personnel. Then, a cross-check is made in order to guarantee that all documentations were sent and complies with the information provided during the interview. For more Information, please verify section 6.1 below.

Purpose of the data	Identify the factory's perception of the project's results, considering the generation and sale of carbon credits and also external aspects of the project.
Comments	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.

4.4 Monitoring Plan

The monitoring is done with the aim of determining the most approximate quantity of non-renewable wood that, in the absence of the project, would be used in the ceramics' kilns and consequently the amount of GHG that would be emitted in tonnes of CO₂e. Section 4.2 describes data and parameters monitored, as well as the procedures involved on the monitoring plan.

Ceramic factory personnel are responsible to monitor the operating conditions on the factory, including the amount of renewable biomass consumed and the monthly production of ceramic devices (parameters Qrenbiomass and PR_y). Ceramic factory personnel are also responsible to store invoices, receipts of sales and other documents related to purchase or acquisition of biomass.

Ceramic factory personnel register monitoring data regarding parameters Qrenbiomass and PR_y on electronic spreadsheets, which are shared with Sustainable Carbon team using an internet cloud service (*dropbox*). This gives Sustainable Carbon real time access to monitoring data.

Sustainable Carbon is responsible to assess if the biomasses are from renewable origin, to evaluate if there is a surplus of renewable biomass and to calculate emission reductions, including an assessment of leakage emissions and the determination of parameter $f_{NRB,y}$.

Periodically, Sustainable Carbon will perform an analysis to verify if biomass and production data are being correctly filled in the monitoring spreadsheets. Analysis on production data will be performed by a series of comparisons between different measurement points of production (molding machine, kiln loading and kiln unloading or sales) to detect inconsistencies or suspicious data.

Analysis on biomass data will be performed by a series of comparisons between the amount of biomass and the cost over months to identify inconsistencies or unexpected variations in these parameters.

Sustainable Carbon is responsible for providing the required guidance to the ceramic factory, to evaluate biomass and production data, in order to minimize errors, including assisting the ceramic in case the person in charge of the project monitoring is replaced.

The sources of leakages predicted in the applied methodology will be monitored. Scientific articles official statistical data regional and national surveys are provided in order to ensure that

there is no leakage from non-renewable biomass (or to estimate the leakage). Based on this information, Sustainable Carbon is responsible to assess if the biomasses are from renewable origin, to evaluate if there is a surplus of renewable biomass and to calculate emission reductions, including an assessment of leakage emissions and the determination of parameter $f_{NRB,y}$, Sustainable Carbon shall also assist the Ceramic personnel to double check the monitored data on biomass consumption and ceramic devices production.

Non-conformities identified in the double check procedures will be clarified between Sustainable Carbon technical team and the monitoring responsible on the ceramic during site visits for data collection, by reassessing existing documents and sources of information.

The responsible for the monitoring plan actions, data collection, and internal organization at Gomes de Mattos Ceramic Company is Mr. Stephenson Ramalho, a forest engineer. The Sustainable Carbon technical team was actively involved in the project monitoring, providing guidance, and carrying out their assigned actions.

To obtain information about the SOCIALCARBON indicators the Sustainable Carbon team administered a questionnaire to Mr. Stephenson, who is the representative of Gomes de Mattos Ceramics and responsible for monitoring the company's operational and environmental performance. The data collection was done remotely by phone call.

The ceramics team is responsible for storing all documents in their respective sectors: health and safety, environment, administrative/financial, operation, and others. The documents that prove the actions recorded in the report are shared with Sustainable Carbon team through different means: internet cloud service (dropbox), instant messaging applications and email. The sustainable carbon team analyze the documents sent to verify that they are in accordance with the information provided during the interview and, subsequently, to prepare the report.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

Baseline emissions are estimated following procedures of the applied methodology: AMS-I.E.: Switch from Non-Renewable Biomass for Thermal Applications by the User – Version 01, valid from 01/02/2008 to 08/04/2010⁵. The project activity in this monitoring period (57 months) generated 76.38 TJ per year. Converting this number to MWh, it was generated 21,217.79 MWh per year, which corresponds to the use of 2.42 MW_{thermal} on average of the kilns capacity during

⁵ Available at: < http://web.archive.org/web/20090304141849/http://cdm.unfccc.int/UserManagement/FileStorage/CDM_AMSP4VBB05G54RXDE9KQ6FJWMGHZLHFA5 >. Last visit on: 09/11/2022.

the monitored period, which is less than the limits of 45 MWthermal for Type I Small scale project activities.

Baseline Emissions

$$BE_y = B_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected_fossil_fuel} \quad (\text{Equation 1})$$

Where:

BE_y:	Baseline emissions during the year y in tCO ₂ e
B_y:	Quantity of biomass that is substituted or displaced in tonnes
f_{NRB,y}:	Fraction of non-renewable biomass (wood) used in the absence of the project activity in year y
NCV_{biomass}:	Net calorific value of non-renewable biomass in TJ/tonne
EF_{projected fossil fuel}:	Emission factor for the projected fossil fuel consumption in the baseline in tCO ₂ e/TJ ⁶ .

B_y is determined using the following option:

Calculated from the thermal energy generated in the project activity as:

$$B_y = \sum_i^n HG_{p,y} \div (NCV_{biomass} \times \eta_{old,i}) \quad (\text{Equation 2})$$

Where:

HG_{p, y}:	Quantity of thermal energy generated by the renewable energy in the project in year y in TJ.
η_{old, i}:	Efficiency of pre-project device per type of device i

⁶ Value obtained on the AMS-I.E.: Switch from non-renewable biomass for thermal applications by the user - Version 7.0.

$$HG_{p,y} = SGE \times PR_y \quad (\text{Equation 3})$$

Where:

SGE: Specific energy which has to be generated in the process to produce a certain amount of ceramic units in TJ/tonnes of ceramic units fired.

PR_y: Amount of product produced in year y in tonnes of ceramic units

$$\eta_{old} = \frac{SGE}{SFE} \quad (\text{Equation 4})$$

Where:

SFE: Specific fuel energy needed for the process to produce a certain amount of ceramic units in TJ/ tonnes of ceramic units

$$SFE = BF_y \times NCV_{biomass} \quad (\text{Equation 5})$$

Where:

BF_y: Consumption of non-renewable biomass per tonne of ceramic units fired in year y

Using the Equations 4, 5 and 6 in the Equation 3, it results to:

$$B_y = PR_y \times BF_y \quad (\text{Equation 6})$$

The exact production (PR_y) was monitored by the project proponent based on data from ceramic units burned in the kilns. Data is aggregated on a monthly and yearly basis. Measurements are done by an internal control sheet monitored by the project proponent.

The value of BF_y was determined through historical consumption of non-renewable biomass by the ceramic. It was calculated by dividing the monthly consumption of each kiln at the baseline from the monthly production of each kiln at the baseline, in thousands of pieces.

Baseline emissions during the monitored period are summarized in the following table:

Table 1. Baseline Emissions - Gomes de Mattos Ceramic Fuel Switching Project

CGM Ceramic		
	Period	BEy (tCO ₂ e)
2017	November	3,060.93
	December	0.00
	Total 2017	3,060.00
2018	January	3,259.68
	february	2,440.89
	March	3,055.30
	April	2,763.07
	May	2,919.14
	June	2,971.53
	July	3,067.62
	August	3,624.67
	September	4,284.95
	October	3,209.32
	November	3,226.50
	December	3,225.21
	Total 2018	38,047.00
2019	January	2,703.79
	february	2,752.20
	March	3,096.43
	April	2,840.43
	May	3,210.18
	June	2,886.38
	July	2,890.44
	August	3,512.62
	September	3,069.10
	October	3,224.80
	November	3,031.86
	December	2,980.70
	Total 2019	36,198.00
2020	January	2,872.36
	february	3,068.12
	March	1,967.82
	April	0.00

	May	0.00
	June	0.00
	July	2,868.71
	August	2,968.19
	September	2,815.81
	October	2,918.38
	November	2,442.76
	December	2,805.35
	Total 2020	24,727
2021	January	2,969.34
	february	2,414.68
	March	2,507.29
	April	3,096.96
	May	3,313.36
	June	2,604.70
	July	2,724.53
	August	3,084.65
	September	2,693.93
	October	2,935.15
	November	3,118.52
	December	2,503.67
	Total 2021	33,966.00
2022	January	2,664.75
	february	2,925.66
	March	2,798.52
	April	2,555.01
	May	2,791.77
	June	3,129.32
	July	3,009.55
	Total 2022	19,874.00
Total in the monitoring period		155,872.00

5.2 Project Emissions

According to applied Methodology the project emissions could be a result of biomass transportation of a distance over 200 Km or emissions from energy consumption associated with

processing of biomass residue. Since it is a small-scale project, may neglect emissions from energy consumption associated with the cultivation of biomass. If the biomass providers are located over a distance of 200 km of the Ceramic factory, it will be calculated using the methodological tool “Project and leakage emissions from transportation of freight” – 01.1.0 where it will be use the option B “using conservative default values”. The emissions caused by transportation it will be monitored during the verification to ensure the distance is less than 200 km and if it is over than 200 km calculate the emissions by the following equation:

$$PE_{TR,m} = \sum_f D_{f,m} \cdot FR_{f,m} \cdot EF_{CO_2,f} \cdot 10^{-6} \quad (\text{Equation 7})$$

Where:

PE_{TR,m}:	Project emissions from road transportation of freight monitoring period <i>m</i> (tCO ₂)
D_{f,m} :	Return trip road distance between the origin and destination of freight transportation activity <i>f</i> in the monitoring period <i>m</i> (km)
FR_{f,m}:	Total mass of freight transported in freight transportation activity <i>f</i> in monitoring period <i>m</i> (t)
EF_{CO₂,f} :	Default CO ₂ emission factor for freight transportation activity <i>f</i> (g CO ₂ / t km)
f :	Freight transportation activities conducted in the project activity in monitoring period <i>m</i>

Table 2. Project Emissions - Gomes de Mattos Ceramic Fuel Switching Project

Period	PE _y (t CO ₂)
2017*	46
2018	140
2019	90
2020	40
2021	2
2022*	7
TOTAL	325

*November and December 2017 and January – July 2022 only.

5.3 Leakage

Leakage was estimated as 0 (zero) tCO₂e during the entire monitoring period.

The category AMS-IE predicts the following possible three sources of leakage:

- A) If the project activity includes substitution of non-renewable biomass by renewable biomass, leakage in the production of renewable biomass must be considered.

The leakage from biomass projects, like this project activity, should also be estimated according to the “General guidance on leakage in biomass project activities” (attachment C of appendix B) ⁷ of Indicative Simplified Baseline and Monitoring Methodologies for Selected Small-Scale CDM Project Activity Categories, which identifies different emission sources based on the type of biomass considered (described in the table below).

Table 3. Sources of leakage according to the type of the biomass

Biomass Type	Activity/Source	Shift of pre project activities	Emissions from biomass generation/ cultivation	Competing use of biomass
Biomass from forests	Existing forests	-	-	X
	New forests	X	X	-
Biomass from croplands or grasslands (woody or non-woody)	In the absence of the project the land would be used as a cropland/wetland	X	X	-
	In the absence of the project the land will be abandoned	-	X	-
Biomass residues or waste	Biomass residues or wastes are collected and use.	-	-	X

⁷ Document available at: <http://cdm.unfccc.int/methodologies/SSCmethodologies/AppB_SSC_AttachmentC.pdf>. Last visit on July, 2023.

Native wood from forest management

The Sustainable Forest Management Plan can be organized into three stages: firstly, the division of the property in exploitable areas and areas of permanent preservation that are inaccessible to exploitation. The second stage is the planning of roads that connect the area with the primary roads. In the third stage, the allocated area is divided for exploration in blocks in order to sustain forest exploitation annually. Furthermore, the minimum requirements of the management plan are defined by Article 31 regulated by law 12.651 of May 25th 2012⁸.

Considering that the rotation cycle is defined between 12 and 15 years, the period used to estimate the production of wood with Sustainable Forest Management Plan in Caatinga biome was 13,5 years, medium value. Another important parameter is the MAI (mean annual increment), that according to MMA (2015) is around 15mst/ha.year⁹, which leads to 4,5m³/ha.year.

The total area properly regularized with Sustainable Forest Management Plan in the Caatinga biome corresponds to around 400,000 hectares. There are around 588 Sustainable Forest Management Plans operating in this biome¹⁰.

Considering that the exploration is in blocks (in order to sustainable forest exploitation annually)¹¹, the area available for exploration is around 29,630 ha/year in Caatinga biome. In addition, it was considered the productivity of wood in Caatinga biome as 60.75 m³/ha.

Therefore, the production of wood with Sustainable Forest Management Plan in Caatinga biome was around 1,800,022.5 m³ in 2012. As the ceramic average consumption presented in this project activity is about 5,755.22 m³ per year, the consumption of this kind of fuel represents less than 1% of the total of wood with sustainable forest management plan produced in the region.

This way, this renewable biomass has no potential to generate leakage emissions.

Table 4. Project activity consumption of native wood from forest management

Renewable Biomass Surplus

⁸ BRASIL. Lei nº. 12.651, de 25 de maio de 2012. Available at: < http://www.planalto.gov.br/ccivil_03/_Ato2011-2014/2012/Lei/L12651.htm#art83>. Last visit on: November, 2022.

⁹ BRASIL. Estatística Florestal da Caatinga/MMA. Ano 2. Vol. 2 (ago. 2015). Natal, RN: APNE, 2015. Available at: < <https://www.terrabrasilis.org.br/ecotecadigital/images/abook/pdf/2016/abril/Abr.16.04.pdf> >. Last visit on: November, 2022.

¹⁰ CNIP, 2012. Available at: < http://www.cnip.org.br/planos_manejo.html>. Last visit on: May, 2022.

¹¹ BRASIL. Manejo sustentável dos recursos florestais da Caatinga/MMA. Secretaria de Biodiversidade e Florestas. Departamento de Florestas. Programa Nacional de Florestas. Unidade de Apoio do PNF no Nordeste._Natal: MMA, 2008. 28p. Last visit on: January, 2018.

Production of Native wood from forest management in the project's region (tonnes)			
1,584,020			
Year	Project activity consumption (tonnes)	Renewable Biomass Surplus	%
2017*	1,452.00	1,582,567.80	0.09
2018	6,518.16	1,577,501.64	0.41
2019	2,170.49	1,581,849.31	0.14
2020	3,345.76	1,580,674.04	0.21
2021	3,615.02	1,580,404.78	0.23
2022*	1,994.58	1,582,025.22	0.13

*November and December 2017 and January – July 2022 only.

The values represent less than 1 % of the total Native wood from forest management in Caatinga biome, so this renewable biomass had no potential to generate leakage emissions during this monitoring period.

Therefore, this kind of fuel does not encompass any type of leakage since there is current a great amount of these renewable biomasses available locally as described before.

The calculation method is described as:

$$Project\ consumption = \frac{Project\ Activity\ Consumption}{P_{Native\ wood\ from\ forest\ management}} \times 100$$

Project consumption = Project activity consumption in Year_x (%)

Project activity consumption = Project activity consumption in Year_x (tonnes) - please check “Renewable Biomass” tab in the VCS MR Calculation CGM spreadsheet.

P_{Native wood from forest management} = Production of Cashew tree wood in the project's region = 1,584,020 tonnes per year.

B) Leakage relating to the non-renewable biomass shall be assessed from ex-post surveys of users and areas from where biomass is sourced.

The following potential sources of this type of leakage could be identified:

- Use/diversion of non-renewable biomass saved under the project activity by non-project households/users who previously used renewable energy sources. If this leakage

assessment quantifies an increase in the use of non-renewable biomass used by the non-project households/users attributable to the project activity then baseline is adjusted to account for the quantified leakage.

- Use of non-renewable biomass saved under the project activity to justify the baseline of other project activities can also be potential source of leakage. If this leakage assessment quantifies a portion of non-renewable biomass saved under the project activity that is used as the baseline of other project activity then baseline is adjusted to account for the quantified leakage.
- Increase in the use of non-renewable biomass outside the project boundary to create non-renewable biomass baselines can also be potential source of leakage. If this leakage assessment quantifies an increase in use of non-renewable biomass outside the project boundary then baseline is adjusted to account for the quantified leakage.

The carbon credits incomes stimulate the use of renewable biomass to other ceramic companies presenting a huge possibility for sustainable development in the region. Therefore, the sources of leakages mentioned above are not applicable as the project activity does not displace the use of renewable biomass of a non-project user, due to the likely decrease in the use of non-renewable biomass in the region and there is current great amount of renewable biomasses available locally as described before. The non-renewable biomass employed which would be employed in this project activity is not being saved for other project activity, since other ceramics were already consuming wood from non-sustainable forest management (common practice).

The project contributes to reduce the use of non-renewable biomass, especially due to the incentive of carbon credits. Therefore, it can be concluded that this source of leakage, until the date of this monitoring report, is not considered for this project activity. This leakage was monitored in order to guarantee the project conservativeness.

C) If the equipment is transferred from another activity or if the existing equipment is transferred to another activity, leakage is to be considered.

The leakage is not applicable for this project activity as there was no transference of equipment, in spite of new equipment had to be acquired.

5.4 Net GHG emission reductions and removals

This category comprises small thermal appliances that displace the use of non-renewable biomass by introducing new renewable energy end-user technologies. The project's emissions from the combustion of native wood are accounted in the same way as fossil fuel combustion once it is not renewable and emits CO₂. Emissions reductions are to be estimated based on the equation below:

$$ER_y = BE_y - PE_y - LE_y \text{ (Equation 8)}$$

Where:

ER_y: Emission Reductions in year y in tCO₂e

PE_y: Project Emissions in year y in tCO₂e

LE_y: Leakage Emissions in year y in tCO₂e

Table 5. Emission reductions for the monitoring period.

CGM Ceramic				
Period	BE _y	PE _y	LE _y	ER _y (tCO ₂ e)
2017*	3,060	46	0.00	3,014
2018	38,047	140	0.00	37,907
2019	36,198	90	0.00	36,108
2020	24,727	40	0.00	24,687
2021	33,966	2	0.00	33,964
2022*	19,874	7	0.00	19,867
TOTAL	155,872	325	0.00	155,547

*November and December 2017 and January – July 2022 only.

Table below summarizes the emission reductions estimated (ex-ante) and the achieved (ex-post)

Table 6. Comparison between Emission Reductions estimated (ex-ante) and achieved (ex-post)

Year	Estimated net GHG emission reductions or removals (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
2017*	7,999	3,014
2018	47,997	37,907
2019	47,997	36,108
2020	47,997	24,687
2021	47,997	33,964
2022*	27,998	19,867
Total	227,985	155,547

*November and December 2017 and January – July 2022 only.

The Net GHG emission reductions were around 32% smaller in this monitoring period than the Estimated Net GHG for the period. This decrease was directly influenced by the macroeconomic

scenario of the Brazilian crisis from 2013 to 2017, which translated into the most diverse indices of the economy, including the civil construction sector¹². Moreover, the pandemic has had an impact on the factory's operations, which has affected its production output as well.

6 SOCIALCARBON RESULTS

6.1 Results

6.1.1 Social Resource

Indicator	1. Diversity																																			
Description	Evaluates the employment opportunities provided by the Ceramic industry to historically excluded social groups, such as: women, ex-convicts, the elderly, the indigenous, the illiterate and the disabled.																																			
Situation	<table><tr><th colspan="3">Excluded social groups</th><th colspan="3">Number of workers</th></tr><tr><td colspan="3">Women employees</td><td colspan="3">2</td></tr><tr><td colspan="3">Senior employees</td><td colspan="3">3</td></tr><tr><td colspan="3">Disabled employees</td><td colspan="3">1</td></tr><tr><td colspan="3">Illiterate</td><td colspan="3">2</td></tr></table>						Excluded social groups			Number of workers			Women employees			2			Senior employees			3			Disabled employees			1			Illiterate			2		
	Excluded social groups			Number of workers																																
	Women employees			2																																
	Senior employees			3																																
	Disabled employees			1																																
	Illiterate			2																																
The Ceramic factory has 102 employees; around 8% of the workers are from excluded social groups.																																				
There are currently no employees at the factory from minority groups and there are no plans to hire minorities.	There are currently no employees from minority groups, but the factory has made plans to hire minorities.	Less than 15% of employees belong to a minority group.	Between 15 ≤ 30% of employees are from minority groups.	More than 30% of employees are from minority groups.	In addition to more than 30% of employees being minorities, the factory presents initiatives or combat forms of																															

¹² Available at: <https://www.em.com.br/app/noticia/economia/2019/04/10/internas_economia,1045313/apos-2013-construcao-civil-perdeu-quase-3-milhoes-de-empregos-revela.shtml> Last visit: March, 2023.

					discrimination.
Score	3 (Three)				
Prospects	The entrepreneur intends to contract more women.				

Indicator	2. Community development				
Description	Evaluates the existence of management practices that contribute to local community development.				
Situation	- Soccer tournaments: CGM factory built a field to provide leisure to the workers and community members. The factory promotes soccer tournaments between the community teams and CGM workers. In addition, people in the community have free access to use the soccer field as well. - Geopark Araripe: The factory has a formal partnership with Geopark Araripe, which is a park of Global Geoparks Network. The network is a result of the UNESCO National Geopark Program. The Geopark is an ecological territory, which aims to conserve and disseminate geological sites allied to economic and sustainable development. In the period analyzed CGM provided educational tours around the factory for students and visitors of the park. For more information, please access: http://geoparkararipe.urca.br/ - Recyclable residue collectors partnership: The ceramic factory has a partnership with an association of Crato municipality which collects recyclable residues of the region. The factory refurbished three cars of collecting recycle material to the Association. - Sponsored athlete: CGM ceramic sponsors a local athlete of Jiu – Jitsu, Ricardo Lima.				
The factory has no initiatives/ activities planned that benefit the local community.	The factory responds to occasional (not continuous) requests for assistance.	The factory supports community members or civil society organizations :	In addition to scenario 3, the factory lends out equipment, space and/or provides manpower for activities that benefit	The factory is formally involved in the development and implementation of social and/or environment	In addition to scenario 5, the factory has formalized planning in order to maximize their contribution

		- Regularly: one per month; OR - Significant: at least 10 different parties were benefited.	the local community.	al projects in partnership with public entities and/or civil society organizations .	to local community development , through survey with the community, establishing new partnerships, etc.
Score	5 (five)				
Prospects	There are currently no foreseen improvements.				

Indicator	3. Employee satisfaction surveys				
Description	Evaluates existing systems for employee feedback (questions, suggestions and complaints) and the measures taken in response to the feedback to make improvements.				
Situation	CGM has three suggestion boxes in the factory to consult the workers opinion. Also, the safety technician does regular meetings with the employees about several topics, such as ceramic cleaning, Personal Protection Equipment (PPE) use, among others. In these meetings, the employees can express suggestions and complaints. All suggestions and complaints are registered in the CIPA minutes. The factory built a recycling container and created a mobile library due to workers suggestions.				
Lack of a consultation system for employee feedback.	There are attempts to implement an employee consultation system but it is not being properly utilized. Example: There is a suggestion	The system for employee consultation is being utilized but is limited to a suggestion box.	In addition to scenario 3, the factory has implemented or is currently implementin g one or more suggestions	The factory promotes periodic satisfaction surveys among employees. Example: monthly meetings, book for documenting	In addition to scenario 5, the factory has stipulated targets and timelines for solutions to employee complains.

	box, but employees do not use it.		made by employees.	information, etc.	
Score	5 (five)				
Prospects	There are currently no foreseen improvements.				

6.1.2 Human Resource

Indicator	4. Additional employee benefits				
Description	Evaluates the additional benefits provided to employees. Benefits required by law are not considered.				
Situation	The Ceramic factory offers to the employees: - Partnership with SESI - Industry of Social Service - to offer to the employees and their families a club, where they can have leisure and basic health services such as dentist. - Doctor once in a month to attend the employees; - An ophthalmologist once in a year to attend the employees; - Soccer field available to the employees; - The factory chooses the best worker of the month and gives a present to him, such as television, microwave, among others; - Offer a New Year's party for all employees and their families. - Psychologist to support employees who have lost relatives victims of covid 19.				
The factory offers no additional benefits to employees.	Some employees receive an additional benefit.	All employees receive sporadic additional benefits, independent of frequency.	All employees receive an additional benefit monthly.	All employees receive more than one additional benefit monthly.	All employees receive more than one additional benefit monthly and there are also award programs based on merit.

Score	6 (six)
Prospects	The entrepreneur intends to build an area with free Wifi for employees use.

Indicator	5. Health and safety practices
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Description	Evaluates the existing health and safety practices in the factories, including the distribution and supervised use of PPE (Personal Protective Equipment) by all employees as well as health and safety programs. Mandatory Programs: PPRA: Program for Prevention and Environmental Risks; PCMSO: Program for Controlling Medical and Occupational Health and CIPA: Internal Commission for Accident Prevention. Complementary programs: PPR: Respiratory Protection Program; PPRPS: Program for Protection from risks in presses and Similar and PCA: Hearing Conservation Program.
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Situation	The company offers all the Personal Protective Equipments (PPEs) necessary for the workers carry on their activities safely. There is internal control of the PPEs use and retreat. The entrepreneur encourages the PPE's use with warning signs and campaigns, and the workers that do not use the PPE's properly are adverted. The factory has a technician, Bruno de Almeida Figueiredo, who is responsible for ensuring best practices of health and security in the Ceramic factory. CGM accomplishes all the mandatory programs: PPRA: Program for Prevention and Environmental Risks; PCMSO: Program for Controlling Medical and Occupational Health; CIPA: Internal Commission for Accident Prevention. Every year the CGM factory promotes a whole week, SIPAT – Internal Week of Accidents Prevention, of training and lectures about health and security to the employees. It is the biggest event in the factory regarding health and safety practices. During the event, there is a multidisciplinary team which addresses diverse themes with the employees such as violence and its consequences in traffic, work life quality, harmony in traffic, alcoholism, motivation and self-esteem. During covid 19, the factory distributed masks and alcohol gel to all employees, emphasizing the correct use of PPE to eradicate the pandemic.
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There is no control of PPE distribution.	PPE distribution is being controlled OR	The factory meets all legal	The factory meets all legal requirements	In addition to scenario 4, the factory contracts or	In addition to scenario 5, the factory develops
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None of the health and safety programs required by law are being implemented .	there is at least one health and safety program required by law being implemented	requirements .	and: (a) penalizes employees who do not properly use the PPE and/or (b) has signs encouraging the use of PPE in the factory and/or (c) The factory promotes lectures and events addressing issues related to health and safety in the workplace.	has a technical professional or safety engineer on staff to ensure best practices in the company.	complement any programs such as PPR, PPRPS and PCA; and/or The factory encourages physical activity or conducts activities for disease prevention.
Score	6 (six)				
Prospects	There are currently no foreseen improvements.				

Indicator	6. Training and capacity building programs
Description	Evaluates whether the factory encourages and invests in the professional development of its employees.
Situation	The Ceramic factory offered training courses to workers, every time they bought a new equipment, specific training and qualifications were offered to workers to learn their operation and handling.

	Moreover, the ceramic factory offered lectures of health and security themes to all employees.				
The company has not invested in lectures nor professional training courses for staff.	The factory organized occasional lectures.	Training courses were offered to individual employees, but not to all employees.	In addition to item 3, the individual employees who were contemplated by the training courses replicate the knowledge via lectures to other employees; and/or Regular lectures were offered to employees (at least two per semester).	In addition to scenario 4, the factory has an internal campaign to encourage employees to complete their high school education; and/or The factory promotes a literacy program for youth and adults.	In addition to scenario 5, the Ceramic factory has established a strategic plan regarding training and capacity building programs.
Score	4 (four)				
Prospects	There are currently no foreseen improvements.				

6.1.3 Financial Resource

Indicator	7. Biomass supply
Description	Evaluates the type, source and quantity of renewable biomass used as fuel, as well as the profile of suppliers.

Situation	During the analyzed period , CGM ceramic factory fed the kilns with native wood from areas with Forest Management Plan . Below are the Gomes de Mattos Ceramics forest management areas description: - Pau D'Arco and Bonfim farm: 2,204 hectares. - Boqueirão farm: 2,344 hectares. - Cana Brava farm: 422 hectares.				
The factory has no control of the source and amount of biomass used; and/or the factory is using non-renewable fuel in the production process.	The factory only has partial control of the source and amount of biomass used.	The factory has total control of the source and amount of renewable biomass used, however 100% of the biomass comes from renewable wood.	The factory has total control of the source and amount of renewable biomass used and less than 50% of the fuel is coming from agro-industrial waste.	The factory has total control of the source and amount of renewable biomass used and more than 50% of the fuel is coming from agro-industrial waste.	The factory has total control of the source and amount of renewable biomass used and 100% of the fuel is coming from agro-industrial waste.
Score	3 (Three)				
Prospects	There are currently no foreseen improvements.				

Indicator	8. Planning and control				
Description	Evaluates the existence of financial planning and controls in regard to carbon credits sold by factory.				
Situation	The ceramic factory has organized controls of the income received from carbon credit sales through spreadsheets that show the entry of carbon credit revenues as well as the destination for proceeds. However, the factory presents no future planning.				
The factory has no organized	The factory has partial control of the	The factory has organized	The factory has organized	The factory has organized	The factory has organized

controls of the income received from carbon credit sales nor the destination for proceeds.	income received from carbon credit sales and the destination for proceeds.	controls of the income received from carbon credit sales, but control of the destination for proceeds is partial.	controls of the income received from carbon credit sales, as well as of the destination for proceeds. However, the factory presents no future planning.	controls of the income received from carbon credit sales, as well as of the destination for proceeds. However, the factory presents incomplete future planning.	controls of the income received from carbon credit sales, as well as of the destination for proceeds. The factory presents satisfactory future planning (timeline, budget, responsible involved and benefits).
Score	5 (five)				
Prospects	The entrepreneur intends to organize the future planning (timeline, budget, responsible involved and benefits).				

Indicator	9. Carbon credit investments				
Description	Evaluates whether proceeds from the sale of carbon credits was invested in factory improvements or activities that benefit the local community.				
Situation	Although there is no detailed prior financial planning, in the current period CGM invested 100% of the income generated by carbon credit, part of in technology improvements, and part in social benefits for the community.				
The income generated by carbon credit sales was not invested in the factory nor in the community, or there are	Less than 20% of the income generated by carbon credit sales was invested the factory or in the	Between 20 and 40% of the income generated by carbon credit sales was invested the factory or in the	Between 40 and 60% of the income generated by carbon credit sales was invested the factory or in the	Between 60 and 80% of the income generated by carbon credit sales was invested the factory or in the	Between 80 and 100% of the income generated by carbon credit sales was invested the factory or in the

no organized controls of the allocation of proceeds.	community development .	community development .	the community development .	community development .	community development .
Score	6 (six)				
Prospects	There are currently no foreseen improvements.				

6.1.4 Natural Resource

Indicator	10. Environmental management				
Description	Evaluates initiatives and structured/certified environmental management systems in regards to managing waste, water, air, soil, energy and nature conservation. Note: the use of renewable fuel shall not be deemed an initiative, since it is a prerequisite for becoming a carbon project.				
Situation	- Waste: The factory has total control over the residues produced, all the residues have the correct destination. Also, the factory does a plan of residues management annually. - Water: The ceramic has humidifiers of high pressure to humidify the clay and to reduce the water consumption. They reduced the water output of men's bathrooms and encourage short showers there. - Air: The factory has three chimneys in the factory and has installed scrubbers in all chimneys. - Nature conservation: The factory has three areas of sustainable management plan, all of them have around 3,700 hectares of native trees planted.				
There are no environmental management initiatives.	There are up to two specific initiatives to prevent/reduce the main environmental impacts caused by	There are more than two initiatives to prevent / reduce the main environmental impacts caused by	In addition the scenario 3, the factory is structuring an environmental management	The factory has implemented a formal environmental management system.	The factory's environmental management system has been certified by a third party.

	the Ceramic factory.	Ceramic factory.	system in the company.		
Score	3 (three)				
Prospects	The entrepreneur intends to make partnerships and install solar power units in the factory.				

Indicator	11. Brazilian environmental legislation				
Description	Evaluates whether the factory has a water grant (for those making use of a well or pond), federal technical registry, operating license and license for clay extraction and is in compliance with the conditions established by the documents. It also evaluates the promotion and fulfillment of agreements with local stakeholders.				
Situation	The ceramic factory possess all the mandatory licenses: • Operating license: There is an operational license valid emitted by SEMACE (Environmental Agency of Ceará). • License for clay extraction: The factory extracts clay from three different areas licensed by State Superintendence of Environment: ○ “Sítio Lagoinha”: License nº 015/2022, valid until February 10th, 2023 ○ “Sítio Boqueirão”: License nº 8/2018 ○ “Sítio Quebra”: License nº 7/2018. • Federal technical registry: Regular. • Water Grant 1862/2018, valid until October 17th 2022 Ceramic CGM has a partnership with civil society organizations like Geopark Araripe and Recyclable Residue Collectors’s Association, cooperating with those environmental projects.				
The factory does not possess any of the following:	The factory only possess two of the following: -operating license	The factory only possess three of the following: -operating license	The factory possess all of the following:	All licenses are up to date and all conditions established	In addition to the previous scenario, the factory collaborates with public administratio

-operating license	-license for clay extraction	-license for clay extraction	-operating license	by them are being met.	n and/or civil society organizations for cooperation with environmental projects.
-license for clay extraction	-water grant	-water grant	-license for clay extraction		
-water grant	- federal technical registry	- federal technical registry	-water grant		
- federal technical registry			- federal technical registry		
			However, they do not meet all the conditions established by them.		
Score	6 (six)				
Prospects	There are currently no foreseen improvements.				

Indicator	12. Voluntary environmental initiatives
Description	Evaluates voluntary environmental initiatives that improve or establish new environmental assets and services, as well as those that raise environmental awareness of workers, their families and the surrounding community.
Situation	- Geopark Araripe: The factory has a formal partnership with Geopark Araripe, which is a park of Global Geoparks Network. The network is a result of the UNESCO National Geopark Program. The Geopark is an ecological territory, which aims to conserve and disseminate geological sites allied to economic and sustainable development. In the period analyzed CGM provided educational tours around the factory for students and visitors of the park. - Nature conservation: The factory has three areas of sustainable management plan, all of them have around 3,700 hectares of native trees planted. In one of the areas, Pau D'Arco and Bonfim farm (2,000 hectares), CGM established a partnership with AQUASE NGO to protect endangered bird species. This area has been selected because it is next to the National Araripe Forestry. In the area, it has been built a national bird observatory where the

factory receives visitors for free to learn about the birds diversity of Caatinga biome. - Two areas of sustainable management plan (Pau D'Arco and Bonfim farm and Boqueirão farm) are reference units of biodiversity products. The recognition was made by Araripe Foundation and Ministry of Science and Technology.					
The factory is not involved in voluntary environmental initiatives.	The factory has implemented only one internal environmental initiative. Example: Planting ten tree saplings on factory grounds.	The factory has implemented more than one internal initiative or is showing continuity for an existing Initiative. Example: Periodic planting of saplings on factory grounds.	The factory has implemented more than one initiative or ongoing initiative whose benefits extend to workers families.	In addition to the previous scenario, the benefits of the initiatives also extend to community members.	In addition to the previous scenario, the factory promotes voluntary environmental initiatives with civil society organizations and/or public administration.
Score	6 (six)				
Prospects	There are currently no foreseen improvements.				

6.1.5 Biodiversity/Technology Resource

Indicator	13. Technological advances to improve efficiency of the production process
Description	Evaluates the general condition of infrastructure and machinery/equipment used in the production process, in regards to the following: - Brick drying methods: The factory possesses a dryer that recycles the heat from kilns or a small drying furnace. - Efficiency of kilns: The factory utilizes continuous furnaces (ex: Hoffman, mobile, tunnel) or the factory uses intermittent kilns, but which are adapted to improve their efficiency. - Kiln temperature control: The factory keeps a record of thermocouples or uses digital controls.

	- Kiln feeds: The factory feeds kilns using automatic or semi-automatic equipment. - Production: The factory control and records production at different stages of the production process (egsales, Ceramic devices that enter in the kiln). - Infrastructure: During the period analysed, infrastructural improvements in the factory were carried out, for instance: construction/renovation of toilets, refectory, cloakroom lecture hall, among others.				
Situation	- Efficiency of kilns: Two Hoffman kilns with high efficiency and one “Câmara” continuous kiln considered with highest efficiency in the production process. - Brick drying methods: The ceramic units are dried with the heat from the kilns and the furnace in the drying process with control of the temperature and humidity. - Kiln temperature control: Thermocouples are used to measure temperatures. - Kiln feeds: There are mechanical burners to the kilns feed. - Production: The factory controls and records production at different stages of the production process through the Dropbox, an online tool to share monitoring data. - Infrastructure: During the period analyzed, the factory installed protection grids in the productive process machines.				
The factory does not meet any of the characteristics described.	The factory meets one of the characteristics described.	The factory meets 2-3 of the characteristics described.	The factory meets 4 of the characteristics described.	The factory meets all of the characteristics described.	In addition to scenario 5, the factory has organized planning to improve general conditions of the production process.
Score	5 (five)				
Prospects	There are currently no foreseen improvements.				

Indicator	14. Technological advances to improve the general conditions of the working environment					
Description	Evaluates the following general conditions of the working environment: cleanliness, noise, heat, lighting and appropriate signage. - Cleanliness: There is not excess dust and debris (ex: broken bricks and iron) around the factory. - Noise: The factory applies programs for noise control that comply with legislation. - Heat: The factory uses equipment to reduce employee exposure to heat (e.g., Fans, exhaust, etc.). - Lighting: The factory uses equipment to maintain a well-lit working environment (ex: translucent tiles, LED or mercury lamps, etc.). - Appropriate signage: - Warning signs indicating danger, or caution; - Warning signs indicating inflammable liquids; - Warning signs encouraging PPE use; - Signs identifying and indicating location of firefighting equipment.					
Situation	-Cleanliness: There are responsible workers for cleaning and there is not excess of dust and broken tiles around the factory. Furthermore, sanitary facilities are in good condition. - Noise control was installed to comply with current legislation, through measurements required by the PPRA and, after January 2022, by the PGR. - Heat: The Ceramic factory uses fans to reduce employees' exposure to kiln's heat. Also, the employees' uniforms were adapted to the heat, now they use shorts and protecting socks. - Lightning: The productive process shed are high to ensure a good natural lighting. The ceramic also uses translucent tiles and LED lamps. - Appropriate signage: The factory has the appropriate signage.					
The factory does not meet any of the characteristics described.	The factory meets one of the characteristics described.	The factory meets 2-3 of the characteristics described.	The factory meets 4 of the characteristics described.	The factory meets all of the characteristics described.	In addition to scenario 5, the factory has organized planning to improve	

					general conditions of the working environment.
Score	5 (five)				
Prospects	There are currently no foreseen improvements.				

Indicator	15. Product quality				
Description	Evaluates whether the quality of the products was evaluated during the time period analyzed.				
Situation	Cerâmica CGM had 10 types of bricks tested by SETEC Controle Técnico, and the resulting technical report was approved by Djenane Maciel, who is the responsible Technical Building and Quality Manager.				
No efforts were made to analyze or improve product quality.	Samples of some products were evaluated by quality tests.	Samples of all products were evaluated by quality tests.	Some of the products have quality certification.	All products have quality certification.	In addition to scenario 5, the factory has an in-house quality lab.
Score	4 (four)				
Prospects	The entrepreneur intends to certify all the products.				

6.1.6 Carbon Resource

Indicator	16. Stakeholder consultation
Description	Evaluates the existence of a stakeholder consultation system (local community, workers, suppliers, local authorities, civil society organizations, and other social parties involved).
Situation	The factory promotes lectures to the stakeholders about the sustainability practices carried on in the ceramic. During the lectures, the factory consults

the stakeholders' opinion and answer questions about the environmental initiatives. The factory has a trained team to perform the stakeholders' consultation. The factory states that there is a high demand by stakeholders regarding the sustainability practices carried on in the factory, they look for the ceramic lecture by phone especially.					
During the time period analyzed, the factory did not conduct a stakeholder consultation.	During the time period analyzed, the factory conducted an informal (no records) stakeholder consultation.	During the time period analyzed, the factory conducted a formal (with records) stakeholder consultation; however negative comments were made regarding the project.	During the time period analyzed, the factory conducted a formal (with records) stakeholder consultation, and no negative comments were made regarding the project.	As well as the previous scenario, there are continuous means of communication with stakeholders.	As well as the previous scenario, the next consultation is being planned together with stakeholders.
Score	5 (five)				
Prospects	There are currently no foreseen improvements.				

Indicator	17. Green marketing				
Description	Evaluates whether the factory has marketing strategies geared towards selling their products based on highlighting socio-environmental practices.				
Situation	CGM has worked mainly to disseminate information through banners that are made and given to students in the community on various topics, such as the ceramic factory's management plan. This material is taken to events and conferences according to the students' needs.				
The factory does not have marketing strategies	The factory markets their environmental practices only using	The factory markets their environmental practices using more	The factory has an established green	The factory has an established green	As well as the previous scenario, the factory has plans to

based on their environmental practices.	one means of communication. Example: magazine advertisement.	than one means of communication. Example: magazine advertisement and billboard.	marketing strategy, but still has not seen positive results.	marketing strategy and sees positive results.	invest in Green marketing.
Score	2 (two)				
Prospects	The entrepreneur intends to invest more on green market using social media.				

Indicator	18. Project performance				
Description	Evaluates the factory's perception about the results of the project, considering the generation and sale of carbon credits and also external aspects of project.				
Situation	The director of the ceramic factory believes that the project adds value not only to their product, but also to the company's image among the community (residents, customers, environmental agencies) as well as toward employees who feels proud to belong to a company that promotes and disseminates sustainability.				
The factory is very dissatisfied and threatens to abandon the carbon project.	The factory is dissatisfied but does not plan to abandon the carbon project..	The factory is indifferent about the carbon project.	The factory believes the carbon project is something positive but has complaints.	The factory is very satisfied with the carbon project.	In addition to the previous scenario, the factory considers the carbon project a competitive advantage for their business and encourages other factories to adopt similar practices.
Score	6 (six)				

Prospects

There are currently no foreseen improvements.

6.2 Analysis of Results

6.2.1 Current Performance

Resource	Critical	Satisfactory	Sustainable	Average Score	Performance
Social	0.0%	33.3%	66.7%	4.3	Satisfactory
Human	0.0%	33.3%	66.7%	5.3	Sustainable
Financial	0.0%	33.3%	66.7%	4.7	Satisfactory
Natural	0.0%	33.3%	66.7%	5.0	Sustainable
Biodiversity/Tech	0.0%	33.3%	66.7%	4.7	Satisfactory
Carbon	0.0%	33.3%	66.7%	4.3	Satisfactory
General	6.0%	28.0%	67.0%	4.7	Satisfactory

6.2.2 Historical Performance

Social	Point Zero	Point One	Point Two	Point Three	Point Four	Point Five	Point Six	Point Seven
	2.5	2.4	3.6	4.1	4.3	4.7	5.3	4.3

Historic Analysis of Social Resource: The decrease in Social Resource score is due to the resignation of employees during the Pandemic. The Ceramic still manage practices that contribute to local community development and there is an existing system for employee feedback. The system used was limited to a suggestion box, however currently the employees have the opportunity to express their opinions during CIPA reunions.

Human	Point Zero	Point One	Point Two	Point Three	Point Four	Point Five	Point Six	Point Seven
	2.8	3.2	3.0	3.3	4.7	5.3	5.3	5.3

Historic Analysis of Human Resource: The Human resource remained the same as point six due to the lectures offered to all employees as schedule of CIPA reunions. The factory continues to offer additional benefits to the employees as food stamps, work parties, consultation with doctor inside the factory, and others. Also, the ceramic factory offered lectures of health and security themes to all employees.

Financial	Point Zero	Point One	Point Two	Point Three	Point Four	Point Five	Point Six	Point Seven
	3.8	4.0	4.2	4.0	4.7	4.7	5.0	4.7

Historic Analysis of Financial Resource: The Financial Resource decreased because during Point Six part of the biomass used came from agro-industrial waste, preventing it from being sent to final disposal, while during Point Seven 100% of the biomass came from areas with Forest Management Plan.

Natural	Point Zero	Point One	Point Two	Point Three	Point Four	Point Five	Point Six	Point Seven
	3.6	4.1	4.1	4.3	5.3	5.3	5.3	5.0

Historic Analysis of Natural Resource: The natural resource has remained in the sustainable scenario since point four, due to voluntary environmental initiatives, however, there has been a drop in the score, as a formal environmental management system has not yet been structured. The partnerships established by CGM factory with regional institutions which contributes with the development of the region and benefits many stakeholders. In the period analyzed both factory areas of sustainable management plan are still being recognized as reference units of biodiversity products by Araripe Foundation and Ministry of Science and Technology.

Biodiversity	Point Zero	Point One	Point Two	Point Three	Point Four	Point Five	Point Six	Point Seven
	3.8	5.0	5.0	4.7	4.7	4.7	4.7	4.7

Historic Analysis of Biodiversity Resource: The Biodiversity Resource is remaining the same since point three. At this SCR, the factory has the PSQ - Sectorial Quality Program – certification to prove the quality of some of their products, especially in the fabrication, identification, visual features, shape, dimensional characteristics, water absorption, and impermeability, among others and they are looking to certificate all their products. There were not significant changes in the Technological resource from the previous SCR to the current Report.

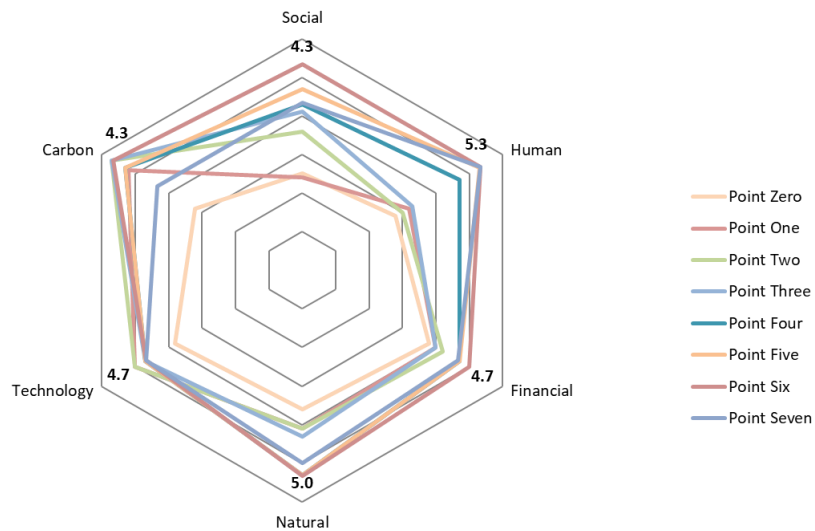
Carbon	Point Zero	Point One	Point Two	Point Three	Point Four	Point Five	Point Six	Point Seven
	3.2	5.2	5.7	5.7	5.3	5.3	5.7	4.3

Historic Analysis of Carbon Resource: The Carbon resource showed a drop compared to point six. This was due to a reduction in activity in green marketing actions, of which there was only one during the current monitoring period, which was the dissemination of environmental actions through banners. Despite this, the factory is becoming a benchmark as a sustainable company in the ceramics sector and intends to start using different means to publicize its environmental practices. The performance of the project is worth highlighting, as the owner believes that the project adds value not only to the product, but also to the company's image in the community.

General Performance	3.3	4.0	4.3	4.4	4.8	5.0	5.2	4.7
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6.2.3 Performance Hexagon

Graphic 1: Performance showing the average score obtained for each resource.



6.3 Prospect Status

6.3.1 Achieved Prospects

Natural	
Indicator	Environmental management
Prospect	Change the logistic of the management of waste residue
Details	The factory has total control over the residues produced, all the residues have the correct destination. Also, the factory has a Waste Management Plan. The waste returns to the production process at different stages or is donated to be used on roads.

6.3.2 Not Achieved Prospects

Social	
Indicator	Diversity
Prospect	The entrepreneur intends to contract more women
Details	During the Pandemic, the company's women's board decreased, not only because of the crisis, but also because of a movement of the employees themselves to stay home. The owner of the ceramics intends to increase the incentive to hire more women in the factory.

Human	
Indicator	Additional employee benefits
Prospect	The entrepreneur intends to build a recreation area for employees.
Details	Due to the Pandemic, the space for employee interaction was not developed, for reasons of social distancing and budget limitation.

Financial	
Indicator	Planning and control
Prospect	The entrepreneur intends to implement a future planning (timeline, budget, responsible involved and benefits).
Details	Due to the Pandemic and the carbon market crisis, the factory did not develop a detailed plan. Although, with some suggestions from the Sustainable Carbon team, technician Bruno and consultant Stephenson will implement a future planning.

Biodiversity/ Technological	
Indicator	Product quality
Prospect	The entrepreneur intends to certify all the products.

Details	Due to the crisis in recent years, it was not possible to certify all ceramic products.
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Carbon	
Indicator	Green marketing
Prospect	The entrepreneur intends to implement a future planning to invest on green market
Details	CGM does a broad disclosure through radio, local TV and flyers. There is a planning for investments in the green marketing using Social Media.

6.3.3 Identified Prospects

Social	
Indicator: Diversity	The entrepreneur intends to contract more women
Responsible	Entrepreneur
Timescale	Next Monitoring Plan

Human	
Indicator: Additional employee benefits	The entrepreneur intends to build an area with free Wi-Fi for employees use.
Responsible	Entrepreneur

Timescale	Next Monitoring Plan
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Financial	
Indicator: Planning and control	The entrepreneur intends to organize the future planning (timeline, budget, responsible involved and benefits).
Responsible	Entrepreneur
Timescale	Next Monitoring Plan

Natural	
Indicator: Environmental management	The entrepreneur intends to make partnerships and install solar power units in the factory.
Responsible	Entrepreneur
Timescale	Next Monitoring Plan

Biodiversity/Technology	
Indicator: Product quality	The entrepreneur intends to certify all the products
Responsible	Entrepreneur
Timescale	Next Monitoring Plan

Carbon	
Indicator: Green marketing	The entrepreneur intends to invest more on green market using social media.
Responsible	Entrepreneur
Timescale	Next Monitoring Plan

APPENDIX

Table 7. Qrenbiomass

	Renewable biomass (tonnes)		
	Period	Native wood from forest management	Total
2017	November	867.68	867.68
	December	584.32	584.32
	Total 2017	1,452	1,452
2018	January	511.28	511.28
	February	472.56	472.56
	March	455.84	455.84
	April	564.96	564.96
	May	687.28	687.28
	June	584.32	584.32
	July	731.28	731.28
	August	474.32	474.32
	September	538.56	538.56
	October	536.80	536.80
	November	505.12	505.12
	December	455.84	455.84
	Total 2018	6,518	6,518
2019	January	113.29	113.29
	February	29.81	29.81
	March	40.25	40.25
	April	11.93	11.93
	May	137.15	137.15

	June	47.70	47.70
	July	250.44	250.44
	August	384.61	384.61
	September	326.47	326.47
	October	357.77	357.77
	November	232.55	232.55
	December	238.52	238.52
	Total 2019	2,170	2,170
2020	January	319.44	319.44
	February	417.12	417.12
	March	323.84	323.84
	April	66.00	66.00
	May	343.20	343.20
	June	223.52	223.52
	July	425.92	425.92
	August	235.84	235.84
	September	387.20	387.20
	October	208.56	208.56
	November	158.40	158.40
	December	236.72	236.72
	Total 2020	3,346	3,346
2021	January	158.02	158.02
	February	149.07	149.07
	March	202.74	202.74
	April	161.00	161.00
	May	312.76	312.76
	June	333.63	333.63
	July	468.09	468.09
	August	384.61	384.61
	September	297.25	297.25
	October	572.44	572.44

2022	November	277.27	277.27
	December	298.14	298.14
	Total 2021	3,615	3,615
	January	162.49	162.49
	February	216.15	216.15
	March	77.52	77.52
	April	293.67	293.67
	May	417.40	417.40
	June	392.06	392.06
	July	435.29	435.29
	Total 2022	1,995	1,995
Total in the monitoring period		19,096	19,096

Table 8 - PRy - Production (tonnes of ceramic units)

Period		PRy - Production (tonnes of ceramic units)
2017	November	4,826.37
	December	0.00
	Total 2017	4,826.37
2018	January	5,139.77
	february	3,848.71
	March	4,817.50
	April	4,356.72
	May	4,602.82
	June	4,685.42

	July	4,836.93
	August	5,715.27
	September	6,756.38
	October	5,060.36
	November	5,087.44
	December	5,085.41
	Total 2018	59,992.73
2019	January	4,263.26
	february	4,339.58
	March	4,882.35
	April	4,478.70
	May	5,061.71
	June	4,551.15
	July	4,557.56
	August	5,538.58
	September	4,839.26
	October	5,084.77
	November	4,780.54
	December	4,699.87
	Total 2019	57,077.34
2020	January	4,529.05
	february	4,837.72
	March	3,102.80
	April	0.00
	May	0.00

	June	0.00
	July	4,523.29
	August	4,680.15
	September	4,439.87
	October	4,601.61
	November	3,851.67
	December	4,423.39
	Total 2020	38,990
2021	January	4,681.96
	february	3,807.39
	March	3,953.42
	April	4,883.20
	May	5,224.40
	June	4,107.01
	July	4,295.96
	August	4,863.79
	September	4,247.70
	October	4,628.05
	November	4,917.19
	December	3,947.70
	Total 2021	53,557.77
2022	January	4,201.70
	february	4,613.09
	March	4,412.62
	April	4,028.67

	May	4,401.98
	June	4,934.22
	July	4,745.36
	Total 2022	31,337.63
	Total in the monitoring period	245,781.40

Table 09. Total mass of freight transported in freight transportation activity f in monitoring period m

Provider	FRf,m in tonnes					
	2017	2018	2019	2020	2021	2022
	Native wood from forest management	Native wood from forest management	Native wood from forest management	Native wood from forest management	Native wood from forest management	Native wood from forest management
ADA MARIA DE ALENCAR PINHO	0	0	0	54	0	0
ANTONIA IONARA GONÇALVES	0	355	101	191	161	292.18
ANTONIO FERNANDES DE OLIVEIRA	0	0	60	90	80	0.00
ASSOCIAÇÃO COMUNITÁRIO DO SÍTIO	0	0	125	0	161	0.00
JOSÉ DUARTE GRANGEIRO NETO	0	137	95	71	0	0.00
JACINTO ALVES TEIXEIRA FILHO	30	282	55	21	0	0.00
LUIS GLEIDIVAN TEIXEIRA	0	0	334	173	30	53.67
DIVERSOS	815	2,328	1,400	608	18	89.44
GOMES DE MATTOS CERÂMICA	607	3,417	0.0	2,138	3,165	1,559.29
Total	1,452	6,518	2,170	3,346	3,615	1,995
	19,096					

Table 09. Social Carbon Indicators

Social Resource			Score	Analysis	Human Resource			Score	Analysis	Financial Resource			Score	Analysis
1°	Diversity		3	SA	4°	Additional employee benefits		6	SU	7°	Biomass supply		3	SA
2°	Community development		5	SU	5°	Health and safety practices		6	SU	8°	Planning and control		5	SU
3°	Employee satisfaction surveys		5	SU	6°	Training and capacity building programs		4	SA	9°	Carbon credit investments		6	SU
Average			4,3	SA	Average			5,3	SU	Average			4,7	SA
Indicators evaluated			3		Indicators evaluated			3		Indicators evaluated			3	
C	Critical		0	0,0%	C	Critical		0	0,0%	C	Critical		0	0,0%
SA	Satisfactory		1	33,3%	SA	Satisfactory		1	33,3%	SA	Satisfactory		1	33,3%
SU	Sustainable		2	66,7%	SU	Sustainable		2	66,7%	SU	Sustainable		2	66,7%
Natural Resource			Score	Analysis	Technology Resource			Score	Analysis	Carbon Resource			Score	Analysis
10°	Environmental management		3	SA	13°	Efficiency of the production process		5	SU	16°	Stakeholder consultation		5	SU
11°	Brazilian environmental legislation		6	SU	14°	Working environment		5	SU	17°	Green marketing		6	SU
12°	Voluntary environmental initiatives		6	SU	15°	Product quality		4	SA	18°	Project performance		6	SU
Average			5,0	SU	Average			4,7	SA	Average			5,7	SU
Indicators evaluated			3		Indicators evaluated			3		Indicators evaluated			3	
C	Critical		0	0,0%	C	Critical		0	0,0%	C	Critical		0	0,0%
SA	Satisfactory		1	33,3%	SA	Satisfactory		1	33,3%	SA	Satisfactory		0	0,0%
SU	Sustainable		2	66,7%	SU	Sustainable		2	66,7%	SU	Sustainable		3	100,0%