

KITAMBAR SWITCHING FUEL PROJECT

Document Prepared By IBOPE Instituto Brasileiro de Opinião Pública e Estatística Ltda

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Summary:

A brief description of the verification and the project

The project activity is the project of Cerâmica Kitambar, which is a red ceramic company located in Caruaru municipality, in the State of Pernambuco, in the northeast of Brazil. The ceramic company produces bricks and roof tiles, destined mainly for the regional market in Pernambuco.

The objective of the implementation of this project activity in the ceramic is to stop using the non-renewable native wood, which is a non-renewable fuel, and completely substitute it with renewable biomasses to feed their 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.

The emission reductions due to the switching of non-renewable fuel (non-renewable wood) to renewable biomasses were equal to **106,462 tCO₂e** during the monitoring period from 01-March-2012 to 31-May-2014 (VCS Monitoring Period) and 01-March-2012 to 30-June-2014 (SCR Monitoring Period). The contribution to sustainability is being monitored applying the SOCIALCARBON® Standard, which is based on six main resources: Technology; Natural; Financial; Human; Social and Carbon Resources.

The purpose and scope of verification

IBOPE has performed the verification of: “Kitambar Switching Fuel Project” according to the Verified Carbon Standard – VCS Version 3.4. This verification covers the period from 01-March-2012 to 31-May-2014 (VCS Monitoring Period) and 01-March-2012 to 30-June-2014 (SCR Monitoring Period).

The verification includes confirming the implementation of the monitoring plan of the VCS PD and the application of the CDM small scale methodology AMS-I.E.: Switch from Non-Renewable Biomass for Thermal Applications by the User – Version 01, valid from 01/02/2008 to 08/04/2010.

The Monitoring Period

The monitoring period for Kitambar Switching Fuel Project is from 01-March-2012 to 31-May-2014 (VCS Monitoring Period) and 01-March-2012 to 30-June-2014 (SCR Monitoring Period).

The method and criteria used for verification

The verification team has reviewed the Monitoring Report against the criteria established in the VCS Version 3.5 Program Guide and the VCS Validation and Verification Manual. In line with the criteria included in the VCS Version 3.5 Program Guide, the verification is meant to ensure that the reported

emission reductions are real, measurable, permanent, additional, independently audited, unique, transparent and conservative.

The verification consisted of a desk review and an on-site visit (July 01st to 03rd, 2014) where interviews with the key personnel from the project company Cerâmica Kitambar and the PD developer Sustainable Carbon – Projetos Ambientais Ltda were conducted. The verification team also confirmed that the monitoring procedures were correctly applied and the emission reductions were correctly calculated.

The number of findings raised during verification

This verification came out with 24 (twenty four) findings, which were all listed in Appendix A. They have all been attended and closed. Additionally this verification came out with 1 (one) Forward Action Request which shall be attended in the next monitoring period.

Any uncertainties associated with the verification

There are no uncertainties associated with this verification.

Summary of the verification conclusion

The Monitoring Report is considered to be in compliance with VCS Program Guide, the approved methodology AMS-I.E.: Switch from Non-Renewable Biomass for Thermal Applications by the User – Version 01, valid from 01/02/2008 to 08/04/2010, and the Monitoring Plan presented in the Project Description.

During the monitoring period from 01-March-2012 to 31-May-2014 (VCS Monitoring Period) and 01-March-2012 to 30-June-2014 (SCR Monitoring Period), the project generated the following GHG emission reductions: **106,462 tCO₂e** equivalents.

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1 INTRODUCTION

1.1 Objective

Sustainable Carbon – Projetos Ambientais LTDA has commissioned IBOPE to verify the 4th periodic verification of the emission reductions reported for the VCS Kitambar Switching Fuel Project with regard to the relevant requirements for VCS program as per the Verified Carbon Standard Version 3.4.

The objective of the 4th periodic verification is to verify that the actual monitoring systems and procedures are in compliance with the monitoring system and procedures described in the Monitoring Plan that is presented in the PD as well as with the Monitoring Manual. In addition, the periodic verification evaluates the greenhouse gas (GHG) emissions data presented in the Monitoring Report and expresses a conclusion about whether the presented GHG emissions data is free off material misstatements and sufficiently supported by evidence.

1.2 Scope and Criteria

The verification comprises a review of the monitoring report over the monitoring period 01-March-2012 to 31-May-2014 (VCS Monitoring Period) and 01-March-2012 to 30-June-2014 (SCR Monitoring Period), based on the registered Project Description (PD) in part of the project design, monitoring parameters, monitoring plan, emission reduction calculation, monitoring methodology and all related evidences provided by project participant. Those documents have been reviewed and verified against VCS Version 3.4 requirements, UNFCCC rules and associated interpretations. The verification is based on validated project design document including baseline calculations.

The main scopes of this verification are:

- Verify whether the emission reductions generated by the project are in line with the VCS Verification Protocol and the information provided by the project participants contains all the necessary information to evidence the project's compliance with all criteria in the VCS.
- Verify that the project has been implemented as described in the Project Design (PD) during the verification period.
- Confirm that the monitoring plan was implemented and fully functional to generate voluntary emission reductions (VCU) without any double counting during the whole verification period.
- Give a conclusion whether reported data are accurate, complete, consistent, and transparent, with a high level of assurance and free of material error or misstatement.

In particular, the project baseline, monitoring plan and the project compliance with relevant applicable protocols and criteria (i.e. UNFCCC, VCS, host Party and others) are to be validated in order to confirm that the project design, as documented, is sound and reasonable and meets the applicable criteria.

The correct application of the CDM small scale methodology: “AMS-I.E.: Switch from Non-Renewable Biomass for Thermal Applications by the User – Version 01, valid from 01/02/2008 to 08/04/2010”. was already carried out. An explicit review of the validation and its underlying assumptions made and its conclusion are not scope of this verification.

The SOCIALCARBON Standard version 5.0 is being utilized for the project activities during referred monitoring period and SOCIALCARBON indicators applied to the project: Brazilian Red Ceramic factories Indicators. Version 1.1 September, 2013.

1.3 Level of Assurance

As the VCS Version 3.4 recognizes verified emission reductions, IBOPE has focused on providing a reasonable level of assurance that the emission reduction calculation methodology is appropriate and correctly applied, and that emission reductions have been accurately monitored. The implementation can be considered sustainable and no indications were observed leading to the assumption of high risks beyond common project specific challenges in relation to the likelihood of continual removal of GHG emission reduction through the project. This judgment is based on the document review, on site checks and consistency checks.

In case it is required, IBOPE may discount verified emission reductions or requests a discount of these by using conservative assumptions for uncertainties in emission reduction calculations that cannot be fully quantified or that cannot give a desired level of assurance. For verifying/certifying VCUs, the desired level of assurance was based on the combined quantitative assessment of the accuracy of monitoring project performance and the identification of material risks.

1.4 Summary Description of the Project

The project activity is the project of *Cerâmica Kitambar*, which is a red ceramic company located in Caruaru municipality, in the State of *Pernambuco*, in the northeast of Brazil. The ceramic company produces bricks and roof tiles, destined mainly for the regional market in *Pernambuco*.

The objective of the implementation of this project activity in the ceramic is to stop using the non-renewable native wood, which is a non-renewable fuel, and completely substitute it with renewable biomasses to feed their 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 a carbon neutral lifecycle.

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

Kitambar Ceramic Company utilized eight “Round Kiln” during all this monitoring period (2012 to 2014). Each one can produce 42,000 devices per cycle. During this monitoring period, Kitambar Ceramic factory started using new equipment - a wood shredder and a dosing machine which makes the right dosage of biomass. These equipment improve the efficiency of the factory at the same time that they reduce the physical efforts made by the employees. These equipment were purchased on 13/07/2011, but only became operational during this monitoring period.

The emission reductions due to the switching of non-renewable fuel (non-renewable wood) to renewable biomasses were equal to **106,462 tCO₂e** during the monitoring period from 01-March-2012 to 31-May-2014 (VCS Monitoring Period) and 01-March-2012 to 30-June-2014 (SCR Monitoring Period). The contribution to sustainability is being monitored applying the SOCIALCARBON® Standard, which is based on six main resources: Technology; Natural; Financial; Human; Social and Carbon Resources.

The project provided improvements in each of the six resources listed above. The factory shows commitment with the local community and does monthly donations to ICIA - *Childhood Cancer of Agreste Institute*. Regarding the environmental aspects, the ceramic factory possesses all the legal documents and operational licenses. The factory was involved in some programs promoted by ANICER to evaluate the environmental practices. One of them was the *João de Barro Award* and another one was the participation in the program called “*Sustainable Ceramic Factory is more life*”; this program was created to promote the sustainability in the red ceramic factories through a set of actions.

2 VERIFICATION PROCESS

2.1 Method and Criteria

The verification is based on validated project description including baseline and monitoring report. These documents are reviewed against VCS Version 3.4 requirements. IBOPE has, based on the recommendations in the Validation and Verification Standard, and employed a risk-based approach in the verification, focusing on the identification of significant risks and reliability of project monitoring and generation of emission reductions.

The verification includes the following steps: desk review of the project design documents and monitoring report; on-site visit and follow-up interviews and resolution of outstanding issues and the issuance of the final verification report and opinion.

2.2 Document Review

The following table outlines the documentation reviewed during the verification process.

/1/ UNFCCC, Clean Development Mechanism Validation and Verification Standard, Version 05.0
/2/ UNFCCC, CDM small scale methodology “AMS-I.E.: Switch from Non-Renewable Biomass for Thermal Applications by the User – Version 01, valid from 01/02/2008 to 08/04/2010”.
/3/ VCS PD registered, Version 2 – May 20 th , 2009
/4/ VCS Verification Report – 1 st Verification – January 16 th 2009
/5/ VCS Verification Report – 2 nd Periodic Verification - January 14 th 2011
/6/ VCS Verification Report – 3 rd Periodic Verification - January 19 th 2013
/7/ VCS Monitoring Report - First Draft - Version 01 – June 25 th 2014
/8/ VCS Monitoring Report - Second version - Version 02 – July 28 th 2014
/9/ VCS Monitoring Report – Third version - Version 03.1 – August 18 th 2014
/10/ VCS MR Calculation Kitambar_period_04_ 01 03 12_31 05 14_v01.1
/11/ VCS MR Calculation Kitambar_period_04_ 01 03 12_31 05 14_v02
/12/ VCS MR Calculation Kitambar_period_04_ 01 03 12_31 05 14_v03.1
/13/ VCS Validation Report – January 13 th 2009
/14/ SOCIALCARBON Validation Report – 20 th February 2009
/15/ SOCIALCARBON Report Point Zero – 17 th December 2008

/16/ SOCIALCARBON Report Point One – 01 st November, 2009
/17/ SOCIALCARBON Report Point Two – 28 th November 2012

2.3 Interviews

IBOPE has performed an on-site visit on July 1th to 3th 2014 during which the operations of the ceramic were reviewed. During the visit the verification team conducted interviews with the following representatives of the project company Cerâmica Kitambar and the Sustainable Carbon – Projetos Ambientais Ltda who prepared VCS PD, VCS Monitoring Report and SOCIALCARBON Reports.

- *Cerâmica Kitambar*
 - *Mr. Antônio Marcos Tavares Barbosa, Director and Owner*
 - *Mr. Severino Francisco Torres, Quality Controller, data responsible*
- *Sustainable Carbon – Projetos Ambientais Ltda*
 - *Ms. Beatriz Rovere, Technical Analyst*
 - *Ms. Victor Oliveira Moller, Technical Analyst*
 - *Ms. Dênis Gonçalves dos Santos, Technical Analyst*
 - *Ms. Larissa Tega da Fonseca, Technical Analyst*
 - *Ms. Mariana Fieri, Technical coordinator*
 - *Marcelo Hector Sabbagh haddah, Technical coordinator*
 - *Thiago de Avila Othero, Technical coordinator*

The monitoring report was completed by Victor Oliveira Moller, Beatriz Rovere and Thiago de Avila Othero, from Sustainable Carbon – Projetos Ambientais LTDA.

Stakeholders

During the monitoring period the factory has conducted informal consultation to stakeholders, however there was not presented any records.

2.4 Site Inspections

An on-site inspection was conducted on July 1th to 3th, 2014 with the purpose to clarify whether the project had been carried out as described in the VCS PD, assessment of documents and interview people in order to verify the project conditions. The main verification topics during the site visit include, but are not limited to:

- On-site assessment to confirm whether all relevant equipment are installed and works as described in the registered VCS PD;
- The operating staff was interviewed and observed in order to check the risks of inappropriate operation and data collection procedures;
- Information process for generating, aggregating and reporting the selected monitored parameters were reviewed;
- The monitoring processes, routines and documentations were audited to check their proper application;
- The monitoring data were checked completely.
- SOCIALCARBON Indicators were on-site verified.

The on-site visit at the ceramic confirmed that the monitoring and reporting is carried out consistently and in line with established procedures and as per the requirements of the monitoring plan mentioned in the registered VCS PD. SOCIALCARBON indicators statements are also in line with determined description of each resource set.

2.5 Resolution of Findings

This process is aimed at resolving any outstanding issues which need to be clarified prior to the IBOPE conclusion on the project design and monitoring results. In order to ensure transparency a verification protocol is customized for the project. The protocol shows in transparent manner criteria (requirements), means of verification and their results against the identified criteria.

Findings established during the verification can either be seen as a non-fulfillment of CDM criteria and VCS Version 3.4, or where a risk to the fulfillment of project objectives is identified. Corrective action requests (CAR) issued where mistakes have been made with a direct influence on project results. Moreover, clarifications (CL) were requested where additional information is needed to fully clarify an issue. Additionally, forward action requests (FAR) were appointed.

During the course of this Verification, it was checked that all of the data from the spreadsheet was backed up by solid proof via receipts in the case of purchases of burning material or process logs for the production of ceramic pieces. The calculations of emission reductions were revised and proofed. In any of the cases, there were no discrepancies or mistakes found.

This verification came out with 25 (twenty five) findings – 22 (twenty two) corrective action request and 2 (two) clarification request, which were all listed in APPENDIX A: Checklist and non-conformities. They have all been attended and closed. Additionally, the verification came out with 1 (one) Forward Action Request (FAR) which shall be monitored onward.

2.5.1 Forward Action Requests

It was raised a Forward Action Required regarding the origin of renewable biomass parameter on Data and Parameters Monitored Section, as presented below:

ITEM 1	FAR 1
REFERENCE ROUND	Monitoring Report: Section 3.2: Data and Parameters Monitored and Site Visit 3 rd
FAR	The parameter <i>origin of renewable biomass</i> was verified in accordance with material and data provided, for example the interviews (audio and picture files) carried out with sawdust and forest residues suppliers of Kitambar ceramic industry. However, for the next monitoring period the project developer shall determine the most applicable presentation format (e.g. documents, scientific papers, sectorial studies) to prove the <i>origin of renewable biomass</i> , in order to guarantee a continuous assessment of the relevant suppliers of Kitambar industry project activities.
CLIENT ANSWER	Sustainable Carbon shall improve the procedures to monitor the origin of the renewable biomass used by the project and provide a clear description of such improvements on the next monitoring period.
REVISED SECTION	
CONCLUSION	Open

2.6 Eligibility for Validation Activities

Not applicable.

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

Not applicable.

3.2 Methodology Deviations

There were no methodology deviations during this monitoring period.

3.3 Project Description Deviations

1) $Q_{\text{renbiomass}}$ parameter

The registered VCS PD version 02 establishes that the project proponent (meaning the ceramic owner) would measure the amount of renewable biomasses used (parameter $Q_{\text{renbiomass}}$). However, during the entire monitored period, this parameter was monitored through all the receipts and invoices of biomass received by the ceramic industries. This means the amount of renewable biomass is measured by each provider and controlled by the ceramics owners, by storing receipts and invoices.

This approach was chosen considering that it is the responsibility of the provider to measure the amount of biomass, since this information needs to be available in the sale invoice or receipt. As this information is used for commercial purposes (to calculate due financial compensations), it is considered that data from the suppliers are a reliable source for this parameter.

2) Conversion factor for algarroba and native wood from forest management areas

The registered VCS PD v.5 did not consider the conversion factor from stereo meter (m^3 stereo) to cubic meter (m^3) for the amount of renewable biomass that arrives in volume units (parameter $Q_{\text{renbiomass}}$). Therefore, in the Monitoring Report (MR), the values presented in the table $Q_{\text{renbiomass}}$ of the VCS PD (section 3.3) for cashew wood, Algarroba wood and native wood from management areas were corrected, according to the conversion factors presented in the Section 3.2 of MR, and presented below:

Conversion factor from " m^3 stereo" to " m^3 "	
<i>Algarroba and Cashew tree wood</i>	0.3745
<i>Native Wood from forest management areas</i>	0.3388

Biomass	Specific gravity (tonne/m ³)
Algaroba Wood	0.836
Cashew tree residues	0.42
Forest Residues	0.35
Native Wood from forest management areas	0.88

3) Native wood from forest management areas

In the current period, the ceramic factory started using native wood from forest management areas as renewable biomass. The native wood from forest management areas is a biomass composed of firewood that is produced in existing areas of native forest where sustainable management techniques are applied. These techniques aim to ensure sustainable exploitation of wood, ensuring the conservation of areas and carbon stocks. This biomass is considered renewable according option I from CDM definition of renewable biomass (Annex 18 of the 23rd Report from the Executive Board), as soon as it fits all the assumptions below:

The biomass is originating from land areas that are forest where:

- (a) The land area remains a forest; and
- (b) Sustainable management practices are undertaken on these land areas to ensure, in particular, that the level of carbon stocks on these land areas does not systematically decrease over time (carbon stocks may temporarily decrease due to harvesting); and
- (c) Any national or regional forestry and nature conservation regulations are complied with.

According to the IBAMA Normative Instruction Nº 112 from August 21st, 2006¹, the entrepreneur who uses raw material from native forests is obliged to use the DOF (Forest Origin Documents) to control the origin, transport, and storage of forest products and by-products. Therefore, to use firewood obtained from native forests in a sustainable manner, it is necessary to use the DOF, which is required by national

¹ **Bibliography presented by Project Developer:** BRASIL. INSTRUÇÃO NORMATIVA IBAMA Nº 112, DE 21 DE AGOSTO DE 2006. Available at: http://www.cetesb.sp.gov.br/licenciamentoo/legislacao/federal/inst_normativa/2006_Instr_Norm_IBAMA_112.pdf >. Last visited on: 23/07/2014.

law. This requirement it is not enforced namely due to the lack of control, and constitutes the baseline scenario, as described in Section B.5 of VCS PD. During the project, however, all firewood used will have DOF, thus demonstrating that it is sustainable.

Furthermore, the other renewable biomasses likely to be used by the project, such as residues from cashew tree, algaroba wood and forest residues, do not require documents for residues, since they do not fall under the forest by-products definition of IBAMA Normative Instruction N° 112/06.

a) Additionality

In the current monitoring period, the ceramic factory did not utilize coconut husk biomass. Instead, Cerâmica Kitambar has used native wood from forest management areas as renewable biomass.

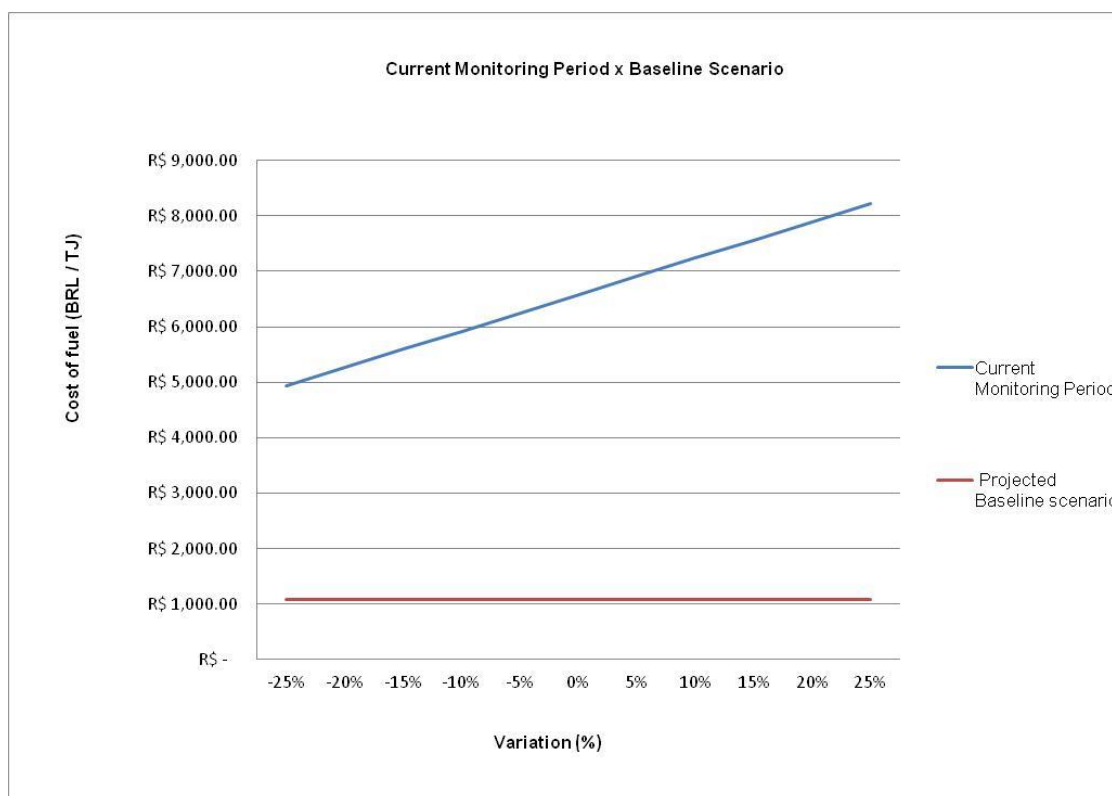
It was provided an analysis (regarding the current monitoring period (01-March-2012 to 31-May-2014 (VCS Monitoring Period) and 01-March-2012 to 30-June-2014 (SCR Monitoring Period) to ensure that this situation would not affect additionality of project activities.

Hence, the cost per energy generated by the new biomass was demonstrated to be higher than the cost per energy generated in baseline scenario. The **Figure 1** summarizes the situation of current period and impact in project additionality.

In accordance with data informed by project developer and cross-checked by IBOPE, the cost of non-renewable wood was updated utilizing a conservative correction factor applied to the cost of the non-renewable biomass in 2006, in order to account for general price increases due to inflation. The annual rate of increase applied on the current monitoring period was 6.50%.

Figure 1 displays the comparison of cost of delivered heat at projected baseline scenario and at current monitoring period. In conclusion, project developer has demonstrated that **Non-renewable biomass is financially more attractive than using the renewable biomass**.

Figure 1. Cost of renewable biomass per energy generated at the baseline scenario and at the current monitoring period



b) General information regarding native wood from forest management areas biome and natural interactions

The forest management in the Caatinga biome is one of the main options to ensure the sustainable biomass production for energy use, as well as for other basic needs of the populations and productive activities in the Northeast of Brazil. Due to the semi-arid climate of the caatinga biome, the vegetation is composed of medium and small size trees, shrubs; with many cactuses and thorny Bromeliaceae in the driest sites. The dominant physiognomy is a dry and low forest. Most plants lose their leaves during the long dry season, giving the Caatinga a meager aspect. However, its primary productivity is very high during the rainy season, when vigorous plant growth offers a wide variety of forage, flowers, fruits and wood.

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 annually².

In the Caatinga biome, the forest management is based on a monocyclic system, with an estimated rotation of 12 to 15 years. The exploration is done by clear cutting in annual plots. The cut is made near the tree's base in order to allow its regeneration by sprouts. When recovered, i.e. after 12 to 15 years, the vegetation reaches similar diversity levels. By this system, the estimated production of a forest management plan is about 40.5 m³/ha. The estimated annual productivity (also known as mean annual increment) of managed forest is about 3 m³/ha/year, so at the end of 12 to 15 years, the previously exploited 40.5 m³ have already recovered, closing the cycle³.

The use of forest management does not seem to affect the applicability of the project, according the methodology AMS-I.E.: Switch from Non-Renewable Biomass for Thermal Applications by the User – Version 01, valid from 01/02/2008 to 08/04/2010, as this is made for projects that use renewable biomass, including woody biomass. The availability of this biomass on the project region was assessed on Section 4.3 of MR and verified by IBOPE Verification Team.

4) Production process changes

During the monitored period, the Kitambar Ceramic started using new production processes: a new biomass shredder and a new biomass feeder. The additional process seems to have increased energy efficiency of burning cycles and thus, decreased consumption of biomass.

a) Biomass shredder and biomass feeder

In first process, a new biomass shredder decreases the particle size, increasing burning area of biomass⁴. The second process, a new biomass feeder, increased the efficiency on biomass handling,

² **Bibliography presented by Project Developer:** AMARAL, P. et al. Floresta para Sempre: um Manual para Produção de Madeira na Amazônia. Belém: Imazon, 1998. pp. 130. Available at: <http://www.bibliotecaflorestal.ufv.br/bitstream/handle/123456789/3942/Livro_Floresta-para-Sempre-Um-Manual-para-a-Produ%C3%A7%C3%A3o-de-Madeira-na-Amaz%C3%B4nia_IMAZON.pdf?sequence=1>. Last visit on: 24-July-2014.

³ **Bibliography presented by Project Developer:** BRASIL. Ministério do Meio Ambiente (MMA). Subsídios para a elaboração do plano de ação para a prevenção e controle do desmatamento na Caatinga. Brasília: MMA, 2011c. 128 p. Available at: <http://www.mma.gov.br/estruturas/168/_arquivos/diagnostico_do_desmatamento_na_caatinga_168.pdf>. Last visit on: August 06th, 2014

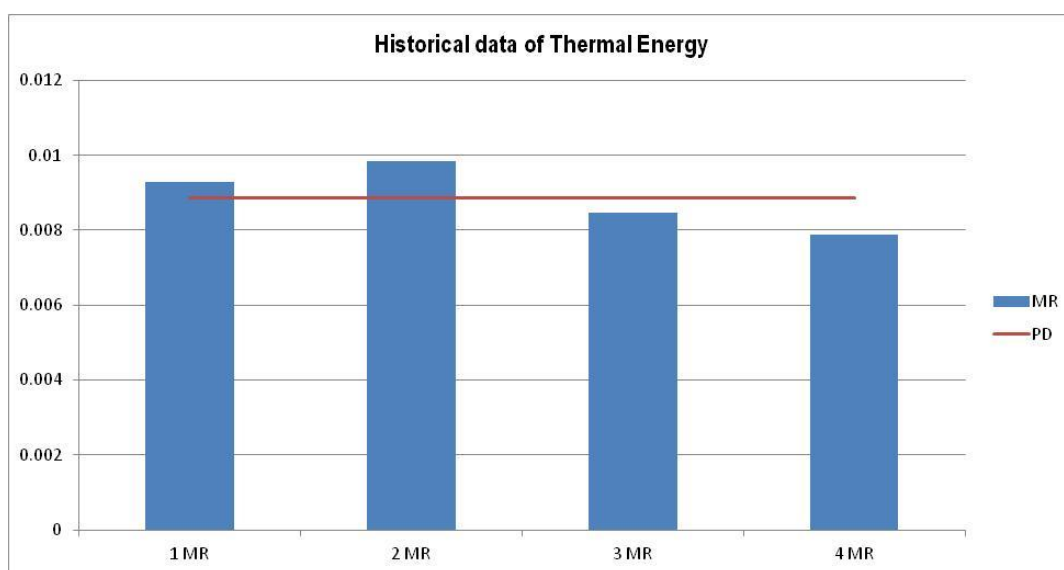
⁴ **Bibliography presented by Project Developer:** According to Ribeiro, M.J.P.M., Abrantes, J.C.C. Moagem em moinho de bolas: estudo de algumas variáveis e otimização energetic do processo. Cerâmica Industrial, 6 (2)

decreasing the amount of biomass needed to the burning in the furnace⁵. Therefore, the thermal energy utilized per thousands of pieces produced in this monitoring period was lower than thermal energy presented in VCS PD.

b) Thermal energy analysis requested by IBOPE Verification Team:

The analysis of data on historical thermal energy from Cerâmica Kitambar since its first monitoring period demonstrates the increased energy efficiency after introduction of the two processes. **Figure 2** presents the amount of energy needed to produce one thousand ceramic pieces on Cerâmica Kitambar (measured on TJ per thousand pieces).

Figure 2. Historical data of Thermal Energy⁶



From all points and statements above mentioned, IBOPE Verification Team states it as valid.

3.4 Grouped Project

Not applicable.

Março/Abril, 2001. Information is available on page 7, paragraph first paragraph.. Available at: <http://www.ceramicaindustrial.org.br/pdf/v06n02/v6n2_1.pdf> Visited in: 07/08/2014.

⁵ **Bibliography presented by Project Developer:** According to Guia Técnico ambiental da Indústria de Cerâmica Vermelha. Information is available on page 26, third paragraph. Available at: <http://www7.fiemg.com.br/Cms_Data/Contents/central/Media/Documentos/Biblioteca/PDFs/FIEMG/MeioAmbiente/2014/CartilhasPublica%C3%A7%C3%B5es/Cartilha-Cer-mica.pdf> Visited in: 18/08/2014

⁶ The graphic was presented in MR to demonstrate the reduction of thermal energy necessary to burn a ton of ceramic devices.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The project consists in fuel switching, substitution of native wood for renewable biomasses to generate thermal energy, feeding the kilns and fire the ceramic units from the Cerâmica Kitambar, according to the VCS PD.

During the on-site visit, it was physically observed and documented by the verification team that renewable biomasses such as forest residues, *algaroba* wood, cashew tree and wood from management areas and have been employed on the kilns of the Cerâmica Kitambar for energy supply.

The project implementation status has follows (VCS):

Kitambar Project Start Date	December 1st, 2006
Project Crediting Period Start Date	January 1st, 2007
Date of terminating the project	December 31th, 2017
VCS project crediting period	10 years renewable
First crediting period (10 years, twice renewable)	January 1st, 2007 to December 31th, 2017
1 st VCS Periodic Verification	January 16 th , 2009
2 nd VCS Periodic Verification	August 14 th , 2011
3 rd VCS Periodic Verification	May 19 th , 2013
SOCIALCARBON Point One Verification Report	February 20 th , 2009
SOCIALCARBON Point Two Verification Report	September 17 th , 2012

The VCS PD project was validated by the Designated Operational Entity TÜV Nord CERT GmbH and the 4th present monitoring report is being verified by Instituto Brasileiro de Opinião Pública e Estatística Ltda. (IBOPE).

There are no remaining issues from previous validation and verifications. The 24 (twenty four) CARs and CLs raised during this verification process were satisfactorily answered by the project proponent and are

closed. Additionally, the verification came out with 1 (one) Forward Action Request (FAR) which shall be monitored onward.

As described on the VCS PD version 02, the production process at Cerâmica Kitambar ceramics encompasses eight “Round” kilns in order to burn the fuel and fire the ceramic units, which are mainly used in the construction sector. According to the VCS PD, the eight “Round” kiln produce together approximately 1,050,000 ceramic units monthly;

In the current monitoring period, as renewable biomasses, Cerâmica Kitambar factory is employing forest residues, *algaroba* wood, cashew tree and wood from management areas.

According to the VCS PD, in order to the project is in accordance with local laws, it must run with licenses under valid time. During the on-site visit, the verification team checked the environmental license and clay extraction license and they were valid during this monitored period, confirming the project compliance with the local laws.

IBOPE hereby verified that there are no material discrepancies between project implementation and the project description.

The Cerâmica Kitambar applied the SOCIALCARBON® and have decreased in the following resource(s): Carbon Resource have decreased for the first time.

The following improvements and perspectives are being developed by Cerâmica Kitambar:

1) Indicator: Additional employee benefits

Description: The company intends to provide health insurance for all employees, to build a lunch room and offer lunch and dinner to all employees. The ceramic also intends to organize more fraternization parties.

Actions: The health insurance for all employees was achieved at this report.

Results: Accomplished

2) Indicator: Employee satisfaction surveys

Description: The entrepreneur will implement a procedure to evaluate workers satisfaction.

Actions: At this period the ceramic conducted employees meeting every two months.

Results: Accomplished

3) Indicator: Community development

Description: Ceramic intends donate construction material to a religious institution in Caruarú.

Actions: The ceramic donated material to the institution called Diocese de Caruaru – Paróquia de São Caetano, in 2013.

Results: Accomplished

4) Indicator: Training and capacity building programs

Description: The ceramic company owner intends to establish a partnership with SESI to develop a program to illiterates.

Actions: The factory started an educational program called EJA - Educacional Program for Youth and Adults in partnership with SESI. Currently there are 10 employees having the classes.

Results: Accomplished

5) Indicator: Health and safety practices

Description: From 2012 on, the ceramic company intends to establish a partnership with SESI for health and security issues.

Actions: The partnership was established.

Results: Accomplished

6) Indicator: Efficiency of the production process

Description: The entrepreneur intends to build a new changing room to employees.

Actions: The factory renovated the bathrooms and it is not necessary build new ones.

Results: Accomplished

7) Indicator: Planning and control

Description: The company's representative plans to take out a loan in the future.

Actions: The company made the loan

Results: Accomplished

8) Indicator: Planning and control

Description: The Kitambar owner intends to increase the ceramic company productivity.

Actions: The company achieved this through the new machineries and the green marketing.

Results: Accomplished

9) Indicator: Efficiency of the production process

Description: The entrepreneur plans to maintain the use of Dropbox program.

Actions: The factory used the Dropbox program in the current period.

Results: On-going

10) Indicator: Additional employee benefits

Description: The company intends to provide health insurance for all employees, to build a lunch room and offer lunch and dinner to all employees. The ceramic also intends to organize more fraternization parties.

Actions: The perspectives of build a lunch room and offer lunch and dinner to all employees were not achieved in this monitoring period. The owner stated that it was not possible due to the lack of resources to invest in this area. The factory has invested in other areas during the period, such as technologic and environmental areas.

Results: On hold

11) Indicator: Voluntary environmental initiatives

Description: The entrepreneur intends to create and apply an environmental policy, environmental marketing actions and strategies for socio-environmental responsibility. Kitambar Ceramic also intends to donate seedlings to recover riparian at Tacaimbo city.

Actions: The prospect was not achieved because the owner wants to hire an environmental professional to help with this activity.

Results: Not Accomplished

For this SOCIALCARBON Report 01-March-2012 to 31-May-2014 (VCS Monitoring Period) and 01-March-2012 to 30-June-2014 (SCR Monitoring Period), the following perspective(s) and improvement(s) are being planned:

- 1) Health and safety practices: For the next monitoring period, the company intends to initiate labor gymnastics to encourages and improve the physical activity of the employees.
- 2) Employee satisfaction surveys: For the next monitoring period the owner intends to record all employees' meeting through a minute.
- 3) Planning and control: For the next monitoring period the company intends to maintain an organized control of the destination for proceeds.
- 4) Voluntary environmental initiatives: Until 2017 Kitambar Ceramic intends to complete the prospect regarding the donation of seedlings to recover riparian at Tacaimbo city.
- 5) Efficiency of the production process: The owner intends to automate the process of discharging the dry tiles. But this is an expensive system that will be feasible when the company has budget.
- 6) Stakeholder consultation: For the next monitoring period the owner intends to conduct a formal stakeholder consultation.

Kitambar Switching Fuel Project has already commercialized its carbon credits.

4.2 Accuracy of GHG Emission Reduction and Removal Calculations

The verification team has checked the emission reduction calculation and confirmed that the Baseline Emissions have been calculated according to the formulas in the PD and following the approved CDM baseline and monitoring methodology “AMS-I.E.: Switch from Non-Renewable Biomass for Thermal Applications by the User – Version 01, valid from 01/02/2008 to 08/04/2010”.

The emission reduction is calculated as baseline emissions (BE_y) minus project emissions (PE_y) minus leakage emissions (LE_y). Since no project and leakage emissions are identified according to the applied methodology, baseline emissions are equal to the amount of emission reduction.

1) Baseline emissions

$$ER_y = B_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected_fossilfuel} \quad (\text{Equation 01})$$

Where:

ER_y : Emission reductions during the year y in tCO₂e

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 tCO₂/TJ⁷.

B_y is determined using the option:

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

$$B_y = \frac{HG_{p,y}}{\eta_{old} \times NCV_{biomass}} \quad (\text{Equation 02})$$

Where:

$HG_{p,y}$: Quantity of thermal energy generated by the renewable energy in the project in year y in TJ.

η_{old} : Efficiency of the system being replaced

$$HG_{p,y} = SGE \times PR_y \quad (\text{Equation 03})$$

⁷ The fossil fuel likely to be used by similar consumers is taken the IPCC default value of residual fossil fuel.

Where:

SGE: Specific energy which has to be generated in the process to produce a certain amount of ceramic devices in TJ/thousand of ceramic device.

PR_y: Amount of product produced in year y in thousand of ceramic devices

$$\eta_{old} = \frac{SGE}{SFE} \text{ (Equation 04)}$$

Where:

SFE: Specific fuel energy needed for the process to produce a certain amount of ceramic devices in TJ/ thousand of ceramic device

$$SFE = BF_y \times NCV_{biomass} \text{ (Equation 05)}$$

Where:

BF_y: Amount of native firewood needed to produce a certain amount of product in tonnes/thousand of ceramic devices

Using the Equations 3, 4 and 5 in the Equation 1, it results to:

$$B_y = PR_y \times BF_y \text{ (Equation 06)}$$

2) Project Emissions

The applied methodology does not include any source of project emissions.

3) Leakage

According to MR and statements of AMS-I.E.: Switch from Non-Renewable Biomass for Thermal Applications by the User – Version 01, valid from 01/02/2008 to 08/04/2010, there is no leakage emissions.

4) Calculations

The calculations presented on the spreadsheet (VCS MR Calculation Kitambar_period_04_01 03 12_31 05 14_v03.1), such as formulae, conversions and aggregations, and consistent use of the data and parameters utilized were verified and crosschecked with presented reference sources of VCS MR and data from VCS PD. Hence, the calculations are right and therefore the emissions reductions are to be considered generated through the *quantity of biomass that is substituted or displaced in tonnes (B_y) times fraction of non-renewable biomass (wood) used in the absence of the project activity in year y (f_{NRB,y}) times net calorific value of non-renewable biomass in TJ/tonne (NCV_{biomass}) times emission factor for the projected fossil fuel consumption in the baseline in tCO₂/TJ (EF_{projected fossil fuel})*.

4.3 Quality of Evidence to Determine GHG Emission Reductions and Removals

Cerâmica Kitambar has adequate monitoring mechanisms and uses the required parameters to monitor on a monthly basis. Additionally, this verification came out with FAR#1 which shall be monitored onward, regarding the origin of renewable biomass, its traceability, sources and reliability.

- Biomass: The amount of renewable biomass employed assessed by personally reviewing all the receipts and invoices of biomass received by Cerâmica Kitambar from their sources.
- Production of pieces: The production of ceramic units per month (PR_y) was assessed by personal review of the internal control sheets used by Cerâmica Kitambar, which are organized per month and daily filled according to data based on ceramic units burned in the kilns, and data from production process directly coming from factory.

The IBOPE Verification Team states as adequate the sufficiency of quantity, and appropriateness of quality, of the evidence used to determine the GHG reductions and removals.

4.4 SOCIALCARBON RESULTS

4.4.1 Social Resource

Indicator	Diversity														
Situation	According to dates collected from the RAIS – Annual Report of Social Information, there were 45 people working in the ceramic factory during the period analyzed. <table> <tr> <th>Excluded social groups</th><th>Number of workers</th></tr> <tr> <td>Women employees</td><td>2</td></tr> <tr> <td>Senior employees</td><td>2</td></tr> <tr> <td>Disabled employees</td><td>-</td></tr> <tr> <td>Ex-convicts employees</td><td>-</td></tr> <tr> <td>Illiterate employees</td><td>2</td></tr> <tr> <td>Indigenous employees</td><td>-</td></tr> </table> The table above shows that 13% of the employees are from minority groups.	Excluded social groups	Number of workers	Women employees	2	Senior employees	2	Disabled employees	-	Ex-convicts employees	-	Illiterate employees	2	Indigenous employees	-
Excluded social groups	Number of workers														
Women employees	2														
Senior employees	2														
Disabled employees	-														
Ex-convicts employees	-														
Illiterate employees	2														
Indigenous employees	-														

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 discrimination.
Score	3 (three)				
Justification	All actions undertaken by Cerâmica Kitambar were crosschecked; data are consistent and adequate. Documentation was assessed during site visit and after when required.				
Evidence	Indicator's data verified and confirmed through the following documents: RAIS (Annual Report of Social Information) and CAGED (General Register of Employed and Unemployed).				

Indicator	Community Development
Situation	Kitambar does monthly donations to ICIA (Instituto do Câncer Infantil do Agreste – Childhood Cancer of Agreste Institute). The ceramic factory also helps this institution with construction materials, always when it's necessary. Besides that, Kitambar used to contribute with donations to a recovery center for drugs addicts, however since the last monitoring period this center had to leave the property where they were installed and the institution ended its activities. The factory helped a religious center, called Diocese de Caruaru – Paróquia de São Caetano during this period,

	achieving the perspective stated in the last Social Carbon Report. Kitambar also has a partnership with the Federal Institution of Education, Science and Technology of Pernambuco – IFPE, to provide supervised internship to students from this institution. This partnership aims to prepare students for work, developing their skills. This partnership shows that the factory is formally involved and contributes with the development and implementation of social benefits in the community.				
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: - Regularly: one per month; OR - Significant: at least 10 different parties were benefited.	In addition to scenario 3, the factory lends out equipment, space and/or provides manpower for activities that benefit the local community.	The factory is formally involved in the development and implementation of social and/or environmental projects in partnership with public entities and/or civil society organizations.	In addition to scenario 5, the factory has formalized planning in order to maximize their contribution to local community development, through survey with the community, establishing new partnerships, etc.
Score	5 (five)				
Justification	All actions undertaken by Cerâmica Kitambar were crosschecked; data are consistent and adequate. Documentation was assessed during site visit and after when required.				
Evidence	Indicator's data verified and confirmed through the following documents: Donations receipts, donations statements and internal registries.				

Indicator	Employee satisfaction surveys				
Situation	The ceramic factory promotes meetings with the employees every two months. During the meetings the employees' opinions are evaluated. One of the last suggestions made by the employees and implemented by the factory was the renovation in the bathrooms.				
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 box, but employees do not use it.	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 implementing one or more suggestions made by employees.	The factory promotes periodic satisfaction surveys among employees. Example: monthly meetings, book for documenting information, etc	In addition to scenario 5, the factory has stipulated targets and timelines for solutions to employee complains
Score	5 (five)				
Justification	All actions undertaken by Cerâmica Kitambar were crosschecked; data are consistent and adequate. Documentation was assessed during site visit and after when required.				
Evidence	Indicator's data verified and confirmed through the following documents: On-site interview, internal registries,				

4.4.2 Human Resource

Indicator	Additional employee benefits
Situation	Beside the fixed salary, the company offers some benefits employees, such as: - Food Staples every month; - Saturday Off: The company granted the employee's request of having the Saturdays off; - Fraternization Party at the end of 2012; - Health insurance: the company pays 50% of the employee Health Insurance; - Life Insurance for all employees; - Commission based on production: except for the administration, cleaning and maintenance staffs, all employees receive commission for every thousand pieces produced; - Transportation: the company provides round trip transportation for employees between the city of São Caetano and the work. São Caetano is the city where almost all employees live; this place was chosen by the employees. - Meals: currently the company can't provide meals to all employees, due to the high value of these meals. Therefore, the company offers lunch to some of the employees, such as office workers, maintenance workers, machine operators and managers. For the others employees, the factory provides the place to have the meals and also provides one employee to cook and prepare the meals.

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)				
Justification	All actions undertaken by Cerâmica Kitambar were crosschecked; data are consistent and adequate. Documentation was assessed during site visit and after when required.				
Evidence	Indicator's data verified and confirmed through the following documents: On-site interview.				

Indicator	Health and safety practices
Situation	The ceramic factory has CIPA – Internal Commission for Accident Prevention – during the CIPA the company promotes speeches, training programs and internal communication about health and safety practices. The ceramic has PCMSO (Programa de Controle Médico de Saúde Ocupacional – Program of Medical Control and Occupation Health) and PPRA (Programa de Prevenção e Redução de Acidentes – Program for Prevention and Reduction of Accidents). They also hired an intern who studies work safety who is responsible for all the health and security issues. The company offers all the personal protective equipments necessary for the workers to carry on their activities with

	safety and there is internal control of the IPEs use. Besides that, Kitambar initiate a partnership with SESI to provide labor gymnastics to the employees. They are discussing the details and probably in the next months the activities will start.				
There is no control of PPE distribution. None of the health and safety programs required by law are being implemented.	PPE distribution is being controlled OR there is at least one health and safety program required by law being implemented.	The factory meets all legal requirements.	The factory meets all legal 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.	In addition to scenario 4, the factory contracts or has a technical professional or safety engineer on staff to ensure best practices in the company.	In addition to scenario 5, the factory develops complementary programs such as PPR, PPRPS and PCA; and/or The factory encourages physical activity or conducts activities for disease prevention.
Score	5 (five)				
Justification	All actions undertaken by Cerâmica Kitambar were crosschecked; data are consistent and adequate. Documentation was assessed during site visit and after when required.				

Evidence	Indicator's data verified and confirmed through the following documents: on-site visit, PPRA (Program for Prevention and Environmental Risks) and PCMSO, (Program for Controlling Medical and Occupational Health).
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Indicator	Training and capacity building programs				
Situation	During the period analyzed Kitambar offered several courses to employees, such as: NR10 (Regulatory Norma): Safety Electricity Installations – Edmilson Andre da Silva Diagnostics,Development and Implementation of NR 12 – Aiane Karine Francisco de Assis de Costa Edmilson Andre da Silva Electrical Controls – Leandro Aguiar de Gois Technological innovation – Administrative and operation staff – among 10 people Lecture about PSQ Qualification – among 10 people from the operational and administrative staff. Besides that, Kitambar in partnership with SESI initiated an educational program – EJA Educação de Jovens e Adultos (Educacional Program for Youth and Adults). The factory provides the place to study – a class inside the company and the classes are given by SESI professionals. Currently there are 10 employees having the classes. The owner, Mr. Antonio Marcos, states that he is really happy and proud of this educational program.				
The company has not invested in lectures nor professional training	The factory organized occasional	Training courses were offered to individual	In addition to item 3, the individual employees who were	In addition to scenario 4, the factory has an	In addition to scenario 5, the Ceramic factory has

courses for staff.	lectures.	employees, but not to all employees.	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).	internal campaign to encourage employees to complete their high school education; and/or The factory promotes a literacy program for youth and adults	established a strategic plan regarding training and capacity building programs.
Score	5 (five)				
Justification	All actions undertaken by Cerâmica Kitambar were crosschecked; data are consistent and adequate. Documentation was assessed during site visit and after when required.				
Evidence	Indicator's data verified and confirmed through the following documents: On-site visit and certificates.				

4.4.3 Financial Resource

Indicator	Biomass supply
Situation	Currently the ceramic factory uses four types of biomass: algarroba wood, cashew tree residues, forest residues and native wood from forest management. The factory has total control of the source and amount of renewable biomass

	used and more than 50% are from native wood with sustainable management.				
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.	he 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	4 (four)				
Justification	All actions undertaken by Cerâmica Kitambar were crosschecked; data are consistent and adequate. Documentation was assessed during site visit and after when required.				
Evidence	Indicator's data verified and confirmed through the following documents: VCS calculation spreadsheets, internal prouction control, biomass control, on-site visit and on-site interviews.				

Indicator	Planning and Control				
Situation	The factory has organized controls of the income received from carbon credit sales, but control of the destination for proceeds is partial.				
The factory has no organized controls of the income received from carbon credit sales nor the destination for proceeds.	The factory has partial control of the income received from carbon credit sales and the destination for proceeds.	The factory has organized controls of the income received from carbon credit sales, but control of the destination for proceeds is partial.	The factory has organized controls of the income received from carbon credit sales, as well as of the destination for proceeds. However, the factory presents no future planning.	The factory has organized controls of the income received from carbon credit sales, as well as of the destination for proceeds. However, the factory presents incomplete f	The factory has organized 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	3 (three)				
Justification	All actions undertaken by Cerâmica Kitambar were crosschecked; data are consistent and adequate. Documentation was assessed during site visit and after when required.				
Evidence	Indicator's data verified and confirmed through the following documents: Internal control documents, sales registry of carbon credits and on-site interviews.				

Indicator	Carbon credit Investments				
Situation	More than 100% of the income generated by carbon credit sales was invested the factory and in the community development.				
The income generated by carbon credit sales was not invested in the factory nor in the community, or there are no organized controls of the allocation of proceeds.	Less than 20% of the income generated by carbon credit sales was invested the factory or in the community development.	Between 20 and 40% of the income generated by carbon credit sales was invested the factory or in the community development	Between 40 and 60% of the income generated by carbon credit sales was invested the factory or in the community development.	Between 60 and 80% of the income generated by carbon credit sales was invested the factory or in the community development.	Between 80 and 100% of the income generated by carbon credit sales was invested the factory or in the community development.
Score	6 (six)				
Justification	All actions undertaken by Cerâmica Kitambar were crosschecked; data are consistent and adequate. Documentation was assessed during site visit and after when required.				
Evidence	Indicator's data verified and confirmed through the following documents: Internal control documents, sales registry of carbon credits and on-site interviews.				

4.4.4 Natural Resource

Indicator	Environmental Management
Situation	The ceramic factory shows some initiatives regarding environmental management: - Waste: the factory generates a small quantity of waste. The unburned residues are returned into the clay mixture and reused in the production process. The discarded ceramic goods are reused to repair roads; the ashes generated by Kitambar's production are used to seal the kiln doors; The materials, such gloves and EPIs, contaminated with oil are collected by a company who treats these materials. - Air: Kitambar has annual reports that monitor the atmospheric emissions, done by SESI (Serviço Social da Indústria – Social Service from Industry). Also, Kitambar ceramic factory is participating in a program called “<i>Cerâmica Sustentável é + vida</i>” (Sustainable Ceramic Factory is more life) developed by Anicer (National Ceramics Factories Association) in partnership with Sebrae (Brazilian Service in support of Micro and Small Enterprises). This program was created to promote the sustainability in the red ceramics factories through a set of actions. A consultant from Anicer visited Kitambar to evaluate aspects such as the kilns energy efficiency, the amount of clay used in the production process, the clay extracting area, compliance with environmental regulations, among others. For more information please access: http://www.anicer.com.br/index.asp?pg=institucional_direita.asp&secao=17&ex=3 The ceramic was also involved in another program promoted by ANICER: The João de Barro Award – this award is an initiative of Anicer to recognize and highlight institutions that have contributed with innovative actions and practices, improving and development the sector. Kitambar won the João de Barro award during the 42º National Meeting of the

	Ceramic Factories. For more information, please access: http://www.anicer.com.br/encontro43/index.php/premio-joao-de-barro/o-premio/				
There are no Environmental management initiatives.	There are up to two specific initiatives to prevent/ reduce the main environmental impacts caused by the ceramic factory.	There are more than two initiatives to prevent / reduce the main environmental impacts caused by ceramic factory	In addition the scenario 3, the factory is structuring an environmental management system in the company.	The factory has implemented a formal environmental management system.	The factory's environmental management system has been certified by a third party.
Score	2 (two)				
Justification	All actions undertaken by Cerâmica Kitambar were crosschecked; data are consistent and adequate. Documentation was assessed during site visit and after when required.				
Evidence	Indicator's data verified and confirmed through the following documents: On-site visit, certificates and award from João de Barro.				

Indicator	Brazilian environmental legislation
Situation	The ceramic is in conformity with the environmental laws and posses: - License for clay extraction nº 05.13.07.002943-2, issued by the CPRH, the Environmental Agency of Pernambuco expiring on July 29th, 2014. - License from the Departamento Nacional de Produção Mineral, DNPM nº 840.089/2002, valid until July 23rd, 2022. - Operation License nº 05.13.09.003481-2, issued by the CPRH, the Environmental Agency of Pernambuco, expiring

	on September 10th, 2014. - Federal Technical Registry issued by IBAMA (Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis - Brazilian Institute of Environment and Natural Resources) valid until July 12th, 2014. - The ceramic uses water from the public supply and also buys water from a company that has the operational license nº 18.13.11.005066-2 issued by the CPRH and valid until December 3rd, 2015. The water is transported by trucks.				
The factory does not possess any of the following: -operating license -license for clay extraction -water grant - federal technical registry	The factory only posses two of the following: -operating license -license for clay extraction -water grant - federal technical registry	The factory only posses three of the following: -operating license -license for clay extraction -water grant - federal technical registry	The factory posses all of the following: -operating license -license for clay extraction -water grant - federal technical registry However, they do not meet all the conditions established by them.	All licenses are up to date and all conditions established by them are being met.	In addition to the previous scenario, the factory collaborates with public administration and/or civil society organizations for cooperation with environmental projects.
Score	5 (five)				
Justification	All actions undertaken by Cerâmica Kitambar were crosschecked; data are consistent and adequate. Documentation was assessed during site visit and after when required.				

Evidence	Indicator's data verified and confirmed through the following documents: Legal license documents.
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Indicator	Voluntary environmental initiatives				
Situation	The Kitambar owner initiated a partnership with the NGO Caatinga Association in the program called “Programa Eu Protejo o Tatu-Bola” (I protect the armadillo) during this period. This association protects the armadillo, which is endangered species in the region. This initiative extends the benefits beyond the community members, since the armadillo is an endemic specie that has been suffering the hunting and the deforestation in the Caatinga biome. For more information about the program and the NGO, please access: http://www.acaatinga.org.br/index.php/nossas-acoes/salveotatubola/				
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)				
Justification	All actions undertaken by Cerâmica Kitambar were crosschecked; data are consistent and adequate. Documentation				

	was assessed during site visit and after when required.
Evidence	Indicator's data verified and confirmed through the following documents: On-site visit and interviews.

4.4.5 Biodiversity/Technology Resource

Indicator	Technological advances to improve efficiency of the production process				
Situation	The factory meets the following aspects: - posses a dryer that recycles the heat from the kilns; - The factory has eight round kilns, considered intermittent kilns; however, it was explained that the round kiln is the most suitable kiln to produce the roof tiles. Therefore, it was considered that the factory has an efficient kiln for its production; - controls the kiln temperature: the factory keeps a record of thermocouples and the data is registered in a computer system; - the factory feeds kilns using a semi-automatic equipment; - The factory control and records production at different stages of the production process: molding machine, kiln loading and kiln unloading; - During the period analyzed, infrastructural improvements in the factory were carried out, such as renovation of toilets. The ceramic also purchased new equipments - a wood shredder and a dosing machine which makes the right dosage of biomass. These equipments improve the efficiency of the factory and at the same time reducing the physical efforts made by the employees.				
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 (four)				
Justification	All actions undertaken by Cerâmica Kitambar were crosschecked; data are consistent and adequate. Documentation was assessed during site visit and after when required.				
Evidence	Indicator's data verified and confirmed through the following documents: On-site visit.				

Indicator	Technological advances to improve the general conditions of the working environment				
Situation	The factory meets all the characteristics: - there is no excess of dust and debris; - the factory is a well ventilated place, not being necessary the use fans to maintain a good working environment; - the factory has translucent tiles, which provides a well-lit working environment; - The noise in the ceramic factory does not exceed those established by law. - The factory uses signing according to the applicable norms.				
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)				
Justification	All actions undertaken by Cerâmica Kitambar were crosschecked; data are consistent and adequate. Documentation was assessed during site visit and after when required.				
Evidence	Indicator's data verified and confirmed through the following documents: On-site visit and pictures.				

Indicator	Product quality				
Situation	The enterprise has quality control of its products, including tests for the raw material and final product. The ceramic has a quality control center inside the company, where employees are trained to evaluate the quality control of the ceramic products. Besides that, the factory has PSQ certification (Quality Program) for the all types of tiles that are produced in the factory.				
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 o 5, the factory has an in-house quality lab.
Score	6 (six)				
Justification	All actions undertaken by Cerâmica Kitambar were crosschecked; data are consistent and adequate. Documentation was assessed during site visit and after when required.				
Evidence	Indicator's data verified and confirmed through the following documents: On-site visit and pictures.				

4.4.6 Carbon Resource

Indicator	Stakeholder consultation				
Situation	Kitambar ceramic factory is always participating in events and meetings in the region, where discloses about the carbon project. The owner, Mr. Antonio Marcos, noticed that people are always very interested when he explains about the carbon project, although he didn't conduct any formal consultation during the period.				
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	2 (two)				
Justification	All actions undertaken by Cerâmica Kitambar were crosschecked; data are consistent and adequate. Documentation was assessed during site visit and after when required.				
Evidence	Indicator's data verified and confirmed through the following documents: On-site interview.				

Indicator	Green Marketing				
Situation	The factory has an established plan to invest in green marketing. The ceramic factory hired an advertising company to help with the green marketing strategies. Currently Kitambar markets their environmental practices on its website (http://www.kitambar.com.br/?pagina=meioambiente), on facebook (https://pt-br.facebook.com/kitambar.pe), youtube (http://ow.ly/u1QqL) and also at the local radio. The factory sees positive results with these marketing strategies.				
The factory does not have marketing strategies based on their environmental practices.	The factory markets their environmental practices only using one means of communication. Example: magazine advertisement.	The factory markets their environmental practices using more than one means of communication. Example: magazine advertisement and billboard.	The factory has an established green marketing strategy, but still has not seen positive results.	The factory has an established green marketing strategy and sees positive results.	As well as the previous scenario, the factory has plans to invest in Green marketing.
Score	6 (six)				
Justification	All actions undertaken by Cerâmica Kitambar were crosschecked; data are consistent and adequate. Documentation was assessed during site visit and after when required.				
Evidence	Indicator's data verified and confirmed through the following documents: On-site interview.				

Indicator	Project Performance					
Situation	The owner states that he is very satisfied with the carbon project, and the project helps him to improve the social and environmental benefits that he provides to the community. Besides that, the ceramic factory has always been invited to participate in meetings to explain about its practices. Showing his social and environmental practices is a way to encourage other companies to adopt similar practices. Mr. Antonio Marcos considers that his carbon project brought a competitive advantage for his business.					
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)					
Justification	All actions undertaken by Cerâmica Kitambar were crosschecked; data are consistent and adequate. Documentation was assessed during site visit and after when required.					
Evidence	Indicator's data verified and confirmed through the following documents: On-site interview.					

4.5 ANALYSIS OF SOCIALCARBON RESULTS

4.5.1 Current Performance

The table below summarizes the indicator's index score and such analysis (critical, satisfactory or sustainable):

Indicator Number	Indicator	Index Score	Analysis
1	Diversity	3,0	Satisfactory
2	Community Development	5,0	Sustainable
3	Employee Satisfaction Surveys	5,0	Sustainable
4	Additional Employee Benefits	6,0	Sustainable
5	Health and Safety Practices	5,0	Sustainable
6	Training and Capacity Building Programs	5,0	Sustainable
7	Biomass Supply	4,0	Satisfactory
8	Planning and Control	3,0	Satisfactory
9	Carbon Credit Investments	6,0	Sustainable
10	Environmental Management	2,0	Critical
11	Brazilian Environmental Legislation	5,0	Sustainable
12	Voluntary Environmental Initiatives	6,0	Sustainable
13	Technological Advances to Improve Efficiency of the Production Process	5,0	Sustainable
14	Technological Advances to Improve the General Conditions of the Working Environment	5,0	Sustainable
15	Product Quality	6,0	Sustainable

16	Stakeholder Consultation	2,0	Critical
17	Green Marketing	6,0	Sustainable
18	Project Performance	6,0	Sustainable

The majority of indicators were assessed as sustainable, representing good strength of actions undertaken by Cerâmica Kitambar. Three indicators were determined as satisfactory, what represents a point of continuous improve of initiatives related to them. Only two indicators were considered critical, representing a demand of actions regarding its progress despite its weakness.

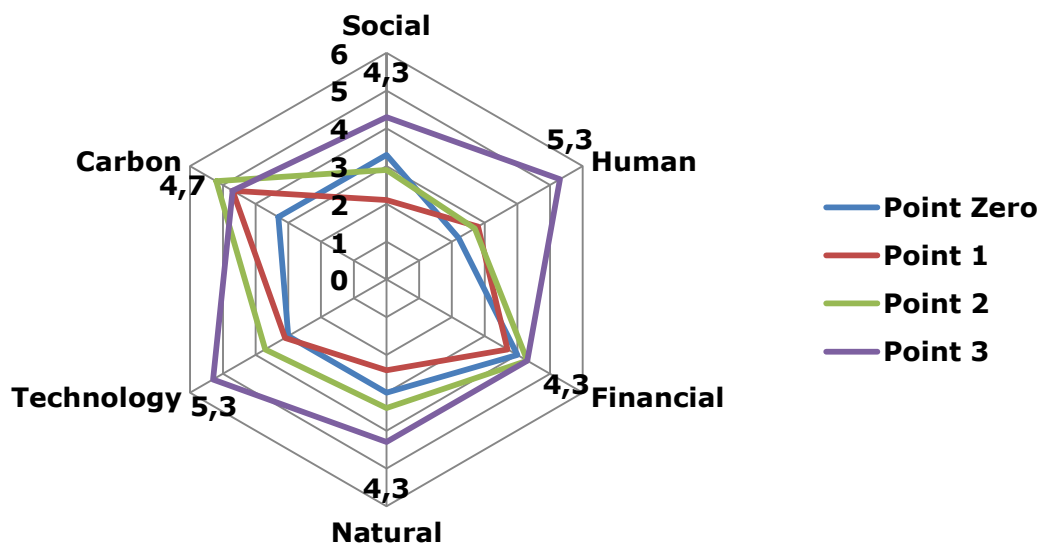
Resource	Critical	Satisfactory	Sustainable	Average Score	Performance
Social	0,0%	33,3%	66,7%	4,3	Satisfactory
Human	0,0%	0,0%	100,0%	5,3	Sustainable
Financial	0,0%	66,7%	33,3%	4,3	Satisfactory
Natural	33,3%	0,0%	66,7%	4,3	Satisfactory
Biodiversity/Tech	0,0%	0,0%	100,0%	5,3	Sustainable
Carbon	33,3%	0,0%	66,7%	4,7	Sustainable

4.5.2 Historical Performance

Social	Point Zero	Point One	Point Two	Point Three
	3,3	2,1	2,9	4,3
Historic Analysis: Increased from the last point. For more information regarding the analysis of historical performance of this resource, please refer to the verified MR.				
Human	Point Zero	Point One	Point Two	Point Three

	2,2	2,8	2,7	5,3
Historic Analysis: Increased from the last point. For more information regarding the analysis of historical performance of this resource, please refer to the verified MR.				
Financial	Point Zero	Point One	Point Two	Point Three
	4,0	3,7	4,3	4,3
Historic Analysis: Maintained performance. For more information regarding the analysis of historical performance of this resource, please refer to the verified MR.				
Natural	Point Zero	Point One	Point Two	Point Three
	3,0	2,4	3,4	4,3
Historic Analysis: Increased from the last point. For more information regarding the analysis of historical performance of this resource, please refer to the verified MR.				
Biodiversity	Point Zero	Point One	Point Two	Point Three
	3,0	3,1	3,7	5,3
Historic Analysis: Increased from the last point. For more information regarding the analysis of historical performance of this resource, please refer to the verified MR.				
Carbon	Point Zero	Point One	Point Two	Point Three
	3,3	4,7	5,2	4,7
Historic Analysis: Decreased from the last point. For more information regarding the analysis of historical performance of this resource, please refer to the verified MR.				

4.5.1 Performance Hexagon



4.6 Non-Permanence Risk Analysis

IBOPE conducted a risk analysis during the Contract Review phase, before finish the Verification process and considers the risk rating acceptable.

5 VERIFICATION CONCLUSION

The verification team of IBOPE has performed the 4th Verification for Kitambar Switching Fuel Project on the basis of VCS Version 3.4 and UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting.

Moreover, IBOPE has conducted the 3rd Verification of SOCIALCARBON Report for the Kitambar Switching Fuel Project in accordance with SOCIALCARBON Standard version 5.0 and SOCIALCARBON indicators applied to the project: Brazilian Red Ceramic factories Indicators. Version 1.1 September, 2013.

IBOPE concludes that during the period of 01-March-2012 to 31-May-2014 (VCS Monitoring Period) and 01-March-2012 to 30-June-2014 (SCR Monitoring Period) the above described project has fulfilled all the requirements to produce emissions reductions on the total of **106,462 tCO₂e** tCO₂ eq.

The monitoring plan is in place and the project is generating GHG emission reductions. IBOPE concludes that the project is implemented and operated as planned and described in the registered VCS Project Design;

It is the opinion of IBOPE that this verification job to be considered as closed.

Verification period: From 01-March-2012 to 31-May-2014

SOCIALCARBON verification period: From 01-March-2012 to 30-June-2014

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

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
2012	39,231	0,00	0,00	39,231
2013	47,022	0,00	0,00	47,022
2014	20,209	0,00	0,00	20,209
Total	106,462	0,00	0,00	106,462

APPENDIX A: CHECKLIST AND NON-CONFORMITIES

ISSUANCE DATE	18/08/2014
PROJECT TITLE	Kitambar Switching Fuel Project
AUDITOR	Fernando Alarcon Nogueira
ROUND	3rd

ITEM 1	CAR 1.
REFERENCE ROUND	Monitoring Report: Section 1.1: Summary Description of the Implementation Status of the Project 1 st
CAR/CL	According to the VCS Monitoring Report Template v3.3, this section should include: • Brief information about the equipment; • The relevant implementation dates (e.g., dates of construction, commissioning, and continued operation periods); Please maintain format of text, mainly in last paragraph which differs from original format.
CLIENT ANSWER	A brief description of the implementation of the information about the equipment of the project was included. The implementation dates were included in the MR. The format text was revised and changed for Arial 10 for the entire section.
REVISED SECTION	Section 1.1 – Summary description of the implementation status of the project.
CONCLUSION	Closed

ITEM 2	CAR 2.
REFERENCE ROUND	Monitoring Report: Section 1.5: Project Start Date 1 st
CAR/CL	According to the VCS+SC Monitoring Report Template v3.3, this section should indicate the project start date and justification for any difference from the carbon component of the project. Start date described in MR is not checkable with SOCIALCARBON point zero report. Please review this section.
CLIENT ANSWER	According to the SOCIALCARBON Standard version 5.0, the time period considered in the SOCIALCARBON

	Report must overlap the period considered by the offset accounting standard monitoring report by at least 50%.
REVISED SECTION	Section 1.5 Project Start Date
CONCLUSION	Closed

ITEM 3	CAR 3.
REFERENCE	Monitoring Report: Section 1.7: Project Location
ROUND	1 st
CAR/CL	Please resize Figure 1 making it bigger.
CLIENT ANSWER	The figure 1 was making it bigger.
REVISED SECTION	Section 1.7 – Project location.
CONCLUSION	Closed

ITEM 4	CAR 4.
REFERENCE	Monitoring Report: Section 1.8: Title and Reference of Methodology
ROUND	1 st
CAR/CL	Please maintain format of text.
CLIENT ANSWER	The format text was revised and changed for Arial 10 for the entire section.
REVISED SECTION	1.8 Title and Reference of Methodology
CONCLUSION	Closed

ITEM 5	CAR 5.
REFERENCE	Monitoring Report: Section 2.1: Implementation Status of the Project Activity
ROUND	1 st
CAR/CL	Regarding CAR 8 Section 2.1 should also review figure “ <i>Current Monitoring x Baseline Scenario</i> ” in order to update eventual changes in biomass data.
	According to VCS+SC Monitoring Report Template, version 3.3 Section 2.1 should include also “a brief

	description of the implementation of the social and environmental components of the project". Please include it.
CLIENT ANSWER	A brief description of the implementation of the social and environmental components of the project was included.
REVISED SECTION	Section 2.1 Implementation Status of the Project Activity
CONCLUSION	Closed

ITEM 6	CAR 6.
REFERENCE ROUND	Monitoring Report: Section 2.2.2: Project Description Deviations 1 st
CAR/CL	This section should include also the modifications carried out by the utilization of native wood from forest management areas renewable biomass, as it has not been previously foresaw by VCS PD. Moreover, include: • a brief description of this renewable biomass; • condition of availability; • most relevant local biome interaction information; • main reason(s) for eligibility and utilization in this project activity; • general explanation of integrity maintenance of methodology requirements; • definition by AMS-I.E of native wood from forest management areas as renewable biomass.
CLIENT ANSWER	A brief description of the implementation of the social and environmental components of the project was included.
REVISED SECTION ROUND	Section 2.2.2 – Project Description Deviations 2 nd
CAR/CL	Please add the following description about native wood from forest management areas, in order to allow a full comprehension of biomass utilized in project activity: 1) a brief description of this renewable biomass; 2) condition of availability; 3) most relevant local biome interaction information;
CLIENT ANSWER	A brief description of the renewable biomass from native wood from management area, condition of availability and most relevant local biome interaction information was included.
REVISED SECTION	Section 2.2.2 – Project Description Deviations.

CONCLUSION Closed

ITEM 7	CAR 7.
REFERENCE ROUND	Monitoring Report: Section 3.1: Data and Parameters Available at Validation 1st 1) EF_{projected fossil fuel} a) <i>Purpose of data:</i> According to VCS+SC Monitoring Report Template, version 3.3, this part of table should include a "Calculation of baseline emissions, Calculation of project emissions or Calculation of leakage" description regarding the purpose of this parameter in project activity. 2) NCV_{biomass} a) <i>Source of Data:</i> Please indicate an available link to the reference presented, where current link is broken or is corrupted: i) <i>QUIRINO, W. F. et al. Poder Calorífico da Madeira e de Resíduos Lignocelulósicos. Biomassa & Energia, v.1, n.2, p. 173-182, 2004</i> 3) ρ_{biomass} a) <i>Source of Data:</i> Please indicate an available link to the reference presented, where current link is broken or is corrupted: i) <i>QUIRINO, W. F. et al. Poder Calorífico da Madeira e de Resíduos Lignocelulósicos. Biomassa & Energia, v.1, n.2, p. 173-182, 2004</i> ii) http://www.ibama.gov.br/lpf/madeira/caracteristicas.php?ID=195&caracteristica=139 iii) <i>Purpose of data:</i> Please indicate what for this parameter is purposed (e.g. Calculation of baseline emissions, Calculation of project emissions or Calculation of leakage). 4) BF_y a) <i>Justification of choice of data or description of measurement methods and procedures applied:</i> Justification presented does not seem to be valid or is not related to BF_y parameter and in discordance with validated VCS PD.
CAR/CL	
CLIENT ANSWER	The item of the BF_y and the links broken or corrupted was updated.
REVISED SECTION	Section 3.1 – Data and parameters available at validation.
CAR/CL	The following were not corrected as per requirement of CAR7 at 1st round: 1) NCV_{biomass} a) <i>Source of Data:</i> Please indicate an available link to the reference presented, where current link is broken or is corrupted: i) <i>QUIRINO, W. F. et al. Poder Calorífico da Madeira e de Resíduos Lignocelulósicos. Biomassa & Energia, v.1, n.2, p. 173-182, 2004</i>

	2) $\rho_{biomass}$ a) <i>Source of Data:</i> Please indicate an available link to the reference presented, where current link is broken or is corrupted: i) QUIRINO, W. F. et al. <i>Poder Calorífico da Madeira e de Resíduos Lignocelulósicos. Biomassa & Energia</i>, v.1, n.2, p. 173-182, 2004 ii) http://www.ibama.gov.br/lpf/madeira/caracteristicas.php?ID=195&caracteristica=139
CLIENT ANSWER	The links that were broken or corrupted were updates.
REVISED SECTION	Section 3.1 – Data and Parameters Available at validation.
CONCLUSION	Closed

ITEM 8	CAR 8.
REFERENCE ROUND	Monitoring Report: Section 3.2: Data and Parameters Monitored 1 st
CAR/CL	$Q_{renbiomass}$ <i>Source of data:</i> Please indicate an available link to the reference presented, where current link is broken or is corrupted: - PINHEIRO, G. F.; RENDEIRO, G.; PINHO J. T. Densidade Energética de Resíduos Vegetais. 2006. Available at: <www.ufpa.br/gedae/BIOMASSAEENERGIA2006.pdf>. Last visit on: 01/05/2012; - FERRAZ, Douglas Galvão. Inventário Florestal de Três Fragmentos com Candeia (<i>Eremanthus erythropappus</i>) no Município de Itajubá - MG. 2008. 26 f. Monografia (Conclusão de Curso) - Curso de Gestão Ambiental, Escola Agrotécnica Federal, Inconfidentes-mg, 2008. Available at: <<a .="" 2011.<="" 28th,="" a="" href="http://docs.google.com/viewer?a=v&q=cache:mNfJBYKgNNMJ:www.ifs.ifsuldeminas.edu.br/pesquisas/TCC/TCC_Douglas.pdf+conver%C3%A7ao+mst+m3&hl=pt-BR&gl=br&pid=bl&srcid=ADGEESiMIDtbGvrwKnI888t-ddbzBkGnc2hYaTXhq3GtXUOg1wbAbYIk1f2UWhdIIHsWCyfyYtfFgNboU_qeG8hcJf5fAzliJjIP3Z451eItDC6xOwmnW_X7D6HN69DDfUPbjq60wes&sig=AHIEtbTwzpj3zy7n6nlZFDM3-djyemLmDg>" last="" on:="" september="" visit=""> Please provide Boqueirão Forest Management Plan. Moreover, please differentiate references for the conversion factor from m³ stereo to m³, from the ones presented to specific gravity (tonne/m³).

Value monitored: During site visit values of $Q_{renbiomass}$ were checked and some inconsistencies were found (values in spreadsheet presented are different from the real consumption). In order to reflect the good presentation of data Verification Team requires **a new complete presentation of biomass data**. In other words, it is required to recheck the biomass data presented and reorganize it since during site view a bunch of inconsistencies were found (in year 2012, 2013 and 2014) and lead to the necessity of a resubmission of biomass data.

These changes in biomass data registry from project proponent shall be resubmitted to the Verification Team which will rearrange a completeness check of biomass data.

Any changes made in biomass data resubmission shall reflect in calculations presented by spreadsheet VCS MR *Calculation Kitambar_period_04_01_03_12_31_05_14_v01.1*, also in $Q_{renbiomass}$ table at Section 3.2, 4.3 (Leakage and Thermal Energy) and table presented in Appendix.

Please present unit of mass in table presented (e.g. tones, kilograms, etc.).

CLIENT ANSWER

The links that were broken or corrupted were updates. The biomass data were completed and a resubmission of biomass data was made.

REVISED SECTION

Section 3.2 – Data end Parameters Monitored

ROUND

2nd

1) $Q_{renbiomass}$

a) Source of data:

- i) Please clarify the calculation method for the conversion factor from m³ stereo to m³. It shall be demonstrated to the Verification Team and should also be included at the *Calculation method* row of the referred parameter.
- ii) Please clarify the calculation method for specific gravity showed. It shall be demonstrated to the Verification Team and should also be included at the *Calculation method* row of the referred parameter.

CAR/CL

- b) *Value monitored:* Please adjust biomass data where applicable, mainly when biomass is registered as a type in spreadsheets and ceramic registry of purchase, receipts or invoices states other.
- c) Any changes made in biomass data resubmission shall reflect in calculations presented by spreadsheet VCS MR *Calculation Kitambar_period_04_01_03_12_31_05_14_v02*, also in $Q_{renbiomass}$ table at Section 3.2, 4.3 (Leakage and Thermal Energy) and table presented in Appendix.

CLIENT ANSWER

The calculation method for the conversion factor from m³ stereo to m³ and the calculation method for specific gravity were demonstrated (item 1.a.). The biomass data in spreadsheets were adjusted (item 1.b.) Changes in biomass data in spreadsheet VCS MR *Calculation Kitambar_period_04_01_03_12_31_05*

	14_v02 were included (item 1.c.).
REVISED SECTION	Section 3.2 – Data and Parameters Monitored and Section 4.3- Leakage and Thermal Energy.
CONCLUSION	Closed

ITEM 9	CAR 9.
REFERENCE	Monitoring Report: Section 3.2: Data and Parameters Monitored and VCS MR Calculation Kitambar_period_04_01 03 12_31 05 14_v01.1 spreadsheet
ROUND	1 st
CAR/CL	PR_y <i>Value monitored:</i> During site visit values of PR_y were checked and some inconsistencies were found (values in spreadsheet presented are different from the real consumption). In order to reflect the good presentation of production data, please consider the following inconsistencies: • 21/08/12: 31,500 tiles (production registry)/28,000 tiles (in spreadsheet); • 06/11/13: 16,920 tiles and 1,600 bricks (production registry)/ 11,600 tiles and 120 bricks (in spreadsheet). Section 4.4 and VCS Calculation spreadsheet should be also reviewed.
CLIENT ANSWER	The spreadsheets were reviewed. In the PR _y , the value monitored wasn't change.
REVISED SECTION	Section 3.2 – Data and Parameters Monitored
ROUND	2 nd
CAR/CL	1) PR_y a) <i>Value monitored:</i> It seems that May 2014 PR_y value does not fit with value presented in Cer Kitambar planilha de monitoramento 2014 spreadsheet. Please review it. b) Section 4.4 and VCS Calculation spreadsheet should be also reviewed.
CLIENT ANSWER	The Value monitored May 2014 PR _y was changed in according the value presented in Cer Kitambar planilha de monitoramento 2014 spreadsheet. In Section 4.4 and VCS Calculation spreadsheet was reviewed.
REVISED SECTION	Section 3.2 – Data and Parameters Monitored, Section 4.4 and VCS Calculation spreadsheet.
CONCLUSION	Closed

ITEM 10	CL 1
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REFERENCE ROUND	Monitoring Report: Section 3.2: Data and Parameters Monitored and Site Visit 1 st
	Origin of renewable biomass <i>Description of measurement methods and procedures to be applied:</i> As VCS PD has not foreseen the statement of native wood from forest management areas, please declare this definition as per AMS-I.E approach (see CAR 6). Moreover, determine how the origin of native wood from forest management areas may be proven, considering its traceability.
CAR/CL	According to statement of VCS PD, “the guarantee of acquiring renewable wood will be achieved by invoices from the providers”. Thus, Verification Team requires the proof of origin of renewable biomass since data presented are mainly provided by receipts of purchase of biomass what cannot directly determine the origin of the renewable biomass utilized (Algaroba wood, cashew tree residues, forest residues and native wood from forest management areas). <i>QA/QC procedures to be applied:</i> please provide proof of renewable origin of algaroba wood, cashew tree, forest residues and native wood from forest management areas, in accordance with VCS PD;
CLIENT ANSWER	It was determined how the origin of native wood from management areas may be proven. According to the IBAMA Normative Instruction N° 112 from August 21st, 2006, the entrepreneur who uses raw material from native forests is obliged to use the DOF (Forest Origin Documents) to control the origin, transport, and storage of forest products and by-products. It was provided proof of renewable origin of algaroba wood, cashew tree, forest residues and native wood from forest management areas. Furthermore, the other renewable biomasses likely to be used by the project, such as residues from cashew tree, algaroba wood and forest residues, do not require documents for residues, since they do not fall under the forest by-products definition of IBAMA Normative Instruction N° 112/06.
REVISED SECTION ROUND	Section 3.2 – Data and Parameters Monitored 2 nd

8 BRASIL. INSTRUÇÃO NORMATIVA IBAMA N° 112, DE 21 DE AGOSTO DE 2006. Available at: http://www.cetesb.sp.gov.br/licenciamentoo/legislacao/federal/inst_normativa/2006_Instr_Norm_IBAMA_112.pdf. Last visited on: 23/07/2014.

CAR/CL	Origin of renewable biomass
	1) The consideration for the origin of renewable biomass shall be better demonstrated in order to maintain all requirements previewed by methodology AMS-I.E, VCS PD with its statements in this monitoring parameter. Sawdust residues are mainly assessed by registers from receipts of freight distribution, which could not be considered as a proof of origin with a good level of traceability from its supply chain. The consideration should be undertaken from the origin of biomass, in order to guarantee its renewable source, in accordance with project activities. Please demonstrate it and provide evidence.
	CLIENT ANSWER The consideration for the origin of Sawdust Residues was included.
	REVISED SECTION Section 3.2 – Data and Parameters Monitored (Origin of renewable biomass).
CONCLUSION Closed, please refer to FAR 1	

ITEM 11	CAR 10.
REFERENCE ROUND	Monitoring Report: Section 3.2: Data and Parameters Monitored 1 st
CAR/CL	Renewable biomass surplus <i>Value monitored:</i> In order to maintain the better description as possible, please provide updated data from sugarcane bagasse and wood residues surplus, if available. Moreover, please consider replicating the data presented in VCS PD version 3. Nevertheless, please indicate the date of values presented in biomass surplus table.
CLIENT ANSWER	The value monitored of the native wood from management areas have been updated according the spreadsheets.
REVISED SECTION	Section 3.2 – Data and Parameters Monitored.
CONCLUSION Closed.	

ITEM 12	CAR 11.
REFERENCE ROUND	Monitoring Report: Section 3.2: Data and Parameters Monitored 1 st
CAR/CL	$f_{NRB,y}$ <i>Description of measurement methods and procedures to be applied:</i> Please indicate a more direct link or reference to the International Tropical Timber Organization article mentioned.

	Please refer properly the data described from IBGE. Footnote 7 leads out to a bad link. Please refer it properly. <i>Calculation method:</i> Please determine the calculation methods utilized since it seem to be applicable to this parameter.
CLIENT ANSWER	A direct link of the International Tropical Timber Organization and a refer properly the data described from IBGE and a direct link was included. The footnote 7 has been updated. The calculation method was included.
REVISED SECTION	Section 3.2 – Data and Parameters Monitored
CONCLUSION	Closed

ITEM 13	CAR 12.
REFERENCE ROUND	Monitoring Report: Section 3.3: Monitoring Plan 1 st
CAR/CL	According to the the VCS Monitoring Report Template v3.3, the Monitoring Plan should better describe the issues related to: The methods used for generating/measuring, recording, storing, aggregating, collating and reporting the data on monitored parameters. Please describe how the measures are taken, such as the following parameters $Q_{renbiomass}$, PR_y, <i>origin of renewable biomass</i>, <i>renewable biomass</i> and <i>leakage of fossil fuel</i>. Sampling approach: How the parameter of weight of each piece (in tons) of ceramic products was measured should be better described in order to maintain transparency of data.
CLIENT ANSWER	A description on how the measures are taken was included.
REVISED SECTION ROUND	Section 3.4 – Description of the Monitoring Plan 2 nd
CAR/CL	1) The monitoring plan should contain a brief description on how parameters are registered by using the Dropbox tool, which is relevant to the availability of data from project activities.
CLIENT ANSWER	A briel description on how parameters are registered by using the Dropbox tool, which is relevant to the availability of data from Project activities was included.
REVISED SECTION	Section 3.4 – Description of the Monitoring Plan
CONCLUSION	Closed

ITEM 14 CAR 13.	
REFERENCE ROUND	Monitoring Report: Section 4.3: Leakage 1st Algaroba wood Footnote 15 leads out to a bad link. Please refer it properly. Cashew tree wood residues Footnote 20 leads out to a bad link. Please refer it properly. According to footnote 22 evidences of statement were made available to verification team. Please provide such evidence.
CAR/CL	Forest residues Please update data of production of wood in Pernambuco (data informed is from 2007) if available, as well as comparison carried out. Native wood from management areas Footnote 26 leads out to a page where information is not directly found. Please refer it properly. Footnote 27 leads out to Forest Code from Brazil which is currently updated by another law. Please refer it properly in accordance with new Brazilian Forest Code, if possible. Please update data of production of native wood in Caatinga (data informed is from 2007) if available, as well as comparison carried out.
CLIENT ANSWER	All the footnotes have been updates.
REVISED SECTION	Section 4.3 - Leakage
ROUND	2 nd
CAR/CL	1) Below table 3 there is the following statement in MR: <i>"During the monitored period, the Kitambar Ceramic started using new production processes: a new biomass shredder and a new biomass feeder. These two processes has increased the energy efficiency and decreased consumption of the biomass. Therefore, the thermal energy utilized per ton of pieces produced in this monitoring period was lower than thermal energy presented in VCS PD."</i> a) In order to preserve conservativeness, traceably and exactness of MR statements, please enforce statement mentioned above by reproducing an analysis of historical of thermal energy

data from project activity since its first monitoring period. This is to demonstrate that current changes in production process have effectively contributed to a gain of energy efficiency in project activity.

- b) Although the Verification Team requires such analysis, it also recommends emphasizing the gain of energy efficiency from the improvement of production process through a trustable source (e.g. scientific paper; public data from red ceramic sector).

2) The following were not corrected as per requirement of CAR13 at 1st round:

- a) Algaroba wood
 - i) Footnote 15 leads out to a bad link. Please refer it properly.
- b) Cashew tree wood residues
 - i) According to footnote 22 evidences of statement were made available to verification team. Please provide such evidence.
- c) Forest residues
 - i) Please update data of production of wood in Pernambuco (data informed is from 2007) if available, as well as comparison carried out.
- d) Native wood from management areas
 - i) Please name correctly "Law about protect of native vegetation".

CLIENT ANSWER

The current changes in production process and a showing of the effectively contributed to a gain of energy efficiency I project activity was included (item 1.a.). The scientific papers (footonotes 20 and 21) was included, emphasizing the gain of energy efficiency (item 1.b.). However, this item (1.a.b) was changed to section 4.4 – Net of GHG Emission Reductions and Removals. The footnote 15 was update (item 2.a.). The footnote 22 was included the evidence (Questionário sobre a disponibilidade de biomassas renováveis) (item 2.b.). According to the Indicative Simplified Baseline and Monitoring Methodologies for Selected Small-Scale CDM Project Activity Categories - General guidance on leakage in biomass project activities, version 03, paragraph 18, the project participant shall evaluate ex ante if there is a surplus of the biomass in the region of the project activity, which is not utilized. This assessment was carried out by Sustainable Carbon during the VCS PD development (item 2.c.).

REVISED SECTION

Section 4.3 – Leakage. Section 4.4 – Net of GHG Emission reductions and Removals.

CONCLUSION

Closed

ITEM 15	CL 2
REFERENCE	Monitoring Report: Section 4.3: Leakage and VCS MR Calculation Kitambar_period_04_ 01 03 12_31 05 14_v01.1 spreadsheet
ROUND	1 st
CAR/CL	According to calculation of VCS MR Calculation Kitambar_period_04_ 01 03 12_31 05 14_v01.1 spreadsheet, thermal energy utilized per ton of pieces produced (TJ/thousand of pieces) is 10.35% lower than thermal energy initially presented by VCS PD. Please clarify this distortion on thermal energy, since differences in thermal energy originally expected may be undertaken as a suspect of utilization of non-renewable biomass. Moreover, value hereby presented may be eventually outdated since CAR 8 require a new complete presentation of biomass data. In case of changes in biomass please consider revising thermal energy value presentation.
CLIENT ANSWER	The Kitambar Ceramic started using a new biomass shredder and a new biomass feeder, incremented the production efficiency.
REVISED SECTION	Section 4.3 - Leakage
ROUND	2 nd
CAR/CL	Please refer to CAR 13.
CLIENT ANSWER	Refer to CAR 13, item 1.a. and 1.b.
REVISED SECTION	Section 4.3 - Leakage
CONCLUSION	Closed.

ITEM 16	CAR 14.
REFERENCE	Monitoring Report: Section 4.4: Net GHG Emissions Reductions and Removals
ROUND	1 st
CAR/CL	Although, table 5 can be presented, please maintain format of presentation of GHG Emission Reductions and Removals table, in accordance with VCS+SC Monitoring Report Template, v 3.0.
CLIENT ANSWER	The GHG Emissions Reductions and Removals table was changed, in accordance with VCS+SC Monitoring Report Template.
REVISED SECTION	Section 4.4 – Net GHG Emissions Reductions and Removals
ROUND	2 nd

CAR/CL	Statement from 1 st round was not carried out. CAR is still open.
CLIENT ANSWER	The GHG Emissions Reductions and Removals table was included, in accordance with VCS+SC Monitoring Report Template.
REVISED SECTION	Section 4.4 – Net GHG Emissions Reductions and Removals.
CONCLUSION	Closed

ITEM 17	CAR 15.
REFERENCE ROUND	Monitoring Report: Section 5.5.1: Social Resource 1 st
CAR/CL	1. Diversity Please complete the table with the source of different types of social groups employed by the ceramic. Moreover, please evidence data for the diversity indicator.
CLIENT ANSWER	The Diversity indicator was completed and the evidence data for the indicator are in the folder named Versão 02/Evidências/CAR 15
REVISED SECTION	Section 5.5.1 Social Resource
CONCLUSION	Closed

ITEM 18	CAR 16.
REFERENCE ROUND	Monitoring Report: Section 5.5.3: Financial Resource 1 st
CAR/CL	8. Planning and control According to site visit, ceramic owner stated that there is no regular planning control of income received carbon credit sales. The indicator index should be revised.
CLIENT ANSWER	The factory has organized controls of the income received from carbon credit sales, as it was showed on the site visit. There is an internal process to report the ceramic factory owner always when there is a carbon credit sale: First, Sustainable Carbon team sent an email to notify that there is a potencial sale, and inform the vintage, volume and price of the negotiation. The ceramic owner has to sign a power of attorney and sent it to Sustainable Carbon. When the negotiation is completed (and the VERPA is signed by the buyer), the owner receive another email from Sustainable Carbon, with the information about the client and the carbon credit that was sold. Finally, Sustainable Carbon inform when the owner will receive the money. Mr. Antonio Marcos, the Kitambar's owner, received all these emails, and keep all the information regarding the carbon credit that was sold, as it was showed in the site visit. So,

	we consider that the factory has organized control of the income received from the carbon credit sales, since the owner keep those emails.
REVISED SECTION	Section 5.1.3: Financial Resource
ROUND	2 nd
CAR/CL	On the site visit a sale statement was presented as the only evidence of income control of carbon credit sales, and was confirmed by ceramic owner. Since the factory has none internal control of carbon credit sales, but only the means of communication with Sustainable Carbon, the control of income should be considered as partial, such as indicator index.
CLIENT ANSWER	Sustainable Carbon is responsible for managing the carbon credits sales and the ceramic factory keep up these documents received from Sustainable Carbon (as it was shown during the site visit). This procedure meets the factory needs for financial control and the sustainable carbon team consider this procedure as an organized control.
REVISED SECTION	Section 5.1.3: Financial Resource
CONCLUSION	Closed

ITEM 19	CAR 17.
REFERENCE	Monitoring Report: Section 5.5.3: Financial Resource
ROUND	1 st
CAR/CL	9. Carbon credit investments According to the document "PLANILHA AÇÃO CARBON SOCIAL" the investments in factory improvements exceeded the proceeds from the sale of carbon credits, recorded on the document "Declaração vendas_Kitambar". The indicator index should be revised.
CLIENT ANSWER	The index was revised and the grade increased to six.
REVISED SECTION	Section 5.5.3 Financial Resource
CONCLUSION	Closed

ITEM 20	CAR 18.
REFERENCE	Monitoring Report: Section 5.5.5: Technological Resource
ROUND	1 st

CAR/CL	13. Technological advances to improve efficiency of the production process According to the on-site visit, the round kiln is more suitable for the roof tiles production than Hoffman kiln. As it seems to be the best practice in roof tile ceramic kiln production process, please consider revising index. Also, please revise statement in Section 5.1.9 at the Technology table description about kiln efficiency.
CLIENT ANSWER	The indicator was revised and the grade increased to five.
REVISED SECTION	5.5.5 Technological Resource
CONCLUSION	Closed

ITEM 21	CAR 19.
REFERENCE ROUND	Monitoring Report: Section 5.3: Achieved Prospects 1 st
CAR/CL	According to ceramic owner the ceramic donated material to a religious institution in Caruaru, as there is evidence. This initiative may be also described in the respective indicator. In this case, please send evidence.
CLIENT ANSWER	The information was included in the Community Development indicator and also in the achieved prospects. The evidence is in the folder Versão 02/ Evidências / CAR 19.
REVISED SECTION	Section 5.1.1 and section 5.3
CONCLUSION	Closed

ITEM 22	CAR 20.
REFERENCE ROUND	Monitoring Report: Section 5.4: Not Achieved Prospects 1 st
CAR/CL	Please state that intention of building a lunch room and offer lunch and dinner to all employees was not achieved.
CLIENT ANSWER	The information about these prospects were included in the Sectio 5.4 Not Achieved prospects, as well the justification and the follow up for it.

REVISED SECTION	Section 5.4 not achieved prospects.
ROUND	2 nd
CAR/CL	Please correct the text insertion term “ <i>from de carbon credit sales</i> ” at <i>follow up</i> in Human Resource table.
CLIENT ANSWER	The term “from de carbon credit sales” was corrected to “from carbon credit sales”.
REVISED SECTION	Section 5.4 not achieved prospects.
CONCLUSION	Closed

ITEM 23	CAR 21.
REFERENCE	Monitoring Report: Section 5.5: Identified Prospects
ROUND	1 st
CAR/CL	There are no Prospects regarding Social, Technology, Financial, Natural and Carbon resources at the Section 5.5, as requires the SOCIAL CARBON Standard. Please include the required information.
CLIENT ANSWER	The prospects regarding Social Technology, Financial, Natural and Carbon resources were included.
REVISED SECTION	Section 5.5 Identified Prospects.
CONCLUSION	Closed

ITEM 24	CAR 22.
REFERENCE	Monitoring Report: Presentation Table
ROUND	2 nd
CAR/CL	Please inform correct monitoring period for SOCIALCARBON Report Point 03, as it differs from first version evaluated.
CLIENT ANSWER	The SOCIALCARBON monitoring period is from 01-March-2012 to 30-June-2014. The date was corrected in the SOCIALCARBON Report version 03.
REVISED SECTION	Monitoring Report: Presentation Table.
CONCLUSION	Closed

ITEM 25	FAR 1
REFERENCE ROUND	Monitoring Report: Section 3.2: Data and Parameters Monitored and Site Visit 3 rd
FAR	The parameter <i>origin of renewable biomass</i> was verified in accordance with material and data provided, for example the interviews (audio and picture files) carried out with sawdust and forest residues suppliers of Kitambar ceramic industry. However, for the next monitoring period the project developer shall determine the most applicable presentation format (e.g. documents, scientific papers, sectorial studies) to prove the <i>origin of renewable biomass</i>, in order to guarantee a continuous assessment of the relevant suppliers of Kitambar industry project activities.
CLIENT ANSWER	Sustainable Carbon shall improve the procedures to monitor the origin of the renewable biomass used by the project and provide a clear description of such improvements on the next monitoring period.
REVISED SECTION	
CONCLUSION	Open