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# GOLD STANDARD VERIFICATION REPORT SUSTAINABLE CARBON – PROJETOS AMBIENTAIS LTDA

# VERIFICATION OF CEARÁ RENEWABLE ENERGY BUNDLED PROJECT

2nd Monitoring Period:
From 01/01/2012 to 30/04/2013 (both days inclusive)

## IBOPE Instituto Brasileiro de Opinião pública e Estatística Ltda.

Report N. 0001 - Revision N. 01
Year 2013

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|---|---|---|
| **Gold Standard Verification Report**<br>**1st Version Date:**<br>02/08/2013<br><br>**Final Version Date:**<br>02/08/2013 | **DOE:**<br>IBOPE<br>Instituto Brasileiro de Opinião Pública e Estatística Ltda.<br>Alameda Santos, 2101,<br>Cerqueira César, São Paulo, SP<br>ZIP Code: 01419-100<br>Brazil | ☒ No distribution without permission from client or responsible organizational unit<br>☐ Limited distribution<br>☐ Unrestricted distribution |
| **Client:**<br>Sustainable Carbon – Projetos Ambientais Ltda | **Contact:**<br>Ms. Mariana dos Santos Silva - Technical Analysts.<br>Mr. Thiago de Avila Othero and Mr. Marcelo Hector Sabbagh Haddad -Technical Coordinators. | |
| **Project Title:**<br>Ceará Renewable Energy Bundled Project | **Methodology:**<br>AMS-I.E – version 04 | **Monitoring Period:**<br>From 01/01/2012 to 30/04/2013 (days included) |

**Project Participants:**

Sustainable Carbon - Projetos Ambientais Ltda
Antônio Cavalcante de Souza Olaria-ME
Ceará Cerâmica Ltda
CEAGRA – Cerâmica e Agropecuária Assunção Ltda
Eliane Cavalcante de Souza EPP
Cerâmica Santa Rita Ltda

**Summary:**

IBOPE verified the 2nd monitoring period (from 01/01/2012 to 30/04/2013, days included) of the "Ceará Renewable Energy Bundled Project", GS Registration Reference Number 1042, project of Sustainable Carbon – Projetos Ambientais Ltda located in Brazil.

The project applies the methodology AMS-I.E version 04, on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting, as well as GS requirements.

In summary, IBOPE confirms that the project activity was correctly implemented according to selected monitoring methodology and monitoring plan. The monitoring system is in place and the project is already generating GHG emission reductions. The GHG emission reduction is calculated without material misstatements, and the emission reductions verified totalize 82,711 tCO2e for the monitoring period. IBOPE, therefore, is pleased to issue a positive verification opinion.

| **Verification Team**<br>**Role** | **Full Name** |
|---|---|
| Lead Verifier | Mr. Rubens da Silva Ferreira |
| Lead Verifier (in training) | Mr. Rafael Kupper Bonizio Oliva |
| Verifier | Ms. Naomi Kawasaki |

**Technical Review**

Mr. Shigueo Watanabe Junior

| **Current Revision Number:** | **Number of pages** |
|---|---|
| 01 | 41 |



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**Abbreviations**

CAR(s): Corrective Action Request(s)

CDM: Clean Development Mechanism

CL(s): Clarification Request(s)

$CO_2$: Carbon Dioxide

DOE: Designated Operational Entity

FAR(s): Forward Action Request(s)

GHG: Greenhouse Gas

GS: Gold Standard

MR: Monitoring Report

PDD: Project Design Document

PP(s): Project Participant(s)

tCO2e: Tonne of Carbon Dioxide Equivalent

UNFCCC: United Nations Framework Convention on Climate Change



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**Table of Contents**

1. Introduction ..... 5
1.1. Objective ..... 5
1.2. Scope ..... 5
2. Description of GS Project Activity ..... 6
3. Methodology ..... 7
3.1. Desk Review ..... 8
3.2. On-Site Visit ..... 9
3.3. Resolution of CARs, CLs and FARs ..... 12
3.4. Internal Quality Control ..... 12
4. Verification Findings ..... 13
4.1. Remaining issues from previous validation/verification ..... 13
4.2. Compliance of the project implementation with the registered GS PDD ..... 13
4.3. Compliance of the monitoring plan with the monitoring methodology ..... 13
4.4. Compliance of monitoring activities with the registered monitoring plan ..... 13
4.5. MR Deviation and Revision ..... 20
4.6. Management System and Quality Assurance ..... 20
4.7. Compliance with the calibration frequency requirements for measuring instruments ..... 20
4.8. Assessment of data and calculation of emission reductions ..... 20
Baseline Emissions ..... 21
4.8.1. Comparison with the estimated emission reduction in the registered PDD ..... 23
5. Verification Opinion ..... 24
6. References ..... 25
*7. Curricula Vitae* of Verification Team and Technical Reviewer ..... 27
8. Verification Protocol ..... 29



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## 1. Introduction

Sustainable Carbon – Projetos Ambientais Ltda has commissioned IBOPE to verify the emissions reductions of its Gold Standard project activity "Ceará Renewable Energy Bundled Project" (hereafter called "project" or "project activity") in Brazil.

This report summarizes the findings of the verification of the project, performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting. This report also considers GS requirements criteria of the Gold Standard Foundation. These criteria refer to GS requirements, version 2.1/18/, GS Toolkit /19/ and supporting annexes.

### 1.1. Objective

In carrying out its verification work, the DOE shall ensure that the project activity complies with the following requirements:

a) Ensure that the project activity has been implemented and operated as per the registered GS PDD and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place;

b) Ensure that the monitoring report and other supporting documents provided are complete in accordance with GS and CDM requirements (when applicable);

c) Ensure that actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan and the approved methodology;

d) Evaluate the data recorded and stored as per the monitoring methodology.

The objective of this independent verification work was to verify and certify emission reductions and check the implementation of sustainable development indicators and mitigation measures monitoring, reported for "Ceará Renewable Energy Bundled Project" in the following period: from 01/01/2012 to 30/04/2013 (days included).

In particular, monitoring plan, monitoring report and the project's compliance with relevant GS, UNFCCC and host Party criteria are verified in order to confirm that the project has been implemented in accordance with previously registered project design and conservative assumptions, as documented.

### 1.2. Scope

The scope of the verification comprises an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant



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documents provided by PP. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules, GS requirements and associated interpretations.

The verification considers both quantitative and qualitative information on emission reductions and sustainable development indicators. The verification is not meant to provide any consultancy towards the client. However, stated requests for clarifications, corrective and/or forward actions may provide input for improvement of the project monitoring towards reductions in the GHG emissions.

## 2. Description of GS Project Activity

The project activity is the bundled project of five red ceramic factories belonging to Grupo Tavares, a family business that owns several ceramic factories in the State of Ceará, Brazil.

The following ceramic factories are included in this project: Antônio Ceramic, Ceará Ceramic, CEAGRA Ceramic, Eliane Ceramic and Santa Rita Ceramic. Antônio Ceramic and Eliane Ceramic are located at Itaitinga, in the state of Ceará, northeast region of Brazil. Ceará Ceramic and Ceagra Ceramic are located at Aquiraz, also in the State of Ceará. Santa Rita Ceramic is located at São Gonçalo do Amarante, also in the State of Ceará.

The ceramic factories produce ceramic bricks, tiles and construction blocks, destined mainly for the regional market in the metropolitan area of Fortaleza. All ceramics used to utilize predominantly wood without sustainable forest management as fuel. The use of this type of non-renewable biomass is a common practice in the ceramic industry. Firewood used to be the most employed source of primary energy until 1970's, when the petroleum started to supply the majority of Brazilian´s energy needs1. Moreover, the Brazilian Energy and Mine Ministry has been monitoring every energy sector of Brazil since 1970, and firewood appears over the years monitored as a significant source of thermal energy for ceramic sector.

This project activity reduces the greenhouse gases (GHG) emissions through the substitution of nonrenewable biomass for renewable biomasses to generate thermal energy. As renewable biomasses, the project activity utilizes mostly biomass residues (such as cashew nut shells, residues from cashew tree, coconut residues, sawdust) and wood from sustainable forest management plan areas to feed the ceramic's kilns.

The project also involves energy efficiency measures, such as improved fuel handling and kilns improvement to reduce the necessary energy per production output. This project points out the possibility for switching from non-renewable biomass to renewable biomasses, which is unattractive due some barriers, including higher fuel costs, uncertainties associated to the fuel switch and the lack of knowledge to operate with renewable biomass. The ceramic owners have considered the income from the commercialization of the carbon credits to make the project activity viable.



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The main goal of this project activity is to minimize the negative impacts of deforestation to obtain firewood, whose consumption also leads to GHG emissions that contribute to climate change. Moreover, in opposition to the identified baseline, the project activity generates thermal energy exclusively from renewable sources, by using abundant renewable biomasses in the region. All these measures contribute to sustainable development by promoting renewable energy, mitigating atmospheric pollution and improving the quality of employment for the ceramic workers.

By the beginning of 2010, Grupo Tavares initiated tests with renewable biomass in the five ceramic factories included in the current project. The start date of the project activity is considered 02/07/2010, when Grupo Tavares and Sustainable Carbon signed contracts for the development of a GHG emission reduction project in the five ceramic factories included in the current project. All ceramics have operated exclusively with demonstrably renewable biomass since the beginning of the crediting period, which is defined as 01/09/2010.

The emission reductions due to the switching of non-renewable fuel (non-renewable wood) to renewable biomasses resulted in 82,711 tCO2e during the monitoring period from 01/01/2012 to 30/04/2013 (days included). The contribution to sustainability is being monitored applying the Sustainability Monitoring Plan, described on Section G of the Gold Standard Passport, version 05 /2/.

## 3. Methodology

The overall verification was conducted using IBOPE internal procedures.

In order to ensure transparency, a verification protocol was customized for the project, according to CDM and GS requirements.

The protocol shows, in a transparent manner, criteria, means of verification and the results from verifying the identified criteria.

The verification protocol serves the following purposes:

- It organizes, details and clarifies the requirements a GS project is expected to meet;
- It ensures a transparent verification process where the verifier will document how a particular requirement has been verified and the result of the verification.

The completed verification protocol is enclosed in Section 8 of this report.



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### 3.1. Desk Review

The verification of the project documentation is based upon quantitative and qualitative information on emission reductions: quantitative information comprises the reported numbers in the monitoring report and qualitative information comprises information on internal management controls, calculation and transfer of data procedures, frequency of emissions reports, review and internal audit of calculations and other relevant information.

The verification has been performed based on the review of the following main documents:

- Registered GS PDD (including monitoring plan) V.5, dated 08 March 2012 /1/;
- Monitoring Report V.2, dated 29 July 2013 – Period from 01/01/2012 to 30/04/2013 (days included) /4/;
- MR Calculation_Ceará Renewable Energy Bundled_01 01 2012_30 04 2013_v02 /6/.

A complete list of all documents reviewed is attached in section 6 of this report.



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### 3.2. On-Site Visit

In order to confirm all physical features of the project activity are in place, as described in the registered GS PDD, and that the project participant has operated and correctly monitored all parameters of the registered GS project activity according to registered GS PDD, the verification team had carried out an on-site visit. The on-site visit objectives are, but are not limited to:

- Assess implementation and operation of project activity in comparison with the registered GS PDD and monitoring plan;
- Investigate whether all relevant equipment is installed and working;
- Check the monitoring processes, routines and documentations;
- Review how the monitored parameters are generated, aggregated and reported;
- Check the risks of inappropriate operation and data collection procedures;
- Identify quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameter;

| **Company** | | **Period of on-site visit** |
|---|---|---|
| 1. Antônio Cavalcante de Souza Olaria-ME<br>2. Ceará Cerâmica Ltda<br>3. CEAGRA – Cerâmica e Agropecuária Assunção Ltda<br>4. Eliane Cavalcante de Souza EPP<br>5. Cerâmica Santa Rita Ltda | | From 20/05/2013 to 24/05/2013 |
| **Verification Team On-site**<br>**Role** | **Full Name** | **Date of on-site visit:** |
| Lead Verifier | Mr. Rubens da Silva Ferreira | 20/05/2013 to 24/05/2013 |
| Lead Verifier (in training) | Mr. Rafael Kupper Bonizio Oliva | |



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| **People Interviewed**<br>**Role** | **Full Name** |
|---|---|
| Director of Marketing | Mr. Marcelo Guimarães Tavares |
| Administrative Assistant | Ms. Maria Letícia Tavares Assunção |
| Production | Mr. Antônio Carlos |
| Production | Mr. Marciano Tavares de Oliveira |
| Production | Mr. João Gomes da Silva |
| Production | Mr. José Oliveira Silva |
| Production | Mr. Murilo Savio Galvão Tavares |
| Production | Mr. Luis Ferreira de Sousa |
| Production | Mr. José Haroldo Batista |
| Production | Mr. Antônio Alves da Silva |
| Production | Mr. Elisandro Sousa Moura |
| Production | Mr. Francisco Alberto Venâncio |
| Assistant | Ms. Leilane Silva Souza |
| Councillor from the municipality of Nazaré da Mata | Ms. Ana Cláudia Araújo A. Soares |



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IBOPE interviewed project participant and stakeholders to confirm data and information and also to resolve issues identified in the document review. The main topics of the interviews were:

| **Interviewed Organization** | **Interview Topics** |
|---|---|
| Local Stakeholders<br>Sustainable Carbon – Projetos Ambientais Ltda<br>Antônio Cavalcante de Souza Olaria-ME<br>Ceará Cerâmica Ltda<br>Ceagra – Cerâmica e Agropecuária Assunção Ltda<br>Eliane Cavalcante de Souza EPP<br>Cerâmica Santa Rita Ltda | • Sustainable Development Indicators<br>• Management and Operational Structure<br>• Changes in Employment<br>• Trainings<br>• Emission Reduction Calculation<br>• Training records<br>• Cross-check procedures<br>• Social security records of employees<br>• Management of Project Activity<br>• Sustainable Development Indıcators |



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### 3.3. Resolution of CARs, CLs and FARs

The objective of this phase of the verification is to raise requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for IBOPE positive conclusion on the GHG emission reduction calculation.

Findings established during the initial verification can either be seen as a non-fulfilment of GS and CDM criteria ensuring the proper implementation of a project or where a risk to deliver high quality emission reductions is identified.

A Corrective Action Request (CAR) is issued, where:

a) Non-conformities with the monitoring plan or methodology are found in monitoring and reporting, or if the evidence provided to prove conformity is insufficient;
b) Mistakes have been made in applying assumptions, data or calculations of emission reductions which will impair the estimate of emission reductions;
c) Issues identified in a FAR during validation or previous verifications to be verified during verification have not been resolved by the project participants.

A Forward Action Request (FAR) is issued, for actions if the monitoring and reporting require attention and/or adjustment for the next verification period.

A Clarification Request (CL) is issued if information is insufficient or not clear enough to determine whether the applicable requirements have been met.

The verification team identifies CARs, CLs and FARs which has to be adequately responded by PP. If so, the CARs and CLs will be closed by IBOPE.

To guarantee the transparency of the verification process, the concerns raised and response provided by PP are documented in the verification protocol in Section 8.

### 3.4. Internal Quality Control

Following the completion of the assessment process and a recommendation by the Verification Team, all documentation is forwarded to a Technical Reviewer.

The technical review is an independent process performed to examine thoroughly that the process of verification has been carried out in conformance with the requirements of the verification scheme.

The task of the Technical Reviewer is to check that all procedures have been followed and all conclusions are justified before presenting the Verification report to PP.

The Technical Reviewer will either accept or reject the recommendation made by the verification team.



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## 4. Verification Findings

The findings from the desk review of the original monitoring documents and the findings from interviews during the follow up visit, such as Clarification, Corrective and Forward Action Requests are further documented in the Verification Protocol, Section 8 of this document.

The verification of the Project resulted in 10 Corrective Action Requests, 02 Clarification Requests, and 0 Forward Action Requests.

The CARs, CLs and FARs were closed based on adequate responses from the Project Participant(s) which meet the applicable requirements. They have been reassessed before their formal acceptance and closure.

### 4.1. Remaining issues from previous validation/verification

All CARs and CLs raised were successfully closed during the verification stage of the project activity, and no remaining issues were left.

FAR 1 raised during the last verification period was also closed.

### 4.2. Compliance of the project implementation with the registered GS PDD

The implementation status of the project is in accordance with the project description contained in the registered GS PDD V.5 /1/ dated 08/03/2012 and it is fully operational, as confirmed by verification team through visual inspection on-site visit. The project is operating in normal condition during the reported monitoring period (from 01/01/2012 to 30/04/2013, days included). The facilities have not been modified and presented proper operating conditions.

### 4.3. Compliance of the monitoring plan with the monitoring methodology

The monitoring plan and the monitoring system implemented are in accordance with the approved methodology applied: AMS-I.E: "Switch from non-renewable biomass for thermal applications by the user" – Version 04 /20/.

Verification Team confirms that the monitoring plan in the GS PDD complies with the applied methodology.

### 4.4. Compliance of monitoring activities with the registered monitoring plan

Monitoring has been carried out in accordance with the monitoring plan contained in the registered GS PDD /1/.



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All parameters stated in the validated monitoring plan are monitored and reported appropriately. The Verification Team has verified the information flow (from data generation, aggregation, to recording, calculation and reporting) for these parameters including the values in the monitoring reports are described below:

| | |
|---|---|
| **Parameter** | $PR_y$ |
| **Description** | Amount of products produced in year y |
| **Data unit** | Thousands of ceramic pieces |
| **Source of data used** | Controlled by the ceramic owners |
| **Means of verification** | Verification team verified $PR_y$ through desk review, and checked on-site visit that the amount of products produced by the project used in the calculation and reported in the MR are correct and traceable to the data.<br>Evidences were taken from manual control of devices burned in the kiln for each ceramic factory /7/ were verified and accepted by the verification team. |

| | |
|---|---|
| **Parameter** | Qrenbiomass |
| **Description** | Amount of renewable biomass used during year y of the crediting period. |
| **Data unit** | Tonnes |
| **Source of data used** | It was monitored through purchase invoice, delivery notes or other documents concerning the acquisition of renewable biomasses. |
| **Means of verification** | During the onsite visit and desk review, verification team verified that the amount of renewable biomass used during the monitoring period by the project used in the calculation and reported in the MR are correct and traceable<br>Evidences and records of purchase invoices and delivery notes of renewable biomass (such as cashew nut shell, residues from cashew tree, coconut husk) for each ceramic /8/ were verified and accepted by the verification team. |

| | |
|---|---|
| **Parameter** | $f$NRB,y |
| **Description** | Fraction of woody biomass used in the absence of the project activity in year y that can be established as non-renewable using survey methods. |
| **Data unit** | Fraction or percentage |
| **Source of data used** | Survey methods |
| **Means of verification** | Verification team checked inconsistence thought the calculation of this parameter (CAR 3) in the first revision of the Monitoring |



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| | Report /3/.<br>PP revised and updated the values for the parameter in the second version of the Monitoring Report /4/ and the verification team analyzed and accepted the changes. |

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|---|---|
| **Parameter** | Origin of Renewable Biomass |
| **Description** | Renewable origin of the biomass |
| **Data unit** | Not applicable |
| **Source of data used** | Controlled by the ceramic owners |
| **Means of verification** | During the on-site visit and desk review, verification team verified the origin of renewable biomass. Evidences and records of the purchase invoices and delivery notes of renewable biomass for each ceramic factory /8/ were verified and accepted by the verification team. |

| | |
|---|---|
| **Parameter** | Leakage due to competing uses of biomass |
| **Description** | This source of leakage was relevant for biomass residues and biomass from existing forests, according to the general guidance on leakage in biomass project activities. The quantity of renewable biomass available was assessed annually to determine the occurrence of leakage. |
| **Data unit** | tCO2e |
| **Source of data used** | Surplus of each type of renewable biomass used by the project activity was assessed by Sustainable Carbon from July to October 2012.<br>Information on the biomass availability and consumption was assessed by Sustainable Carbon following a methodological plan that was based on the application of questionnaires to relevant biomass experts, producers and suppliers.<br>An independent third party expert opinion on the results and findings of such study was obtained, to ensure the results are appropriate and conservative.<br>The following surplus of each biomass is considered, as based on a study developed by Sustainable Carbon /9/. More details are available on Section E.3 of the MR /4/ and Section 3.4 of this Report.<br>A specific study was developed for the biomass "wood from sustainable management areas", in order to prove the surplus of its biomass. The study was done through a methodology developed by a biomass expert /10/. |

| Biomass type | Surplus (%) | Year of assessment |
|---|---|---|
| Cashew nut shell | 45% | 2011/2012 |
| Residues from cashew tree | 25% | 2011/2012 |
| Coconut residues | 1,444% (dry coconut_ 3,491% (green | 2011/2012 |



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| | | coconut) | |
| | Babaçu residues | 83% | 2011/2012 |
| | Mamona Husk | 458% | 2011/2012 |
| | Sawdust | 65% | 2011/2012 |
| | Wood from sustainable management areas | 444% | 2012/2013 |
| **Means of verification** | Verification team checked the study "Renewable Biomass Surplus In The State Of Ceará, Brazil", version 02, from November, 2012 /9/ and all documents related to this study.<br>Verification team also checked the study Effective Availability and Surplus of Firewood _v19.07.2013, /10/ and Effective Availability and Surplus of Firewood_Ceará /11/ and all related documents to this study.<br><br>Verification team considered appropriate the calculation methods utilized to leakage emissions due to competing uses of biomass. | | |

| | |
|---|---|
| **Parameter** | Leakage of non-renewable woody biomass |
| **Description** | Leakage relating to non-renewable woody biomass |
| **Data unit** | $tCO_2e$ |
| **Source of data used** | Monitored |
| **Means of verification** | During the on-site visit and desk review, verification team checked the renewable origin of the biomass. Evidences and records of purchase invoices and delivery notes of renewable biomass for each ceramic factory /08/ were verified and accepted by the verification team. |

| | |
|---|---|
| **Parameter** | Checking of all appliances (kiln) |
| **Description** | Checking of all appliances (kiln) |
| **Data unit** | Not applicable |
| **Source of data used** | Ceramic owners and employees |
| **Means of verification** | In this monitoring period, Santa Rita has sold the rights of use of its third kiln to a neighbour company who is not a project participant. As of January, 01st, 2012, Santa Rita has been operating with 2 kilns.<br>During the on-site visit and desk review, the verification team do the check of all appliances. Evidences were obtained by visual inspection. |

With respect to GS requirements, the project has to monitor the sustainability indicators, as defined in the GS Sustainability Monitoring Plan in the GS Passport /2/.

The verification of the parameters required by the monitoring plan is provided as follows:



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|---|---|
| **Number** | 01 |
| **Indicator** | Air quality |
| **Chosen Parameter** | Emissions to the atmosphere |
| **Way of Monitoring** | Evaluations by applying Ringelmann smoke charts as recommended by SEMACE (Environmental Superintendence of the State of Ceará), the environmental authority. Results shall be stored to assess the intensity of atmospheric emissions. |
| **Means of verification** | Verification Team checked the monitoring spreadsheets /12/ used in the Ceramic Factors during onsite visit.<br>During this monitoring period, ceramic owners have applied the Ringelmann smoke chart and the results were compiled in files |

| | |
|---|---|
| **Number** | 02 |
| **Indicator** | Soil condition |
| **Chosen Parameter** | Procedures related to the control and disposal of ashes |
| **Way of Monitoring** | Ashes are to be quantified by using standard storage bags with a known weight. Employees on the ceramic used spreadsheets to control the amount of storage bags leaving the ceramic each time ashes were collected for final destination.<br>Such spreadsheet shall also include information on the destination of ashes, such as the person/entity responsible for collecting the ashes and the place of destination. Photographs are to be used as evidence of the final destination whenever feasible.<br>Interviews and meetings with stakeholders and ceramic personnel on each ceramic should also be applied to identify the relevant score under the Social Carbon indicator. |
| **Means of verification** | Verification Team checked the monitoring spreadsheets /13/ used in the Ceramic Factors during onsite visit.<br>During this monitoring period, ceramic owners have provided a proper destination to ashes resulted from biomass combustion. Ashes quantification and destination method started to be documented on proper files. |

| | |
|---|---|
| **Number** | 03 |
| **Indicator** | Quality of employment |
| **Chosen Parameter** | Actions of health and security |
| **Way of Monitoring** | Site visits and interviews with employees and Managers of each Ceramic factory. |
| **Means of verification** | Verification team checked the training certificates /14/ of each ceramic factory, and checked compliance by onsite interviews.<br>Verification team also checked that there are warning signs |



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| | regarding the correct use of IPE displayed into the factories. |

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| **Number** | 04 |
| **Indicator** | Quality of employment |
| **Chosen Parameter** | Use of safety equipment |
| **Way of Monitoring** | Ceramic managers are to use spreadsheets to control the use of safety equipment by employees. Employees should provide their signatures on such spreadsheet each time they receive safety equipment. |
| **Means of verification** | Verification Team checked the monitoring spreadsheets of IPE distribution /15/ used in the Ceramic Factors during onsite visit.<br>Ceramic managers documented the receiving control through spreadsheets with the signature of each employee. |

| | |
|---|---|
| **Number** | 05 |
| **Indicator** | Access to affordable and clean energy services |
| **Chosen Parameter** | Total energy produced from renewable |
| **Way of Monitoring** | The amount of renewable biomass used by each ceramic was monitored during the crediting period (through purchase invoice, delivery notes or other documents concerning the acquisition of biomass).<br>By using default values of energy content, the project proponents were able to determine the amount of renewable energy produced during each year of the crediting period. |
| **Means of verification** | Verification team checked this indicator by purchase invoices and delivery notes /08/ during the onsite visit. |

| | |
|---|---|
| **Number** | 06 |
| **Indicator** | Quantitative employment and income generation |
| **Chosen Parameter** | Voluntary emission Reductions issued |
| **Way of Monitoring** | The issuance of Voluntary Emission Reductions (or similar assets from the carbon market) will be monitored. |
| **Means of verification** | Verification Team checked this indicator by the analyses of VER issuance /16/. |

| | |
|---|---|
| **Number** | 07 |
| **Indicator** | Quantitative employment and income generation |
| **Chosen Parameter** | Additional revenues for biomass suppliers |



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| **Way of Monitoring** | Total revenues will be monitored by storing purchase invoices, receipts of sale and other documents concerning biomass acquisition.<br>Total revenues shall be compared to the baseline fuel cost for the ceramics which were destined to native firewood suppliers. This parameter is defined ex-ante using data from 2009 (the most recent year prior to the project start date).<br>A conservative correction factor of 15% will be applied annually, to account for general price increase due to inflation. |
| **Means of verification** | Verification team checked this indicator by purchase invoices and delivery notes /08/ during the onsite visit, and by analysing the document MR Calculation_Ceará Renewable Energy Bundled_01 01 2012_30 04 2013_v02 /06/. |

| | |
|---|---|
| **Number** | 08 |
| **Indicator** | Origin of renewable biomass |
| **Chosen Parameter** | Origin of renewable biomass |
| **Way of Monitoring** | The origin of the renewable biomass will be assessed storing documents (receipts, invoices) from the biomasses providers, thus allowing determining its origin. The biomasses shall be considered renewable as fulfilling definitions of renewable biomass approved by the CDM Executive Board. |
| **Means of verification** | Verification team checked this indicator by purchase invoices and delivery notes /08/ during the onsite visit. |

| | |
|---|---|
| **Number** | 09 |
| **Indicator** | Competing uses of biomass |
| **Chosen Parameter** | Biomass surplus |
| **Way of Monitoring** | According to the Gold Standard Passport /02/, national and international articles and databases should be assessed to determine the availability of each type of biomass used during the project operation.<br>However, in response to FAR 1 raised by the Gold Standard Secretariat during project registration, Sustainable Carbon has developed a detailed Study on the surplus of all types of biomass used by the project activity. In addition to the first study, which could not determine the surplus of firewood with certainty, a new evaluation of an expert has been requested and a methodology has been developed in response to confirm the existence of availability and surplus of firewood at Caatinga forest management plans. |
| **Means of verification** | Verification team checked the study "Renewable Biomass Surplus In The State Of Ceará, Brazil", version 02, from November, 2012 /9/ and all documents related to this study.<br>Verification team also checked the study Effective Availability and Surplus of Firewood _v19.07.2013, /10/ and Effective Availability and Surplus of Firewood_Ceará /11/ and all related documents to |



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| | |
|---|---|
| | this study. |

### 4.5. MR Deviation and Revision

The PPs have not deviated from the provisions of the registered monitoring plan, therefore a deviation or revision request was not submitted.

### 4.6. Management System and Quality Assurance

The responsible for registration, monitoring, measurement and reporting the monitored data for Antônio Ceramic, Ceará Ceramic, CEAGRA Ceramic and Eliane Ceramic is Mr. Francisco Evanildo de Souza and for Santa Rita Ceramic is Mr. Erinaldo Duarte.

The responsible for applying the monitoring methodology and elaborating the MR is Sustainable Carbon – Projetos Ambientais Ltda.

- Thiago de Avila Othero - Technical Coordinator
- Marcelo Hector Sabbagh Haddad - Technical Coordinator
- Mariana dos Santos Silva - Technical Analyst
- Cecília de Oliveira Sampaio Garcia - Technical Analyst

Therefore, the verification team concludes that the monitoring plan and relevant procedures reflect a good and appropriate monitoring practice to the project according to interviews made during the on-site visit. The verification team confirms that the PP was able to implement the monitoring plan as per the requirements of the applied monitoring methodology, GS and CDM requirements.

### 4.7. Compliance with the calibration frequency requirements for measuring instruments

No monitoring equipment was used to determine any parameter.

### 4.8. Assessment of data and calculation of emission reductions

IBOPE confirms that appropriate methods and formula for calculating baseline emissions, project emissions and leakage have been followed, and the assumptions, emission factors and default values that are applied in the calculation have been justified.

During the on-site visit, the verification team checked the implemented process and the actual monitoring plan (monitored parameters, source of data, and frequency of measurements).
Through desk review and stakeholders interviews the verification team confirms the implementation of the project activity and the monitoring plan are in accordance with the registered PDD /1/ and the MR /4/.



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**Baseline Emissions**

According to the registered PDD /1/ and the approved methodology /20/, the formula used to calculate the baseline emissions is:

$$ER_y = B_y \times f_{NRB,y} \times NCV_{biomass} \times EF_{projected\ fossil\ fuel}$$

Where:

**$ER_y$:** Emission reductions during the year y in tCO2e
**$B_y$**: Quantity of woody biomass that was substituted or displaced in tonnes
**$f_{NRB,y}$**: Fraction of woody biomass used in the absence of the project activity in year *y* that was established as non-renewable biomass using survey methods
**$NCV_{biomass}$:** Net calorific value of non-renewable woody biomass that was substituted, in TJ/ton
**$EF_{projected\ fossil\ fuel}$:** Emission factor for substitution of non-renewable woody biomass by similar consumers, in tCO2e/TJ.

**By** was calculated according to option (a) of the selected methodology, as follows:
(a) **By** was calculated as the product of the number of appliances multiplied by the estimate of average annual consumption of woody biomass per appliance (tonnes/year);

The consumption of woody biomass in the kilns was calculated as the amount of products (ceramic pieces) produced and the consumption of woody biomass per thousand of ceramic pieces fired in year y, as follows:

$$B_y = PR_y \times BF_y$$

Where:
**$PR_y$:** Amount of products produced in year y, in thousands of ceramic pieces
**$BF_y$:** Quantity of woody biomass per thousand of ceramic units fired in year y.

The quantity of woody biomass that was substituted (**$B_y$**) is calculated by multiplying the amount of products produced (**$PR_y$**) with the quantity of woody biomass fired (**$BF_y$**). The counting of the total production was monitored by employees on each ceramic. Data was aggregated on a monthly basis from manual control of devices burned in the kiln, measured by monthly reports.
During the on-site visit and desk review the verification team checked the amount of products produced (**$PR_y$**) through records of manual control of devices burned in the kiln /7/.



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The value of ($BF_y$) was determined with the use of the historical records from the ceramics included in the project, by dividing monthly average consumption in the baseline by monthly average baseline production.

In the current monitoring period, the value of ($BF_y$) was revised by the PP, because the quantity of biomass was provided in $m^{st}$ (piled volume), but the calculations in the spreadsheets were using the value as $m^3$ (solid volume), and no conversion calculation was used. Therefore the parameter ($BF_y$) was revised in this monitoring report /4/.

The DOE agreed with the revision of the parameter, ($BF_y$), and that no revision of the registered PDD /1/ is necessary, since this change does not affect the Emissions Reductions, neither is a critical or major change in the project activity.

The values are inputted in an electronic spreadsheet by the ceramic responsible and Sustainable Carbon has access to the information and then applied to the baseline emission calculations. The verification team confirms the correctly application of the values on the MR Calculation spreadsheet /6/.

The fraction of woody biomass used in the absence of the project activity ($f$NRB,y) applied in the calculation was revised, because there was some difference since the reference of non-renewable biomass was in mst (piled volume), but the value used in the spreadsheets and calculations were using $m^3$ (solid volume), and no conversion calculation was used. The values for $f$NRB,y were updated and corrected by the PP accordingly.

**Leakage emissions**

Leakage is estimated at 0 (zero) tCO2e during the current monitoring period.

The sources of leakage relevant to the present project activity are the competing use of biomass for biomass from existing forests and for biomass residues or waste, in which follows the general guidance on leakage in biomass project activities /21/.

In response to FAR 1 raised by the Gold Standard Secretariat during project registration, Sustainable Carbon has developed a detailed Study "Renewable Biomass Surplus in the State of Ceará, Brazil" /9/ on the surplus of all types of biomass used by the project activity. Such study was developed from July to November, 2012.

In the current monitoring period, the surplus of wood from sustainable management area was analyzed through a methodology developed by a biomass expert /10/, and another study from Sustainable Carbon comparing the effective available amount of wood from sustainable management area and the amount of wood provided by Forest Origin Documents /11/.

Through desk review the verification team accessed the Studies /10/11/ and all documents related to this study and verified that the analysis and the calculations were performed in a conservative manner.



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The conclusion reached by these Studies /9/10/11 is that the estimates of the surplus of each are at least 25% for the whole renewable biomasses in the project activity.

The applied methodology does not include any source of project emissions, then the emission reductions for the project activity is equal to the baseline emissions.

| Ceará Renewable Energy Bundled Project | 2012 | January to April 2013 | Total monitoring period |
|---|---|---|---|
| Baseline emissions (tCO2e) | 65,566 | 17,145 | 82,711 |
| Project emissions (tCO2e) | 0 | 0 | 0 |
| **Emissions reductions for the project activity (tCO2e)** | **65,566** | **17,145** | **82,711** |

The baseline calculations, leakage and emission reduction calculations are carried out electronically with a spreadsheet /6/; therefore the calculations are transparent, traceable and of high quality.

### 4.8.1. Comparison with the estimated emission reduction in the registered PDD

The emission reductions declared during the 2st monitoring period was 82,711 tCO2e, compared with the estimated and stated in the registered GS PDD 48,230 tCO2e, it was verified that value is 71,5% higher than the estimation.

This is explained due to the production increase in the ceramic companies, which is justified by the market demand and economic scenario, as can be verified through articles and economic information /17/.

Hence, based on these evidences and onsite interviews, the Verification Team deemed that the difference between the estimated and the verified amount of emission reductions are feasible and real.



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## 5. Verification Opinion

IBOPE has performed the 2nd periodic verification of the Ceará Renewable Energy Bundled Project in Brazil, which applies the methodology AMS.I-E version 04. The verification was performed based on GS and CDM requirements.

The verification consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion.

The management of Sustainable Carbon – Projetos Ambientais Ltda is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions of the project on the basis set out within the project Monitoring Plan indicated in the registered GS PDD. The development and maintenance of records and reporting procedures in accordance with that plan, including the calculation and determination of GHG emission reductions from the project, is the responsibility of the management of the project.

IBOPE verified the Project Monitoring Report version 02 for the reporting period as indicated below. IBOPE confirms that the project is implemented as described in validated and registered GS PDD. Installed equipment being essential for generating emission reduction runs reliably. The monitoring system is in place and the project is generating GHG emission reductions

IBOPE can confirm that the GHG emission reduction is calculated without material misstatements. Our opinion relates to the project's GHG emissions and resulting GHG emissions reductions reported and related to the valid and registered project baseline and monitoring, and its associated documents. Based on the evidence and information that are considered necessary to guarantee that GHG emission reductions are appropriately calculated, IBOPE confirms the following statement:

Reporting period: From 01/01/2012 to 30/04/2012 (days included)

| | | | |
|---|---|---|---|
| Baseline emissions | : | 82,771 | $tCO_2e$ |
| Project emissions | : | 0 | $tCO_2e$ |
| Leakage emissions | : | 0 | $tCO_2e$ |
| Emission Reductions | : | 82,771 | $tCO_2e$ |

02/08/2013

Shigueo Watanabe Junior

Technical Reviewer

02/08/2013

Rubens da Silva Ferreira

Lead Verifier



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## 6. References

Documents provided by Sustainable Carbon – Projetos Ambientais Ltda that relate directly to the GHG components of the project and documents related to the design and/or methodologies employed in the design and/or other reference documents.

| Ref. | PPs Documents |
|---|---|
| 1. | GS PDD – V.5 – 08/03/2012 |
| 2. | GS Passport – V.5 – 08/03/2012 |
| 3. | Monitoring Report – V.1 – 10/05/2013 |
| 4. | Monitoring Report – V.2 – 29/07/2013 |
| 5. | MR Calculation_Ceará Renewable Energy Bundled Project_01.01.2012_30.04.2013 – V.1 |
| 6. | MR Calculation_Ceará Renewable Energy Bundled Project_01.01.2012_30.04.2013 – V.2 |
| 7. | Records of Manual control of devices burned in the kiln for each ceramic factory |
| 8. | Records of purchase invoices and delivery notes of renewable biomass for each ceramic factory |
| 9. | Study "Renewable Biomass Surplus In The State Of Ceará, Brazil", Version 02 November, 2012 |
| 10. | Study "Effective Availability and Surplus of Firewood" _v19.07.2013 |
| 11. | Study "Effective Availability and Surplus of Firewood_Ceará" |
| 12. | Monitoring spreadsheets - air quality |
| 13. | Monitoring spreadsheets – soil condition |
| 14. | Training certificate – quality of employment |
| 15. | Monitoring spreadsheets of IPE distribution |
| 16. | VER issuance |
| 17. | Articles and economic information |



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| Ref. | Requirements, Procedures, Methodologies, Rules and guidance documents |
|---|---|
| 18. | Gold Standard requirements, version 2.1 |
| 19. | Gold Standard Toolkit version 2.1 |
| 20. | UNFCCC Approved Small Scale Methodologies - AMS-I.E: "Switch from non-renewable biomass for thermal applications by the user" – Version 04. |
| 21. | General guidance on leakage in biomass project activities (Attachment C of Appendix B) |
| 22. | VVS version 03.0 (EB 70 annex 3) |



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## 7. *Curricula Vitae* of Verification Team and Technical Reviewer

**Rubens da Silva Ferreira**

Graduated in Chemical Engineering with experience in quality and environmental management in glass industries. He is ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007 Lead Auditor and Greenhouse Gases Lead Verifier. Mr. Ferreira has also experience in the implementation of Environmental Management Systems. Mr. Ferreira attended the Basic Session (basic overview on the new rules and requirements part of the GS Toolkit version 2.2) and Specialized Session (explanation of new rules including among other Eligibility criterion, PoAs and Grievance Mechanism) on February, 6th and 7th.

**Rafael Kupper Bonizio Oliva**

Environmental Engineer and Post-graduated in Project Management. Mr. Oliva has developed more than 10 projects under the VCS, acting as consultant for more than 3 years in carbon credits projects and emission inventories. Mr. Oliva has experience in the implementation of Quality and Environmental Management Systems, and is certified under ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007 as internal auditor. Mr. Oliva attended the Basic Session (basic overview on the new rules and requirements part of the GS Toolkit version 2.2) and Specialized Session (explanation of new rules including among other Eligibility criterion, PoAs and Grievance Mechanism) on January, 23th and 24th.

**Naomi Kawasaki**

Post-graduate diploma in environment, sustainable development and global issues and also in business administration. Naomi is certified under ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007 as internal auditor. Ms. Kawasaki has already conducted validation and verification processes in voluntary projects. She has expertise in business development in climate change and has been working as a consultant and expert for more than 6 years in carbon credits projects under Kyoto Protocol and voluntary market, carbon credits broker, emissions inventories and neutralization. Ms. Kawasaki attended the Basic Session (basic overview on the new rules and requirements part of the GS Toolkit version 2.2) and Specialized Session (explanation of new rules including among other Eligibility criterion, PoAs and Grievance Mechanism) on January, 23th and 24th.



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**Shigueo Watanabe Junior**

Shigueo is BSc and MSc in physics by the Physics Institute of the University of São Paulo, Brazil. He is a specialist in carbon projects and has deep knowledge of the Brazilian energy sector. In 2012, he became director of IBOPE Ambiental offering services oriented to the environmental aspects of sustainable development and climate change.

Before IBOPE, he managed the development of projects under the CDM starting in 2004 and has registered 10 projects in hydropower, biomass, fuel switch and energy efficiency. He also helped the development of GHG emissions inventories and energy efficiency projects for large corporations in Brazil.

In carbon projects, Shigueo worked as regional coordinator for Orbeo, responsible for sourcing carbon projects, for One Carbon (before being absorbed by Orbeo), for Geoklock and Lumina Energia.

He participated in the creation of ABEMC, the Brazilian Association of Enterprises in the Carbon Market, a sort of Brazilian IETA and has supported the Gold Standard Foundation since 2007, first as a local expert in Brazil, and since 2010, as a member of its Technical Advisory Committee.



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## 8. Verification Protocol

**Table 1 Verification requirements based on CDM VVS version 03.0 (EB 70 Annex 3).**

| Checklist Question | Verification team comments | Draft Concl. | Final Concl. |
|---|---|---|---|
| **Implementation of project activity** | | | |
| 1. Has the PP implemented all physical features proposed in the registered PDD at the project site? | Yes, the PP implemented all physical features proposed in the registered PDD at the project site. | ok | ok |
| 2. Has the project activity operated in accordance with the project scenario described in the registered PDD? | Yes, the project activity operated in accordance with the project scenario described in the registered PDD. | ok | ok |
| **Description of Monitoring Plan** | | | |
| 1. Has the PP established the monitoring plan in accordance with the monitoring methodology? | Yes, the PP established the monitoring plan in accordance with the monitoring methodology | ok | ok |
| 2. Has the PP established the monitoring in compliance with the monitoring plan in the registered PDD? | Yes, the PP established the monitoring in compliance with the monitoring plan in the registered PDD. | ok | ok |
| 3. Has the PP monitored and updated all baseline emission parameters in accordance with monitoring plan and monitoring methodology? | Refer to CAR 3 | CAR 3 | ok |
| 4. Has the PP controlled the monitoring equipment for baseline emission parameters?<br>If so, has the PP recorded those monitoring results as per approved frequency? | Not applicable. No monitoring equipment was used to determine the baseline emission parameters. | ok | ok |
| 5. Has the PP calibrated the monitoring equipment for baseline emission parameters in accordance with QA&QC procedures described in the registered PDD? | Not applicable. | ok | ok |
| 6. Has the PP monitored and updated all the project emission parameters in accordance with monitoring plan and monitoring methodology? | Yes, the PP monitored and updated all the project emission parameters in accordance with monitoring plan and monitoring methodology. | ok | ok |
| 7. Has the PP controlled the monitoring equipment for | Not applicable. | ok | ok |



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|---|---|---|---|
| project emission parameters?<br>If so, has the PP recorded the monitoring results as per approved frequency? | | | |
| 8. Has the PP calibrated the monitoring equipment for project emission parameters in accordance with QA&QC procedures described in the registered PDD? | Not applicable. | ok | ok |
| 9. Has the PP monitored and updated all leakage emission parameters in accordance with monitoring plan and monitoring methodology? | Refer to CAR 4 and CAR 5 and CL 1 | CAR 4<br>CAR 5<br>CL 1 | ok |
| 10. Has the PP controlled the monitoring equipment for leakage emission parameters?<br>If so, has the PP recorded the monitoring results as per approved frequency? | Not applicable. No monitoring equipment was used to determine the leakage emission parameters | ok | ok |
| 11. Has the PP calibrated the monitoring equipment for leakage emission parameters in accordance with QA&QC procedures described in the registered PDD? | Not applicable. | ok | ok |
| 12. Were all monitoring parameters available and verifiable through the whole monitoring period? | Yes, the monitoring parameters were available and verifiable through the whole monitoring period. | ok | ok |
| 13. In case, only partial monitoring data is available and PP(s) provide estimations or assumptions for the rest of data:<br>Was it possible to verify those estimations and assumptions? | Not applicable. | ok | ok |
| 14. Has the PP established and operated the management and operation system in accordance with the monitoring plan? | Yes. | ok | ok |
| **Data and Parameters** | | | |
| 1. Has the PP provides evidences in order to verify the following parameters: | | | |

| | | | |
|---|---|---|---|
| a. PRy | Refer to CAR 1 | CAR 1 | ok |
| b. $Q_{renbiomass}$ | Refer to CAR 2 and CAR 10 | CAR 2<br>CAR 10 | ok |
| c. $f_{NRB,y}$ | Refer to CAR 3 | CAR 3 | ok |
| d. $EF_{projected\_fossilfuel}$ | Yes | ok | ok |
| e. $NCV_{biomass}$ | Refer to CL 2 | CL 2 | ok |
| f. $\rho_{biomass}$ | Yes | ok | ok |
| g. $BF_y$ | Yes | ok | ok |
| **Emission Reductions Calculation** | | | |
| 1. Has the PP calculated the baseline emissions according to the formulae and methods described in the registered PDD and applied methodology? | Yes, the PP calculated the baseline emissions according to the formulae and methods described in the registered PDD and applied methodology. | ok | ok |
| 2. Has the PP calculated the project emissions according to the formulae and methods described in the registered PDD and applied methodology? | Not applicable. | ok | ok |
| 3. Has the PP calculated the leakage emissions according to the formulae and methods described in the registered PDD and applied methodology? | Yes the PP calculated the leakage emissions according to the formulae and methods described in the registered PDD and applied methodology. | ok | ok |
| 4. Are current emission reductions in accordance with the values estimated in the PDD? | Yes, current emissions are reductions in accordance with the values estimated in the PDD | ok | ok |
| 5. If not, has the PP explained the difference between the current emission reduction and the values estimated in the PDD? | Not applicable. | ok | ok |

**Table 2. GS Project Activities Verification Protocol based on The Gold Standard Toolkit 2.1, The Gold Standard Requirements 2.1 and related annexes**

| Checklist Question | Validation team comments | Draft Concl. | Final Concl. |
|---|---|---|---|
| **General requirements** | | | |
| 1. Has the PP (or DOE, when applicable) uploaded the carbon and sustainability reports together with supporting documents into the Gold Standard Registry? | Yes. | ok | ok |
| 2. If the project activity is a CDM or JI project, is the Gold Standard verification process conducted at the same time and period under the regular CDM and JI project cycle? | Not applicable. | ok | ok |
| 3. Has the DOE selected samples of the monitoring plan? If so, has the DOE justified the selected samples? | No. Not applicable. | ok | ok |
| 4. Has the PP made changes since validation/last verification that impact on the claimed emission reductions? | No, the PP has not made any changes that impact on the claimed emission reductions. | ok | ok |
| 5. Has the project activity suffered any changes that might impact the Gold Standard qualification of the project? | No, the project activity has not suffered any changes that might impact the Gold Standard qualification of the project. | ok | ok |
| **Site visit** | | | |
| 1. In case of a large scale project, has the DOE conducted a site visit? | Not applicable. | ok | ok |
| 2. In case of small scale project, has the DOE conducted a site visit? | Yes, the site visit was conducted in the period of 21/05/2013 until 24/05/2013. | ok | ok |
| 2.1. If not, a site visit was required according to Gold Standard requirements? | Not applicable. | ok | ok |
| 2.1.1. If so, has the PP demonstrated with appropriate justification and requested less frequent visits? | Not applicable. | ok | ok |

| | | | |
|---|---|---|---|
| 2.1.1.1. If so, has the previous DOE provided a positive opinion and it was approved by Gold Standard? | Not applicable. | ok | ok |
| **Monitoring GHG reductions and Sustainable Development** | | | |
| 3. Has the PP included in the monitoring report: | | | |
| 3.1. A monitoring table from the PDD and Passport? (Gap analysis report when applicable) | Yes. Table 05, Table 12, Table 12 and Annex 1. | ok | ok |
| 3.2. Data entry sheets of self-monitored parameters? | Yes, data included in Table 05 and Section D. | ok | ok |
| 3.3. Remarks on the monitoring process used? | Yes, remarks were included in Section D. | ok | ok |
| 3.4. Current or expected status and future status of the parameters in the table? In addition, has the PP described how it/they is/are monitoring these parameters? | Yes, information were included in Section D. | ok | ok |
| 3.5. Other data sources to substantiate PPs' claims? | Refer to CAR 6, CAR 7, CAR 8 and CAR 9 | CAR 6<br>CAR 7<br>CAR 8<br>CAR 9 | ok |
| 4. Has the PP monitored the sustainability impact of the project activity according to the sustainability monitoring report? | Refer to CAR 6, CAR 7, CAR 8 and CAR 9 | CAR 6<br>CAR 7<br>CAR 8<br>CAR 9 | ok |
| **Forward Action Requests (FARs) raised by Gold Standard** | | | |
| 1. Has the Gold Standard raised any FAR in the previous desk review? If so, has the PP considered it/them in the current monitoring? | Yes. The PP considered it in Section B.2 and Section E.3 | ok | ok |

| Forward Action Requests (FARs) raised by previous verification | | | |
|---|---|---|---|
| 1. Has the previous DOE raised any FAR to be considered in the current monitoring? If so, has the PP considered it/them in the current monitoring? | Yes. In Annex 1 – Sustainability Monitoring Plan, there is the application and monitoring of each indicator. | ok | ok |

**Table 3 Resolution of Corrective Action /Clarification / Forward Action Requests**

| ITEM 1 | CAR 1 |
|---|---|
| Round 1 | ***CAR/CL/FAR DESCRIPTION OF FINDING***<br>Revise data and records of PRY parameter (thousands of ceramic pieces) and update "*MR_Ceará Renewable Energy Bundled Project_01.01.2012_30.04.2013_v01*" " – including table 13 and section E.6, and "*MR Calculation_Ceará Renewable Energy Bundled_01 01 2012_30 04 2013_v01*". |
| | ***PP REPLY***<br>Data and records of Pry parameter were revised and updated at "MR_Ceará Renewable Energy Bundled Project_01.01.2012_30.04.2013_v02" and "MR Calculation_Ceará Renewable Energy Bundled_01 01 2012_30 04 2013_v02". |
| CONCLUSION<br>Data and records of PRY parameter were revised accordingly. CAR closed. | |

| ITEM 2 | CAR 2 |
|---|---|
| Round 1 | ***CAR/CL/FAR DESCRIPTION OF FINDING***<br>Revise data and records of Qrenbiomass parameter (amount of renewable biomass used during year y of crediting period) and update "*MR_Ceará Renewable Energy Bundled Project_01.01.2012_30.04.2013_v01*" and "*MR Calculation_Ceará Renewable Energy Bundled_01 01 2012_30 04 2013_v01*". |
| | ***PP REPLY***<br>Data and records of Qrenbiomass parameter were revised and updated at "MR_Ceará Renewable Energy Bundled Project_01.01.2012_30.04.2013_v02" and "MR Calculation_Ceará Renewable Energy Bundled_01 01 2012_30 04 2013_v02". |
| CONCLUSION<br>Data and records of Qrenbiomass parameter were revised accordingly. CAR closed. | |

| ITEM 3 | CAR 3 |
|---|---|
| Round 1 | ***CAR/CL/FAR DESCRIPTION OF FINDING***<br>In "*MR Calculation_Ceará Renewable Energy Bundled_01 01 2012_30 04 2013_v01*" :<br>a. The value of *ƒ*NRB,y parameter for *Cerâmica Elaine* is 0,6439. However in the "*MR_Ceará Renewable Energy Bundled Project_01.01.2012_30.04.2013_v01*" and "*SSCPDD Ceará Renewable Energy Bundled Project v05*" the value is 0,6440.<br>b. The sources provided at "*native firewood*" spreadsheet are bad links. |
| | ***PP REPLY***<br>a. As described in the PDD, version 05, the parameter *ƒ*NRB,y is monitored. Thus, data available at "*ƒ*NRB,y caatinga" and "*ƒ*NRB,y project" spreadsheets were updated, including information regarding years 2010 and 2011, which justifies this minor change in the third decimal point of Eliane ceramic fNRB value.<br>b. Sources provided at "native firewood" spreadsheets were updated and revised. |
| CONCLUSION<br>a. There was some difference since the reference of non-renewable biomass was in $m^{st}$ (piled volume), but the value used in the spreadsheet and calculations were using $m^3$ (solid volume), and no conversion calculation was used. The values for *ƒ*NRB,y were updated and corrected accordingly.<br>b. The sources were updated accordingly.<br>CAR Closed. | |

| ITEM 4 | CAR 4 |
|---|---|
| Round 1 | ***CAR/CL/FAR DESCRIPTION OF FINDING***<br>In "*Leakage due to competing uses of biomass*" parameter, the value of "*mamona husk*" (2,206%) is not in accordance with "*RENEWABLE BIOMASS SURPLUS IN THE STATE OF CEARÁ, BRAZIL version 2*" (458%). |
| | ***PP REPLY***<br>The correct value for mamona husk was updated (458%), according to the "*RENEWABLE BIOMASS SURPLUS IN THE STATE OF CEARÁ, BRAZIL version 2*". |
| CONCLUSION<br>The value for mamona husk was corrected accordingly. CAR closed. | |

| ITEM 5 | CAR 5 |
|---|---|
| Round 1 | ***CAR/CL/FAR DESCRIPTION OF FINDING***<br>In the "*EFFECTIVE AVAILABILITY AND SURPLUS OF FIREWOOD_02.04.2013*":<br>a. Please include the curriculum vitae of the author.<br>b. Please include all the sources used in the study.<br>c. The study suggests that there is an average annual stock biomass increase in the forest management areas of 27% when compared to non-managed areas. However, the study does not include any consideration regarding the demand side and how this increase in supply won't be trailed by an increase in consumption. |
| | ***PP REPLY***<br>a. The curriculum vita of the author was included in the study.<br>b. The sources were included in the study.<br>c. In order to include demand in the supply chain of wood from forest management plans, a comparison was performed between the effective annual availability of firewood, and the amount of native firewood consumed with Forest Origin Document (in Portuguese, DOF - *Documento de Origem Florestal*), in the state of *Ceará* in the year 2012. The annual availability of native wood data was based on the Forest Management Plans in the State of *Ceará*, registered by the Environmental Authority of Ceará State, SEMACE. Regarding DOF information, it was based on IBAMA source of data. The spreadsheets built with Supply and Demand Assessment will be sent to the verification team, please see "Effective Availability and Surplus of Firewood_Ceará" spreadsheets. |
| CONCLUSION<br>a. The curriculum vita of the author was included.<br>b. The sources were included accordingly.<br>c. Across the comparison of both studies it is possible to verify the surplus of biomass.<br>CAR Closed. | |

| ITEM 6 | CAR 6 |
|---|---|
| Round 1 | ***CAR/CL/FAR DESCRIPTION OF FINDING***<br>In *"Annex 1 – Sustainability Monitoring Plan"* of *"MR Calculation_Ceará Renewable Energy Bundled_01 01 2012_30 04 2013_v01"*, indicator "A*ir quality*":<br>a. *Cerâmica Eliane* started the monitoring of smoke emissions on January 2012 with six day interval.<br>b. *Cerâmica Antonio* started the monitoring of smoke emissions on January 2012 with five day interval.<br>c. *Cerâmica Ceará* monitors the smoke emissions every day.<br>d. *Cerâmica CEAGRA* monitors the smoke emissions every day.<br>e. The scenario of the indicator "Emissions to the Atmosphere" is not in accordance with Social Carbon Standard "*Indicators_for_Industries_of_the_Ceramic_Sector_V8.2*". Please include the source. |
| | ***PP REPLY***<br>It was corrected the monitoring of smoke emissions start date and interval, as stated above. It is noticed that the monitoring of this indicator is performed in a shorter time interval than defined by the monitoring period, which is conservative. Furthermore, the indicator "*Emissions to the atmosphere"* from Social Carbon Standard is classified into scenario 04. The scenario description was corrected in the Sustainability Monitoring Plan. |
| CONCLUSION<br>The indicator was corrected accordingly. The scenario of the indicator was identified as 04, and it was corrected accordingly. CAR closed. | |

| ITEM 7 | CAR 7 |
|---|---|
| Round 1 | ***CAR/CL/FAR DESCRIPTION OF FINDING***<br>In *"Annex 1 – Sustainability Monitoring Plan"* of *"MR Calculation_Ceará Renewable Energy Bundled_01 01 2012_30 04 2013_v01"*, indicator "*Soil condition*":<br>It is states that "*…classifying the project activity into scenario 1, defined as…*" but it is defined as "*Scenario 4: - Ashes are totally reused or donated, with control of the quantity and destination of the material."* |
| | ***PP REPLY***<br>The parameter "Procedures related to the control and disposal of ashes" was classified into scenario 4 from Social Carbon Standard. The correction was made in the Annex 1-Sustainability Monitoring Plan. |
| CONCLUSION<br>The indicator was corrected accordingly. CAR closed. | |

| ITEM 8 | CAR 8 |
|---|---|
| Round 1 | ***CAR/CL/FAR DESCRIPTION OF FINDING***<br>In "*Annex 1 – Sustainability Monitoring Plan"* of "*MR Calculation_Ceará Renewable Energy Bundled_01 01 2012_30 04 2013_v01"*, indicator "*Quality of employment*" chosen parameter "*Use of safety equipment*":<br>a. *Cerâmica Eliane* started the EPI distribution control on January 2012.<br>b. Cerâmica Antonio started the EPI distribution control on June 2012. According to the onsite visit interview, there is no policy to encourage the use of the equipment at the company.<br>c. According to the onsite visit interview, there is no policy to encourage the use of the equipment at *Cerâmica Santa Rita*.<br>d. According to the onsite visit interview, there is no policy to encourage the use of the equipment at *Cerâmica Ceará*.<br>e. The parameter describes that "*During the monitoring period, the project developers started implementing procedures to control and monitor the use of safety equipment*". However, according to the onsite interview, there are no implemented procedures to control and monitor the use of safety equipment. |
| | ***PP REPLY***<br>In the parameter "Use of safety equipment" of the Sustainability Monitoring Plan, data of IPE distribution control were updated as mentioned on items a. and b. above. Furthermore, during the monitoring period the ceramics performed the control on the use of IPEs and provided awards to employees as an attempt to encourage its use. However, a more efficient incentive mechanism shall be employed in the future. Also, it is important to mention revenues from carbon credits only became available on January, 2013, which was a barrier for the implementation of an incentive system before this date.<br>This information was included in the MR Report document. |
| CONCLUSION<br>The indicator was corrected accordingly. CAR closed. | |

| ITEM 9 | CAR 9 |
|---|---|
| Round 1 | ***CAR/CL/FAR DESCRIPTION OF FINDING***<br>In "*Annex 1 – Sustainability Monitoring Plan"* of "*MR Calculation_Ceará Renewable Energy Bundled_01 01 2012_30 04 2013_v01"*, indicator "*Quality of employment*" chosen parameter "*Actions of health and security*":<br>It is described that "*… the project activity can be classified into scenario three, defined as…"* but it is defined as "*Scenario 4: The company develops regular campaigns, meetings, training regarding occupational health and security in the last 12 months*." |

| | |
|---|---|
| | ***PP REPLY***<br>The project activity, for the parameter "Actions of health and security", was classified into scenario three. The scenario description was corrected in the MR Calculation document, version 02. |
| CONCLUSION<br>The indicator was corrected accordingly. CAR closed. | |

| **ITEM 10** | **CAR 10** |
|---|---|
| Round 1 | ***CAR/CL/FAR DESCRIPTION OF FINDING***<br>a. The evidence documents "*Documento de Origem Florestal* (DOF)" used to prove the acquisition of biomass provides the value as $m^{st}$ (piled volume), but the value used in the spreadsheet are considered as $m^3$ (solid volume). However, no conversion calculation was used.<br>b. The evidence documents used to prove the acquisition of "*Poda de Cajueiro"* provides the value as $m^{st}$ (piled volume), but the value used in the spreadsheet are considered as $m^3$ (solid volume). However, no conversion calculation was used. |
| | ***PP REPLY***<br>It was used an conversion factor from stereo meter ($m^{st}$) to cubic meter ($m^3$) for both biomass, more information regarding conversion factor can be seen in Monitoring Report Document, section D.2. Furthermore, in the register PDD it was not considered the same conversion factor from mst to $m^3$ for the fraction of firewood from management areas used in the baseline scenario. Therefore, the conversion factor was applied in the amount of sustainable firewood used in baseline scenario, which means minor changes in the $BF_y$(Quantity of woody biomass per thousand of ceramic units fired in year y) and the $f_{NRB}$ (Fraction of woody biomass used in the absence of the project activity in year y that can be established as non-renewable biomass) parameters. Both changes in the parameters $BF_y$ and $f_{NRB}$ do not affect the amount of emission reductions since the conversion factor will be applied only for renewable firewood. More detailed information can be verified in section D of the Monitoring Report and the VER calculation spreadsheet. |
| CONCLUSION<br>The conversion factor was used correctly. CAR closed. | |

| ITEM 11 | CL 1 |
|---|---|
| Round 1 | ***CAR/CL/FAR DESCRIPTION OF FINDING***<br>Table 07 from "*MR_Ceará Renewable Energy Bundled Project_01.01.2012_30.04.2013_v01*" presents different values from the study "*RENEWABLE BIOMASS SURPLUS IN THE STATE OF CEARÁ, BRAZIL version 2*". Please Clarify. |
| | ***PP REPLY***<br>Table 07 was corrected in the "*MR_Ceará Renewable Energy Bundled Project_01.01.2012_30.04.2013_v02". It is in accordance to the study* "*RENEWABLE BIOMASS SURPLUS IN THE STATE OF CEARÁ, BRAZIL version 2*" (please see table 05). |
| CONCLUSION<br>Table 07 was corrected accordingly. CL closed. | |

| ITEM 12 | CL 2 |
|---|---|
| Round 1 | ***CAR/CL/FAR DESCRIPTION OF FINDING***<br>Please clarify and provide source for *mamona husk* and NVC values submitted in "*Sustainability monitoring"* spreadsheet of "M*R Calculation_Ceará Renewable Energy Bundled_01 01 2012_30 04 2013_v01*". |
| | ***PP REPLY***<br>The source for renewable biomass were revised in "Sustainability monitoring" spreadsheet of "MR Calculation_Ceará Renewable Energy Bundled_*01 01 2012_30 04 2013_v02*". |
| CONCLUSION<br>The source was provided accordingly. CL closed. | |

**Table 4 Forward Action Request (Previous Verification Report)**

| ITEM 1 | FAR 1 |
|---|---|
| Round 1 | ***FAR DESCRIPTION OF FINDING***<br>Since the Sustainability Monitoring Plan was revised during the validation and Gold Standard review phases occurred in 2012, after the end of the first monitoring period, the monitoring of the Sustainability indicators was not complete, then the indicators no. 01, 02, 03 and 04 were not monitored because of the lack of information available during the monitoring period. Verify in the next verification if these indicators were correctly applied. |
| | ***PP REPLY***<br>Project Participants applied the correct monitoring procedures related to indicators number 01, 02, 03 and 04. |
| CONCLUSION<br>The monitoring spreadsheets related to indicators 01, 02, 03 and 04 were provided and analysed during the site visit. FAR 1 is closed. | |