



Voluntary Carbon Standard 2007.1

Project number: 8000374604 08/456

Validation Report:

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TÜV NORD CERT GmbH	September 09 th , 2009
Report Title:	Approved by:
Final Validation Report Por do Sol Ceramic Fuel Switching Project	Mr. Eric Krupp (FA)
Client:	Project Title:
Carbono Social Serviços Ambientais Ltda.	Por do Sol Ceramic Fuel Switching Project
Summary:	
<p>The Carbono Social Serviços Ambientais Ltda has commissioned the TÜV NORD JI/CDM Certification Program to validate the project: "POR DO SOL CERAMIC FUEL SWITCHING PROJECT" with regard to the relevant requirements of the VCS 2007.1 Standard.</p> <p>The project activity consists of switching non-renewable to renewable biomass fuel for end-user thermal energy generation. A risk-based approach has been followed to perform this validation. In the course of the draft validation 8 Corrective Action Requests (CARs), 11 Clarification Requests (CLs) and 1 Forwarded Action Request (FAR) were raised and successfully closed.</p> <p>The review of the project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.</p> <p>In detail the conclusions can be summarised as follows:</p> <ul style="list-style-type: none"> - The project is in line with all relevant host country criteria (Brazil) and all relevant VCS 2007.1 Standard criteria. - The project additionality is sufficiently justified in the VCS PD. - The monitoring plan is transparent and adequate. - The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 79,050 t CO₂e is most likely to be achieved within the 10 years (renewable) crediting period. <p>The conclusions of this report shows, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation.</p>	
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Table of Contents

1	Introduction	3
1.1	Objective	3
1.2	Scope and Criteria	3
1.3	VCS project Description	3
1.4	Level of assurance	3
2	Methodology	4
2.1	Review of Document	4
2.2	Follow-up Interviews	5
2.3	Resolution of any material discrepancy	5
3	Validation Findings	5
3.1	Project Design	5
3.2	Baseline	13
3.3	Monitoring Plan	17
3.4	Calculation of GHG Emissions	21
3.5	Environmental Impact	22
3.6	Comments by stakeholders	23
4	Validation conclusion	24
5	References	25

1 Introduction

1.1 Objective

The purpose of this validation is to have an independent third party assessment on the project design. In particular the project's baseline, the monitoring plan (MP) and the project's compliance with the requirements of:

- VCS 2007.1 Standard
- other relevant rules, including the host country (Brazil)
- legislation and sustainability criteria

are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders on the quality of the project and its intended generation of Voluntary Carbon Units (VCUs).

1.2 Scope and Criteria

The validation scope is given as an independent and objective review of the project design, the project's baseline study and monitoring plan (based on AMS-I.E: Switch from non-renewable biomass for thermal applications by the user - Version 01, February 1st 2008 onwards), which are included in the VCS PD and other relevant supporting documents.

The items covered in the validation are described below:

- Project Description
- Project Baseline
- Monitoring Plan
- Calculation of GHG Emissions
- Environmental Impacts
- Stakeholder Consultation

1.3 VCS project Description

Located in Panorama, Sao Paulo State, this project comprises one enterprise, Por do Sol Ceramic, which produces structural ceramic devices like bricks. The project activity involves fuel switching from native firewood from Cerrado biome to sawdust and sugar cane bagasse used to feed the ceramic kilns; thus GHG emission reduction is achieved. Other types of renewable sources of biomass can be applied during the project activity, such as elephant grass and peanut shells.

Before the switching of the fuel, Por do Sol Ceramic consumed 5,603 tonnes of native firewood per year producing 6,552,000 ceramic devices per year (12,285 tones of ceramic units per year), in its three "Round" kilns.

The ceramic started its activities with the renewable biomass in January 2007, and now Por do Sol Ceramic is consuming around 170 tonnes of sawdust and 18 tonnes of sugar cane bagasse per month, producing the same quantity of bricks as before the project.

Due to the project activity investments were necessary to maintain the facility productions, such as: new mechanical burners to feed the kilns, adjustments in the kilns entrance before adapted to the native firewood fuel, construction of a shed to store the renewable biomass and staff training regarding the new fuel adoption.

The project contributes to the sustainable development as due to its activity it will: diversify and improve sources of thermal energy generation, make possible new renewable biomass thermal energy generation technologies to be applied in the ceramic sector or other similar process, reuse biomass waste material, utilize renewable sources of biomass for thermal energy generation and contributes to the local biome preservation.

The estimated annual GHG emission reduction is 7,905 tCO₂e during the 10 years of the project activity, two times renewable.

1.4 Level of assurance

The validation report is based on VCS PD and documents provided by the project proponent, as well as information obtained from the on-site visit. The validation opinion is assured provided the credibility of all above.

2 Methodology

The validation of the project was carried out from August 2008 to August 2009.

Preparations: 2008-08-08 to 2008-08-25

On-site validation: 2008-08-26

(Draft) Reporting: 2009-06-05

(Final) Reporting: 2009-09-09

The validation consisted of the following three phases:

- a desk review of the project design and the baseline and monitoring methodology
- follow-up interviews
- the resolution of outstanding issues and the issuance of the final validation report and opinion.

According to the VCS 2007.1 policy validations shall be completed within two years of the project start date, or within 1 year of 18 November 2008, whichever is later. The Policy announcement from the VCS Association extends this validation deadline. There it is stated, that proof of contracting prior to 19 November 2008 shall be provided. The signed contract between the parts was checked and it is prior to the defined date^{/PRO/}.

2.1 Review of Document

VCS PD^{/VCS PD/} and proof of title submitted by Por do Sol Ceramic, as well as the supporting documents were reviewed. Refer to Table 5-1.

The VCS PD^{/VCS PD/} submitted by Por do Sol Ceramic and background documents related to the project design and baseline were reviewed.

Furthermore, the validation team used additional documentation by third parties like host party legislation, and technical data based on the project design provided by the company.

Afterwards, this report show the documents considered during the validation process and listed as follows:

- Documents provided by the project proponent (Table 5-1)
- Background investigations and assessment documents (Table 5-2)
- Websites consulted (Table 5-3)

2.2 Follow-up Interviews

Before and during the on-site visit on August 26th, 2008, the verifier of TÜV NORD performed interviews with the project participants to confirm selected information and to resolve issues identified in the document review.

Por do Sol Ceramic's owners and Carbono Social Serviços Ambientais Ltda. consultants were interviewed. The main topics of the interviews are summarised in Table 5-4 and the participant's information is addressed in table 5-5.

2.3 Resolution of any material discrepancy

The report includes Corrective action and Clarification Requests (CAR and CL) identified in the course of this validation.

A Corrective Action Request is established if:

- mistakes have been made in assumptions or the project documentation which directly will influence the project results,
- the requirements deemed relevant for validation of the project with certain characteristics have not been met or
- there is a risk that the project would not be registered by the UNFCCC or that emission reductions cannot be verified and certified.

A Clarification Request is issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

After resolution of these CARs and CLs by the project proponent the validator will issue the (final) validation report and opinion.

8 CARs, 11 CLs and 1 FAR were found during pre-validation. Please refer to Section 3.

3 Validation Findings

3.1 Project Design

The project comprehends the use of renewable biomass instead of non-renewable sources of biomass to generate thermal energy to feed the kilns and producing ceramic devices. Prior to the project implementation the ceramic used native firewood from unsustainable production as fuel to feed its kilns that nowadays was switched to

sawdust and sugar cane bagasse. The ceramic will preferably apply sawdust and sugar cane bagasse offered by the provider addressed in the VCS PD, but, in case of lack of providers, it may also employ other renewable biomasses sources as peanut shells and elephant grass.

The identified project boundary is the limits of the ceramic facility, in accordance with the applied methodology. The GHGs considered within the project boundary is the CO₂ emission from the combustion of native firewood used to occur in the baseline scenario. No other sources of GHG emission, sinks or reservoirs were identified.

Key parameters of the project are as below:

Table 3-1: Key parameters of the proposed project activity

Parameter of "Round" kiln	Value	
Average number of burning cycles	8 per month per kiln	
Average firing temperature of the kilns	900 °C	
Burning cycle duration	Kiln loading	6h
	Burning cycle	36h
	Cooling cycle	12h
	Pieces storage, kiln cleaning and preparation for next cycle	6h
	Total	60h
Kiln capacity	25,000 pieces/kiln	
Number of mechanic burners operating	4	
Number of "Round" kilns operating	3	
Production capacity	546,000	

Table 3-2: Project Location

Item	Project Scope
Host Country	Brazil
Region:	Sao Paulo State, Southwest Region, Brazil
Project location address:	Por do Sol Ceramic Avenida Rodion Podolsky, 740, Centro, Zip Code: 17980-000 Panorama – São Paulo – Brasil
Latitude:	21° 21' 55" S
Longitude:	51° 51' 50" W
Telephone:	+55 (18) 3871-2003 / 8116-0862

This project does not participate in any other project emission trading program and was not rejected in other GHG programme.

This project is eligible under the VCS methodology, so it fulfils all applicability criteria of the methodology used. The project consists of thermal appliances (ceramic kilns) that displace the use of native firewood by introducing renewable sources of biomass as fuel

for end-user energy generation. As the energy generation necessary for the ceramic pieces production occurs only in the ceramic facility, the validation team assumed that the plant is the end-user for the thermal energy generated. The native firewood utilized in the baseline scenario can be considered as non-renewable biomass as its extraction is illegal (but common practice) and no sustainable management plan is adopted. The renewable sources of biomass could be evidenced as follows in table 3-3:

Table 3-3: Type of biomass

Renewable biomass applied	Description of sustainability
Sawdust	The sawdust that may be used in the project activity is originated from sawmills industries which utilizes wood coming from sustainable forest management. As the sawdust is an industrial residue it falls therefore under the renewable biomass criteria V of the applied methodology. Sustainability will be provided by the assurance of the quantities and origin of the sawdust used via the check of the invoices.
Sugar cane bagasse	The sugar cane production is necessary to maintain the production of sugar and alcohol mills in the region. Its cultivation is sustainable because the sugar and alcohol facilities demand yearly incoming of sugar cane to maintain the production, thus is necessary to maintain permanently the cultivation area. Sustainability will be provided by the assurance of the quantities and origin of the sugar cane bagasse used via the check of the invoices. This kind of biomass falls also under option V of the methodology.
Biomass that may be applied	Description of sustainability
Peanut shell	This biomass is a residue/waste from peanut production. Its cultivation is assumed as sustainable because the producers of peanuts demand yearly processing of peanuts thus it is necessary to maintain regularly the cultivation area. Sao Paulo State is a huge producer of peanut. It is a waste from the peanut production and therefore renewable according to the methodology. Sustainability will be provided by the assurance of the quantities and origin of the peanut shells used via the check of the invoices.
Elephant grass	This is an alternative which is seen with potential for the future. If adopted by the project activity, the elephant grass cultivation should follow sustainable management methodologies. The elephant grass will be exclusively cultivated for the purpose to supply fuel to the project activity. The ceramic owner will be responsible to maintain or to evidence the sustainability of the production. Until now the ceramic did not use elephant grass for their project. The evidence of sustainability will be provided by the evidences of the sustainable

	management origin of the elephant grass and by the control of the quantities involved.
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There are no similar CDM projects activities in the region as could be evidenced in the UNFCCC website. Moreover the project participants could prove the use of non-renewable biomass since 31 December 1989 using survey methods. Firewood is a well known fuel used in Brazil^{/WEB2/} since the colonial period^{/WEB1/}. The use of native wood and its unsustainable management is the most common practice in the ceramic sector^{/WEB3/}.

The project reduces the greenhouse gases (GHG) by switching from non renewable firewood as fuel to renewable biomass. It will also contribute for the sustainable development of the region. The participation is voluntary.

The emission reduction was not double counted.

Table 3-4: Timelines

Project timelines	date
First implementation of the project	October 2005
Project starting date (total biomass switch)	2007-01-01
Starting date of the 1 st Crediting Period	2007-01-01
End of date of the 1 st Crediting Period	2016-12-31
Total project lifetime	10 years, twice renewable (30 years)

Table 3-5: Proof of title

Project Participant	Proof of title
Por do Sol Ceramic	Wilson Aparecido Delmor
Carbono Social Serviços Ambientais Ltda.	Contract with ceramic owner

However, 4 CARs and 5 CLs were raised and successfully closed.

General	CAR 1
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Burning cycle numbers (cooling, loading, unloading...) must be informed in the report as in the VCS spreadsheet. (VCS PD Section 1.9)
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Ok. This information's was added in the table 2.

General	CAR 1
DOE Assessment #1 <i>In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Ok. The information was included in a table in the section 1.9.
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

General	CAR 2
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Please add full companies names ("razão social"). (VCS PD Section 1.15)
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>It was included the full companies names:</p> <p>-Angelina Moreira Dalmore Vitta – ME; and - Carbono Social Serviços Ambientais Ltda.</p>
DOE Assessment #1 <i>In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Ok. The full names of the companies were included in the referred item.
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

General	CAR 3
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The Operational License, Water Use License and some invoices of renewable biomasses were not presented to DOE.(on site assessment)
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p><i>Por do Sol</i> ceramic needed to request again the Operational license since the currently Licence has some mistakes that must be corrected. However, the local Environmental Agency has been retarding the issuing of such license.</p> <p>The water use license is not necessary because the ceramic facility uses public water supply.</p> <p>The invoices were sent to the auditor.</p>
DOE Assessment #1 <i>In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The invoices of renewable biomass were sent to the auditors and are in line with the documents checked during the on-site visit and VCS PD and MR. The operational license is still within the Environmental Department. This has been checked by the validation team.

General	CAR 3
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements

General	FAR 1
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The Operational License needs to be delivered during the first periodic verification.
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Por do Sol ceramic needed to request again the Operational license since the currently Licence has some mistakes that must be corrected. However, the local Environmental Agency has been retarding the issuing of such license.
DOE Assessment #1 <i>In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	The Operational licence will be checked during the first periodic verification.
Conclusion <i>Tick the appropriate checkbox</i>	<input checked="" type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Appropriate action was taken <input type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements

General	CAR 4
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	It's necessary to correct the dates in the schedule. (VCS PD section 7.0)
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Ok. The date was corrected.
DOE Assessment #1 <i>In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Not OK. The dates of the item 7.0 are different than in item 1.6
Corrective Action #2 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Ok. The dates were corrected in the section 7.0
DOE Assessment #2 <i>In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Ok. The dates were corrected and are now inline with the information given during the on-site visit.

General	CAR 4
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

General	CL 1
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>Please clarify the type of biomass used and the biomass that can be used because in item 1.5 page 4, says that in harvest period can be used sugar cane bagasse and peanut shells; in item 1.9 says that the ceramic utilizes sugar cane bagasse and sawdust; above table 3 of the same item, says that can be utilized peanut shell and wood chips; and in the item 1.11 says that the ceramic can use elephant grass and peanut shells.</p> <p>After clarified, complete correctly the item 2.2, with the biomasses utilized.</p>
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>It was added in the section 1.9: “<i>Pôr-do-sol</i> Ceramic is currently and will preferentially employ sawdust and sugar cane bagasse, but other renewable biomasses such as peanut shells can be employed due to seasonal harvest reasons. The ceramic owner also showed interest in elephant grass. Currently, elephant grass has been acquiring national importance as biomass to generate thermal energy due to its high productiveness and easy adaptation in almost all climate and soil Brazilian conditions.</p> <p>The state of <i>São Paulo</i> is the biggest producer of peanut of Brazil. Peanut shells may be utilized in small amounts, mainly during its two harvest periods that go from January to February and through June”</p>
DOE Assessment #1 <i>In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>Ok. The type of biomass was clarified. They will employ sawdust and sugar cane and in harvest periods can be employed peanut shells and elephant grass.</p>
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

General	CL 2
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>According to the Voluntary Carbon Standard Project Description Template the GPS project boundaries have to be included. In the VCS PD only the geographical coordinates of the city are named. Please fill in the needed information.(VCS PD section 1.5)</p>
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The Ceramic Boundaries were included in the VCS PD section 1.5: P1 – 21° 21' 55" S; 51° 51' 50" w; 290 m; P2 – 21° 21' 57" S; 51° 51' 51" w; 290 m; P3 – 21° 21' 57" S; 51° 51' 53" w; 286 m; P4 – 21° 21' 53" S; 51° 51' 53" w; 282 m.</p>
DOE Assessment #1 <i>In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>Ok. The ceramic boundaries were included in the referred section and they are correct.</p>

General	CL 2
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

General	CL 3
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Please, clarify if the cooking time is 36 or 38 hours? It is confusing in all over VCS PD. (VCS PD section 1.4 and 1.9)
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	OK. The cooking time is 36 hours. It is modified in all over VCS PD.
DOE Assessment #1 <i>In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Ok. It was corrected and the value of 36h is inline with the information given during on-site visit.
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

General	CL 4
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Please, clarify the value of BFy, because in the beginning of the VCS PD is 0,827 and in all over PD and the calculation the value is 0,855. (VCS PD section 1,9 and all over PD)
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	It was corrected the value in the all VCS PD according to the weight of the ceramic devices. The correct value is 0,456.
DOE Assessment #1 <i>In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Ok. BFy was recalculated according to the weight of the ceramic devices. (466.9/1,023.75=0.456)
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

General	CL 5
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General	CL 5
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Explain what is proposed by Social Carbon Methodology. (VCS PD Section 1.13)
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	It was included in the VCS PD foot notes: "Social Carbon Methodology was developed by Ecológica Institute (www.ecologica.org.br). It was founded on the principle that transparent assessment and monitoring of the social and environmental performance of projects improves their long-term effectiveness. The methodology uses a set of analytical tools that assess the social, environmental and economic conditions of communities affected by the project, and demonstrates through continuous monitoring the project's contribution to sustainable development."
DOE Assessment #1 <i>In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Ok. It was included the explanation of the Social Carbon Methodology.
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

3.2 Baseline

The proposed project used CDM approved methodology Category AMS-I.E: Switch from non-renewable biomass for thermal applications by the user - Version 01, February 1st 2008 onwards; this methodology has been select by the project developer since contemplate the switching of non renewable biomass for renewable biomass.

The baseline scenario is the continuation of the common practice in the region, which is the use of native firewood from unsustainable management to feed the ceramic kilns contributing for the deforestation of the Cerrado biome. In the past, *Por do Sol* Ceramic used approximately 467 tonnes of native firewood monthly to produce 546,000 ceramic pieces monthly, according to ceramic owner experience^{/IM01/} which could be evidenced during on-site visit.

Table 3-6: Assessment of Baseline Identification

<input type="checkbox"/>	Baseline is not identified					
<input checked="" type="checkbox"/>	Assessment of baseline see below					
Baseline Alternatives identified	Inline with the Methodology?	Eliminated	Reasons for elimination / non-elimination from list of alternatives	Evidence used	DOE Assessment	
					Appropriateness of elimination	Assessment of validation team (results and means of assessment)

Native wood	<input checked="" type="checkbox"/>	<input type="checkbox"/>	The use of native wood is common practice in the region. Additionally it could be evidenced that the use of wood was the most important national energy source until the 70's decade, when the use of petroleum assumed the first position ^{/WEB2/} . Although, when assessing exclusively the ceramic sector, the use of wood is still the most important fuel adopted ^{/WEB3/} and its source is originated from unsustainable managed areas ^{/WEB1/} .	/WEB 1/ /WEB 2/ /WEB 3/	<input type="checkbox"/>	Checking the sources given, it was possible to verify that the use of native wood is the preferred approach and therefore could not be eliminated.
Fuel oil	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	The fuel oil was discarded as a candidate because its high price when compared with the use of wood. Despite of the fact that the fuel oil presents a higher net calorific value when compared with wood its costs for the ceramic facility are higher because of its expensive price, as shown in a reliable university study ^{/WEB4/} .	/WEB 4/	<input checked="" type="checkbox"/>	The reason for elimination was reviewed and, when comparing prices one can understand that cost/benefit ratio is not an advantage for the company. Furthermore the use of fuel oil would not reduce carbon emissions.
Natural gas	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	The natural gas was dis-considered as a possible baseline scenario, although there is distribution in the activity region, the inconstant distribution of natural gas, as 40% of the natural gas consumed in Brazil proceeds from Bolivia ^{/WEB5/} made the project developer exclude this possibility. Moreover the natural gas presents higher prices when compared with wood ^{/WEB6/} and its supply lacks of availability ^{/WEB7/} .	/WEB 5/ /WEB 6/ /WEB 7/	<input checked="" type="checkbox"/>	The reason for elimination was reviewed and, when comparing prices one can understand that cost/benefit ratio is not an advantage for the company. Furthermore the use of natural gas would not reduce carbon emissions and the distribution is lacking all over the country.
Renewable biomass	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	The use of renewable biomass in the baseline (not carried out as a VCS project) has also been addressed as one possible baseline candidate. Due to some barriers that will be explained in the next step of additionality assessment this baseline scenario can also be excluded from the list.	-	<input checked="" type="checkbox"/>	Checking the assessment of barriers, the elimination is appropriate. See barrier assessment in table 3-7.

The project attends satisfactorily all the requested tests according to the V-C-S program. It is not enforced by Brazilian legislation; the barriers met were real and verified and the use of native firewood is a common practice in the ceramic sector.

Additionality

The additionality was assessed using the project test (1) of section 5.8 of the VCS 2007.1 Standard. The project activity is not mandatory by any enforced applicable federal, state and municipal law, thus passing through step 1. The implementations barriers identified were:

Table 3-7: Assessment of Barrier Analysis

<input type="checkbox"/>		No barrier parameters are used for additionality justification		
<input checked="" type="checkbox"/>		Assessment of barriers see below		
Kind of Barrier (invest, tech, other)	Description of Barrier	Evidence used	Assessment of validation team	
			Appropriateness of information source	Explanation of final result
Technical	<p>Kilns adjustment to the new machineries.</p> <p>Use of the new mechanical burners.</p> <p>Using the new fuel, changing of working process.</p> <p>Storage of the renewable biomass.</p>	/FAE/ /ECT/ /IM01/	<input checked="" type="checkbox"/>	<p>According to the validation team the adjustments on the kilns could be evidences during on-site visit and were crosschecked by invoices for the new technical equipment /FAE/.</p> <p>The ceramists had to learn how to manage and control the logistics for the new machinery in order to get the most efficient production. Moreover, it was necessary to train the staff responsible for the kilns feeding as well as overall operation of the ceramic.</p> <p>The difficulties occurred during the switch of the biomass could be evidenced by the PP due to interviews with workers, training plans, loss of biomass and production in the experimental period. As the new process is different than the baseline a technical barrier was faced by this project</p> <p>The technical barrier has been verified and found to be significant for the additionality of the small-scale project activity.</p>
Financial variable costs	<p>Renewable biomass purchase</p> <p>Electrical consumptions cost due to the new mechanical burners</p>	/ECR/	<input checked="" type="checkbox"/>	<p>As it is clear indicated in the VCS PD and the financial spreadsheet, the variable cost of the renewable biomass is higher then the natural firewood in the region, as was previous practiced by the ceramic. The new fuel implicates in higher costs.</p> <p>The electrical consumptions cost was evidenced though electricity consumption.</p> <p>This barrier has been validated to be true but found to be significant for the additionality of the small-scale project activity as no financial analysis has been carried out.</p>
Financial investment costs	<p>Kiln entrance adjustment</p> <p>Equipment acquisition</p> <p>New storage shed</p> <p>Maintenance costs</p>	/FAE/	<input checked="" type="checkbox"/>	<p>All the sources of investment costs could be verified during on-site visit. All invoices have been checked by the validation team.</p> <p>The financial barrier due to investment cost has been validated to be true but found not to be significant for the additionality of the small-scale project activity as no financial analysis has been carried out.</p>

Other	Increasing price for biomass		<input checked="" type="checkbox"/>	<p>As the use of renewable biomasses in the ceramic sector is an innovation the future demand of these fuels is difficult to foresee. Although there is currently a great amount of these biomasses available, there is a possibility that the prices will increase.</p> <p>This barrier has been validated to be true but found not to be significant for the additionality of the small-scale project activity.</p>
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The validation team believes that the most impacting barrier for the proposed project activity are the new fuel used (technical barrier) including the production difficulties experienced due to the new fuel applied, renewable biomass purchase, mechanical biomass burners acquired and the uncertain of the renewable biomass supply due its possible upcoming demand in the future and the higher amount of variable costs (financial barrier). The presented technical and financial barrier is sufficient to properly address step 2 requests.

For the common practice analyse it was used the GHG Protocol criteria assessment. As show in VCS PD the most common practice in the region is the use of native firewood as fuel in the ceramics sector. The data available for the common practice analyse was the same presented for the baseline identification, thus the validation assessment was carried out in the same manner. The high levels of deforestation rates in the project region^{/WEB13/} and the practices in Brazil^{/WEB1//WEB2/} and specific in the ceramic sector^{/WEB1//WEB3/} supports this conclusion.

The validation team is convinced that the project is additional, as show in the comments above. However 2 CL were opened and successfully closed.

General	CL 6
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Survey methods and plausible evidences must be described to justify the use of invoices and receipts with a name that isn't the owner of this Ceramic. (VCS PD Section 2.5 and XCS Financial Costs)
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	It was added the full name of the ceramic in the VCS PD, which is "Angelina Moreira Dalmore Vitta – ME". The full name justifies the name used in the invoices.
DOE Assessment #1 <i>In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Ok. After clarified the full name of the ceramic, the same name in the invoices was justified.
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

General	CL 7
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The quantity of biomass presented in the table 8 (financial barrier), is different than the values in the parameter quantity of biomass in item 3.3 and different than the values in all VCU spreadsheet and VCS PD. On page 24, the values are different too. Please clarify the amount of renewable biomass that the ceramic uses. (VCS PD section 2.5 and 3.3)

General	CL 7
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Ok. The values were corrected. The ceramic uses 18 tonnes of sugar cane bagasse per month and 170 tonnes of sawdust per month.
DOE Assessment #1 <i>In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Ok. The values are in line in all over VCS PD and VCUs and the information obtained during the on-site visit.
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

3.3 Monitoring Plan

The proposed project used CDM approved methodology Category AMS-I.E: Switch from non-renewable biomass for thermal applications by the user - Version 01, February 1st 2008 onwards. The project satisfies all criteria for the applied methodology. The application of monitoring methodology was assessed as correct.

The monitoring plan provides detailed information related to the collection, archiving and monitoring of all relevant data needed to:

- Estimate or measure emissions occurring from GHG sources, sinks and reservoirs
- Determine the baseline emissions
- Estimate changes in emissions from the site

Table 3-8:

Responsibility for the Monitoring	Area
Mr. Wilson Aparecido Delmor, owner of the Por do Sol Ceramic.	registration monitoring measurement reporting

Table 3-9:

Parameter monitored		Description of measurement and monitoring methods.
Name	Unit	
Q _{renbiomass} Amount of renewable biomass employed	tones per month	Will be measured by the project developer, monthly. The parameter will be monitored through the weight indicated in the buying receipts of the renewable biomasses providers. These values will be crosschecked with internal records on biomass they received. The specific gravity of each renewable biomass can be used for unit conversion ^{/WEB11/WEB12/}
f _{NRB}	%	Fraction of native wood used in the absence of the project activity has been identified by 98.04%. The source could be verified with to be reliable ^{/WEB8/} . The

Fraction of native wood used in the absence of the project activity		value will be monitored yearly in each verification period. This value includes also the amount of non-renewable wood saved under similar project activities in the same biome (Cerrado) ^{/XCS1/} . The sources applied are literature and project database.
PR _y Production of ceramic devices	tones of ceramic units per month	The measurement will be done by an internal control sheet monitored by the project proponent, which will be filled daily. The production is a representative sample to ensure that all appliances are still in operation. ^{/IM01/} .
Origin of renewable biomass	-	Controlled by the ceramic owner, annually. The project participant will only buy renewable biomass from the list of its reliable supplier. Depending on the renewable biomass type different criteria must be applied as stated in section 3.1 of this report. If the ceramic obtain their biomass from other suppliers than listed now in the PD they will check the origin of the biomass and provide evidence to the verification team.
Renewable biomass surplus	tonnes or m ³	In order to estimate the leakage emission of the renewable biomass the project participant will monitor the renewable biomass surplus in the specific region of the project activity, yearly. The measurement will be based on national and internal sources. During validation leakage could not be identified so far. According to the general guidance on leakage EB 28 a possible source of leakage is the competing use of biomass. This is the case when the project uses more than 25% of the biomass available in the region. With proper references the PP could show, that there is more than 75% of each biomass available on the marked not used for the project activity ^{/VCS PD/} .
Leakage of non-renewable biomass	tCO ₂ e	All three sources of leakage predicted in the applied methodology will be monitored, annually. It will be provided information regarding the non-renewable biomass availability in the specific project region by official statistic data and national surveys.

The QA/QC procedures of the monitored parameters are clearly described and they are considered adequate. The amount of non-renewable biomass that would be used in the absence of the project activity will be calculated according option “b” of the applied methodology. The kiln efficiency (weight of renewable biomass / weight of pieces produced) before the project implementation multiplied by the monthly production that will be reached will define the amount of non-renewable biomass that would be used in the absence of the project activity.

Table 3-9:

Fixed parameter				Description of measurement and monitoring methods.
Name	Unit	Value	/REF/	
NCV biomass Net calorific value of non-renewable biomass	TJ/ton of wood	0.0186	/WEB9/	An average value from a reliable article was applied. It was considered an average of the typical Cerrado biome trees, as can be checked in the calculation spreadsheet.
p biomass	t/m ³	0.5702	/WEB9/	An average value from a reliable article was applied. It was considered an average of the typical Cerrado biome trees, as can be checked

Wood specific gravity				in the calculation spreadsheet.
EF _{projected fossil fuel}	T CO ₂ /TJ	77.4	IPCC 2006	The official IPCC value has been applied.
BF _y	tones of wood/tones of ceramic units	0.456	/IM01/	Value adopted from ceramic owner experience. This value is in accordance with other ceramics with the same fuel and kiln used.

The validation team raised 2 CARs and 3 CLs for this item which were successfully closed.

General	CAR 5
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Defining the frequency of fNBR's monitoring is necessary. It is monitored. (VCS PD Section 3.2)
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Ok. It was modified in the VCS PD. The frequency of fNBR's will be monitored annually.
DOE Assessment #1 <i>In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Ok. It was modified in the referred section, because this parameter is monitored.
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

General	CAR 6
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	In the parameter PRy table is it ton per what? (VCS PD Section 3.3 and page 4).
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The unit is in ton of ceramic goods.
DOE Assessment #1 <i>In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Not Ok. The parameter is measured in tonnes per month and it was corrected to kg of ceramic devices. Please correct the unit.
Corrective Action #2 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The values were adapted to use kg of ceramic goods. The correct value is 1,023,750 Kg of ceramic units monthly.
DOE Assessment #2 <i>In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Ok. It was corrected and the unit is completed now.

General	CAR 6
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

General	CL 8
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Please, clarify why in one of the tables the kiln capacity is 2,22, in the other is 0,34 and in VCS PD table 2 is 6,67. It must be checked and corrected. (VCS spreadsheet)
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Ok. These values were corrected. The Supposed capacity of each kiln is 0.60 MW.
DOE Assessment #1 <i>In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Ok. The value was clarified and corrected in all over VCS PD and VCUs. The kiln capacity has been calculated and all input data have been checked for their correctness.
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

General	CL 9
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	In the VCS PD table 3 is described the amount of biomass of sugar cane and sawdust. This values doesn't match with the values in VCS spreadsheet. (VCS PD section 1.9 and VCS spreadsheet (financial barrier)).
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Ok. The values were corrected. The ceramic uses 18 tonnes of sugar cane bagasse per month and 170 tonnes of sawdust per month.
DOE Assessment #1 <i>In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Ok. It was corrected in all over VCS PD and VCUs.
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

General	CL 10
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General	CL 10
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>Please, include the source of the invoices or receipts of the price of biomasses.</p> <p>And, please, send it to the auditor to evidence the providers and the price of the biomass. (VCS PD spreadsheet (financial barrier) and VCS PD section 1.9)</p>
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>Ok. The sources were included and sent to the auditor.</p>
DOE Assessment #1 <i>In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>Ok. The sources were included in the VCU and the invoices were sent to the auditors. The values mentioned in the PD and during the on-site visit are matching with the data given in the invoices.</p>
Conclusion <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input checked="" type="checkbox"/> Appropriate action was taken</p> <p><input checked="" type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input checked="" type="checkbox"/> The project complies with the requirements</p>

3.4 Calculation of GHG Emissions

GHG emission reduction is calculated as baseline emissions minus project emissions minus leakage emissions. As no project and leakage emissions are identified according to the applied methodology, baseline emissions are equal to the amount of emission reduction. Emission reduction is calculated through the estimate value of native wood that would be consumed in the absence of the project activity in year y (according option “b” of applied methodology as state in section 3.3 of this report) multiplied by the fraction of non-renewable biomass (wood) used in the absence of the project activity in year y multiplied by Net calorific value of non-renewable biomass multiplied by the EF of the projected fossil fuel adopted. The approach used for the emission reduction calculation was considered to be in accordance with the applied methodology.

According to the applied methodology leakage emissions regarding the project activity are to be considered. The leakage emission was assessed according to the “General guidance on leakage in biomass project activities” of Indicative Simplified Baseline and Monitoring Methodologies for Selected Small-Scale CDM Project Activity Categories. The methodology requests due to the identification of potentially significant sources of leakage emission were properly addressed in the VCS PD and its emission is considered to be zero. Using the same assumptions and considerations as for the baseline identification^{/WEB1//WEB2//WEB3//WEB5/}, it can be assumed that the most employed fuel used is the native firewood. Thus no leakage emissions due to the non-renewable biomass should be considered. Despite of that, if this source of leakage emission is assessed to be significant in the further crediting period, the baseline will be identified to neutralize the leakage emission identified. For the leakage consideration regarding the renewable source of biomass it was properly addressed in VCS PD that the biomasses supply is significantly bigger (more than 75%) than the quantity necessary for the project activity. All possible biomasses were considered in this assessment^{/BRI//WEB10/}. The validation team identified, however, 2 CARs and 1 CL which were successfully closed:

General	CAR 7
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Adjust the “commas” and the “points”, translating to English. And put the references of all the values. (VCS PD/ VCU estimates/ Financial barrier spreadsheet)
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Ok. The commas and points were translated to English and the references that were missing were included in the documents.
DOE Assessment #1 <i>In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Ok. The commas and points were translated to English and the references have been included.
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

General	CL 11
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	In page 23 says that Mr Milton Anezio Salsedas will be responsible for monitoring data and in item 3.4 says that will be Mr Wilson Aparecido Delmor, please clarify. (VCS PD Section 3.2 and 3.4)
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Ok. It was corrected. Mr Wilson Aparecido Delmor will be responsible for monitoring data

General	CL 11
DOE Assessment #1 <i>In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Ok. It was clarified that Mr Wilson Aparecido Delmor will be in charge of monitoring as he is the owner of the ceramic unit.
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements

General	CAR 8
Description of finding <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The unit of BF is wrong. It must be in tones of wood per tones of ceramic unit. Please, correct it in all VCS PD, MR and spreadsheet calculation.
Corrective Action #1 <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Ok. All the units of BF were modified to tones of wood per tones of ceramic units.
DOE Assessment #1 <i>In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	Ok. All the units were corrected.
Conclusion <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

3.5 Environmental Impact

The project will use renewable biomass for its firing process. The origin of the biomass will be monitored regularly and is included in the monitoring plan. A table that shows possible negative impacts to the environment has been included to the PD. There are no additional negative environmental impacts due to the project activity expected. An EIA (*Estudo de Impacto Ambiental* – Environment Impact Assessment) is not required by the environment federal authority. All mandatory licences for the project activity were available at the time of validation^{/OL1//OL2/}.

3.6 Comments by stakeholders

The considered stakeholders for this project activity were the ceramic sector syndicate and the ceramic company employees. Moreover a letter was sent to them to inform about the project activity. Comments were received from Civil Construction in Brazil concerning the environmental and social benefits of the project activity, which expresses the positive impact of the project activity.

4 Validation conclusion

Carbono Social Serviços Ambientais Ltda. Brasil has commissioned the TÜV NORD JI/CDM Certification Program to validate the project: “POR DO SOL CERAMIC FUEL SWITCHING PROJECT” with regard to the relevant requirements of the VCS 2007.1 Standard.

The project activity consists of switching from non-renewable to renewable biomass fuel for end-user thermal energy generation. A risk-based approach has been followed to perform this validation. In the course of the draft validation 8 Corrective Action Requests (CARs), 11 Clarification Requests (CLs) and 1 Forwarded Action Request (FAR) were raised and successfully closed.

The review of the project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.

In detail the conclusions can be summarised as follows:

- The project is in line with all relevant host country criteria (Brazil) and all relevant VCS 2007.1 Standard criteria.
- The project additionality is sufficiently justified in the VCS PD.
- The monitoring plan is transparent and adequate.
- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 79,050 t CO₂e is most likely to be achieved within the 10 years (renewable) crediting period.

The conclusions of this report show, that the project, as it was described in the project documentation, is in line with all criteria applicable for the validation.

Essen, 2009-09-09



Rainer Winter
TÜV NORD JI/CDM CP
Verification Team Leader

Essen, 2009-09-09



Eric Krupp
TÜV NORD JI/CDM CP
Final approval

5 References

Table 5-1: Documents provided by the project proponent

Reference	Document
/BRI/	BRITO E.O. Estimativa da produção de resíduos na Indústria Brasileira de Serraria e Laminação de Madeira. Rev. da Madeira. v.4. n.26. 1995, pp. 34-39. – “Estimative waste production in the brazilian industries”
/ECR/	Electric consumptions receipts checked during on-site visit. It could be evidenced that the electric consumption and costs are higher than before of the project activity.
/ECT/	Employee’s certificates for training realized regarding process for the project activity.
/FAE/	Financial assessment evidences. Please refer to invoice receipts for the assessment of the pertinent financial data used in the financial spreadsheet calculation.
/ML1/	Municipal License to Por do Sol Ceramic – inscription 033/2008
/OL/	Operation License, Por do Sol Ceramic
/PFT/	Contract signed between Carbone Social Serviços Ambientais Ltda. and Por do Sol Ceramic stating their ownership of the project.
/PRO/	Signed BRTÜV proposal issued for the project activity. It is clear stated the date of contracting for the validation and verification process. Date 2007/12/19
/VCS PD/	Project Design Document “Por do Sol Ceramic Switching fuel project” - Version 01 – March 16 th , 2009.
/VCS PD/	Project Design Document “Por do Sol Ceramic Switching fuel project” - Version 02 – April 2 nd , 2009.
/VCS PD/	Project Design Document “Por do Sol Ceramic Switching fuel project” - Version 03 – August 3 rd , 2009.
/WEB1/	Website consult on 2009/04/20 http://www.teses.usp.br/teses/disponiveis/86/86131/tde-14052008-113901/

Reference	Document
/WEB2/	Website consult on 2009/04/20 http://www.scielo.br/scielo.php?pid=S0103-40142007000100015&script=sci_arttext&tlng=ES
/WEB3/	Website consult on 2009/04/20 http://www.mme.gov.br/download.do?attachmentId=16555&download
/WEB4/	Website consult on 2009/03/20 http://www.abcm.org.br/xi_creem/resumos/TE/CRE04-TE01.pdf
/WEB5/	Website consult on 2009/04/20 http://www.ctgas.com.br/template02.asp?parametro=2547
/WEB6/	Website consult on 2009/04/20 http://www.dep.fem.unicamp.br/boletim/BE31/artigo.htm
/WEB7/	Website consult on 2009/04/20 http://www.gasnet.com.br/novo_entrevistas.asp?cod=145
/WEB8/	Website consult on 2009/04/20 http://faculty.jsd.claremont.edu/emorhardt/159/pdfs/2006/Klink.pdf
/WEB9/	Website consult on 2009/04/20 http://www.ufsm.br/cienciaflorestal/artigos/v12n1/A8V12N1.pdf
/WEB10/	Website consult on 2009/04/20 http://www.ibge.gov.br/estadosat/temas.php?sigla=sp&tema=extracao vegetal2007
/WEB11/	Website consult on 2009/04/20 http://www.nuca.ie.ufrj.br/infosucro/biblioteca/bim_Ribeiro_ExcedenteAcar.pps
/WEB12/	Website consult on 2009/04/20 http://hdl.handle.net/1884/10294
/WEB13/	Website consult on 2009/04/20 http://www.cenargen.embrapa.br/cenargenda/noticias2006/atrativos130606.pdf
/XCS1/	Calculation spreadsheet of baseline study and emission reduction Version 3
/XCS1a/	Calculation spreadsheet of baseline study and emission reduction Version 03
/XCS2/	Por do Sol Financial Costs – version 03

Table 5-2: Background investigation and assessment documents

Reference	Document
/AMS-I.E./	AMS-I.E: Switch from Non-Renewable Biomass for Thermal Applications by the User, Version 01, February 1 st , 2008.
/GHG Protocol/	GHG Protocol for Project Accounting 2005.
/IPCC-GP/	IPCC Good Practice Guidance & Uncertainty Management in National Greenhouse Gas Inventories, 2000
/IPCC/	2006 IPCC Guidelines for National Greenhouse Gas Inventories: General Guidance and Reporting
ISO 14064-1:2006	Greenhouse gases - Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals
ISO 14064-2:2006	Greenhouse gases - Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements.
ISO 14064-3:2006	Greenhouse gases - Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions
ISO 14065:2007	Greenhouse gases - Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition
/KP/	Kyoto Protocol (1997)
/CONAMA 279/	Resolution CONAMA 279 (2001) – Environmental National Board
/VCS/	Voluntary Carbon Standard Program Guideline 2007.1.

Table 5-3: Websites used

Reference	Link	Organization
/MCT/	http://www.mct.gov.br	Ministério da Ciência e Tecnologia –

Reference	Link	Organization
		Technology and Science Department
/UNFCCC/	http://unfccc.int	United Nations Framework Convention on Climate Change
/VCS/	http://www.v-c-s.org	Voluntary Carbon Standard
/DNPM/	http://www.dnpm.gov.br	National Department of Mineral Production

Table 5-4: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
Mr. Wilson Aparecido Delmor - Por do Sol Ceramic Owner	<ul style="list-style-type: none"> ▪ Desk review findings ▪ General aspects of the project ▪ Project design, Commissioning and implementation ▪ Technical equipment and operation of the project ▪ Performance of the project ▪ Involved personnel and responsibilities ▪ Training and practice of the operational personnel ▪ Implementation of the monitoring plan ▪ Monitoring and measurement equipment ▪ QA/QC Testing and calibration procedures ▪ Monitored data management ▪ Data quality, archiving and reporting procedures ▪ Data uncertainty and residual risks ▪ GHG calculation ▪ Procedural aspects of the verification

Table 5-5: List of interviewed people

Reference	Mol ¹		Name	Organization / Function
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Mr. Wilson Aparecido Delmor	Por do Sol Ceramic's owner
/IM01/	E, V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Flávia Yumi Takeuchi	Carbono Social Serviços Ambientais Ltda - Technical Coordinator
/IM01/	E, V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	Silvia Cruz	Carbono Social Serviços Ambientais Ltda - Technical

Reference	Mol ¹		Name	Organization / Function
				Analyst

¹⁾ Means of Interview: (Telephone, E-Mail, Visit)