Voluntary Carbon Standard Version 2007.1

Verification Report

Report Number: 8000362263 10/111

Name of Verification company:	Date of the issue:
TÜV NORD CERT GmbH	September 23, 2010
Report Title:	**Approved by:**
Final Verification Report Luara Ceramic Fuel Switching Project	Mr. Eric Krupp (FA)
Client:	**Project Title:**
Carbono Social Serviços Ambientais Ltda.	Luara Ceramic Fuel Switching Project

Summary:

Carbono Social Serviços Ambientais Ltda. has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 3rd periodic verification of the project "Luara Ceramic Fuel Switching Project", with regard to the relevant requirements for VCS project activities. The project reduces GHG emissions due to switching non-renewable to renewable biomass fuel for end-user thermal energy generation. This verification covers the period from 2009-06-01 to 2009-12-31 (including both days).

In the course of the verification 02 Corrective Action Requests (CAR) and 07 Clarification Requests (CL) were raised and successfully closed. Furthermore 0 FARs are raised to improve the monitoring system in the future. The verification is based on the draft monitoring report, revised monitoring report, the monitoring plan as set out in the VCS PD, the validation report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

As a result of this verification, the verifier confirms that:

- all operations of the project are implemented and installed as planned and described in the validated project design document;
- the monitoring plan is in accordance with the applied approved CDM methodologies, AMS-I.C.: Thermal Energy for the user – Version 06 from September 30 of 2005 and AMS-III.E.: Avoidance of methane production from decay of biomass through controlled combustion, gasification or mechanical/thermal treatment – Version 15.1 valid from 14 Dec 07;
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately;
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of the 3rd periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions	CO_2 [t CO_2]	CH_4 [t CH_4]	N_2O [t N_2O]	HFCs [t HFC]	PFCs [t PFC]	SF_6 [t SF_6]	**Sum [t CO_2e]**
2009	6,934	-	-	-	-	-	6,934
TOTAL							**6,934**

Work carried out by:	Number of pages:
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1 Introduction

1.1 Objective

The purpose of this verification, by independent checking of objective evidence, is as follows:

- to verify that the project is implemented as described in the project design document;
- to confirm that the monitoring system is implemented and fully functional to generate voluntary carbon units (VCUs) without any double counting, and
- to establish that the data reported are accurate, complete, consistent, transparent and free of material error or omission by checking the monitoring records and the emissions reduction calculation.

1.2 Scope and Criteria

The verification of this VCS project is based on the VCS project description[/VCS PD/], the monitoring report[/MR/], supporting documents made available to the verifier and information collected through performing interviews and during the on-site assessment. Furthermore publicly available information was considered as far as available and required.

The TÜV NORD JI/CDM CP has employed a risk-based approach in the verification, focusing on the identification of significant risks and reliability of project monitoring and generation of emission reductions.

1.3 VCS Project Description

Located in Panorama, state of São Paulo, this project comprises the enterprise Luara Ceramic, which produces structural ceramic devices like bricks. The project activity involves fuel switching from native firewood to sawdust and sugar cane bagasse coming from legal sustainable forests and sugar and alcohol mills, respectively, 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, as peanut shells and elephant grass provided from management areas.

Before the switching of the fuel, Luara Ceramic used to produce 550,000 ceramic devices per month and it consumed 600m³ of native firewood monthly in its one “round” kiln and one “*Paulista*” kiln.

The total replacement occurred in April 2006, and the ceramic has been using the same kilns to produce 550,000 ceramic devices and consuming 245 tons of sawdust and 1,600m³ of clay monthly.

In May 2008, the ceramic increased the production to 700,000 ceramic devices monthly due to a market demand and constructed another “round” kiln. This new “round” kiln was predicted at the registration of the VCS-PD and its production has already been counted and verified on the 2nd Verification.

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 entrances before adapted to the native firewood fuel 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 GHG emission reduction for the considered crediting period is 6,934 tCO_2e[/XCS/].

1.4 Level of assurance

The verification report is based on Monitoring Report, supporting documents made available to the verifier and information collected through performing interviews and during the on-site assessment. The verification opinion is assured provided the credibility of all above.

2 Methodology

The third verification of the project was carried out from January 24th, 2010 to September 23, 2010.

Preparations: 2010/01/24 to 2010/01/25

On-site verification: 2010/01/26

Draft Reporting: 2010/01/31

Final Reporting: 2010/09/23

The verification consisted of the following steps:

- a desk review of the VCS PD[/VCS PD/] and supporting documents with the use of the relevant sections of a customised protocol according to the VCS 2007.1;
- a desk review of the Monitoring Report[/MR/] and additional supporting documents which the client submitted. The relevant sections of the above mentioned customised protocol according to the VCS 2007.1 were used;
- verification audit planning;
- on-site assessment;
- background investigation and follow-up interviews with personnel of the project developer;

The criteria of this verification include the relevant rules and steps as set out in the VCS.

3 Verification Findings

3.1 Remaining issues, including any material discrepancy, from previous validation

There are no pending CARs and CLs issued in the course of the validation that still needs to be properly addressed to get closed.

3.2 Project Implementation

The project consists of a fuel switch from non-renewable biomass to renewable biomass in the ceramic facility. The use of non-renewable native wood will be substituted by renewable biomass of different kinds as can be seen in the table below.

Table 3-1: Type of biomass

Renewable biomass applied	**Description of sustainability**
Sawdust/Woodchips	The wood chips and sawdust used in the project activity are 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. This kind of biomass falls also under option V of the methodology.
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. This kind of biomass falls also under option III of the methodology.

For the project implementation the ceramic owner had to deal with different kind of difficulties, such as:

Table 3-2: Afforestation Wood Supplier

Name of supplier	**Evidence of sustainability of afforestation wood**
For this verification, no afforestation wood was used. The indication bellow is for cashew wood and residues. The intention is to prove the legal origin of the biomass used during the crediting period.	
Export Madeiras	- Declaration of Ramires Reflorestamento that Export Madeiras buys Pinus wood from them/BIO/ - Documents which show that the wood of Ramires Reflorestamento comes from regular and approved plantations/BIO/
Satipel S.A.	- Documents which show that Duratex and Satilpel are the same company/BIO/ - Documents which show that the wood of Duratex comes from regular and approved plantations/BIO/.
Prosperidade Indústria e Comércio de Madeiras Ltda.	- Declaration of L. C. Almeida de Aguiar Madeiras that Prosperidade Indústria e Comércio de Madeiras Ltda. buys Pinus wood from them/BIO/ - Declaration of Energo Agro Industrial Ltda. that L. C. Almeida de Aguiar Madeiras buys Pinus wood from them/BIO/ - Documents which show that the wood of Energo Agro Industrial Ltda. comes from regular and approved plantations/BIO/
Usina Alta Paulista	Document that shows that Alta Paulista Indústria e Comércio Ltda. is a regular company which main activity is the

	production of alcohol from sugar cane/BIO/
Pedra Agroindustrial Ltda. – Usina Ipê	Documents that show that Pedra Agroindustrial Ltda. – Usina Ipê is a regular company which main activity is the production of alcohol from sugar cane/BIO/

Table 3-3: Assessment of Barrier Analysis

☐	No barrier parameters are used for additionality justification
☒	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	Kilns adjustment to the new machinery Use of the new mechanical burners. Using the new fuel, changing of working process. Storage of the renewable biomass.	/FAE/ /ECT/ /IM01/	☒	Technical adjustments and modifications in the kilns and in the overall ceramic production could be evidenced during on-site visit and were crosschecked by invoices for the new technical equipments /FAE/. 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. The difficulties that occurred during the switch of the biomass, as described by the PP, could be evidenced during the interviews with workers and by checking the training plans, loss of biomass and loss of production (cracked devices and colour changing) during the experimental period. As the new process is different than the baseline, a technical barrier was faced by this project It was evidenced during the on-site visit that the use of the new fuel had to be done with the proper humidity and therefore a new storage logistic was necessary. The renewable biomass was storage in the shed, just to protect it, before it could be use in the process. Native wood can be left in the open space and still be readily used, once it only gets wet on the outside part of the logs. The technical barrier has been verified and found to be **significant** for the additionality of the small-scale project activity.

Financial variable costs	Renewable biomass purchase Maintenance costs Electrical consumptions cost due to the new mechanical burners	/ECR/	☒	As it is clear indicated in the VCS PD and the financial spreadsheet, the variable cost of the renewable biomass is higher than the natural firewood in the region, as was previous practiced by the ceramic. The new fuel implicates in higher costs. The transportation costs are higher, once the non-renewable biomass was delivered by lumberjacks and renewable biomass must be identified, loaded and transported by the ceramic, increasing the costs with drivers, diesel and truck maintenance. All values used for the calculations could be evidenced and properly assessed. Costs related to the maintenance of the new mechanical burners acquired. It was evidenced during the on-site visit that this equipment frequently needs to be repaired. The electrical consumptions cost was evidenced though electricity consumption. This barrier has been validated to be true and found **to be significant** for the additionality of the small-scale project activity.
Financial investment costs	Kiln entrance adjustment Equipment acquisition New kiln construction	/FAE/	☒	All the sources of investment costs could be verified during on-site visit. All invoices have been checked by the validation team. 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.
Other	Increasing price for biomass		☒	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 the possibility that the prices of renewable biomasses will increase. This barrier has been validated to be true but found **not to be significant** for the additionality of the small-scale project activity.

During the 3rd verification period, a site visit was carried out. On the basis of this site visit and the reviewed project documentation could be confirmed that the realized technology has been implemented and operated as described in the Monitoring Report and are in line with the VCS 2007.1 Standard.

It was confirmed that the actual project activity was implemented in accordance with the validated VCS PD, but the following CL has been addressed and successfully closed:

Finding	**CL 1**		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	In Section A.2., please correct the quantities of kilns and verify their temperatures. During the site visit, it was verified that the ceramic has two round kilns and one *Paulista*. It was also verified that the kiln working temperature is 900° C.		

Finding	CL 1
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	It was corrected as requested.
DOE Assessment #1 *The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The section has been revised accordingly and the quantities, types and temperature of kilns are now correct. **CL is closed**
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☐ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

3.3 Completeness of Monitoring

The monitoring has been carried out in accordance with the VCS 2007.1 standard. The responsibilities identified during the validation have been confirmed and all parameters to be monitored have been verified and crosschecked.

During the Draft phase of the Verification 02 CARs and 06 CLs were recorded in this section and successfully closed, as indicated bellow.

Finding	CAR 1		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	In Section B.4. of the MR version 1, please verify the table of the monitored parameter "$Q_{renbiomass}$". The figures for November (sugar cane bagasse column) and June, August and December (sawdust column) are rounded up and consequently, the total value is not correct.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The values were updated and were not rounded anymore.		
DOE Assessment #1 *The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The table of monitored parameter "$Q_{renbiomass}$" has been revised and the figures have been properly corrected. **CAR is closed**		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements		

Finding	CAR 2		
Classification	☒ CAR	☐ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	In Section B.4. of the MR version 1, the total of the period of parameter "PRy" is not the correct sum of the figures of the months, since the total is rounded up and the numbers by months are rounded down.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The total of the period of parameter "PRy" was rounded down.		
DOE Assessment #1 *The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The table of monitored parameter "PRy" has been revised and the figures have been properly corrected. **CAR is closed**		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☒ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements		

Finding	CL 2		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	In Section B.4. of the MR version 1, the parameter "PR_y": 1. It was used the average weight of the ceramic device. On site visit, it was verified that the ceramic produces more than one type of device. The main device weighs 1.735kg (the number used as the average weight), but there are two other types. The average weight has to be based in the real production of all ceramic devices. 2. The production by month and type of device for the whole period that is verified has to be monitored. Please, provide the reports and calculate the ceramic production, by tons per month, appropriately.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The parameter PR_y has been calculated using only one type of ceramic units, because the ceramic owner doesn't have evidences proving the quantity of the other two ceramic units produced. Besides that, the other two types of ceramic units are heavier than the main ceramic unit used for the calculation of PR_y (their weight are 2.160kg and 4.035kg). The weight of both ceramic units can be verified by photos taken in ceramic.		

DOE Assessment #1 *The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	a. as the ceramic does not have a production control by type of device and assuming that it is more conservative to use 1.735kg as the weight of all devices it is acceptable the figures for the monitored parameter "PR_y". This assumption is based on photos of the devices being weighed and by the checking done during the site visit by the verification team that made clear that the other two types of devices are indeed heavier than main device produced at the ceramic. b. to be able to check the production of all types of ceramic devices, it is necessary to provide a control sheet (or any other control record) that may prove the quantity of tons of ceramic devices produced by month of the monitoring period. Please, provide these records. **CL remains open**
Corrective Action #2 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The ceramic control record is made in excel spreadsheets, monthly. It can be verified on the file *"Production control record_Luara.xls",* which will be sent to the validation team.
DOE Assessment #2 *The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The ceramic control record has been provided. Please, revise the value used for December, because the value for all other months was the production one (which is correct) and for December is the amount of sold devices. Even being more conservative, it is not the correct value for the calculation. **CL remains open**
Corrective Action #3 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The value used for December has been corrected on the *"VCS MR Calculation Luara_period_ 01 06 09_ 31 12 09_v4"* excel spreadsheet.
DOE Assessment #3 *The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The figure has been properly corrected at the *"VCS MR Calculation Luara_period_ 01 06 09_ 31 12 09_v4"* but the table for Production at section B.4 of the MR has not been updated. Please, revise the production amount to make it consistent throughout the documents and calculations. **CL remains open**
Corrective Action #4 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Production amount were reviewed and corrected as requested in the CL 2.
DOE Assessment #4 *The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The amount of production has been revised accordingly. **CL is closed**
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☐ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

Finding	CL 3		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	During the site visit it was evidenced the use of sawdust as biomass, but the evidences of the traceability of the wood were not presented. Please clarify the traceability for all the sawdust used during the monitoring period from each supplier.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The evidences of the traceability of the renewable biomass will be sent to the verification team.		
DOE Assessment #1 *The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	1. There are 4 suppliers of sawdust to Luara Ceramic. Please, it is necessary to provide all evidences that the sawdust used by Luara Ceramic from all suppliers during the monitoring period is traceable. a. Export Madeiras: presented a declaration issued by Ramirez Reflorestamentos Ltda. that Export Madeiras buys Pinus wood that comes from Ramirez Reflorestamentos Ltda. plantations. It is necessary to provide evidences that Ramirez Reflorestamentos Ltda. has regular and legalized plantations of Pinus trees; b. Satipel S.A.: presented 2 folders about the sustainability of afforestation wood. It is necessary to provide that the project is implemented and is legalized by an official environmental institution; c. Prosperidade Ltda.: presented in its file a cutting authorization issued by IBAMA in the name of Energo Agro Industrial Ltda. and a declaration from Energo Agro Industrial Ltda. that L.C. Almeida de Aguiar Madeiras buys this wood. There is no relation between L.C. Almeida de Aguiar Madeiras and Prosperidade Ltda.; d. Tropical Ltda.: it was not presented any evidence. 2. Please, it is necessary to provide declarations that the sugar cane bagasse comes from regular and legalized plantations. 3. Please, it is necessary to provide the records (receipts and/or invoices) that the used sawdust and sugar cane bagasse come from these suppliers. **CL remains open**		

Corrective Action #2 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	a. The traceability of Export Madeiras was once proved on the verification report of the "Pôr-do-Sol – Panorama/SP. Anyway, the documents proving its traceability will be sent to the validation team, and also the traceability from Ramires Reflorestamentos Ltda. has already been proved on the verification report of the ceramic "Pôr-do-sol" – Panorama/SP. It was proved and accepted. b. The traceability of Satipel S.A can be evidenced by the documents: Environmental Policy, Environmental management, Environmental Certifications as can be seen on attached documents. c. LC Almeida de Aguiar Madeiras acquires sawdust of Energo Agro Industrial LTDA – Fazenda Pântano and provides biomass for Prosperidade Indústria e Comércio de Madeiras LTDA. Prosperidade is a supplier of Luara Ceramic. The documents that evidence the connection between the three companies mentioned above are attached. d. The traceability of supplier Tropical Ltda does not present any evidence because it has provided a low amount of sawdust to Luara Ceramic during the monitoring period. The two cane bagasse suppliers: *Usina Alta Paulista* and *Pedra Agroindustrial – Usina Ipê* are regular and legalized plantations. It can be evidenced by regular and legal *Tax Identification Number* (*CNPJ*) provided by *Brazilian Internal Revenue Service*. The cane bagasse supplier *Pedra Agroindustrial – Usina Ipê* has Environmental Policy, Environmental management, Environmental Certifications for ethanol as can be seen on attached documents. The evidences that the used sawdust and sugar cane bagasse come from the suppliers mentioned above can be seen on receipts and/or invoices, attached as *Receipts&invoices_biomass suppliers, Sawdust Suppliers* ,and *Sugar Cane Suppliers*.

DOE Assessment #2 *The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	1. Please, it is necessary to provide all documents to show the traceability of the sawdust supplied: a. Export Madeiras: the traceability of the sawdust supplied is verifiable. b. Satipel S.A.: all documents presented are internal documents and advertisement from Duratex. The only document which connects Satilpel and Duratex is dated on May 2010, which is after the monitoring period. Please, it is necessary to provide an external document about the sustainability of afforestation wood and also a document that shows the connection of Satilpel and Duratex dated within the monitoring period. c. Prosperidade Ltda.: the traceability of the sawdust supplied is verifiable. d. Tropical Ltda.: if there is no traceability of the sawdust, it cannot be considered. It is necessary to remove Tropical Ltda. and its supplied sawdust from all the documents and calculations or provide documents to prove its traceability. 2. There are evidences that the two cane bagasse suppliers: *Usina Alta Paulista* and *Pedra Agroindustrial – Usina Ipê* have legalized and regular plantations. 3. Please, check all the receipts of biomass and their calculations. Example: the Prosperidade's receipts are in tons and at the calculation of "Amount of Sawdust Consumed" they are converted as if they are in m^3. Moreover, please reference the conversion figure 0,35 used to convert the sawdust from m^3 to ton. **CL remains open**

Corrective Action #3 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	Satipel S.A.: The documents that prove the sustainability of afforestation wood from Satipel and Duratex are named as: *"Gestão Ambiental Duratex"; "Certificações Duratex"; "Manejo Florestal Satipel"; "Relatório Anual de Sustentabilidade 2009 Duratex".* The documents mentioned above prove that both, Satipel and Duratex have the FSC certified (Forest Stewardship Council). Besides that, the documents named as *"Declaração Satipel_Duratex"* and *"Ata União Duratex_Satipel"* evidence the connection of Satipel and Duratex dated within the monitoring period. On the links listed below: http://www.duratex.com.br/port/ri/cvm/cvm.asp?empresa=Duratex and http://www.duratex.com.br/port/ri/cvm/cvm.asp?empresa=Satipel It is possible to check the documents and meeting minutes related to the subject. Tropical LTDA: Tropical Ltda. and its sawdust supplied were removed from all the documents and calculations. All the receipts of biomass and their calculations have been checked, the values are corrected. Reference of the number used to convert the sawdust from m^3 to tons is mentioned below: SIMIONI, FLÁVIO JOSÉ. Análise diagnóstica e prospectiva da cadeia produtiva de energia de biomassa de origem florestal no planalto sul de Santa Catarina/Flávio José Simioni. - Curitiba: UFPR, 2007.132p.: il. Available at: <http://hdl.handle.net/1884/10294>. Last visited on August 23rd, 2010.
DOE Assessment #3 *The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The section has been completely revised and is consistent with the provided documentation. **CL is closed**
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☐ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

Finding	**CL 4**		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	In Section B.4., the average of parameter "$DAF_{b,y}$" is not proportional with the quantities bought from each supplier. Please, verify the average number according to the amount bought from each supplier.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	It was done an average of parameter "$DAF_{b,y}$" proportional with the quantities bought from each supplier (the total of travels from each supplier multiplied per its distance, then divided per the total of travel realized in the period), as can be seen on the excel spreadsheet "VCS MR Calculation Luara_period_ 01 06 09_ 31 12 09_v2".		

DOE Assessment #1 *The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The table of monitored parameter "$DAF_{b,y}$" has been revised and the figures have been properly corrected, as they now reflect the proportionality of the biomass amount bought from each supplier. **CL is closed**
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☐ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

General	CL 5		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	During the site visit it was evidenced the use of clay from external suppliers. Please, provide evidences that the material used fulfills all the legal requirements from DNPM.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The clay external supplier is *"Cinira Citelli Freddi ME".* The legal requirement is evidenced by document from "CETESB –Companhia de Tecnologia de Saneamento Ambiental" named license to operate. Besides that, the legal requirements from DNPM can be seen on the document *RAL (Relatório Annual de Lavra)* year 2009.		
DOE Assessment #1 *The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The evidences have been provided and the authorizations for clay extraction to "Cinira Citelli Freddi ME" have been presented to the verification team. **CL is closed**		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☐ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements		

Finding	CL 6		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Please, provide a soft copy of all following documents for general clarifications and to strengthen some information: a. Environmental (official environmental institution); b. Operational Licenses (City Hall).		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The documents required are named *"Alvará prefeitura 2010"* and *"Licença de Operação_Luara"*, as can be seen in the documents attached.		
DOE Assessment #1 *The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	The environmental and operational licenses have been provided. **CL is closed**		

Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☐ Project documentation was corrected correspondingly ☐ Additional action should be taken ☒ The project complies with the requirements

Finding	**CL 7**		
Classification	☐ CAR	☒ CL	☐ FAR
Description of finding *Describe the finding in unambiguous style; address the context (e.g. section)*	Please, revise the section B.6: a. Make "Table 1. Production and biomass predicted and monitored" at the MR consistent with the same table at "June 09 to December 09" tab presented at Excel spreadsheet. b. The QA/QC results are named as "annually" but calculation has been done only for 6 month. Please correct the term. c. Further, PRy and Thermal energy is given in thousands of pieces, but the number is given in tons.		
Corrective Action #1 *This section shall be filled by the PP. It shall address the corrective action taken in details.*	The section B.6 was revised. The production and biomass values were corrected based on the VCS PD version 04, as can be seen on the table 01, MR version 06. *Pry* and *Thermal energy* was corrected, both are given in tons of ceramic products. The corrections were made on: *VCS MR Calculation Luara_period_ 01 06 09_ 31 12 09_v6* *VCS MR Luara_period_ 01 06 09_ 31 12 09_v6*		
DOE Assessment #1 *The assessment shall encompass all open issues. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.*	Section B.6 has been properly revised and Table 1 is now consistent with the other documents. **CL is closed**		
Conclusion *Tick the appropriate checkbox*	☐ To be checked during the first periodic verification ☒ Appropriate action was taken ☐ Project documentation was corrected correspondingly ☒ Additional action should be taken ☐ The project complies with the requirements		

Table 3-3: Responsibilities

Responsibility for the Monitoring	**Area**
Ms. Dulceneia Aparecida Tamos – Ceramic director	registration monitoring measurement reporting

Table 3-4: Data and parameters Monitored

Parameter monitored				Description of measurement and monitoring methods	/REF/ for cross-check
Name	**Unit**	**Value**	**/REF/ MR**		
$Q_{renbiomass}$ Amount of renewable biomass employed	Tons	Sugar cane bagasse: 148.72 Sawdust: 1,713.95	/B.4/	Measured monthly by the project developer. The parameter is monitored through the weight indicated in the buying receipts of the renewable biomasses providers. These values are crosschecked with internal records on biomass they received. The specific gravity of each renewable biomass is used for unit conversion.	/BIO/ /OSV/
PR_y Production of ceramic devices	Tons	8,395	/B.4/	The amount was acquired by counting the total production per month. The measurement was done by an internal control sheet monitored by the project proponent, which was filled daily. The production is a representative sample to ensure that all appliances are still in operation.	/OSV/
Origin of renewable biomass	N/A	as verified during the site visit	/OSV/	Controlled by the ceramic annually. The guarantee of acquiring sawdust/wood chips from renewable wood is controlled by invoices from a reliable supplier. The biomasses (sawdust, elephant grass, peanut shells and sugar cane bagasse) are considered renewable as fulfilling the options described in Annex 18, EB 23. If the ceramic obtain their biomass from other suppliers than listed now in the PD, it will check the origin of the biomass and provide evidence to the verification team.	/OSV/
$EF_{grid,y}$ Emission factor of the grid	tCO_2e/ MWh	0.2383	/B.4/	It is monitored to estimate the project emission due to electricity consumption. The value will be obtained by "Brazilian Ministry of Science and Technology" annually.	/MCT/
TC Average Truck Capacity	tons	Sugar cane bagasse: 9.5 Sawdust: 13.5	/B.4/	It is monitored to calculate the project emission due to the renewable biomass transportation. The truck will be weighed and the capacity will be estimated. The scale will be calibrated annually according to INMETRO parameters and the registers of calibration will be kept.	/OSV/
$DAF_{b,y}$ Average incremental distance for biomass transportation	km	591	/B.4/	It is monitored to calculate the project emission due to the renewable biomass transportation. The distances from each biomass provider will be estimated. The amount of the biomass and its respective provider will be recorded in order to achieve the average distance.	/WEB1/

N_{MB} Number of mechanic burners employed during the project activity	Units	11	/B.4/	It is monitored to calculate the quantity of energy consumed by the project activity and its project emission. The parameter will be controlled by the project proponent and double checked with the receipts of purchase. The quantity of mechanic burners could be verified during on-site visit.	/OSV/
PC_{MB} Power Capacity of mechanic burners employed during the project activity	MW	0.001336	/B.4/	It is monitored to calculate the quantity of energy consumed by the project activity and its project emission. It will be controlled by the project proponent and double checked with the information given by the manufacturer. The information could be verified during on-site visit.	/OSV/

The monitoring equipments are controlled based on common industrial practice of the ceramic sector. An internal verification was performed to ensure that the monitoring plan is being followed accordingly with the proposed procedure stated in the VCS PD. The use of the internal procedures was checked.

3.4 Accuracy of Emission Reduction Calculations

The approved CDM baseline and monitoring methodologies AMS-I.C: Thermal energy for the user – Version 06 – September 30th, 2005 and AMS-III.E: Avoidance of methane production from decay of biomass through controlled combustion, gasification or mechanical/thermal treatment – Version 15.1 – December 14th, 2007, are applied to the project activity.

GHG emission reduction is calculated as baseline emissions minus project emissions minus leakage. 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 quantity of thermal energy that would be generated by the non-renewable biomass in the project per year multiplied by the emission factor of wood. The approach used for the emission reduction calculation was considered to be in accordance with the applied methodology.

The project activity will also avoid the decomposition of the renewable biomass and the possible release of methane to the atmosphere. The renewable biomass that was left to decay in open dumps before the project implementation is now burned in the kilns to generate thermal energy. Despite of that, the avoided methane emissions are not considered in the emission reduction calculation.

It was verified in the course of this verification that the above-mentioned methodology has been correctly and accurately applied in calculating the total emission reductions and the emission reduction calculation is accurate and conservative.

3.5 Quality of Evidence to Determine Emission Reductions

The project proponent as evidence of the calculations required to determine the emission reductions submitted several documents in addition to those collected during the On-Site Visit. Refer to Table 5-1.

The evidences were assessed and considered as of sufficient quantity and appropriate quality.

3.6 Management and Operational System

The management and operational system of the project is suitable.

An operational structure was established with responsibilities identified.

Staff training plan was clear; training records were available.

The quality management and the procedures to address errors and non-conformances were clearly defined[/VCS PD/].

4 Verification Conclusion

Carbono Social Serviços Ambientais Ltda. has commissioned the TÜV NORD JI/CDM Certification Program to carry out the 3rd periodic verification of the project "Luara Ceramic Fuel Switching Project", with regard to the relevant requirements for VCS project activities. The project reduces GHG emissions due to switching non-renewable to renewable biomass fuel for end-user thermal energy generation. This verification covers the period from 2009-06-01 to 2009-12-31 (including both days).

In the course of the verification 02 Corrective Action Requests (CAR) and 07 Clarification Requests (CL) were raised and successfully closed. Furthermore 0 FARs are raised to improve the monitoring system in the future. The verification is based on the draft monitoring report, revised monitoring report, the monitoring plan as set out in the VCS PD, the validation report, emission reduction calculation spreadsheet and supporting documents made available to the TÜV NORD JI/CDM CP by the project participant.

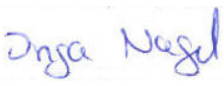
As a result of this verification, the verifier confirms that:

- all operations of the project are implemented and installed as planned and described in the validated project design document;
- the monitoring plan is in accordance with the applied approved CDM methodologies, AMS-I.C.: Thermal Energy for the user – Version 06 from September 30 of 2005 and AMS-III.E.: Avoidance of methane production from decay of biomass through controlled combustion, gasification or mechanical/thermal treatment – Version 15.1 valid from 14 Dec 07;
- the installed equipment essential for measuring parameters required for calculating emission reductions are calibrated appropriately;
- the monitoring system is in place and functional. The project has generated GHG emission reductions.

As the result of the 3rd periodic verification, the verifier confirms that the GHG emission reductions are calculated without material misstatements in a conservative and appropriate manner. TÜV NORD JI/CDM CP herewith confirms that the project has achieved emission reductions in the above mentioned reporting period as follows:

Emission reductions	CO2 [t CO2]	CH4 [t CH4]	N2O [t N2O]	HFCs [t HFC]	PFCs [t PFC]	SF6 [t SF6]	Sum [t CO2e]
2009	6,934	-	-	-	-	-	6,934
TOTAL							**6,934**

Essen, 2010-09-23



Inga Nagel

TÜV NORD JI/CDM CP

Verification Team Leader

Essen, 2010-09-23

Eric Krupp

TÜV NORD JI/CDM CP

Final approval

5 References

Table 5-1: Documents provided by the project proponent

Reference	Document
/BIO/	- Receipt and invoices of biomass - Declaration of legal origin of the biomass
/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.
/ML/	Municipal license – issued by the Panorama City Hall – Nº 040/2010 – Date: 2010/03/09
/MR/	Monitoring Report of the Third Period Luara Ceramic Switching Fuel Project – versions 1, 2, 3, 4, 5 and 6 (final). Date: from 2010-01-11 to 2010-09-15
/OL/	Operation License – issued by CETESB (Environmental Company of the State of São Paulo) – Nº 12001210 – Date: 2008/06/23 – valid until 2012/06/23 in the name of Luara Ceramic
/OL2/	Operation License for Clay Extraction – issued by CETESB (Environmental Company of the State of São Paulo) – Nº 12001349 – Date: 2008/12/30 – valid until 2011/12/30 in the name of Cinira Citelli Freddi ME
/OSV/	Information/Observation during on-site Visit including ceramic devices production and renewable biomasses used. Appropriate records retained by the Verification Team as evidences of the on-site Visit.
/PRO/	Signed BRTÜV Proposal issued for the project activity. It is clearly stated the date of contracting for the verification process – Date: 2010/01/13
/VCS PD/	VCS Project Description Luara Ceramic Fuel Switching Project – version 7 – 2008/03/02)
/WEB1/	http://maps.google.com.br/
/XCS/	VCS MR Calculation – period: from 2009/06/01 to 2009/12/31 – Luara Ceramic Switching Fuel Project – versions 1, 2, 3, 4, 5 and 6 (final)

Table 5-2: Background investigation and assessment documents

Reference	Document
/AMS- I.C/	AMS-I.C: Thermal energy for the user – Version 06 – 2005/09/30
/AMS-III.E/	AMS-III.E: Avoidance of methane production from decay of biomass through controlled combustion, gasification or mechanical/thermal treatment – Version 15.1 – 2007/12/14
/CONAMA 279/	Resolution CONAMA 279 (2001) – Environmental National Board
/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)
/VCS/	Voluntary Carbon Standard Program Guideline 2007.1.

Table 5-3: Websites used

Reference	Link	Organization
/DNPM/	http://www.dnpm.gov.br	National Department of Mineral Production
/MCT/	http://www.mct.gov.br	Ministério da Ciência e Tecnologia – Technology and Science Ministry

/UNFCCC/	http://unfccc.int	United Nations Framework Convention on Climate Change
/VCS/	http://www.v-c-s.org	Voluntary Carbon Standard

Table 5-4: Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
Mr. Juarez Pinheiro Cotrim / Luara Ceramic Mr. André Luiz A. Peruzi / Luara Ceramic	- 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 - Trainning 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	MoI[1]		Name	Organization / Function
/IM01/	V	☒ Mr. ☐ Ms.	Juarez Pinheiro Cotrim	Luara Ceramic / Director
/IM01/	V	☒ Mr. ☐ Ms.	André Luiz A. Peruzi	Luara Ceramic / Office Assistant
/IM01/	E, V	☐ Mr. ☒ Ms.	Heloísa Garcia da Mota	Carbono Social Serviços Ambientais Ltda. / Sustainability Coordinator
/IM01/	E, V	☒ Mr. ☐ Ms.	Rafael Ribeiro Borgheresi	Carbono Social Serviços Ambientais Ltda. / Tecnical Coordinator

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