

RENEWAL OF CREDITING PERIOD REPORT

Dori Alimentos Ltda - Biomass Based Project - Brazil



Document Prepared by Earthhood Services Private Limited

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Summary:**Brief summary of the project activity**

The project activity is a bundle that involves fuel switching from shale oil and natural gas to renewable biomasses (wood chips and peanut shells) as a source of fuel to supply steam for the production process to minimize environmental impacts related to the fossil fuel consumption. Thus, GHG emission reduction is achieved.

The project applies the CDM approved methodology AMS-I.C – Thermal energy for the user with or without electricity – version 20.0.

Scope of validation

Dori Alimentos LTDA has contracted the Earthood Services Private Limited to conduct the validation of the renewal of crediting period of the project “Dori Alimentos Ltda - Biomass Based Project - Brazil”, with regard to the requirements of VCS Version 3.

The scope of the revalidation is to establish that:

- the proposed project activity complies with the corresponding registered VCS-PD and the latest version of the renewed VCS-PD;
- the proposed project activity complies with all relevant VCS rules and requirements. The VCS renewal of crediting period was based on the updated VCS-PD, estimated emission reduction calculation spreadsheet, information from current validated VCS-PD and supporting documents made available to the ESPL by the project participants;
- the proposed monitoring plan complies with all requirements of applied methodology.

Conclusion

Earthood Services Private Limited has performed the validation of the renewal of crediting period of the project “Dori Alimentos Ltda - Biomass Based Project - Brazil”, with VCS Project ID 332.

As outcomes of this validation, the validation team confirms that:

- the latest available VCS-PD template has been applied;
- the original baseline is still valid as it was given by the applied methodology;
- the project additionality remains valid for the renewal of the crediting period as per section 3.8.5, paragraph 1 of the VCS Standard version 3.7. No regulatory surplus has been identified. The project is in accordance with all applicable regulations and legislations;
- the project description is in accordance with the characteristics identified on site.
- the monitoring plan is adequate to the project activity and is in accordance with the applied methodology.
- at this 2nd crediting period, the project activity is likely to achieve the estimated of **11,377 tCO₂e** per year.

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1 INTRODUCTION

1.1 Objective

Dori Alimentos LTDA has contracted Earthood Services Private Limited to conduct the validation of the renewal of crediting period for the VCS project activity “Dori Alimentos Ltda - Biomass Based Project - Brazil” for the period from 01/04/2016 to 31/03/2026 (including both days).

1.2 Scope and Criteria

The scope of the validation of the renewal of crediting period is to establish/verify that:

- the project is in accordance with requirements of the VCS Standard – version 3.7;
- the update of the applied methodology is in accordance with CDM small scale methodology AMS-I.C – version 20.0;
- the validation of the renewal of crediting period is in accordance with requirements of CDM methodological tool “Assessment of the validity of the original / current baseline and update of the baseline at the renewal of the crediting period” version 3.0.1;

The validation of the renewal of crediting period is based on the registered VCS-PD, revised VCS-PD and estimated GHG emission reduction calculations.

1.3 Level of Assurance

The validation of the renewal of crediting period aims to achieve a reasonable level of assurance.

1.4 Summary Description of the Project

The project activity is a bundle that involves two production units of Dori Alimentos LTDA in Brazil (head office in Marília – State of São Paulo and subsidiary in Rolândia – State of Paraná) consisting in fuel switching in the boiler of both units from shale oil and natural gas to renewable biomasses (wood chips and peanut shells) as a source of fuel to supply steam for the production process to minimize environmental impacts related to the fossil fuel consumption. Thus, GHG emission reduction is achieved.

The project is listed at VCS and can be accessed by the following link:
http://vcsprojectdatabase.org/#/project_details/332

2 VALIDATION PROCESS

2.1 Method and Criteria

The validation of the renewal of crediting period process is conducted as per internal CDM Quality Manual and in accordance with criteria laid down by VCS. It includes the following steps:

- contract with PP for the scope and appointment of validation team and technical review team;
- completeness check of VCS-PD;
- desk review of VCS-PD and estimated GHG emission reduction calculations;
- physical on-site inspection by validation team;
- follow up activities e.g., interviews;
- reporting and closure of findings (CARs/CLs/FARs) and preparation of draft validation report;
- independent technical review of the draft validation report and final/revised documentation (e.g., VCS-PD, corresponding estimated ER calculations sheet and evidences);

- issuance of the final validation report to contracted PP (or authorized representatives).

2.1.2 Sampling approach

No sampling plan has been used to conduct the validation of the renewal of the crediting period of this project activity.

2.2 Document Review

A desk review was conducted by the validation team that included:

- a review of the data and information presented to assess its completeness;
- a review of the registered VCS-PD, revised VCS-PD, estimated GHG emission reduction calculations, the applied methodology including applicable tool(s) and, where applicable, the applied standardized baseline;
- supporting documents.

A complete list of documents/evidences reviewed is included as Appendix I.

2.3 Interviews

#	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Queiroz	Rejane	Dori	06/02/2018	Project activity management	Sergio Cruz
2.	Oliveira	Márcia	Dori	06/02/2018	Project activity management and operation	Sergio Cruz
3.	Suzuki	Fernanda	Sustainable Carbon	06/02/2018 07/02/2018	Monitoring of parameters Excel calculations	Sergio Cruz
4.	Alves	Luana	Sustainable Carbon	06/02/2018 07/02/2018	Monitoring of parameters Excel calculations	Sergio Cruz
5.	Herrera	Fabio	Dori	06/02/2018	Boiler operations	Sergio Cruz
6.	Cardoso	Adriano	Dori	06/02/2018	Biomass and boiler control	Sergio Cruz
7.	Pinas	Sílvia	Dori	07/02/2018	Project activity management and operation	Sergio Cruz
8.	Guidini	Ronaldo	Dori	07/02/2018	Purchase of biomass and fuel oil control	Sergio Cruz
9.	Dos Santos	Carlinhos	Dori	07/02/2018	Boiler control and operation	Sergio Cruz

2.4 Site Inspections

Duration of on-site inspection: 06/02/2018 to 07/02/2018

#	Activity performed on-site	Site location	Date	Team member
1.	Opening Meeting	Marília	06/02/2018	Sergio Cruz
2.	Implementation and operation of project activity as per registered PD/previous verifications.	Marília	06/02/2018	Sergio Cruz
3.	Management and monitoring procedures followed at project site.	Marília	06/02/2018	Sergio Cruz
4.	Physical inspection of the project activity: site visit and interview of monitoring personnel.	Marília	06/02/2018	Sergio Cruz
5.	Verification checklist: compliance of monitoring procedures followed at project site with registered PD and monitoring methodology.	Marília	06/02/2018	Sergio Cruz
6.	Management and operational system: documentation, allocation of responsibilities, qualification and training, data recording & archiving, internal audit and management review and emergency procedures.	Marília	06/02/2018	Sergio Cruz
7.	Review of estimated ER calculations in accordance with applied methodology and relevant tools.	Marília	06/02/2018	Sergio Cruz
8.	Review of monitored data and relevant document in accordance with registered monitoring plan and applied monitoring methodology.	Marília	06/02/2018	Sergio Cruz
4.	Implementation and operation of project activity as per registered PD/previous verifications.	Rolândia	07/02/2018	Sergio Cruz
5.	Management and monitoring procedures followed at project site.	Rolândia	07/02/2018	Sergio Cruz
6.	Physical inspection of the project activity: site visit and interview of monitoring personnel.	Rolândia	07/02/2018	Sergio Cruz
7.	Verification checklist: compliance of monitoring procedures followed at project site with registered PD and monitoring methodology.	Rolândia	07/02/2018	Sergio Cruz
8.	Management and operational system: documentation, allocation of responsibilities, qualification and training, data recording & archiving, internal audit and management review and emergency procedures.	Rolândia	07/02/2018	Sergio Cruz
9.	Review of estimated ER calculations in accordance with applied methodology and relevant tools.	Rolândia	07/02/2018	Sergio Cruz

10.	Review of monitored data and relevant document in accordance with registered monitoring plan and applied monitoring methodology.	Rolândia	07/02/2018	Sergio Cruz
11.	Presentation of findings	Rolândia	07/02/2018	Sergio Cruz
12.	Closing meeting	Rolândia	07/02/2018	Sergio Cruz

2.5 Resolution of Findings

The findings may be of following types: CAR – Corrective Action Request, CL – Clarification Request and FAR – Forward Action Request.

During the present verification, 04 CARs and 05 CLs were raised and successfully closed.

The list of findings and their resolution are presented at Appendix III of this report.

2.5.1 Forward Action Requests

No FAR was raised.

3 VALIDATION FINDINGS

3.1 Project Details

The project activity is a bundle that involves two production units of Dori Alimentos LTDA in Brazil (head office in Marília – State of São Paulo and subsidiary in Rolândia – State of Paraná) consisting in fuel switching in the boiler of both units from shale oil and natural gas to renewable biomasses (wood chips and peanut shells) as a source of fuel to supply steam for the production process to minimize environmental impacts related to the fossil fuel consumption. Thus, GHG emission reduction is achieved.

Some of the characteristics of the project activity are described below:

- Project Proponents: Dori Alimentos LTDA (project owner) and Sustainable Carbon – Projetos Ambientais Ltda. (project developer);
- Project Category: project ($\leq 300,000$ tCO₂e/y);
- Estimated GHG emission reductions: 11,377 tCO₂e per year and 113,772 tCO₂e over the entire crediting period;
- Methodology: AMS-I.C – Thermal energy for the user with or without electricity – version 20.0;
- Start Date: 01/12/2004 – date on which the project proponent began employing renewable biomass at Rolândia unit;
- Crediting Period: from 01/04/2016 to 31/03/2026 – 10 years – renewable;
- Project Location:
 - o Head Office: Av. República, 5159/85 – Distrito Industrial Santo Barion – Marília – State of São Paulo – Brazil – geographical coordinates are: 22° 12' 50" S and 49° 56' 45" W;
 - o Subsidiary: Av. Itamaraty, 1324 – Parque Industrial – Rolândia – State of Paraná – Brazil – geographical coordinates are 23° 18' 36" S and 51° 22' 8" W;
- Conditions prior to project initiation: use of shale oil as fuel for the boilers of both units;
- Compliance with applicable laws, statutes and other regulatory frameworks: the company has all necessary licenses in order to operate as a food industry, in accordance with Brazilian legislation: operation licenses from the environmental state agencies and from municipal

departments; authorization to use chemical products for food industrial purposes; federal inscription as food industry; authorization for the use of water (refer to the licenses at Appendix I);

- Project ownership: Dori Alimentos LTDA is the project owner (as confirmed by the operation license that evidences that Dori Alimentos LTDA is the owner of the company and responsible for its operations);
- Emissions trading programs and other binding limits: GHG emission reductions generated by the project are not included in an emissions trading program or any other mechanism that includes GHG allowance trading;
- Other forms of environmental credit sought or received and eligible to be sought or received: the project has not received nor sought any other form of environmental credit;
- Participation under other GHG programs: the project does not participate in any other GHG program;
- Rejection by other GHG programs: the project was not rejected under any other GHG programs.
- Technical Data:
 - **Marília unit**:
 - *Biomass boiler*: Aalborg – Model: FAM 12 – Serial number: 10526;
 - *Natural gas boiler*: ATA – Model: AWN10 – Serial number: 9591;
 - *Weigh meter*: Toledo – Model 820J – Serial number: 10254955;
 - *Flow meter*: SMAR – Model D2 – Serial number: U534978.
 - **Rolândia unit**:
 - *Biomass boiler*: Aalborg – Model: FAM 12 – Serial number: 10525;
 - *Shale oil boiler*: Aalborg – Model: M3P10 – Serial number: 10373
 - *Weigh meter*: Toledo – Model 810II – Serial number: 195;
 - *Flow meter*: Spirax Sarco – Model VLM101503AB6D3A3B – Serial number: 121341-VLM001.

The overall description in the VCS-PD is accurate, complete, and provides an understanding of the nature of the project.

3.2 Application of Methodology

3.2.1 Title and Reference

The applied methodology is the approved CDM methodology AMS-I.C – Thermal energy for the user with or without electricity – version 20.0.

3.2.2 Applicability

The project activity uses renewable energy technologies to supply industrial facilities. The project activity uses renewable biomasses (wood chips and peanut shells) displacing the use of shale oil and natural gas.

The total thermal energy output of the project equipment does not exceed 45 MW.

3.2.3 Project Boundary

The project boundary is the physical geographical areas consuming energy generated by the use of biomass. Therefore, the entire facilities of both units.

3.2.4 Baseline Scenario

The baseline scenario is still valid for this next crediting period and it is given by the applied methodology: “Electricity is imported from a grid and thermal energy is produced using fossil fuel”.

Thus, as per VCS Standard, paragraph 2)b. “the GHG emissions associated with the original baseline scenario shall be reassessed using the latest version of the CDM “Tool to assess the validity of the original/ current baseline and to update the baseline at the renewal of a crediting period”.

Step 1: Assess the validity of the current baseline for the next crediting period

Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies: the current baseline scenario complies with all relevant mandatory national/sectoral legislation.

Step 1.2: Assess the impact of circumstances: the baseline scenario identified at the validation of the project activity was the continuation of the current practice without any investment, which would be the scenario in the absence of the project activity.

Step 1.3: Assess whether the continuation of use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested: the baseline scenario identified at the validation of the project activity was the continuation of use of the current equipment without any investment. The change of backup fossil fuel from shale oil to natural gas at Marília unit does not change this as the boiler was just adapted for such use because an opportunity that arose from the installation of the natural gas pipe system in the region.

Step 1.4: Assessment of the validity of the data and parameters: the parameters fixed in the previous crediting period and will remain fixed for the 2nd commitment period are the following:

- $EF_{shaleoil}$ (CO₂ emission factor of shale oil): 73.3 tCO₂/TJ (for BE calculations) and 79.2 tCO₂/TJ (for PE calculations);
- $NCV_{shaleoil}$ (Net calorific value of shale oil): 0.0381 TJ/ton (for BE calculations) and 0.0452 TJ/ton of shale oil (for PE calculations);
- $\rho_{shaleoil}$ (Specific gravity of shale oil): 0.9700 ton/m³;
- $\rho_{renewbiomass}$ (Specific gravity of renewable biomasses): 0.35 ton/m³ (wood chips) and 0.117 ton/m³ (peanut shells);
- *Efficiency Factor* (Efficiency of the boiler, used for determining the amount of shale oil consumed, based on the amount of steam generated): 0.074074 ton of shale oil/ton of steam;
- $COEF_{i,y}$ (CO₂ emission coefficient of shale oil): 3.57984 tCO₂e/ton of shale oil;
- $\eta_{BL,thermal}$ (efficiency of the plant using fossil fuel that would have been used in the absence of the project activity): 100%.

Nevertheless, as the Marília unit started to use natural gas instead of shale oil, the following parameters were also included:

- $EF_{naturalgas}$ (CO₂ emission factor of natural gas): 56.1 tCO₂/TJ (for BE calculations) and 58.3 tCO₂/TJ (for PE calculations);
- $NCV_{naturalgas}$ (Net calorific value of natural gas): 0.048 TJ/ton (for BE calculations) and 0.0504 TJ/ton of natural gas (for PE calculations);
- $\rho_{naturalgas}$ (Specific gravity of natural gas): 0.000766 ton/m³;
- *Efficiency Factor* (Efficiency of the boiler, used for determining the amount of natural gas consumed, based on the amount of steam generated): 0.056741 ton of natural gas/ton of steam;
- $COEF_{i,y}$ (CO₂ emission coefficient of natural gas): 293832 tCO₂/ton of natural gas.

The application of Steps 1.1, 1.2, 1.3 and 1.4 above confirmed that the current baseline as well as data and parameters are still valid for the subsequent crediting period.

As there are new parameters included, Step 2 is assessed below:

Step 2: Update the current baseline and the data and parameters

Step 2.1: Update the current baseline: Not applicable as the current baseline is valid.

Step 2.2: Update the data and parameters: the following parameters were included, and remain fixed for the 2nd crediting period, in order to calculate the baseline emissions of the Marília unit using the data of natural gas:

- $EF_{naturalgas}$ (CO₂ emission factor of natural gas);
- $NCV_{naturalgas}$ (Net calorific value of natural gas);
- $\rho_{naturalgas}$ (Specific gravity of natural gas);
- *Efficiency Factor* (Efficiency of the boiler, used for determining the amount of natural gas consumed, based on the amount of steam generated);
- $COEF_{i,y}$ (CO₂ emission coefficient of natural gas).

3.2.5 Additionality

According to the VCS Standard section 3.8.5, “a full reassessment of additionality is not required when renewing the project crediting period. However, regulatory surplus shall be demonstrated in accordance with Section 4.6.3 and the project description shall be updated accordingly”.

And according to Section 4.6.3, “The project shall not be mandated by any law, statute or other regulatory framework, or for UNFCCC non-Annex I countries, any systematically enforced law, statute or other regulatory framework. For UNFCCC non-Annex I countries, laws, statutes, regulatory frameworks or policies implemented since 11 November 2001 that give comparative advantage to less emissions-intensive technologies or activities relative to more emissions-intensive technologies or activities need not be taken into account. For all countries, laws, statutes, regulatory frameworks or policies implemented since 11 December 1997 that give comparative advantage to more emissions-intensive technologies or activities relative to less emissions-intensive technologies or activities shall not be taken into account”

This project is not mandated by any law, statute or other regulatory framework from the host country or foreign countries.

3.2.6 Quantification of GHG Emission Reductions and Removals

All the equations to calculate the ERs are in accordance with the applied methodology and VCS-PD.

The baseline emissions (BE_y) are calculated as follows:

$$BE_{thermal,CO2,y} = \left(\frac{EG_{thermal,y}}{\eta_{BL,thermal}} \right) \times EF_{FF,CO2}$$

Where:

$BE_{thermal,CO2,y}$:	Baseline emissions from thermal energy displaced by the project activity during the year y;
$EG_{thermal,y}$:	Net quantity of thermal energy supplied by the project activity during the year y;
$EF_{FF,CO2}$:	CO ₂ emission factor of the fossil fuel that would have been used in the baseline plant;

$\eta_{BL,thermal}$: Efficiency of the plant using fossil fuel that would have been used in the absence of the project activity.

To calculate the net quantity of heat supplied by the project activity ($EG_{thermal,y}$) during the year y (in TJ), the following equation has been used:

$$EG_{thermal,y} = Q_{fossil\ fuel} \times NCV_{fossil\ fuel}$$

Where:

$Q_{fossil\ fuel}$: Amount of shale oil or natural gas consumed;

$NCV_{fossil\ fuel}$: Net calorific value of shale oil or natural gas.

The project emissions (PE_y) are calculated as follows:

$$PE_{FC,j,y} = \sum_i FC_{i,j,y} \times COEF_{i,y}$$

Where:

$FC_{i,j,y}$: Quantity of fuel type i combusted in process j during the year y ;

$COEF_{i,y}$: CO₂ emission coefficient of fuel type i in year y ;

i : Fuel types combusted in process j during the year y .

The parameter $COEF_{i,y}$ is calculated as per the following equation, based on net calorific value and CO₂ emission factor of the fuel type i , as follows:

$$COEF_{i,y} = NCV_{i,y} \times EF_{CO2,i,y}$$

Where:

$NCV_{i,y}$: Weighted average net calorific value of the fuel type in year y ;

$EF_{CO2,i,y}$: Weighted average CO₂ emission factor of fuel type i in year y ;

i : Fuel types combusted in process j during the year y .

The leakage emissions (LE_y):

No leakage is considered for this kind of project as all three possible sources of leakage are demonstrated at the MR as:

- there is no transference of equipment;
- the amount of wood chips consumed by the project activity represents less than 0.5% of its availability within the surrounding areas, which avoids the possibility of leakage;
- the amount of peanut shells consumed by the project activity represents less than 1.5% of its availability within the surrounding areas, which avoids the possibility of leakage.

The leakage is not considered in accordance with the applied "General guidance on leakage in biomass project activities".

Therefore, according to the methodology applied the **Emission Reductions** are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y$$

Where:

ER_y :	Emission reductions in year y ;
BE_y :	Baseline reductions in year y ;
PE_y :	Project reductions in year y ;
LE_y :	Leakage reductions in year y .

Thus, it can be concluded that:

- all relevant assumptions and data are listed in the project description, including their references and sources;
- all data and parameter values used in the project description are considered reasonable in the context of the project;
- all estimates of the baseline emissions can be replicated using the data and parameter values provided in the project description;
- the quantification of GHG emission reductions were determined in accordance with applied methodology.

3.2.7 Methodology Deviations

No methodology deviation was observed in the course of this validation of renewal of crediting period.

3.2.8 Monitoring Plan

The monitored parameters of the project activity are:

- $Q_{renbiomass}$: Amount of renewable biomass;
- $EG_{thermal,y}$: Amount of heat supplied;
- $Q_{shaleoil}$: Amount of shale oil that would be consumed in the baseline scenario;
- $Q_{naturalgas}$: Amount of natural gas that would be consumed in the baseline scenario;
- Q_{steam} : Amount of steam generated by the boiler;
- *Renewable Biomass origin*;
- *Leakage due to transportation of biomass*;
- $FC_{i,j,y}$: Amount of fossil fuel combusted in the project activity.

A weigh meter continues being used to monitored parameter $Q_{renbiomass}$ and the flow meter continues being used to monitored parameter Q_{steam} .

The monitored parameters are in accordance with applied methodology.

3.3 Non-Permanence Risk Analysis

Not applicable to this stage of the project activity.

4 SAFEGUARDS

4.1 No Net Harm

The burning of the biomasses emits particulate material and CO_2 identified as negative impact. This also occurs when using fossil fuel. Nevertheless, as they are renewable biomasses, they have carbon neutral lifecycle.

All ashes resulting from the burning are sent for plantations to be used as fertilizers.
Thus, the negative impacts caused by the project activity are being mitigated.

4.2 Environmental Impact

The entire environmental impact assessment was done during the validation of the project activity. Nevertheless, it remains positive, as it has good effects on soil, climate, water resources and energy.

4.3 Local Stakeholder Consultation

The formal local stakeholder consultation was done during the validation of the project activity. Nevertheless, the project participant has a good relationship with local community and has open channels in its environmental management area in order to receive comments from local stakeholders.

Thus, the project activity has a local stakeholder consultation access in place and working.

4.4 Public Comments

According to the validation report and registered VCS-PD, no comments were raised during the local stakeholder consultation

5 VALIDATION CONCLUSION

ESPL, contracted by Dori Alimentos LTDA, has performed the independent validation of the renewal of crediting period of the project "Dori Alimentos Ltda - Biomass Based Project - Brazil", with VCS Project ID 332.

ESPL commenced the validation based on the baseline and monitoring methodology AMS-I.C – version 20.0, the registered VCS-PD – version 02 (from previous crediting period) and revised VCS-PD – version 5.0.

ESPL's validation approach is based on the understanding of the risks associated with reporting the project activity, estimates of GHG emission data and the controls to be implemented to mitigate these. ESPL planned and performed the validation by obtaining evidence, other information and explanations that ESPL considered necessary to give reasonable assurance that the estimated GHG emission reductions are fairly to be achieved.

The validation team confirms, based on final version of revised VCS-PD (version 5.0), that:

- the original baseline is still valid as it is given by the applied methodology;
- the project additionality remains valid for the renewal of the crediting period as per section 3.8.5, paragraph 1 of the VCS Standard version 3.7. No regulatory surplus has been identified. The project is in accordance with all applicable regulations and legislations;
- the project description is in accordance with the characteristics identified on site;
- the monitoring plan is adequate to the project activity and it is in accordance with the applied methodology;
- at this 2nd crediting period, the project activity is likely to achieve the estimated of **11,377 tCO₂e** per year.



Kaviraj Singh (Managing Director)

11/06/2018

APPENDIX I: REFERENCES

No.	Title	References
1.	Methodology: AMS-I.C – Thermal energy for the user with or without electricity	version 20.0
2.	<u>Biomass:</u> Marília - Invoices of purchased wood chips - Invoices of purchased peanut shells - Handwritten report of daily consumption Rolândia - Invoices of purchased wood chips - Handwritten report of daily consumption	2013 / 2014 / 2015 / 2016 2013 / 2014 / 2015 / 2016 2013 / 2014 / 2015 / 2016 2013 / 2014 / 2015 / 2016 2013 / 2014 / 2015 / 2016
3.	<u>Licenses</u> Marília - Operation License # 11004805 – CETESB – valid until 20/02/2020 - License for the use of hydraulic resources – DAEE Rolândia - Operation License # 11110 – IAP - License for the use of hydraulic resources # 25/2011 – Instituto Águas do Paraná	20/02/2017 17/10/2016 01/02/2013 13/01/2011
4.	VCS-PD – draft	version 3.0 – 23/01/2018
5.	VCS-PD – revised	version 4.0 – 19/02/2018 version 5.0 – 26/03/2018
6.	VCS-PD – final	version 6.0 – 28/05/2018
7.	ER Spreadsheet – draft	version 1
8.	ER Spreadsheet – revised	version 2
9.	ER Spreadsheet – final	Version 5.0
10.	Registered VCS-PD	version 02 – 19/10/2009
11.	<u>Production of Steam:</u> Marília Handwritten report of daily production Rolândia Handwritten report of daily production	2013 / 2014 / 2015 / 2016 2013 / 2014 / 2015 / 2016
12.	IPCC publications	www.ipcc-nggip.iges.or.jp
13.	UNFCCC	http://cdm.unfccc.int
14.	VCS	http://www.v-c-s.org/

APPENDIX II: ABBREVIATIONS

Abbreviations	Full texts
BE	Baseline Emissions
CA	Corrective Action / Clarification Action
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CETESB	Environmental Agency of the State of São Paulo
CO₂	Carbon dioxide
CO₂e	Carbon dioxide equivalent
CL	Clarification Request
DAEE	Department of Water and Electric Energy of the State of São Paulo
DOE	Designated Operational Entity
ER	Emission Reductions
ESPL	Earthood Services Private Limited
FAR	Forward Action Request
GHG	Greenhouse gas(es)
IAP	Environmental Agency of the State of Paraná
LE	Leakage Emissions
MP	Monitoring Plan
MR	Monitoring Report
PA	Project Activity
PE	Project Emissions
PP	Project Participant
QA/QC	Quality Assurance / Quality Control
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCS-PD	VCS – Project Description
VCU	Verified Carbon Unit
XLS	Emission Reduction Calculation Spread Sheet

APPENDIX III: FINDINGS

Table 1. CL from this validation

CL ID	01	Section no.	3.1; 3.2.3	Date: 26/03/2018
Description of CL				
According to the instructions to fill up the VCS-PD, the following information is missing:				
a. Section 1.8: information regarding the age and average lifetime of the equipment based on manufacturer's specifications and industry standards, and existing and forecast installed capacities, load factors and efficiencies;				
b. Section 1.12.1: information regarding evidence establishing project ownership;				
c. Section 2.3:				
i. project emissions from fossil fuel combustion in the table; and				
ii. diagram or map of the project boundary identifying systems, flow mass and GHG emission sources.				
Project participant response				Date: 26/03/2018
The sections were revised.				
DOE assessment				Date: 26/03/2018
The sections have been revised and are now in accordance with the instructions to fill up the VCS-PD:				
a. Section 1.8: technical information about the boilers are presented;				
b. Section 1.12.1: the information that the operation license (presented to the validation team) evidences that Dori Alimentos Ltda is the owner of project and responsible for its operation;				
c. Section 2.3: project emissions and diagram of project boundary are now presented.				
CL ID	02	Section no.	3.1	Date: 07/02/2018
Description of CL				
At Section 1.5 of the VCS-PD, the project start date is not in accordance with the date of the registered VCS-PD.				
Project participant response				Date: 19/02/2018
The project start date was corrected in accordance with the registered VCS-PD				
DOE assessment				Date: 19/03/2018
The project start date is now correct and consistent with VCS-PD.				
CL ID	03	Section no.	4.1	Date: 07/02/2018
Description of CL				
At Section 5.1 of the VCS-PD, there is no information regarding the ashes resulted of the biomass burning.				
Project participant response				Date: 19/02/2018
The information regarding ashes resulted of the biomass burning was included in the section 5.1 of the VCS-PD. The ashes generated in Marília site are used as fertilizer and in Rolândia site are destined to a worm farm to produce compost.				
DOE assessment				Date: 19/03/2018
The information about the destination of the ashes resulted from the combustion at each plan is now described at Section 5.1 of the VCS-PD.				
CL ID	04	Section no.	4.2	Date: 07/02/2018
Description of CL				

At Section 5.2 of the VCS-PD, the environmental impact analysis is not consistent with the project activity.	
Project participant response	Date: 19/02/2018
The table 5 – Environmental Impact Analysis was revised according to the project activity.	
DOE assessment	Date: 19/03/2018
The environmental impact assessment was revised and it is now consistent with the actual project activity.	

CL ID	05	Section no.	4.3	Date: 07/02/2018
Description of CL				
At Section 5.3 of the VCS-PD, there is no information regarding the actual and future communication of the project owner with local stakeholders.				
Project participant response				Date: 19/02/2018
The formal stakeholder consultation was carried out during the validation of the project. Currently, the company's environmental management area is available to receive any kind of suggestions and comments from the community through the website, CSC, telephone, e-mail or even personally.				
DOE assessment				Date: 19/03/2018
It is described that the environmental management area of the company has a channel for external communication of local stakeholders. This information is consistent with the situation verified during the site visit.				

Table 2. CAR from this validation

CAR ID	06	Section no.	3.2.4	Date: 07/02/2018
Description of CAR				
The assessment of the validity of the baseline scenario is not conclusive as it does not confirm its validity, neither sets a new one.				
Project participant response				Date: 19/02/2018
The baseline scenario was reassessed considering the CDM Methodological Tool "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period, version 03.0.1. The original baseline scenario for the project activity was approved at the project validation and is still valid. It comprises renewable energy technologies that displace technologies using fossil fuel, as defined on the Methodology AMS-I.C. However, the availability of a natural gas pipeline in Marília region since December of 2013 brings an opportunity to the Dori's Head Office to change the type of fossil fuel utilized to natural gas. Consequently, the data and parameters to obtain the Baseline Emissions at Marília site was updated.				
DOE assessment				Date: 19/03/2018 26/03/2018
The baseline scenario is still valid. The assessment of its validity has been correctly performed: <u>Step 1: Assess the validity of the current baseline for the next crediting period</u> <i>Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies:</i> the current baseline scenario complies with all relevant mandatory national/sectoral legislation. <i>Step 1.2: Assess the impact of circumstances:</i> the baseline scenario identified at the validation of the project activity was the continuation of the current practice without any investment, which would be the scenario in the absence of the project activity.				

Step 1.3: Assess whether the continuation of use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested: the baseline scenario identified at the validation of the project activity was the continuation of use of the current equipment without any investment. The change of backup fossil fuel from shale oil to natural gas at Marília unit does not change this as the boiler was just adapted for such use because an opportunity that arose from the installation of the natural gas pipe system in the region.

Step 1.4: Assessment of the validity of the data and parameters: the parameters fixed in the previous crediting period and will remain fixed for the 2nd commitment period are the following:

- $EF_{shaleoil}$ (CO₂ emission factor of shale oil);
- $NCV_{shaleoil}$ (Net calorific value of shale oil);
- $\rho_{shaleoil}$ (Specific gravity of shale oil);
- $\rho_{renbiomass}$ (Specific gravity of renewable biomasses);
- *Efficiency Factor* (Efficiency of the boiler, used for determining the amount of shale oil consumed, based on the amount of steam generated);
- $COEF_{i,y}$ (CO₂ emission coefficient of shale oil);
- $\eta_{BL,thermal}$ (efficiency of the plant using fossil fuel that would have been used in the absence of the project activity).

Nevertheless, as the Marília unit started to use natural gas instead of shale oil, the following parameters were also included:

- $EF_{naturalgas}$ (CO₂ emission factor of natural gas);
- $NCV_{naturalgas}$ (Net calorific value of natural gas);
- $\rho_{naturalgas}$ (Specific gravity of natural gas);
- *Efficiency Factor* (Efficiency of the boiler, used for determining the amount of natural gas consumed, based on the amount of steam generated);
- $COEF_{i,y}$ (CO₂ emission coefficient of natural gas).

The application of Steps 1.1, 1.2, 1.3 and 1.4 above confirmed that the current baseline as well as data and parameters are still valid for the subsequent crediting period.

As there are new parameters included, Step 2 is assessed below:

Step 2: Update the current baseline and the data and parameters

Step 2.1: Update the current baseline: Not applicable as the current baseline is valid.

Step 2.2: Update the data and parameters: the following parameters were included, and remain fixed for the 2nd crediting period, in order to calculate the baseline emissions of the Marília unit using the data of natural gas:

- $EF_{naturalgas}$ (CO₂ emission factor of natural gas);
- $NCV_{naturalgas}$ (Net calorific value of natural gas);
- $\rho_{naturalgas}$ (Specific gravity of natural gas);
- *Efficiency Factor* (Efficiency of the boiler, used for determining the amount of natural gas consumed, based on the amount of steam generated);
- $COEF_{i,y}$ (CO₂ emission coefficient of natural gas).

Nevertheless, the upper limit of the uncertainty at a 95% confidence interval should be used as per the “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion” for the application of NCV_{FF} and EF_{FF} for project emission calculations, if IPCC values are applied.

Project participant response	Date: 26/03/2018
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The values of NCV_{FF} and EF_{FF} were revised.

DOE assessment	Date: 26/03/2018
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The values of NCV_{FF} and EF_{FF} have been correctly revised to the upper limit of the uncertainty at a 95% confidence interval for PE calculations.

CAR ID	07	Section no.	3.2.6	Date: 07/02/2018
Description of CAR				
The estimates of GHG emission reductions are based in the historical data of the project (10 years). Nevertheless, as the natural gas was used just from December/2013 onwards, the estimates are inconsistent with the actual scenario.				
Project participant response				Date: 19/02/2018
The estimates of GHG emission reductions were revised considering the period from December/2013 to March/2016, in order to be consistent with the actual scenario which utilizes gas natural in Marília site.				
DOE assessment				Date: 19/03/2018 26/03/2018
The estimates are now consistent with the actual scenario, which is the use of shale oil in Rolândia and natural gas in Marília. Nevertheless, no reference to natural gas is made at Section 3.1 (equation 2), Section 4.2 and Section 4.3.				
Project participant response #2				Date: 26/03/2018
All references to natural gas were included.				
DOE assessment #2				Date: 26/03/2018
References and inclusions of information and data of natural gas have been correctly done in every section that refers to the head office in Marília, as it is effectively the fossil fuel, which is being replaced by the biomass.				

CAR ID	08	Section no.	3.1	Date: 22/05/2018
Description of CAR				
As per VCS assessment the following finding has been raised: the instructional text of Section 1.5 of the Project Description template, v3.3 states “Indicate, and provide justification for, the project start date, specifying the day, month and year.” Section 1.5 of project description includes the corresponding project start dates for the two sites included in the project. However, no justification is provided indicating why the start date is appropriate. The project proponent is requested to update the project description to include this information.				
Project participant response				Date: 28/05/2018
The section 1.5 “Project start date” was updated in order to clarify the start date of the project.				
DOE assessment				Date: 03/06/2018
It was included in Section 1.5 of the VCS-PD the information that project start date was defined as 01/03/2005 for Marília’s office and as 01/12/2004 for Rolândia’s office, which are the dates when the substitution of shale oil by renewable biomass has taken place respectively. Therefore, the start date of the project activity was set as 01/12/2004, as it is the date of the first substitution considering both sites.				

CAR ID	09	Section no.	3.2.5	Date: 22/05/2018
Description of CAR				
As per VCS assessment, the following finding has been raised: Section 3.8.5(1) of the VCS Standard, v3.7 requires that a full reassessment of additionality is not required at a project crediting period renewal. However, regulatory surplus must be demonstrated. Section 2.5 of the project description states “Discussed and approved during validation process.” Although it is appropriate to reference the determination of additionality from the original project description, the project description is requested to be updated to more clearly state this as validation is conducted at the crediting period renewal as well. Additionally, the project description is requested to be updated to discuss whether the project still demonstrated regulatory surplus as required by Section 3.8.5(1) of the <i>VCS Standard</i>.				
Project participant response				Date: 28/05/2018
The project description was updated to the actual scenario. The section 2.5 “Additionality” was updated considering the regulatory surplus and demonstrating that the additionality analysis was performed during the validation process.				
DOE assessment				Date: 03/06/2018
The project description was revised in order to demonstrate the actual scenario verified in the site visit to explain the switch from shale oil to natural gas in the headquarter office in Marília. It is stated what could be seen that the change was due to implementation of gas pipeline in the Marília region and the environmental impact advantages regarding when compared to the shale oil. The change did not adversely impacted the additionality of the project activity since the use of natural gas is more expensive than the use of shale oil. Although the additionality has been discussed during the original validation, it is clear and it is correct the information that the project activity is not mandated by any law, statute or other regulatory framework from the host country or foreign countries.				

Table 3. FAR from this validation

No applicable for this validation.

APPENDIX IV: COMPETENCE OF TEAM MEMBERS AND TECHNICAL REVIEWERS

Competence Statement			
Name	Sergio Bonanno Cruz		
Country	Brazil		
Education	Post Graduate Diploma in Environment		
Experience	25 Years		
Field	Environmental Law, CDM, Energy, Climate Change		
Approved Roles			
Team Leader	Yes		
Validator	Yes		
Verifier	Yes		
Methodology Expert	Yes (ACM0001, ACM0002, AM0026, ACM0006, AMS ID)		
Local expert	Brazil, Chile		
Financial Expert	Yes		
Technical Reviewer	Yes		
TA Expert	Yes (TA 1.2, 13.1)		
Reviewed by	Abhishek Mahawar	Date	01/03/2018
Approved by	Ashok Kumar Gautam	Date	01/03/2018

Competence Statement			
Name	Marcelo Sebben		
Country	Brazil		
Education	M.Sc. (Sustainable Energy System) B. Eng. (Chemical Engineering)		
Experience	12.5 Years		
Field	Chemical process industry, CDM, Energy, Climate Change		
Approved Roles			
Team Leader	Yes		
Validator	Yes		
Verifier	Yes		
Methodology Expert	Yes (ACM0001, ACM0002, ACM0006, AM0065, AMS ID)		
Local expert	Brazil, Chile, Honduras		
Financial Expert	Yes		
Technical Reviewer	Yes		
TA Expert	Yes (TA 1.1, 1.2, 5.1, 13.1)		
Reviewed by	Abhishek Mahawar	Date	01/03/2018
Approved by	Ashok Kumar Gautam	Date	01/03/2018