Voluntary Carbon Standard
Project Description
19 November 2007

October 19th of 2009

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1 Description of Project:

1.1 Project title

Dori Alimentos LTDA. - Biomass based project - Brazil
Version 02
PDD completed in: October 19th, 2009

1.2 Type/Category of the project

The project activity includes the following simple modality categories and procedures, which are described in appendix B, for small scale type I CDM project activities.

- **Category AMS-I.C: Thermal energy for the user with or without electricity** – Version 13 from March 14th 2008, EB 38[1].

This category comprises renewable energy technologies that supply individual households or users with thermal energy that displaces fossil fuels.

- This project is a grouped project

1.3 Estimated amount of emission reductions over the crediting period including project size:

The amount of emission reductions are greater than 5,000 tonnes of CO_2 equivalent and less than 1,000,000 tonnes of CO2 equivalent, thus classifying as a project under the VCS 2007 size groups (micro project, project, mega project).

Table 1. Emission reductions estimate during the crediting period.

Year	Total Baseline Emissions
April - 2006	14,880
2007	20,916
2008	20,378
2009	20,378
2010	20,378
2011	20,378
2012	20,378
2013	20,378
2014	20,378
2015	20,378
March - 2016	5,093
Total Emission Reductions (ton de CO2equ)	**203,913**
Number of years of the crediting period	10
Annual average of estimated emissions reductions for the 10 years of crediting period (ton de CO2equ)	**20,391**

1.4 A brief description of the project:

The project activity is the grouped project of two unities of *Dori Alimentos LTDA* and consists in promoting the fuel switch in *Dori's* boiler. *Dori Alimentos LTDA* is a candy industry that was created in 1967 as an individual

[1] *Methodology available at:*
http://cdm.unfccc.int/UserManagement/FileStorage/CDMWF_AM_YL0327DQSKVFXYQREWRT3VNR58402G

company called Doraci dos Santos Spila, but only came out of the ground in around the decade of 1990, already with the currently name and the new owners, the Barion family, with the acquisition of one of the most traditional candy factory in the State of *Paraná*, the "*Ouro Verde*", situated in *Rolândia – PR* and the creation of commercial subsidiary companies in *Osasco – SP* and *Porto Alegre – RS*. Nowadays, the *Dori Alimentos LTDA* has two production unities, the company's head office is situated in the city of *Marília – SP* and the subsidiary production plant is located in the city of *Rolândia – PR*.

At the present time, *Dori* manufactures all kinds of candies, chocolates and peanuts in different flavours, to meet domestic and international demand. The company exports its products to 70 different countries.

In the candies manufacturing process, the steam is used in several different stages of the production process, for example in the greenhouse providing heat to dry the final product or during the production in order to increase the humidity of some candies' ingredients.

The project activity aims to use, in both unities, eucalyptus and pinus wood chips, in *Dori's* head office it will be also used peanut shells, to supply steam to the production process to replace the usual shale oil[2], which is the fuel commonly used. In both unities, the fuel switch process started in November 2004 but the viability (operation of the biomass based boiler without production damages) of the project activities was made possible only in August 01, 2005 (*Dori's* head office) and January 01, 2005 (*Dori's* subsidiary company). Shale oil is still being used in the project activity, but in reduced amounts, as it is being replaced by the renewable biomass gradually.

The project activity takes into account GHG emission mitigation due to the replacement of shale oil to generate heat with biomass residues with carbon-neutral cycle. In the absence of the project, the average amount of shale oil utilized in *Dori's* head office would be around 3,544 tonnes/year, which has been gradually replaced by renewable biomass to generate an average of 47,843 tonnes/year of steam in the boiler. In *Dori's* subsidiary company, the amount of shale oil that would be utilized is around 4,077 tonnes/year generating 55,041 tonnes/year of steam to be used throughout the production process.

The implementation of this project activity in *Dori Alimentos* has as objective stop using the shale oil and completely substitutes it by renewable biomasses to feed boiler and generate steam to sustain the production, with the intention of minimizing environmental impacts related to its consumption including the reduction of greenhouse gas (GHG) emissions.

Different from the identified baseline scenario, *Dori Alimentos* will generate steam minimizing the damages caused by the use of fossil fuels and helping to preserve its reserves with the implementation of this project activity.

1.5 Project location including geographic and physical information allowing the unique identification and delineation of the specific extent of the project:

The project activity is located in *Marília*, state of *São Paulo*, and *Rolândia*, State of *Paraná*, which are indicated in Figure 1. The project site has the following geographic location and postal address:

-Head Office
Av. República, 5.159/85 - Distrito industrial Santo Barion - CEP 17512-035
Marília, SP, Brazil;
The coordinates are: 22° 12′ 50″ S and 49° 56′ 45″ W

-Subsidiary
Av. Itamaraty, 1324 - pq. Industrial – CEP 86600-000
Rolândia, PR, Brazil.
The coordinates are: 23° 18′ 36″ S and 51° 22′ 8″ W

[2] *Shale oil: an oil obtained from the shale stone with high flow rate and high specific gravity.*

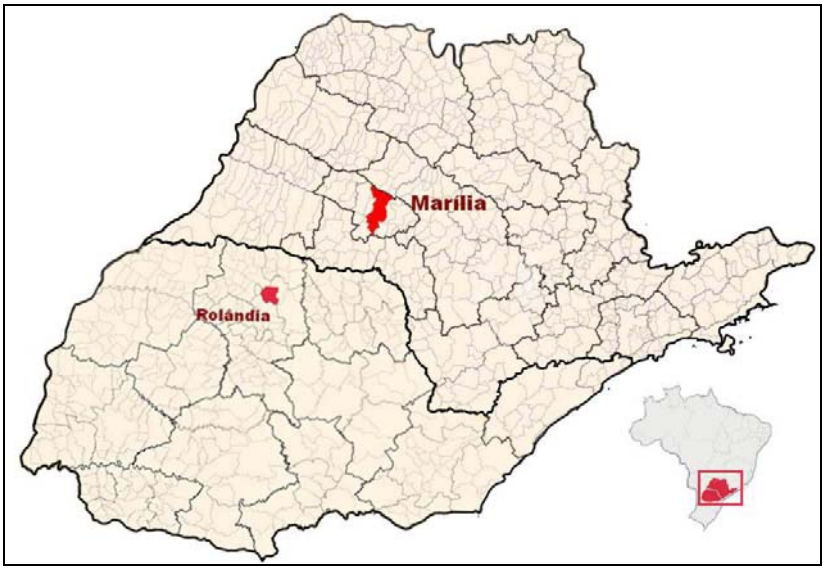

Figure 1. Geographic location of the city of the project activity that has the following coordinates: *Marília*: 22° 12′ 50″ S, 49° 56′ 45″ W *Rolândia*: 23° 18′ 36″ S, 51° 22′ 8″ W

1.6 Duration of the project activity/crediting period:

- Project start date[3]:

Unity	Date
***Dori's* Head Office**	March 2005
***Dori's* Subsidiary company**	December 2004

- Crediting period start date[4]: April 1st, 2006
- VCS project crediting period: 10 years, twice renewable

1.7 Conditions prior to project initiation:

The oil supply was stable and the Company had a reliable logistic program which did not present high risks. Shale oil was employed as fuel in the *Dori's* boiler for many years.

The project activity aims at the use of wood chips and peanut shells as renewable biomass for energy supply. Since these biomasses would otherwise be disposed in open dumps, the project activity also reduces adverse environmental effects, of local and global order, because the methane emissions originating from the natural decay of these biomasses in on-site places are avoided. In spite of the fact that these emission reductions really occur, it will not be considered in this project.

1.8 A description of how the project will achieve GHG emission reductions and/or removal enhancements:

The emission reductions will be achieved by displacing the use shale oil to provide thermal energy in the candy industry. An opposite scenario occurs with the renewable biomasses employed in this project activity.

1.9 Project technologies, products, services and the expected level of activity:

[3] *Date on which the project began reducing or removing GHG emissions, i.e. when the project proponent began employing renewable biomass.*

[4] *Earliest credit start date under the VCS 2007. The original date was March 28th 2006, but to simplify the emission reduction account, the date of April 1st 2006 was chosen for determining the crediting period start date.*

There are numerous decisions to be made when producing steam for industrial applications at different steam loads, operating 24 hours a day all year round. There are four primary classes of biomass power systems: direct-fired, co-fired, gasification, and modular systems. Most of today's biomass power plants consist of direct-fired systems that are similar to most fossil-fuel fired power/steam plants.
The project activity technology implemented in both unities foresees a direct combustion technology. The direct combustion technology is based on the direct oxidation of biomass with excess air, producing hot flow gases that in turn produce steam in the heat exchanger.
Each unity had acquired the same kind of boiler which generates steam with highest flow capacity of 12ton/h and pressure of 10kgf/cm² and its perfect temperature to be reached is 186ºC. Its installed power is in the order of 188.67 CV and is distributed as follows:
- 01 main exhauster: 100 CV;
- 01frontal fan: 5 CV;
- 01 back fan: 12.5 CV;
- 01 rotative cyclone valve: 05 CV;
- 02 water pump: 20 CV each;
- 02 feed screw: 3 CV each;
- 01 gas washer: 16.5 CV;
- Conveyor belt: 3.67 CV.

Figure 2. Boiler employed in both Unities.

In the candies manufacturing process, the steam is used in several different stages of the production process, for example, during the production providing heat or increasing the humidity of some candies' ingredients.
In the head office unity, the wood chips are bought in bulk and discharged in a third company which realizes the bagging work, the full bags are transported to *Dori Alimentos* in *Marília* where it keeps stored under a shed until its use. The same kind of storage and bagging work happens with the peanut shells which are residues from *Dori's* production making this sector self sustainable.
Biomass transportation from the bags to the metallic silo will take place by means of a conveyor belt that will start and stop automatically based on the biomass amount required by the boiler.
The *Dori's* subsidiary unity does not make use of bags for biomass storage and the first silo feeding is made by a motorized cart which feed the wood chips directly into the first mill hopper. From there, the wood chips goes through a conveyor belt into a classifier where the thicker wood chips are excluded. The selected wood chips fall into the second silo, and then they are carried by a conveyor belt to the metallic silo which feeds the boiler with the help of two screws that dose the biomass. This dosage is controlled by an automated system which controls other instruments such as pressure and flow meter.
The fuel switch is being implemented very slowly with the intention of minimizing the risks in the industries facility, since there are high costs involved to adapt the industry to the new acquired equipments and make it work with the new renewable biomasses. For this reason, the project activity will be gradually implemented. Initially, in both unities, the substitution of shale oil by renewable biomass lead to a boiler change and in *Dori's* head office it started in March 2005 while in *Dori's* subsidiary company in December of 2004.
Right after the beginning of the project activity implementation, in opposition with the biomass consumption, the shale oil consumption was still high and this number is progressively decreasing while the quantity of biomass used is continuously increasing and in a few years the oil will be totally displaced. In the absence of the project activity, the amount of shale oil that would be used is 7,621 tons per year in the both unities.

The wood chips employed in the project activity will be acquired from legal providers. Those providers are wood industries and its legibility can be proved through evidences and documents in power of *Dori Alimentos* which ensures that the providers utilize wood from areas with sustainable forest management.
Due to the project activity, a set of adaptations were necessary, such as alterations and adaptations to the process, the creation of an automated system and other machineries as well as the reconstruction and enlargement of a shed where the biomass must be stored and kept dry so the boiler can operate with the biomasses with higher efficiency. The following figures show some of the changes at the industries.

The main biomass providers are listed in tables 2 and 3, which does not exclude the possibility of buying biomass from others:

Table 2. Wood chips providers for both unities.

Unity	Biomass Providers	Percentage
Head Office - *Marília*, SP	Grupo Brancalhão	100%
Subsidiary - *Rolândia*, PR	Grupo Brancalhão	61%
	Maurício C. Rodrigues Madeiras	6%
	Madeireira e Serraria SK *LTDA*.	33%

Table 3. Peanut shells providers for Head Office Unity.

Unity	Biomass Providers	Percentage
Head Office - *Marília*, SP	Angelo Marcio Calixt	58%
	Yoki Alimentos S.A	25%
	Dori Alimentos LTDA	17%

Figure 3. Shed and tractor of the third company in *Rolândia* unity.

Figure 4. Bags where the biomass is stored in *Marília* Unity.

1.10 Compliance with relevant local laws and regulations related to the project:

This project is in accordance to the CONAMA[5] Resolution, no. 237/97 which establishes that activities like candy production, as it is in the project activity, must be supported by specific licenses, such as operational license, environmental licenses and the permission of the local government which must run under the valid time.

1.11 Identification of risks that may substantially affect the project's GHG emission reductions or removal enhancements:

- Price of the renewable biomasses

The thermal energy generation through the combustion of biomasses is an innovation in the Brazilian industry. The future demand of this alternative fuel by other consumers is not easy to foresee. Although there is currently a great amount of biomasses available in the project activity region at accessible prizes, there is a possibility that the prices will increase, especially between harvests, when the biomasses production decrease or because of a non-predicted biomass demand increase.

As the project activity will use biomasses like pinus and eucalyptus wood chips that do not depend on harvest, the biomass availability problem is attenuated because the prizes of these biomasses tend to be maintained stable during all the year and as a consequence, the risk is not very representative. Even if the biomass prizes increases, the project approval will make the continue use of renewable biomasses feasible.

- Difficulty related to the abrupt change

Dori Alimentos LTDA. has been using shale oil successfully since the beginning of their activities which means more than forty years. With the implementation of the project activity the laborers had to learn new techniques to manage the machineries implanted and the employees who were very used to the standard situation offered resistance to change their work reality. This situation claimed a lot of effort from the administrators during the reconfiguration of the internal logistic and to minimize the employees' resistance to the new methods of production. The abrupt change might decrease the productivity of *Dori*`s units as a result of the inexperience and the difficulty of acceptance of the new technology.

1.12 Demonstration to confirm that the project was not implemented to create GHG emissions primarily for the purpose of its subsequent removal or destruction.

[5] *CONAMA (National Environmental Council), created in 1981 by Law 6.938/81, is the Brazilian's department responsible for deliberation and consultation of the whole national environmental policy and it is chaired by the Minister of Environment. Therefore, it is responsible for the establishment of standards and criteria relating to licensing of potentially polluting companies. More information is available at http://www.mma.gov.br/port/conama/estr.cfm*

The historical of *Dori's* activities using shale oil since the beginning of their works, which means more than forty years, confirms that the project was not implemented to create GHG emissions for the purpose of its subsequent removal or destruction.

1.13 Demonstration that the project has not created another form of environmental credit (for example renewable energy certificates).

Dori's project is not creating any other form of environmental credit under any specific program.

1.14 Project rejected under other GHG programs (if applicable):

Dori's project was not presented to any formal GHG reduction or removal program. The project report was produced to make the project public and available to voluntary measures or other opportunities of the carbon market.

1.15 Project proponents roles and responsibilities, including contact information of the project proponent, other project participants:

The project proponent contributed to the current report by assigning the following roles and responsibilities to members of its team:

Mrs. Márcia S. Cavicchioli de Oliveira, Environmental management system coordinator: Information and visit of the candy industry, detailed information on process and production lines, environmental challenges, technological challenges, research and development history, food market challenges. Mrs. Márcia S. Cavicchioli de Oliveira will also be responsible for the monitoring data, providing the quantification of the amount of steam produced and of the amount of biomass.

Other information on the project's proponent: *Dori Alimentos LTDA*.

Address:
-Head Office
Av. República, 5.159/85
Distrito industrial Santo Barion
CEP 17512-035
Marília, SP, Brazil;

-Subsidiary
Av. Itamaraty, 1324
pq. Industrial
CEP 86600-000
Rolândia, PR, Brazil.

Phone number: +55 (14) 3408-3000
Web site: http://www.*Dori*.com.br/

Project participant: *CantorCO2e Brasil Consultoria Comercialização de Commodities Ambientais LTDA*, responsible to prepare the project report and to accompany it until the end of crediting period. The assessors directly involved are:

Rafael Ribeiro Borgheresi, Technical Analyst: Project Design Document writer, elaboration of GHGs Emissions' Inventory, direct contact between CantorCO2e Brasil and the candy industry and responsible to collect necessary information. Coordinated by:

Flávia Yumi Takeuchi, Technical Coordinator

Other information on the project's developer's contact:
Phone number: +55 11 5083 3252
Web site: http://www.cantorco2e.com
Email: rborgheresi@cantorco2e.com.br
ftakeuchi@cantorco2e.com.br

1.16 Any information relevant for the eligibility of the project and quantification of emission reductions or removal enhancements, including legislative, technical,

economic, sectoral, social, environmental, geographic, site-specific and temporal information):

The project is eligible according to:

- Legislative: the project attends all legal requirements;
- Technical: alterations/adaptations required are technically feasible;
- Economic: carbon credits will contribute to make the project’s feasiblity;
- Sectoral: incentive of good practices to the sector;
- Social: The culture of burning oil as fuel will be slowly mitigated;
- Environmental: the project attends all legal requirements and no environmental impacts are predicted;
- Geographic /site specific: the plant can be uniquely geographically identified with no barriers regarding logistic;
- Temporal information: the project will not double count the GHG emissions during the ten years renewable of the crediting period.

However there is no information relevant for its eligibility which is not already described in this VCS PD.

1.17 List of commercially sensitive information (if applicable):

None of the information disclosed to the validator was withheld from the public version of the report.

2 VCS Methodology:

2.1 Title and reference of the VCS methodology applied to the project activity and explanation of methodology choices:

AMS I. C. - Thermal energy for the user with or without electricity – Version 13 from March 14th 2008, EB 38.

The project's emissions are from the combustion of fossil fuel, which is a non-renewable fuel and emits CO_2.

2.2 Justification of the choice of the methodology and why it is applicable to the project activity:

The methodology chosen for this project activity is the baseline and monitoring small scale methodology AMS-I.C: Thermal energy for the user with or without electricity – Version 13 from March 14th 2008, EB 38.
This category "comprises renewable energy technologies that supply individual households or users with thermal energy that displaces fossil fuels" with a thermal generation capacity less than 45 MW_{th}. Examples are solar thermal water heaters and dryers, solar cookers, energy derived from renewable biomass for water heating, space heating, or drying, and other technologies that provide thermal energy that displaces fossil fuel.

The project activity will use renewable biomass instead of non-renewable fossil fuel. The biomass is considered renewable according to option 5 of Annex 18 – Definition of Renewable Biomass (EB 23[6]) definition of renewable biomass: "The biomass is the non-fossil fraction of an industrial or municipal waste".

As both *Dori*'s Units (Head office in *Marília* and Subsidiary in *Rolândia*) will have their thermal generation through the combustion of renewable biomass (as described in table 4 below), displacing the use of fossil fuel (shale oil). Considering that this project will use only renewable biomass to feed the steam generators and also the proof of the renewable origin of the biomass used in the project activity, the project activity is applicable to the chosen baseline and monitoring methodology, which is described as "renewable energy technologies that supply individual households or users with thermal energy that displaces fossil fuels". Furthermore, the project activity will generate less than the limits of 45 MWthermal (MW_{th}) for Type I small scale project activities, which confirms the applicability criteria of this small scale methodology applied.

Table 4 – Renewable biomasses used in the project activity.

Type of renewable biomass used		
	Wood chips	**Peanut shells**
***Dori*'s Head Office (Marília)**	YES	YES
***Dori*'s Subsidiary (Rolândia)**	YES	NO

2.3 Identifying GHG sources, sinks and reservoirs for the baseline scenario and for the project:

According to the applied methodology, the project boundary is the physical, geographical area of the use of biomass or the renewable energy, thus, the *Dori*s' limits.

Table 5. Gases included in the project boundary and brief explanation.

	Gas	**Source**	**Included?**	**Justification/ Explanation**
Baseline	CO2	Emission from the combustion of fossil fuels	Yes	This emissions constitute the baseline scenario (major emission

[6] *Annex 18 – Definition of Renewable Biomass, from 23rd Executive Board meeting (from 2006 February 22 to 24) , available at: http://cdm.unfccc.int/EB/Meetings/023/eb23_repan18.pdf*

				source)
	CH4	-	No	Not applicable (minor emission source)
	N20	-	No	Not applicable (minor emission source)
Project Activity	CH4	-	No	Not applicable (minor emission source)
	N20	-	No	Not applicable (minor emission source)
	CO2	Emission from the combustion of fossil fuels	Yes	This emission constitutes the project emissions (minor emission source)

2.4 Description of how the baseline scenario is identified and description of the identified baseline scenario:

A plausible baseline scenario would be the use of Natural Gas. However, there is no distribution / gas pipe in the region[7] of the project activity, which excludes this baseline possibility. It is foreseen that the city of *Marília* will have it's first gas pipe (12 km long) finished in January 2009[8], which will bring natural gas for the industries and for the city. Thus, natural gas would only be a plausible baseline scenario if there were a natural gas pipeline available for fuel supply. The City of *Rolândia* has no gas pipeline.

Another potential scenario would be the use of heavy oil or any petrol derived, but the current prices and market instability make this possibility impracticable.

The shale oil is the fuel that *Dori* has been utilizing for a long time, which characterizes the other baseline candidate. Petrobras[9] has shale oil processing activities which started in 1953 by developing Petrosix technology for extracting oil from oil shale. The pilot plant started in 1982 and the commercial production started in 1992. At present, the company operates 2 retorts, the largest one processes 260 tonnes/hour of oil shale. This oil refinery is situated in *São Mateus do Sul* – PR, the same state of *Dori's* subsidiary company and also relatively close to *Dori's* head office in *São Paulo* state and its production is more than 16 thousand of shale oil per month. Four years ago, the production was 35% less[10].

This way, the industries in the region have a preference of using this kind of fuel and the most probably scenario would be the use of shale oil.

The identified baseline for this project activity in *Dori Alimentos* head office was the average generation of 47,843 tons of steam per year and employment of 3,544 tons of shale oil per year. The other unity of *Dori Alimentos*, would utilize 4,077 tons of shale oil to sustain its generation of 55,041 tons of steam per year. These numbers are an estimated average in the absence of the project activity and are shown on table below.

Table 6. Baseline information

	Dori's Head Office	*Dori's* Subsidiary
Average generation of steam (tons per year)	47,843	55,041

[7] *Source: http://www.ctgas.com.br/template02.asp?parametro=2547*

[8] *According to the publication of the FECOMBUSTÍVEIS (National Federation of the Commerce of Fuels and Lubrificants) from 15th December 2008: http://www.fecombustiveis.org.br/index.php?option=com_clipping&task=nota&notaid=5645 (access in 5th June 2009, 15:51)*

[9] *Petrobrás - Short for Petróleo Brasileiro S.A., is a semi-public Brazilian energy company headquartered in Rio de Janeiro and is the main national petroleum provider and producer.. The company was founded in 1953 mainly due to the efforts of the Brazilian President Getúlio Vargas. While the company ceased to be Brazil's oil monopoly in 1997, it remains a significant oil producer, with output of more than 2 million barrels of oil equivalent per day, as well as a major distributor of oil products. The company also owns oil refineries and oil tankers. Petrobras is a world leader in development of advanced technology from deep-water and ultra-deep water oil production. Source: http://en.wikipedia.org/wiki/Petrobras*

[10] *Source: Available on [http://www.quimica.com.br/revista/qd422/atualidades1.htm]. Accessed at March 19th, 2008*

Shale Oil consumption of the baseline (tons per year)	3,544	4,077

The calculation regarding the quantity of oil required in the burning process were done according to the efficiency of the boiler, which are the same in both unities and requires 0.074074[11] tons of shale oil to generate 1 ton of steam in *Dori Alimentos*. The baseline estimative is an average value of the first 2 years of project activity.

In the absence of wood chips, *Dori* will use peanut shells and the boilers are able to be fed with other renewable biomasses like sugar cane bagasse, elephant grass etc. The peanut shells would be provided by *Dori's* own production and for any other kind of biomass, *Dori* will buy from more distant providers.

2.5 Description of how the emissions of GHG by source in baseline scenario are reduced below those that would have occurred in the absence of the project activity (assessment and demonstration of additionality):

The methodology applied is Category AMS-I.C: Thermal energy for the user with or without electricity – Version 13 which is applicable for project activities that avoid greenhouse gas emissions by using renewable biomass in order to generate thermal energy.
Furthermore, the project activity will annually generate less than 45 MWthermal.

Project additionality is explained according to section 5.8 of the Voluntary Carbon Standard - Specification for the project-level quantification, monitoring and reporting as well as validation and verification of greenhouse gas emission reductions or removals. To demonstrate that the project is additional it will be used the test 1:

Test 1 – The project test

Step 1: Regulatory Surplus
The project is not mandated by any enforced law, statute or other regulatory framework in Federal, State and Municipal levels in the survey performed.

Step 2: Implementation Barriers
The project shall face at least one distinct barrier compared with barriers faced by alternative projects.

- **Technological and technical barrier**

In the grouped small project activity, the *Dori's* unities found some technological barriers. In the baseline scenario, using the oil, the boiler was fed with the use of pipes fixed on the side of the boiler, and some machines were used to pump the oil into the pipes. To adapt to the new system, those machines had to be changed when the new biomasses were applied. With the old boiler and all equipment connected with, it was unfeasible to make it work with the new fuel; therefore, each unity of *Dori Alimentos LTDA*. had to buy a new boiler, with different characteristics.

Different from shale oil, the new fuel used in the firing process must be stored in covered sites. With this purpose, the project proponents had to provide a covered place to stock and keep the biomass. Beyond these alterations, both unities had to make some changes in the whole system.

Detailed specifications are exposed below.

Head Office – *Marília*

The new equipment that constitutes the new boiler was just part of the necessary changes in the process. Beyond the initial investments, lots of studies and tests were done and improvements in the old system of boiler supplying. The presence and handle of the biomass inside the industry generate particulate material which caused some problems for *Dori* when they tried to renew the operational license, so they had to acquire a gas washer aiming also benefits to the employers' health. This gas washer was submitted by a sequence of tests until it starts working efficiently.

The gases exhauster system drags the particulate (sand, sawdust), this particulate material goes through a cyclone filter that removes part of the thicker particulate material, and the rest of the impure material is removed with the use of the gas washer, releasing clean water vapor to the atmosphere.

[11] *Value provided by Dori Alimentos LTDA.*

The residues from the gas washer are weekly removed and accumulated in dumpsters which, when full, are donated to local farms.

In addition to the complex program, *Dori* acquired and improved the biomass burning equipment and has arduous concerns about the maintenance because the system fed by wood chips has much more damage than when using shale oil, mainly because the wood chips requires a more complex system and brings with it some waste like rock, sand and big wood pieces. This way the maintenance cost is high.

Subsidiary Unity - *Rolândia*

In the subsidiary unity located in *Rolândia*, the wood chips are delivered directly to *Dori Alimentos* and they are stored in a storage area reconstructed by *Dori Alimentos* especially for the new biomass to prevent any contact with rain, humidity, etc. This new covered area is extremely important in order to keep the biomass dry, increasing the burn efficiency. It is important to highlight that this unity does not make use of bags for biomass storage.

The boiler used in the subsidiary company is exactly the same as the one used in the head office company. The gas washing system in this Unity is made by the multi-cyclone which drags the particulate (sand, sawdust); this particulate material goes through a cyclone filter that removes part of the thicker particulate material. Although the clear preference in investing on automation, *Dori* also hired a new employee to manage with the new system.

The subsidiary unity also has arduous concerns about the maintenance for the same reason that was mentioned above, the system fed by wood chips presents much more damage than when using shale oil.

All these mentioned equipment had to be acquired and this logistic program had to be developed in order to attend the complex new system without put in danger the company's future.

The combustion of biomass waste is considered carbon neutral cycle in and the project activity has no GHG emission, as opposed to the emissions from the shale oil[12]-fired boilers, which are part of the GHG emissions in the baseline. The efficiency of carbon absorption through the vegetation growth is very significant and can be equalized to the biomass combustion emissions.

- **Financial barrier**

With the project implementation, the both unities of *Dori* had to have an initial capital so the new system could regularly operate and one use of this investment is that it had to acquire several equipments.

The boilers were the most expensive investments made by *Dori* in the switching fuel project. The both boilers were acquired by leasing through *Citi Brasil Arrendamento Mercantil* and the total value of each boiler was U$ 665,135.84 paid in 48 lots with an annual charged tax of 8.5%.

In addition, there was also the cost of installation[13] of the new system. *Marília*'s unity spent in the order of 530,008.00 reais while the *Rolândia*'s unity spent around 551,000.45 reais. These numbers are discrepant because of the automated system created in *Rolândia*'s unity.

Table 7– Installation costs for Marília unit (in R$). Data supplied by the project proponent.

Installation Costs - Head Office (Marília)	
Third company contract – bagging process	**R$ 530,008.00**
Costs of electrical energy	
Costs with equipment acquisition	
Costs with equipment maintenance	
Renewable biomass costs per m3 (wood chips)	**R$ 34,98**
Renewable biomass costs per m3 (peanut shells)	**R$ 5,85**
Transportation costs of the renewable biomass per	**R$ 2,75**

[13] *Installation costs were supplied by the project proponent by email on august 14th 2008.*

m3 (wood chips or peanut shells)	

Table 8 – Installation costs for Rolândia unit (in R$). Data supplied by the project proponent.

Installation Costs– Subsidiary (Rolândia)	
Employee cost	**R$ 551,000.45**
Costs of electrical energy	
Costs with equipment acquisition	
Costs with equipment maintenance	
Tractor rent and employee contract with a third company	
Renewable biomass costs per m3 (wood chips)	**R$ 34,98**
Transportation costs of the renewable biomass per m3 (wood chips)	**R$ 2,75**

- **Institutional Barriers**

- Risks of the project

The project activity implementation presents a risk to the project proponents, once the use of a new biomass and its machines adds a significant amount of insecurity to the production process, as the use of shale oil is a usual and well-known process. This change an extensive period of fiscal vulnerability for *Dori*, since during the boiler switch and adaptation period, the production was low.

The production can decrease, representing a risk and a hazardous period to the *Dori*, as the operators do not have the completely knowledge of how to use wood chips and peanut shells, as well as the efficiency of these new biomasses. Furthermore, *Dori Alimentos* can overgrow a period in which there is possibility that there is lack of biomass, representing another risk period.

Since it must be re-emphasized that there is no direct subsidy or support from government for this project, without the income from the commercialization of the carbon credits, the fuel switch at *Dori Alimentos* would not be feasible or attractive to the project developer.

- Barrier due to the price of the biomass

The combustion of wood chips to generate thermal energy still isn't a consolidated process, so it can be considered an innovation in the industry sector. The future demand of this alternative fuel e.g. by other consumers is not predictable. Although there is currently great amount of biomasses available, there is a possibility that the prices will increase, especially between harvests, when the demand biomasses that do not depend on harvest like the pinus and eucalyptus wood chips used in the project activity and the problem with biomasses disposal is attenuated.

Step 3: Common Practice

GHG Protocol for Project Accounting, common practice analysis shall be carried out following:

1. Define the product or service provided by the project activity.
The product of the project activity is candies and other food products.

2. Identify possible types of baseline candidates[14].
The baseline candidates are selected according to common fuels employed in the project activity region and sector (food industries) and therefore, they are: natural gas, shale oil, diesel oil, fuel oil, piped gas renewable biomass and, electricity.

3. Define and justify the geographic area and the temporal range used to identify baseline candidates.
The geographic area utilized was the South region of Brazil and it was considered its historical data of using shale oil.

4. Define and justify any other criteria used to identify baseline candidates.
Another criteria used to determine plausible baseline scenarios was the fuel availability in the project activity region, which determines the possibility for baseline scenario implementation. Therefore, some baseline scenario candidates were discarded according to table 9:

Table 9 – Baseline scenario candidates' characteristics and applicability availability.

Baseline Scenario candidates		Fuel availability in the project activity region	Justification / explanation	Plausible baseline candidate?
a.	Use of natural gas (non-renewable fossil fuel)	There is natural gas availability, but not in a constant way.	Risk of natural gas blackout – may compromise the project proponent's activities.	NO
b.	Use of shale oil (non-renewable fossil fuel)	Shale oil can easily be bought in the project activity region, considering that this fuel is abundant in that region.	The use of shale oil is common practice in the region.	YES
c.	Use of diesel oil (non-renewable fossil fuel)	Diesel oil can easily be bought in the project activity region.	The use of diesel oil is common practice in the region.	YES
d.	Use of fuel oil (non-renewable fossil fuel)	Fuel oil can easily be bought in the project activity region, nut is more expensive as the shale oil.	*Petrobrás* was offering subsidy to the consumption of fuel oil in spite of natural gas in the State of São Paulo.	YES
e.	Use of piped gas	There is no natural gas pipeline available in the project activity region.	According to the Gas Technology Centre (CTGÁS[15]) and also high associated fuel costs.	NO
f.	Use of renewable biomass (not as a VCS project activity)	Different types of biomasses are available in the project activity region, but there is no guarantee for delivered amount for all of them.	The necessary biomass amount vary according to the biomass type, as well as its availability. High installation costs and lack of well-known technology.	YES
g.	Use of electricity	There is enough electricity production and supply in the project activity region.	Considering that the electricity in the host country (Brazil) is distributed through the *SIN* (interconnected national system), the electricity supply for the project activity is not directly related to the project activity region.	YES

5. Identify a final list of baseline candidates.
The baseline candidates identified for the proposed project activity are described in table 9. Since alternatives "a" and "e" have been discarded as actual baseline scenarios because of the lack of fuel availability, the final baseline candidates are listed below.

b. Use of shale oil (non-renewable fossil fuel)
c. Use of diesel oil (non-renewable fossil fuel)

[14] *The baseline candidates were selected based on the National Energetic Balance 2008 (*BEN 2008 - Balanço Energético Nacional) *base year: 2007, which contains detailed information about the type of fuel consumed by sector and geographical region.* http://www.mme.gov.br/site/menu/select_main_menu_item.do?channelId=1432&pageId=17036

[15] *CTGÁS (Centro de Tecnologia do Gás) natural gas pipeline distribution: http://www.ctgas.com.br/template02.asp?parametro=2547*

d. Use of fuel oil (non-renewable fossil fuel)
f. Use of renewable biomass (not as a VCS project activity)
g. Use of electricity

6. Identify baseline candidates that are representative of common practice (for the project-specific baseline procedure).

The use of renewable biomass as fuel is a baseline candidate once there is sufficient availability of renewable sources in the region, such as sawdust, rice husk, peanut shells and wood chips. The main reason for the use of non-renewable fossil fuels as common practice in the project activity region is that for the use of renewable biomass, several investments have to be made. The technology implementation and investments needed are higher than for the use of fossil fuels. Also the logistics for the transportation and handle of the renewable biomass are more complex, so that the use of this fuel becomes inappropriate for this kind of activity.

The shale oil is the fuel that *Dori* has been utilizing for a long time, which characterizes the other baseline candidate. *Petrobrás*[16] has shale oil processing activities which started in 1953 by developing Petrosix technology for extracting oil from oil shale. The pilot plant started in 1982 and the commercial production started in 1992. At present, the company operates 2 retorts, the largest one processes 260 tonnes/hour of oil shale[5]. This oil refinery is situated in *São Mateus do Sul* – PR, the same state of *Dori's* subsidiary company and also relatively close to *Dori's* head office in *São Paulo* state and its production is more than 16 thousand of shale oil per month. Four years ago, the production was 35% less[17].

This way, the industries in the region have a preference of using this kind of fuel and the most probably scenario would be the use of shale oil.

a) **Natural gas:** it is restricted by the inconstant distribution of natural gas which made the project developers not to trust in this fuel, therefore excluding this possibility. The risk of lack of offering and higher costs when compared with other fuels discourages the scenario of investing in this type of fuel even in local with piped gas. The distribution of gas is preferentially performed to thermal power plants, increasing the risk of blackout of natural gas.

b) **Fuel oil:** This fuel is more expensive than shale oil, however it more plausible to use than natural gas due to its efficiency and availability in the project activity region. The risks involving natural gas distribution are so considerable that PETROBRÁS was offering subsidy to the consumption of fuel oil in spite of natural gas in the State of São Paulo.

c) **Shale oil:** The fuel employed in *Dori*'s boiler before the project activity, which would be the scenario of high GHG emissions, once its emission factor is higher than the natural gas according to IPCC 2006[18].

Therefore, the common practice is the use of shale oil; the fuel most employed, with fewer risks associated and high availability.

Using shale oil as fuel to provide thermal energy had shown good results especially because of the experience in manage this kind of fuel. The fuel switch represents a barrier to the project developer since the baseline practice is well known and established.

Dori Alimentos LTDA. is an industry that has been using shale oil successfully since the beginning of their activities which means more then forty years. To acquire new equipments and switch the fuel represents a risk to the project developer since the first practice was showing good results for several years.

Besides, the burning of oil is well known by the *Dori's* labourers, since it had been done during a long period. The operators had the knowledge of the ideal amount of oil in order to achieve the optimum temperature in the boilers to generate the perfectly amount of steam and afterward, optimize the process. In order to clarify new procedures related to the machineries implanted, especially because of the new boiler's start-up and to maintain the correct steam generation, the technician of AAlborg Company oriented and capacitated the boiler's operators in loco. And *Dori* faced tough resistance from the employees who were very used to the standard situation, managing the oil insertion.

The *Dori's* production unities, in order to adapt themselves to the new practice, made a series of changes and adaptations.

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[16] *Performs in oil and oil by product exploration, production, refining, marketing, and transportation, both in Brazil and abroad. More information available in: http://www2.petrobras.com.br/ingles/ads/ads_Petrobras.html*

[17] *Source: Available on [http://www.quimica.com.br/revista/qd422/atualidades1.htm]. Accessed at March 19th, 2008*

[18] *Source: IPCC 2006 Guidelines for National Greenhouse Gas Inventories. Source: http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf. Page 2.18. Table 2.3.*

In *Dori's* Head Office, keeping the same staff, they gave preference to invest on automation, pay overtime on weekends for one employee in charge of the bags management and in the contract with a third company which is responsible for the wood chips bagging. The automation creation is always an expensive and very lengthy process.

The differences between the unities in this case are that in *Dori's* subsidiary unity, the bagging process does not contemplate the biomass storage, and management is made by the company itself and the boiler is fed with the use of a motorized cart by a third company.

Thus, the project activity is not a common practice.

Impacts of project approval

Brazil was the third major contributor[19] to the carbon dioxide emissions in the year of 2003, due mainly to deforestation. Contemporary studies generally place Brazil fourth in the ranking of the countries that emit the most GHGs. Renewable sources are relatively less prejudicial to the environment, in terms of local emissions (particle material, sulphur and lead) and greenhouse gases.

The use of fossil fuels brings forward serious environmental problems such as global warming. There are also raising concerns about the security of the oil transportation that can result in huge environmental impacts, chiefly when this transportation is overseas.

As Brazil occupies a top position between the emitters of carbon dioxide, any kind of efforts to change this scenario and take Brazil out of this uncomfortable top position, is willingly received. In addition, the project activity will contribute to the sustainable development of the host country.

[19] *Source: Goldemberg & Moreira. Política Energética no Brasil. Estudos Avançados 19 (55), 2005. Available in: <http://www.scielo.br/pdf/ea/v19n55/14.pdf> (last visit in April 2009).*

3 Monitoring:

3.1 Title and reference of the VCS methodology (which includes the monitoring requirements) applied to the project activity and explanation of methodology choices:

The methodology applied is Category AMS-I.C: Thermal energy for the user with or without electricity – Version 13, EB 38 which is applicable for projects that avoid greenhouse gas emissions by using renewable energy technologies that supply individual households or users with thermal energy that displaces fossil fuels as in the grouped project.
Furthermore, the project activity will annually generate less than 45 MWthermal.

Source data used in this report is based on real outputs from each *Dori*'s Unity. This section will focus on information management related to production.

The biomasses receipts will be monitored to represent the amount of each biomass in fact consumed, what means the amount of biomasses consumed through the production. Consequently, those data will be digitally stored *Dori*.

3.2 Monitoring, including estimation, modelling, measurement or calculation approaches:

The monitoring will be done with the aim of determine the most approximate quantity of shale oil that, in the absence of the project, would be consumed in the companies' boilers and consequently the amount of GHG that would be emitted in tons of CO_2e.

In order to generate the same sum of steam, the thermal energy generated by shale oil is not directly equivalent to the energy generated by the amount of biomass used in the project activities, once the net calorific values of the shale oil and the renewable biomasses (wood chips and peanut shells) are different. Therefore the amount of oil that would be used in the absence of the project will be estimated through the amount of steam generated in a month, which is specified bellow taking *Dori's* Head Office as example.

Tonnes of shale oil consumed = Tonnes of steam generated/month * Efficiency Factor
$Q_{shaleoil}$ = Qsteam * conversion factor
$Q_{shaleoil}$ **= 3,986.95 ton of steam * 0.074074074 ton of shale oil/ton of steam = 295.32 ton of shale oil/month**

The efficiency factor is provided by the project developer and it is based on internal studies and represents the direct relation between the oil consumption and the steam generated. The amount of steam generated (Qsteam) is also a value provided by the project proponent and is monitored monthly and archived electronically (Excel sheets).

The following table shows the frequency of the monitoring of each parameter.

Table 10. Details of the monitoring plan in terms of frequency of data.

Parameters	Description	Units	Origin	Frequency
Qrenbiomass	Amount of renewable biomass consumed	Tonnes	Measured by the project developer	Monthly
ρrenbiomass	Specific gravity of renewable biomass	Ton/m3	Estimated by *Dori Alimentos*	Not monitored
Biomass origin	Origin of renewable biomass	Not applicable	Controlled by the project developer	Annually
$Q_{shaleoil}$	Amount of shale oil that would be consumed in the baseline scenario	Tonnes	Estimated through calculations based on the amount of steam generated and a conversion factor provided by *Dori Alimentos*	Monthly

HGy	Amount of heat produced (production of steam)	TJ	Calculated through equation: HGy (TJ) = Qshaleoil (ton) * NCVshaleoil (TJ/ton)	Annually
Qsteam	Amount of steam generated	Tonnes	Measured by a flow meter – monitored by the project proponent	Monthly
Leakage of non-renewable biomass	Leakage resulted from the implantation of the project activity	tCO_2e	Monitored	Annually
FC $_{i,j,y}$	Amount of fossil fuel combusted in the project activity	Tonnes/year	Monitored	Monthly
EFshaleoil	CO_2 Emission factor of shale oil	tCO_2/TJ	IPCC 2006 Guidelines for National Greenhouse Gas Inventories. Source: http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf. Page 2.18. Table 2.3.	Not monitored
NCVshaleoil	Net Calorific Value of fossil fuel	TJ/Tonne of heavy oil	Bibliography	Not monitored
ρshaleoil	Specific gravity of fossil fuel	ton/ m^3	Bibliography	Not monitored
Efficiency Factor	Conversion factor for determining the amount of shale oil consumed based on the amount of steam generated	ton of shale oil/ ton of steam	Data from project developer	Not monitored
η_{th}	Efficiency of the plant using fossil fuel that would have been used in the absence of the project activity.	%	Estimated by *Dori Alimentos*	Not monitored

3.3 Data and parameters monitored / Selecting relevant GHG sources, sinks and reservoirs for monitoring or estimating GHG emissions and removals:

Monitored Parameters

Data / Parameter:	**Qrenbiomass**
Data unit:	Tonnes
Description:	Amount of renewable biomass (per year)
Source of data to be used:	Values measured and supplied by the project proponent
Value of data	<table><tr><th></th><th>Head Office</th><th>Subsidiary Unity</th><th>Grouped project</th></tr><tr><td>Wood chips (tons/year)</td><td>13,562</td><td>12,802</td><td>26,364</td></tr><tr><td>Peanut shells (tons/year)</td><td>1,886</td><td>-</td><td>1,886</td></tr><tr><td>**Total biomass (tons/year)**</td><td>**15,448**</td><td>**12,802**</td><td>**28,250**</td></tr></table>
Description of measurement methods and procedures to be applied:	The amount of renewable biomass will be monitored in accordance to the weight described in the receipts from the providers and the number of trucks which arrives in the companies. The biomass weighing will be done with a government approved scale for truck weighing to commercial standards. One truck of each biomass provider will be weighed once a month. In addition to the weighing registries, the amount of biomass will also be monitored through biomass invoices/receipts in order to double check the monitoring data. In case of divergence, the lower value will be employed.

QA/QC procedures to be applied:	The weighing-machine will be calibrated periodically according to the INMETRO[20] procedures and parameters, in order to guarantee the quality and precision of the amount of biomass weighted.
Any comment:	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.

Data / Parameter:	**HGy**
Data unit:	TJ
Description:	Amount of heat supplied (per year)
Source of data to be used:	The amount of steam generated (Qsteam - tonnnes) is measured by the project developer (*Dori Alimentos*) and converted in TJ through the equation: HGy (TJ) = Qshaleoil (ton) * NCVshaleoil (TJ/ton)
Value of data	
Description of measurement methods and procedures to be applied:	The amount of steam generated will be monitored with the use of a flow meter connected to the boiler.The flow meter will be periodically calibrated (each 6 months), following the INMETRO procedures and registered in calibration reports. The values of HGy will be monitored monthly.
QA/QC procedures to be applied:	
Any comment:	The flow meter comes back with Kg/h, which easily transforms into tonnes of steam.

	Steam generated (TJ/year)		
	Head Office	Subsidiary Unity	Total
Total Annually Average	135.02	155.34	290.36

Data / Parameter:	**Qshaleoil**
Data unit:	Tonnes
Description:	Amount of shale oil that would be consumed in the baseline scenario
Source of data to be used:	Calculated based on the amount of steam generated and a conversion factor provided by *Dori Alimentos.* Qshaleoil = Qsteam (tonnes of steam)* conversion factor (tonnes of shaleoi/tonnes of steam)
Value of data	
Description of measurement methods and procedures to be applied:	The amount of shale oil consumed will be calculated through the amount of steam generated in a month (Qsteam), which is measured monthly by the project proponent and a conversion factor (calculated by the project proponent)
QA/QC procedures to be applied :	The project developer will be responsible for gathering and maintaining in adequate achieve all data from steam production (measured by flow meter daily).
Any comment:	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.

	Shale oil consumed (ton/year)		
	Head Office	Subsidiary Unity	Total
Total Annually Average	3,543.96	4,077.14	7.621,10

Data / Parameter:	**Qsteam**
Data unit:	Tonnes
Description:	Amount of steam generated by the boiler

[20] INMETRO – Instituto Nacional de Metrologia, Normalização e Qualidade Industrial *(National INstitute for metrology, normalization and indesrial quality) is a federal institution, responsible for verifiying calibration and quality procedures in Brazil.*

Source of data to be used:	Value measured daily by the project proponent (*Dori Alimentos*).
Value of data	
Description of measurement methods and procedures to be applied:	The amount of steam generated is measured monthly by a flow meter installed in the boiler by the project proponent and registered in electronic format (Excel sheets).
QA/QC procedures to be applied :	The project developer will be responsible for gathering and maintaining in adequate achieve all data from steam generation (measured by flow meter daily) and also for controlling the flow meter calibration (according to the INMETRO requirements).
Any comment:	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.

	Steam generated (ton/year)		
	Head Office	Subsidiary Unity	Total
Total Annually Average	47,843	55,041	102,885

Data / Parameter:	**Renewable Biomass origin**
Data unit:	Text
Description:	Origin of renewable biomass
Source of data to be used:	Documents proving that the biomass is renewable.
Value of data	Not applicable
Description of measurement methods and procedures to be applied:	The documentation (a Forestry Partnership Contract) from each renewable biomass provider will be provided annually to prove the renewable origin of the biomass through explanation of the management of the wood extraction areas.
QA/QC procedures to be applied :	The project developer will be responsible for gathering and maintaining in adequate achieve all documents related to the renewable biomass origin.
Any comment:	Data will be kept for two years after the end of the crediting period or the last issuance of carbon credits for this project activity, whichever occurs later.

Data / Parameter:	**Leakage of non-renewable biomass**
Data unit:	tCO_2e
Description:	Leakage resulted from the implantation of the project activity
Source of data to be used:	Estimated
Value of data	0
Description of measurement methods and procedures to be applied:	The leakage considered in this project activity are those regarding the General guidance on leakage in biomass project activities (Annex 18, EB 23), which are in consistency with the other biomass alternatives available in the project activity region (forest residues and peanut shells).
QA/QC procedures to be applied :	Information about the biomass availability in the region, as well as the other industries' fuel consumption will be monitored to check the occurrence of leakage.
Any comment:	

Data / Parameter:	**$FC_{i,j,y}$**
Data unit:	Tonnes/year
Description:	Amount of fossil fuel combusted in the project activity
Source of data to be used:	Amount of shale oil consumed is monitored and supplied by the project proponent
Value of data	
Description of measurement methods and procedures to be applied:	The amount of shale oil consumed is measured monthly through level marks in the fuel tank. Also the total amount of fuel purchased is registered through receipt registries achieved in Dori´s head office.
QA/QC procedures to be applied :	The project developer will be responsible for gathering and maintaining in adequate achieves all documents related to the shale oil consumption and purchase.
Any comment:	Data will be kept for two years after the end of the crediting period or the last issuance

	Shale oil consumption (ton/year)		
	Head Office	Subsidiary Unity	Total
Total Annually Average	314.97	199.11	514.08

	of carbon credits for this project activity, whichever occurs later.

Fixed Parameters

Data / Parameter:	**EFshaleoil**
Data unit:	tCO2/TJ
Description:	CO2 Emission factor of shale oil
Source of data used:	Value checked at: -IPCC: Intergovernmental Panel on Climate Change http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_2_Ch2_Stationary_Combustion.pdf
Value applied:	73.3 tCO2/TJ
Justification of the choice of data or description of measurement methods and procedures actually applied:	The use of this parameter is mandatory under the small scale methodology AMS.I-C chosen for this PDD and value applied is recommended to be imported from the IPCC.
Any comment:	

Data / Parameter:	**NCVshaleoil**
Data unit:	TJ/tonne of shale oil
Description:	Net Calorific Value
Source of data used:	Value average checked at: - IPCC : Intergovernmental Panel on Climate Change http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_1_Ch1_Introduction.pdf
Value applied:	0.0381 TJ/Tonne
Justification of the choice of data or description of measurement methods and procedures actually applied:	This value will provide the energy generated by the amount of shale oil that would be used in the absence of the project.
Any comment:	IPCC default values shall be used only when country or project specific data are not available or difficult to obtain, according to "Guidance on IPCC default values" (Extract of the report of the twenty-fifth meeting of the Executive Board, paragraph 59).

Data / Parameter:	**Pshaleoil**
Data unit:	ton/L
Description:	Specific gravity of the shale oil
Source of data used:	Value provided by the fuel provider through the technical form of the shale oil.
Value applied:	0.00097 ton/L
Justification of the choice of data or description of measurement methods and procedures actually applied:	The amount of oil used in the baseline was measured by volume units.
Any comment:	

Data / Parameter:	**P renbiomass**
Data unit:	ton/ m3
Description:	Specific gravity of renewable biomass
Source of data to be used:	Value measured and recorded by the project proponent.
Value of data applied for the purpose of calculating expected emission reductions	**Biomasses** / **Specific Gravity (tonnes/m³)** **Wood chips** 0.35 **Peanut shells** 0.117
Description of measurement methods and procedures to be applied:	The value is referenced and was supplied by the project proponent.

QA/QC procedures to be applied:	The specific gravity of the renewable biomass can be checked each time that a truck containing big bags with wood chips or peanut shells enters the project activity site through a weighing-machine. The values weighed, the truck capacity, the date and hour of the weighing and the truck plate are recorded and achieved.
Any comment:	

Data / Parameter:	**Efficiency Factor**
Data unit:	Tons of shale oil / ton of steam.
Description:	Efficiency of the boiler, used for determining the amount of shale oil consumed, based on the amount of steam generated
Source of data used:	*Dori Alimentos LTDA*. 1/13.5 = 0.074074 13.5 is the average amount of steam generated (kg) for each kg of shale oil consumed. This value was determined by studies made through historical stem generation data, based on the functioning of the baseline boiler and the shale oil consumption registries.
Value applied:	0.074
Justification of the choice of data or description of measurement methods and procedures actually applied:	Required to calculate the amount of shale oil generated by the amount of steam calculated with the steam flow meter.

Data / Parameter:	**COEF i,y**
Data unit:	tCO2e/ ton fossil fuel
Description:	CO_2 emission coefficient of the shale oil
Source of data used:	Value calculated through the parameters NCV shaleoil and EF shaleoil: COEF i,y = NCVshaleoil * EF shaleoil = 31.8 (GJ/ton) * 0.0733 (tCO2e/GJ) = 2.33094 (tCO2e/ton)
Value applied:	2.33094
Justification of the choice of data or description of measurement methods and procedures actually applied:	Required by the "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion" (version 02, EB 41, Annex 11) to calculate the project emissions (CO_2 emissions from the consumption of shale oil in the project activity).

Data / Parameter:	**ηth**
Data unit:	%
Description:	The efficiency of the plant using fossil fuel that would have been used in the absence of the project activity.
Source of data used:	Value provided by the project proponent
Value applied:	100 %
Justification of the choice of data or description of measurement methods and procedures actually applied:	*Dori's* facilities do not use to monitor the energy generated by the shale oil consumed. However, it is well known the amount of shale oil consumed as well as the amount of fuel required to generate a ton of steam. Therefore, this project will estimate the baseline emissions through the energy generated by the real consumption of fossil fuel and assuming that ηth is 100%.
Any comment:	-

3.4 Description of the monitoring plan

The party responsible for implementing the monitoring plan shall be the owners of the companies. The project developer will also be responsible for developing the forms and registration formats for data collection and further classification. For this purpose the authorities for the registration, monitoring, measurement and reporting will be Márcia S. Cavicchioli de Oliveira, responsible for *Dori's* head office and for *Dori's* subsidiary unity.

The management structure will rely on the local technicians with a periodical operation schedule during the project. The technical team will manage the monitoring, the quality control and quality assessment procedures and the different auditory will be responsible to carry the project premises.

The boiler in the both unities has a flow meter that registers the amount of steam produced. Having the quantity of steam produced, and using the efficiency[21] of tones of shale oil per tonnes of steam generated, it is possible to obtain the total of oil that would be used by the boiler in the absence of the project activity. Those data will be monitored by the project developer. In addition to the monitoring of the steam generation, the amount of biomass will also be monitored through biomass invoices/receipts in order to double check the monitoring data. Data monitored will be kept during the crediting period and 2 years after.

The calibration **of the equipments used in the project activity will occur for all the equipments listed in table 11, following the determinations of the** *INMETRO* **(National Institute for m**etrology, normalization and indu**srial quality)**, the **federal institution responsible for verifying calibration and quality procedures in Brazil.** The cal**ibration certificates will be archived in Dori's head office and kept as record for at least the next calibration.**

Table 11 – List of equipments that will be calibrated.

Equipment	Use	Calibration purpose
Weighing-machine	Used to weight the trucks containing renewable biomass that enter the project activity site – registration of the amount of renewable biomass bought	Guarantee the quality and precision of the amount of biomass weighted.
Flow meter	Used to determine the amount of steam generated in the boilers (in kg)	Guarantee the quality and precision of the amount of steam generated daily. Calibration will occur each 6 months.

4 GHG Emission Reductions:

4.1 Explanation of methodological choice:

Baseline

$$BEy = HGy * EF\ CO2 / \eta th \qquad \text{(Equation 01)}$$

Where:

BEy: The baseline emissions from steam/heat displaced by the project activity during the year y in tCO2e.

HGy: The net quantity of heat supplied by the project activity during the year y in TJ.

EFCO2: The CO2 emission factor per unit of energy of the fuel that would have been used in the baseline plant in (tCO2 / TJ), obtained from reliable local or national data if available, otherwise, IPCC default emission factors are used.

ηth: The efficiency of the plant using fossil fuel that would have been used in the absence of the project activity.

Dori's facilities do not use to monitor the energy generated by the shale oil consumed. However, it is well known the amount of shale oil consumed as well as the amount of fuel required to generate a ton of steam. Therefore, this project will estimate the baseline emissions through the energy generated by the real consumption of fossil fuel and assuming that ηth is 100%.

As no specific equation is mandatory under the methodology applied to this project activity (AMS.I-C: Thermal energy for the user with or without electricity, version 13, EB 38) to calculate the net quantity of heat supplied by the project activity (HGy) during the year *y* (in TJ), this parameter was calculated according to the equation 02, an equation determined by the project proponent based on the amount of shale oil consumed by the project (specific data available at the project activity sites) and on the net calorific value of the shale oil (default value provided by the IPCC),:

$$HGy = Q_{shaleoil} \times NCV_{shaleoil} \qquad \text{(Equation 02)}$$

Where:

Qshaleoil: Amount of shale oil consumed (ton)

[21] *Amount of oil per tonnes of steam generated.*

NCVshaleoil: Net calorific value of shale oil (TJ/ton)

Leakage (LEy)

The leakage predicted in the baseline and monitoring methodology AMS-I.C - Thermal energy for the user with or without electricity (version 13, EB 38) is not applicable for this project activity as there is no transference of equipment. As described in section 1.9, new equipments were acquired for the project activity implementation, so no leakage is to be considered in the emission reductions calculations.

In addition, these kind of industry (food industries) are very present in the states where the project activity is being implemented, which means that the project activity will not disturb in any aspects the wood or peanut market once that is a plenty of this kind of biomass available. The tables below show the main wood chips and peanut shells providers, their location and percentage of contribution for the both unities.

Table 12. Wood chips providers for both unities.

Unity	Biomass Providers	Percentage
Head Office - *Marília*, SP	Grupo Brancalhão	100%
Subsidiary - *Rolândia*, PR	Grupo Brancalhão	61%
	Maurício C. Rodrigues Madeiras	6%
	Madeireira e Serraria SK *LTDA*.	33%

Table 13. Peanut shells providers for Head Office Unity.

Unity	Biomass Providers	Percentage
Head Office - *Marília*, SP	Angelo Marcio Calixt	58%
	Yoki Alimentos S.A	25%
	Dori Alimentos LTDA	17%

The leakage from biomass projects, like the project activity, shall also be estimated according to the "General guidance on leakage in biomass project activities (Annex 18, EB 23)" of Indicative Simplified Baseline and Monitoring Methodologies for Selected Small-Scale CDM Project Activity Categories, which identifies different emission sources based on type of biomass being considered and states that a minimum of 25% above the amount of biomass used in the project activity shall be available in the project activity region, avoiding the lack of biomass supply for other buyers.

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Table 14. Sources of leakage according to the type of the biomass used.

Biomass Type	Activity/ Source	Shift of pre project activities	Emissions from biomass generation/ cultivation	Competing use of biomass
Biomass from forests	Existing forests	-	-	X
	New forests	X	X	-
Biomass from croplands or grasslands (woody or non-woody)	In the absence of the project the land would be used as a cropland/wetland	X	X	-
	In the absence of the project the land will be abandoned	-	X	-
Biomass residues or	Biomass residues or wastes are	-	-	X

waste	collected and used.			

Observing table above, the source of leakage of the present project is showed below according to each type of biomass applied to the *Dori*' s units.

Forest Residues (Sawdust/wood chips)

Forest Residues are also a probable fuel to be used for steam generation in the project activity units. The production of wood generates a large amount of residues, which can be reused to generate thermal energy. As can be observed in the figure 5, the potential of energy generation in the states of *São Paulo* and *Paraná* are extremely high, which means that there is an enormous availability of this kind of fuel to be employed in the project activity units (*Rolândia-PR* and *Marília-SP*).
Also, the average amount of wood chips consumed yearly by the project activity (72,543.63 m3) represents only 0.22% of all wood chips and wood residues produced in the States of *São Paulo* and *Paraná,* as can be seen in table 12. This way, the use of this biomass does not have potential to generate leakage emissions due to its high availability.

Figure 5- Forest Residues Potential for Energy Generation[22].

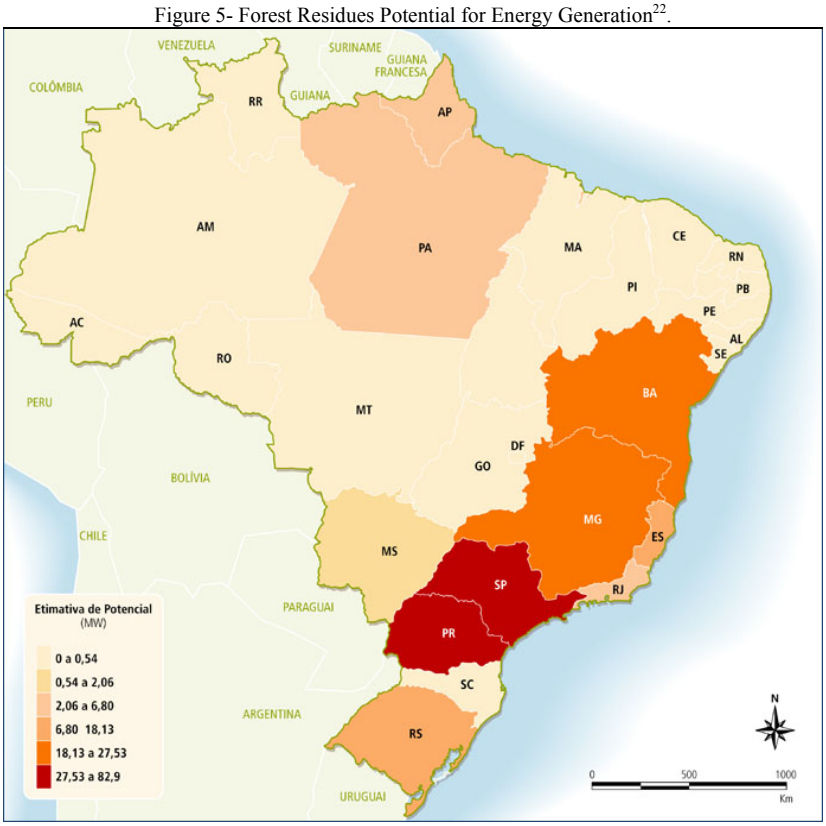

Table 15 – Production of wood logs and wood residues in the States of *São Paulo* and *Paraná. Source: IBGE 2007* - *http://www.ibge.gov.br/estadosat/index.php*

[22] Source: *CENTRO NACIONAL DE REFERÊNCIA EM BIOMASSA - CENBIO. Panorama do potencial de biomassa no Brasil. Brasília*; Dupligráfica, 2003. 80p. – Map available at: http://www.aneel.gov.br/aplicacoes/Atlas/biomassa/5_2.htm (access in July, 2009).

	São Paulo	*Paraná*
Production of wood log - 2007 (m^3)	25,966,464	23,759,668
Amount of wood chips produced per m3 of wood log (%)[23]	65	
Total residues generated (m3)	16,878,202	15,443,784
Average amount of renewable biomass (wood chips) consumed by the project activities (m3/year).	72,543.63	

Peanut Shell

Peanut Shell is the other renewable biomass used in the project activity (only in the *Marília* unit). The state of *São Paulo* is the biggest producer of peanut of Brazil. Table 13 shows the total amount of peanut produced between the years 2005 and 2007 in the state of *São Paulo* and Brazil. According to IBGE (Geographic and Statistic Brazilian Institute), the shell represents thirty percent of peanut's weight[24].

Table 16 - Peanut Production in the state of *São Paulo*. Source: www.iica.org.br/Docs/Publicacoes/PublicacoesAgricolas/Lev03_Safra20062007.pdf

Peanut production in *São Paulo* State		
First and Second Harvest		
Harvest	2005/2006	2006/2007
Peanut production (in thousand of tonnes)	207.8	188.3
Peanut shells (in thousand of tonnes)	62.34	56.49

As the peanut shells used in *Dori Alimentos* head office are a residue of the peanut candies' production process, they are classified as a "biomass residue or waste", which according to table 9, characterizes a competing use of biomass. As the consume of peanut shells by the project activity (average of 2,075.16 tonnes per year) represents only 0,04% of all peanut shells produced between years 2006 and 2007, there is no leakage to be considered.

Project Emissions

The project emissions are those related to the CO_2 emissions from the consumption of shale oil and are calculated according to the second version of the methodological tool "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" (EB 41, annex 11). The shale oil consumption in the project activity is considered a minor emission source once the small amount of fossil fuel consumption is required only to perform cleaning and maintenance of the steam generation equipments, so it is a sporadic routine.

The project emissions (PEy) are calculated through equation 03:

$$PEy = FC_{i,j,y} * COEF_{i,y} \quad \textbf{(Equation 03)}$$

Where:

PEy: Project CO_2 emissions from the combustion of fossil fuel (tonnes of CO_2 eq)

[23] According to Brand (et. al 1999), 65% of all forestry produced yearly becomes waste biomass - BRAND, M.A; MUNIZ, G.I.B.; SILVA, D.A.; KLOCK. U. Caracterização do rendimento e quantificação dos resíduos gerados em serrarias através do balanço de materiais. Revista Floresta 32(2) 247-259. Paraná, 2001 (Characterization of the income and measurement of the waste generated in sawmills through the material balance. "Floresta" Magazine 32(2)).

[24] *Source: <cenbio.iee.usp.br/download/metodologiabiomassa.pdf>*

FC $_{i,j,y}$: Amount of fossil fuel combusted in year y (tonnes of fossil fuel)
COEF $_{i,y}$: CO_2 emission coefficient of the fossil fuel used in year y (tonnes of CO_2 eq/ tonnes of fossil fuel)

The parameter COEF $_{i,y}$ value is 2.33094 tCO_2e/ton and was calculated as per the following equation, required in the methodological tool (EB 41, annex 11):

COEF $_{i,y}$ **= NCV**$_{i,j}$ *** EF**$_{CO2i,j}$ **(Equation 04)**

Where:
COEF $_{i,y}$: CO_2 emission coefficient of the fossil fuel used in year y (tonnes of CO_2 eq/ tonnes of fossil fuel
NCV$_{i,j}$ **:** weighted average net calorific value of the fuel type i in year y = NCV shaleoil (GJ/ tones of fossil fuel)
EF$_{CO2i,j}$: weighted average CO2 emission factor of fuel type i in year y = EFshaleoil (tones of CO_2 eq/ GJ)

Emission Reductions

According to the methodology applied to this project activity (AMS.I-C, version 13), the emission reductions shall be calculated considering these criteria:

"21. If fossil fuel is used, the thermal energy or the electricity generation metered should be adjusted to deduct thermal energy or electricity generation from fossil fuels using the specific fuel consumption and the quantity of fossil fuel consumed." (option 1)

"23. The amount of thermal energy or electricity generated using biomass fuels calculated as per paragraph 21 shall be compared with the amount of thermal energy or electricity generated calculated using specific fuel consumption and amount of each type of biomass fuel used. The lower of the two values should be used to calculate emission reductions." (option 2)

As the project activity consumes a small amount of fuel oil (as described above in "project emissions") and also renewable biomass (wood chips and peanut shells), the emission reductions calculations were made deducing the amount of thermal energy generated by the fossil fuel consumption, so that the final results represent only the amount of emission reductions generated by the consumption of the renewable biomass.

ERy = BEy –LEy - PEy (Equation 05)

Where:

ERy: Emission reduction in the year "y" (tonnes of CO_2 eq);
BEy: Baseline emissions of CO_2 that would be generated through shale oil burning (tonnes of CO_2 eq).
LEy: Leakage emissions from renewable biomass (tones of CO_2 eq).
PEy: Project CO_2 emissions from the combustion of shale oil (tones of CO_2 eq)

4.2 Quantifying GHG emissions and/or removals for the baseline scenario:

Baseline Emissions

***Dori's* Head Office:**

The baseline emissions can be obtained by Equation 01 and 02, as follows:
HGy = Qshaleoil x NCVshaleoil (eq 02)
HGy = 3,544 tons of oil x 0.0381 TJ/ton = 135.02 TJ (amount of heat produced)

BEy = HGy * EF CO2 /ηth (eq 01)
BEy = 135.02 TJ x 73.3 tCO2/TJ /100% = 9,897tCO2

The baseline emissions for each crediting period for Dori´s head office and subsidiary are presented in tables 16 and 17, respectively:

Year	Total of shale oil consumed by the project activity (ton)	Total of renewable biomass consumed by the project activity (m3)		Total energy produced by the renewable biomass (TJ)	Total Emission Reductions (tCO2e)
		wood chips	peanut shells		
April - 2006	175.02	28,838.00	0.00	89.45	6,557
2007	139.95	39,044.00	17,736.00	140.25	10,280
2008	186.66	38,747.33	17,736.00	129.76	9,511
2009	186.66	38,747.33	17,736.00	129.76	9,511
2010	186.66	38,747.33	17,736.00	129.76	9,511
2011	186.66	38,747.33	17,736.00	129.76	9,511
2012	186.66	38,747.33	17,736.00	129.76	9,511
2013	186.66	38,747.33	17,736.00	129.76	9,511
2014	186.66	38,747.33	17,736.00	129.76	9,511
2015	186.66	38,747.33	17,736.00	129.76	9,511
March - 2016	46.66	9,686.83	4,434.00	32.44	2,377
Total	**1,855**	**387,548**	**164,058**	**1,300**	**95,301**
Number of years of the crediting period					10
Annual average of estimated emissions reductions for the 10 years of crediting period (ton de CO_2equ)					**9,530**

Table 17 – Amount of emission reductions calculated for Dori's head office (Marília), in tones of CO2e.

Year	Total of shale oil consumed by the project activity (ton)	Total of renewable biomass consumed by the project activity (m3)		Total energy produced by the renewable biomass (TJ)	Total Emission Reductions (tCO2e)
		wood chips	peanut shells		
April - 2006	86,55	26.409,90	0,00	113.57	8,325
2007	112,56	37.939,50	0,00	145.11	10,637

2008	113,98	36.576,35	0,00	148.26	10,867
2009	113,98	36.576,35	0,00	148.26	10,867
2010	113,98	36.576,35	0,00	148.26	10,867
2011	113,98	36.576,35	0,00	148.26	10,867
2012	113,98	36.576,35	0,00	148.26	10,867
2013	113,98	36.576,35	0,00	148.26	10,867
2014	113,98	36.576,35	0,00	148.26	10,867
2015	113,98	36.576,35	0,00	148.26	10,867
March - 2016	28.50	9,144.09	0,00	37.07	2,176
Total	**1,139**	**366,104**	**-**	**1,482**	**108,612**
Number of years of the crediting period					10
Annual average of estimated emissions reductions for the 10 years of crediting period (ton de CO_2equ)					**10,861**

Table 18 - Amount of emission reductions calculated for Dori's subsidiary (*Rolâdia*), in tones of CO2e.

4.3 Quantifying GHG emissions and/or removals for the project:

As described in section 4.1, there are still fossil fuel emissions to be considered in the project activity: the combustion of shale oil used in the steam production equipments' maintenance and cleaning. Since this fossil fuel consumption is a small amount and also that this is a sporadic consumption, the emissions are included in the emission reductions calculations (as project emissions), but are considered as minor emission sources under the applied methodology. The leakage is considered zero.

4.4 Quantifying GHG emission reductions and removal enhancement for the GHG project:

The emission reductions are a result from the equation 05, which depends also on the results from equations 01 and 02, whose calculations have already been described in section 4.2 and also from equations 03 and 04, described below.

The project emissions can be obtained by equations 03 and 04, as follows:
$COEF_{i,y} = NCV_{i,j} * EF_{CO2i,j}$ (eq 04)
$COEF_{i,y}$ = 31.8 (GJ/ton) * 0,0733 (tCO2e/GJ) = 2.33094 tCO2e/ton

$PEy = FC_{i,j,y} * COEF_{i,y}$ (eq 03)
PEy = 157.5 (ton) * 2.33094 (tCO2e/ton) = 367.12 tCO2e

As described in section 4.1, leakage emissions (LEy) are considered zero for the project activity, thus the emission reductions are calculated through equation 05:

ERy = BEy – LEy – PEy (eq 05)
ERy = 8,261 (tCO2e) – 0 – 367.12 (tCO2e) = **7,894 tCO2 eq**

The emission reductions estimative for the grouped project is presented on table 18, as follows. The shale oil consumed from 2008 onwards is being considered zero but it will be a monitored data and project emissions will be calculated according to real fuel consumption in the monitoring reports.

Year	**Total of shale oil consumed by the project activity (ton)**	**Total of renewable biomass consumed by the project activity (m3)**		**Total energy produced by the renewable biomass (TJ)**	**Total Emission Reductions (tCO2e)**
		wood chips	**peanut shells**		
April - 2006	261.57	55,247.90	0.00	203.02	**14,881**

2007	252.51	76,983.50	17,736.00	285.36	**20,916**
2008	300.64	75,323.68	17,736.00	278.02	**20,378**
2009	300.64	75,323.68	17,736.00	278.02	**20,378**
2010	300.64	75,323.68	17,736.00	278.02	**20,378**
2011	300.64	75,323.68	17,736.00	278.02	**20,378**
2012	300.64	75,323.68	17,736.00	278.02	**20,378**
2013	300.64	75,323.68	17,736.00	278.02	**20,378**
2014	300.64	75,323.68	17,736.00	278.02	**20,378**
2015	300.64	75,323.68	17,736.00	278.02	**20,378**
March - 2016	75.16	18,830.92	4,434.00	69.51	**5,093**
Total	**2,994.34**	**753,651.79**	**164,058.00**	**2,782.07**	**203,913**
Number of years of the crediting period					10
Annual average of estimated emissions reductions for the 10 years of crediting period (ton de CO_2equ)					**20,391**

Table 19 – Total emissions of the grouped project (Dori's head office and subsidiary company), in tones of CO2e.

5 Environmental Impact:

Environmental Laws related to the plant activities

The Environmental National Policy, *Política Nacional do Meio Ambiente* - PNMA, instituted by the Brazilian Law 6.938/81, establishes that the construction, installation, amplification and operation of any enterprise or activity which may exploit natural resources, and are considered potentially pollutant, or capable of degrading the environment, will be possible only if they obtain a previous environmental permission; according to the Brazilian Constitution of 1988. One of the tools settled by the PNMA, in order to monitor and study the potential impacts generated by these kinds of enterprises, is the Environmental Impact Assessment (EIA).

An EIA was not required due to the project activity.

The project contribution for the sustainable development

A sustainable energetic future depends on a huge raising quantity of renewable energy, especially on the developing countries. One of the best ways of reach this goal is encouraging the use of renewable energy instead of fossil fuels, that is the purpose of the present project.

The exhaustible fossil fuels represent about 80% of the world's total supply of energy. If this consumption maintains the same, the petrol reserves will be exhausted within 41 years, the natural gas reserves within 64 years and charcoal within 155 years, considering that the demand always grows, this exhaustion can happen faster than the forecast[25].

Although it is very simplified, this analysis illustrates why the fossil fuels can be considered the main source of energy of the world for more than one or two generations. Besides these problems, the use of fossil fuel brings forward serious environmental problems such as global warming. There are also raising concerns about the security of the oil transportation that can result in huge environmental impacts, mainly when this transportation is over the sea.

The fossil fuels represent about 80% of the world's total energy supply, the nuclear represents 6.3% and the renewable sources, 13.6%, where the major fraction is from the traditional biomass which is used mainly in an inefficient manner and nearly always leading to the deforestation[24].

The renewable sources are widely available, guarantying more security of the energy supply and diminishing the dependency of the petrol importation of the politically unstable regions. The renewable sources are relatively less prejudicial to the environment, in terms of local emissions (particle material, sulphur and lead) and greenhouse gases.

The project activity contributes to the level reduction of greenhouse gas (GHG) emissions by avoiding the incentive of fossil fuels utilization. Greenhouse gas emissions will be also reduced by avoiding the anaerobically decay of wood chips. In addition, the project activity will contribute to the sustainable development of the host country, such as:

- The diversification and improvement of sources for thermal energy generation;

- The creation of job opportunities;

- The guarantee of self-sufficiency;

- The use of clean and efficient technologies through the use of biomass waste as fuel. By these means the project is in accordance to Agenda 21 and with Brazilian Sustainable Development Criteria;

- A pioneer initiative that encourages throughout the country the development of new technologies that substitutes the use of usual fuels for renewable biomass which presents an efficient thermal energy generation potential as shown in the project demonstration;

Dori Alimentos LTDA. always had concerns with social issues, and when it is possible, social projects are implemented. Examples of some social project applied are

Dori promotes social events like:

- "Children's party" - for the employees' children;
- "Children's week" - week of activities in the children's home;
- Sports championships for the employees;
- "Reading incentives" - making a library available for the employers and landing books;
- "Celebrating your birthday" – a cake is served and the birthday person receives a *Dori's* kit;
- "Interaction moment" – opportunity to have contact with other employees;

[25] *Science Magazine, volume 315, Feb 09 2007.*

- "Special weekend" – Each 6 months, employees without absences can win a trip in a weekend;
- "Mother's day" and "Father's day" – special event with lunch or cocktails;
- "June party" – Brazilian traditional party that happens every year on June;
- "Challenge Day" – Incentive to physical activities;
- "World cup prizes" – During the football world cup, *Dori* gives products to needy entities in *Marília* and *Rolândia*;
- "Homeland week" – Historical day in Brazil. *Dori* spreads the meaning of this day, everybody get together to sing the national anthem;
- Toys – In the Christmas the kids receive toys;

Dori also promotes social projects involved to Health and Life quality such like:

- "Life quality" – Campaigns against drugs, STD, Cancer, Heart diseases, Respiratory diseases and Diabetes and Blood donation movements.

Social benefits offered by *Dori* to its employees are:

- Restaurant for lunch, Food basket, *Dori* products kit, Scholar kits, Uniforms, Group life-insurance;

Training courses promoted by *Dori*:

- Each position in the company has its own course and training in order to increase the employee capacity and consequently reducing risks in the company and Scholarship for the employees.

Environmental issues:

- Integrated system of Environmental Management; Hydric resources management; Environmental education; Environmental impacts management; Air quality control.

All these projects were applied in the year of 2006, there are some more that have been created and applied by *Dori*, which shows how the company is highly concerned about the employees' life quality and the carbon credits income will represent a new opportunity to enhance the investments on these kind of projects.

6 Stakeholders comments:

The main stakeholders considered in this project are the local government, the Brazilian Association of Food Industry and the employees. A letter was sent to the stakeholders informing about the project. In *Dori*'s facilities, the letter was posted on the employees' board which is a visible place with high circulation of employees. The letter is available during 7 days and the comments are expected for a period of 7 days after the letter has been posted.

The comments received from the stakeholders are described below, according to the date of receive of the letter/email:

1. From Reinaldo Santos Martins (reimarsp@hotmail.com), sent by email at 23th December, 2008.

This email congrats the project proponent for the development of the project activity and suggests that the carbon credits marketing should be widely disclosed in order to strengthen the Company's commitment with the environmental cause.

Bom dia!

Gostaria de parabenizá-los pelo trabalho que está sendo desenvolvido, pois sabemos que a questão ambiental está cada vez mais em evidência e certamente empresas que desenvolvem ações proativas como a Dori Alimentos, são empresas diferenciadas, que mostram sua preocupação no meio em que atuam.

Sugiro que a comercialização de venda de crédito de carbono seja amplamente divulgada, afim de fortalecer o comprometimento da empresa com a questão ambiental, pois pelo que me consta nenhuma empresa da cidade atua nesse sentido.

Atenciosamente,

Reinaldo Santos Martins

2. From Fernando de Lima Colombo (djcolombolc@yahoo.com.br), sent by email at 29th December, 2008.

This email congrats the project proponent and all involved in the project activity for the initiative of using renewable biomass for the steam production and evidences the importance of diversifying the Brazilian energy matrix.

Bom dia,
Recebi a carta de divulgação do trabalho que a Dori esta fazendo referente a utilização de combustivel renovavel (Biomassa) para produção de vapor.
Recentemente defendi uma manografia sobre a Cogeração de Energia Através da Queima do Bagaço de Cana-de-açucar, onde pude percerber o quanto é importante a diversificação da matriz energética de nossa pais e para o mundo, visto que a maior fonte de energia para todo é proveniente do petróleo que é algo finito. A comercialização de credito de carbono foi outro assunto abordado em meu trabalho e estou contente em saber que a politica ambiental da Dori esta alinhada ao protocolo de Kyoto, e ainda possibilitando a mesma a comercialização dos crédito.
Praticas como essas sempre serão bem vindas e apreciadas; Parabéns a todos os envolvidos.

Atenciosamente

Fernando de Lima Colombo

3. From José Humberto Soares (humberto@dori.com.br) - *Dori Alimentos LTDA* Quality guarantee and product manager, sent by email at 6th January 2009.

This email shows the enthusiasm and pride of wording in an industry that concerns about the environmental issues and hopes that this initiative becomes an example for other industries to do similar projects.

Prezado Sr

Foi com grande satisfação que tomei conhecimento da iniciativa da Dori para redução da emissão dos gases responsáveis pelo efeito estufa. É motivo de orgulho para seus colaboradores saber que a Empresa está inserida no esforço mundial para a busca da sustentabilidade em nosso planeta. Que este projeto sirva de incentivo a outras empresas para que façam o mesmo. Parabéns a todos os envolvidos.

Atenciosamente,

José Humberto Soares

Gerente de Produto e Garantia da Qualidade

Dori Alimentos Ltda. - Rolândia, PR

humberto@dori.com.br

4. From Juliano Canonio Pimenta (siga-rla@dori.com.br) – *Dori Alimentos LTDA* employee, sent by email at 9th January 2009.

This email congrats the project proponent for the initiative of developing a carbon credit project, and also evidences the important role of governments and industries in the effort to combat the global warming. The author shows also his enthusiasm in working in an industry (*Dori Alimentos LTDA*) that concerns about environmental issues.

Bom dia.

A respeito dos créditos de carbono, acredito que o programa tem um papel importante de conscientização dos países e suas indústrias, mas não será suficiente para resolver esse problema se não houver vontade e comprometimento de todos os envolvidos. Governos, empresas e sociedade devem sentar-se juntos e discutir como mudar esse crime, que é contra o meio ambiente, mas, principalmente, contra nós mesmos. É com imensa satisfação que recebo a notícia que a empresa onde trabalho (Dori Alimentos Ltda) vem desenvolvendo projetos para participar do programa de créditos de carbono, isto demonstra o comprometimento que a instituição possui com o meio ambiente e com o crescimento sustentável, que isto sirva de exemplo para outras instituições, e desde já aproveito para parabenizar todos os envolvidos com o projeto.

Parabéns!!!!
Abraço.

Juliano Canonio Pimenta (Dori Alimentos Ltda).

7 Schedule:

- Project start date:

Unity	Date
Dori's Head Office	March 2005
Dori's Subsidiary company	December 2004

- Crediting period start date: 01/04/2006
- Date of terminating the project: 31/03/2016
- Validation Report predicted to: 19/11/2008
- First Verification Report predicted to 19/12/2008
- VCS project crediting period: 10 years, twice renewable
- Monitoring and reporting frequency: preferentially from 6 to 12 months, since the beginning of the crediting period.

8 Ownership:

8.1 Proof of Title:

Articles of Incorporation of *Dori* will proof the title and are available to consultation and in power of *Dori Alimentos*. *CantorCO2e Brasil Consultoria Comercialização de Commodities Ambientais Ltda.* was contracted to render consultancy services related to the VCS PD, and is entitled to fifteen percent (15%) of the emission reduction units (VERs) which may result from the project in remuneration, as provided in clause 2.2 from the consultancy service agreement between *Dori* and *CantorCO2e Brasil*.

8.2 Projects that reduce GHG emissions from activities that participate in an emissions trading program (if applicable):

Not applicable.