**PROJECT DESIGN DOCUMENT FORM
FOR SMALL-SCALE CDM PROJECT ACTIVITIES (F-CDM-SSC-PDD)
Version 04.1**

PROJECT DESIGN DOCUMENT (PDD)

Title of the project activity	Irani biomass electricity generation project
Version number of the PDD	07
Completion date of the PDD	21/02/2013
Project participant(s)	• Celulose Irani S.A. • EcoSecurities Ltd. • J.P. Morgan Ventures Energy Corporation
Host Party(ies)	Brazil
Sectoral scope and selected methodology(ies)	01
Estimated amount of annual average GHG emission reductions	4,778 tCO_2e

SECTION A. Description of project activity
A.1. Purpose and general description of project activity

Celulose Irani is a Brazilian pulp and paper manufacturing company, located in the 'Campina da Alegria' district (Santa Catarina State, Brazil), with 71 years of experience in the manufacturing of a diversified range of paper products for both domestic and export markets at the time of completing of this document. Currently, Celulose Irani has 14,070 ha of planted forests, which provide wood for the production of paper and pulp. The forestry industrial activities of Celulose Irani generate copious amounts of biomass residues.

Prior to the implementation of the project activity, the National Interconnected Electric System (*Sistema Interligado Nacional* - SIN) supplied the electricity consumed by Celulose Irani that was not produced by its own small hydropower plants and biomass plants, besides its diesel-based plant that is used as a back-up system in emergency cases. Hence, in the baseline scenario electricity consumed by Irani Celulose would be partly supplied by the operation and addition of new sources connected to SIN.

The project activity consists in the implementation and operation of a new captive renewable biomass-fired cogeneration facility, which will be supplied by renewable biomass (Celulose Irani own biomass residues and biomass residues from the market).

The cogeneration facility has a 9.43 MW electricity generation capacity, which is consumed onsite, displacing electricity consumption that would otherwise be supplied by sources connected to SIN by renewable electricity generated from biomass residues, thus reducing GHG emissions. All other biomass and hydro plants will continue working normally.

The renewable electricity generation of the project activity is expected to reduce 33,452 tCO_2e during the current crediting period[1].

The project is helping Brazil fulfil its goals of promoting sustainable development. Specifically, the project:

• Increases employment opportunities in the area where the project is located;
• Acts as a clean technology demonstration project, encouraging development of modern and more efficient cogeneration of electricity and thermal energy using biomass fuel throughout Brazil;
• Optimises the use of natural resources, avoids new uncontrolled waste disposal places, using a large amount of wood residues from the region;
• Diversifies the sources of electricity generation;
• Helps Celulose Irani achieve its commitment to environmentally clean and environmentally friendly production;
• Uses clean and efficient technologies and conserves natural resources, thus the project will be meeting the Agenda 21 and Sustainable Development Criteria of Brazil.

A.2. Location of project activity
A.2.1. Host Party(ies)

Federative Republic of Brazil

[1]This corresponds to the second crediting period of this project activity. In the first crediting period, the project activity accrued from two emission reduction components: renewable electricity generation and avoidance of methane emissions, which would occur due to the utilization of biomass residues that would otherwise be disposed under anaerobic conditions. In the present crediting period the project activity accrues only from the renewable electricity generation component.

A.2.2. Region/State/Province etc.

State of Santa Catarina

A.2.3. City/Town/Community etc.

Municipality of Vargem Bonita

A.2.4. Physical/ Geographical location

The project is located at Celulose Irani main industrial complex in the Campina da Alegria integrated mill, located in Campina da Alegria district, in the municipality of Vargem Bonita, Santa Catarina State (Rodovia BR 153, km 47, CEP: 89600-000).

Figure 1: Geographic location of Vargem Grande Municipality (red mark) in Santa Catarina State.

Reference geographical coordinates: -26.865914S; -51.794961W

A.3. Technologies and/or measures

The project activity herein described consists in the implementation and operation of a renewable biomass-fired cogeneration system with a thermal and electrical nominal installed capacity of 84.78 MW and 9.43 MW, respectively.

The cogeneration system consists in a high-pressure aquatubular boiler, which works with a closed water circuit and with automatic fuel feed. The steam produced is conducted to a turbine at 64 kgf/cm^2 and then directed to the process with a pressure of 9.5 kgf/cm^2. This system has also a gas washer in the chimney, which reduces the amount of suspended particulate from atmospheric effluents, and the residues obtained from biomass burning are applied on Celulose Irani's forest plantations.

Suppliers from the project region and the own plantations of Celulose Irani provide the renewable biomass that fuels the cogeneration system. This biomass consists in residual biomass (e.g. residual woodchip and sawdust), woodchips from energetic forests, and forest and process residues (e.g. barks), that are mixed and stored in silos before being conducted to the project plant[2].

The project activity only accrues from the emissions reductions from the renewable electricity production (and not from renewable heat generation). The project activity displaces electricity that would otherwise be consumed from SIN by generating a net average amount of 43,531 MWh of renewable electricity annually.

Table 1. Project activity cogeneration system composition.

Equipment	Aquatubular boiler	Turbines	Generator
Model	VS 5090/2	TME 15000A	SPW 900
Manufacturer	Sermatec[3]	TGM Turbinas[4]	Weg Indústrias S.A.[5]
Installed capacity	84.78MW	9.35MW	9.43MW
Year	2003	2004	2004

A.4. Parties and project participants

Party involved (host) indicates a host Party	**Private and/or public entity(ies) project participants (as applicable)**	**Indicate if the Party involved wishes to be considered as project participant (Yes/No)**
Brazil (Host Country)	Celulose Irani S.A.	No
United Kingdom of Great Britain and Northern Ireland	EcoSecurities Ltd.	No
	J.P. Morgan Ventures Energy Corporation	

A.5. Public funding of project activity

Irani Celulose biomass plant did/will not receive any public funding from Parties included in Annex-I.

A.6. Debundling for project activity

The sponsoring company, Celulose Irani, has other CDM project associated with their activities.

Project 1410 : Irani Wastewater Methane Avoidance Project

[2] It is important to notice that, although the project cogeneration system also burns biomass from energetic forests, the additional amount demanded by the project operation is supplied only by biomass residues and, therefore, it does not affect the energetic forest's biomass production.
[3] http://www.sermatec.com.br/por/index.php
[4] ht*tp://www.grupotgm.com.br/*
[5] http://www.weg.com.br

Available at: http://cdm.unfccc.int/Projects/DB/DNV-CUK1194334826.24/view

The Project 1410 does not involve the same technology/measure than this project activity, thus, according to *Guideline on Assessment of Debundling for SSC Project Activities/*version 3, the Celulose Irani small-scale project is not a debundled of a larger emission-reduction project.

SECTION B. Application of selected approved baseline and monitoring methodology

B.1. Reference of methodology

The following methodology and methodology tools are applied to the second crediting period of the project activity:

- AMS-I.C/version 19 (Thermal energy production with or without electricity);
- "Tool to calculate the Emission Factor for an electricity system"/version 2.2.1;
- Tool "Validity of the original/current baseline and to update the baseline at the renewal of a crediting period", version 03;
- Tool "Project and leakage emissions from road transportation of freight"/version 01.0.0;
- "Tool to calculate baseline, project and/or leakage emissions from electricity consumption"/version 01;
- "General guidance on leakage in biomass project activities"/version 03.

B.2. Project activity eligibility

As previously mentioned, the project activity herein described consists in the implementation and operation of a renewable biomass-fired cogeneration system with a thermal and electrical nominal installed capacity of 84.78 MW and 9.43 MW, respectively. Nevertheless, the project activity only accrues from the emissions reductions from the renewable electricity production (and not from renewable heat generation). The project activity displaces electricity that would otherwise be consumed from SIN by generating a net average amount of 43,531 MWh of renewable electricity annually.

Although site encompasses two existing biomass plants (and three hydro plants), their operation shall continue as prior to the implementation of the project activity. The project activity does not involve any replacement, retrofit or any alterations to the existing plants; therefore they do not have direct relation to the project activity. The project activity consists in the addition of a new (greenfield) biomass plant, which shall displace electricity consumption from the grid and not from any of the existing biomass or hydro plants.

Also, although the project activity replaces other existing biomass units that generated only thermal energy, it only accounts for emission reductions from electricity displaced from the grid. The biomass thermal units had reached the end of their operational lifetime and would be replaced by new thermal units. The project participant, aiming to reduce GHG emissions, decided instead to acquire the project activity: a cogeneration plant. The cogeneration plant allowed the project participant to displace part of the grid electricity.

Considering the facts above, as per Appendix B of the simplified modalities and procedures for small-scale project activities, the project activity falls under the type I project category for the renewable electricity generation.

This project activity qualifies as a small-scale project activity, since its capacity will not exceed 15 MW of installed electricity generation capacity and it will remain under the limits of small-scale project activity types during every year of the crediting period.

AMS-I.C/version 19 was selected for the application into renewable electricity generation. This selection was based on the analysis conducted in the table below.

Table 2. Analysis of the applicability conditions of AMS-I.C/version 19

Applicability condition	Comment
Biomass-based cogeneration systems are included in this category. For the purpose of this methodology "cogeneration" shall mean the simultaneous generation of thermal energy and electrical energy in one process. Project activities that produce heat and power in separate element processes (for example heat from a boiler and electricity from a biogas engine) do not fit under the definition of cogeneration project.	The project activity supplies electricity to the project proponent's industrial plant, by means of a cogeneration system fueled with biomass residues.
Emission reductions from a biomass cogeneration system can accrue from one of the following activities: a) Electricity supply to a grid; b) Electricity and/or thermal energy (steam or heat) production for on-site consumption or for consumption by other facilities; c) Combination of (a) and (b).	Option (b) applies. Emission reduction from the project activity will accrue from **electricity** production for **onsite** consumption.
The total installed/rated thermal energy generation capacity of the project equipment is equal to or less than 45 MW thermal (see paragraph 6 for the applicable limits for cogeneration project activities).	The emissions reductions of this cogeneration project activity are solely on account of electrical energy production and the generator has an installed capacity of 9.43 MW.
For co-fired systems, the total installed thermal energy generation capacity of the project equipment, when using both fossil and renewable fuel, shall not exceed 45 MW thermal (see paragraph 6 for the applicable limits for cogeneration project activities).	Not pertinent to the project activity. The project activity does not encompass a co-fired system.

Applicability condition	Comment
The following capacity limits apply for biomass cogeneration units: a) If the project activity includes emission reductions from both the thermal and electrical energy components, the total installed energy generation capacity (thermal and electrical) of the project equipment shall not exceed 45 MW thermal. For the purpose of calculating this capacity limit the conversion factor of 1:3 shall be used for converting electrical energy to thermal energy (i.e. for renewable energy project activities, the maximal limit of 15 MW(e) is equivalent to 45 MW thermal output of the equipment or the plant); b) If the emission reductions of the cogeneration project activity are solely on account of thermal energy production (i.e. no emission reductions accrue from the electricity component), the total installed thermal energy production capacity of the project equipment of the cogeneration unit shall not exceed 45 MW thermal; c) If the emission reductions of the cogeneration project activity are solely on account of electrical energy production (i.e. no emission reductions accrue from the thermal energy component), the total installed electrical energy generation capacity of the project equipment of the cogeneration unit shall not exceed 15 MW.	The emissions reductions of this cogeneration project activity are solely on account of electrical energy production and the generator has an installed capacity of 9.43 MW.
The capacity limits specified in the above paragraphs apply to both new facilities and retrofit projects. In the case of project activities that involve the addition of renewable energy units at an existing renewable energy facility, the total capacity of the units added by the project should comply with capacity limits in paragraphs 4 to 6, and should be physically distinct from the existing units.	The project activity consists in the installation of a new cogeneration facility. Moreover, the emissions reductions of this cogeneration project activity are solely on account of electrical energy production and the generator has an installed capacity of 9.43 MW.
Project activities that seek to retrofit or modify an existing facility for renewable energy generation are included in this category.	Not pertinent to the project activity. The project activity consists in a greenfield plant.

Applicability condition	Comment
New Facilities (Greenfield projects) and project activities involving capacity additions compared to the baseline scenario are only eligible if they comply with the related and relevant requirements in the "General Guidelines to SSC CDM methodologies".	In the "General Guidelines to SSC CDM methodologies"/version 17, no requirements are mentioned to Greenfield type I projects.
If solid biomass fuel (e.g. briquette) is used, it shall be demonstrated that it has been produced using solely renewable biomass and all project or leakage emissions associated with its production shall be taken into account in the emissions reduction calculation.	The project activity does not use solid biomass fuel (e.g. briquettes). The project activity demand will be provided by the project proponent own biomass residues and by residues sold in the market. Thus, the project´s relevant sources of emissions (biomass transportation and competing use of biomass) are discussed in section B.6.
Where the project participant is not the producer of the processed solid biomass fuel, the project participant and the producer are bound by a contract that shall enable the project participant to monitor the source of the renewable biomass to account for any emissions associated with solid biomass fuel production. Such a contract shall also ensure that there is no double-counting of emission reductions.	Not pertinent to the project activity. The project participant does not produce neither will buy processed solid biomass fuel from third parties. It will only buy biomass residues from renewable sources.
If electricity and/or steam/heat produced by the project activity is delivered to a third party i.e. another facility or facilities within the project boundary, a contract between the supplier and consumer(s) of the energy will have to be entered into that ensures there is no double-counting of emission reductions.	Not pertinent to the project activity, since it produces electricity for captive consumption.
If the project activity recovers and utilizes biogas for power/heat production and applies this methodology on a stand alone basis i.e. without using a Type III component of a SSC methodology, any incremental emissions occurring due to the implementation of the project activity (e.g. physical leakage of the anaerobic digester, emissions due to inefficiency of the flaring), shall be taken into account either as project or leakage emissions.	Not pertinent to the project activity, since it does not recovers and utilize biogas for power generation.

Applicability condition	Comment
Charcoal based biomass energy generation project activities are eligible to apply the methodology only if the charcoal is produced from renewable biomass sources provided: *a)* Charcoal is produced in kilns equipped with methane recovery and destruction facility; or *b)* If charcoal is produced in kilns not equipped with a methane recovery and destruction facility, methane emissions from the production of charcoal shall be considered. These emissions shall be calculated as per the procedures defined in the approved methodology AMS-III.K. Alternatively, conservative emission factor values from peer reviewed literature or from a registered CDM project activity can be used, provided that it can be demonstrated that the parameters from these are comparable e.g. source of biomass, characteristics of biomass such as moisture, carbon content, type of kiln, operating conditions such as ambient temperature.	Not pertinent to the project activity, since it does not use charcoal.

B.3. Project boundary

As per AMS-I.C/version 19 the project boundary comprises the spatial extent of the biomass plant, the industrial facility that consumes the electricity generated by the project activity, the transportation itineraries of biomass (if it is transported over distances of 200 km), all plants generating power located at the project site (whether fired with biomass, fossil fuels or a combination of both) and all power plants connected physically to the electricity system that the plant is connected to (i.e. SIN). The project boundary and the emission sources are depicted below.

It is important to note that the two biomass plants and three hydro power plants, which are located in the project site, are not included in the project boundary, because they continue to operate as they did before the implementation of the project activity. For a more detailed description of the scenario prior to the implementation of the project activity, baseline and project activity scenarios, please refer to section B.4.

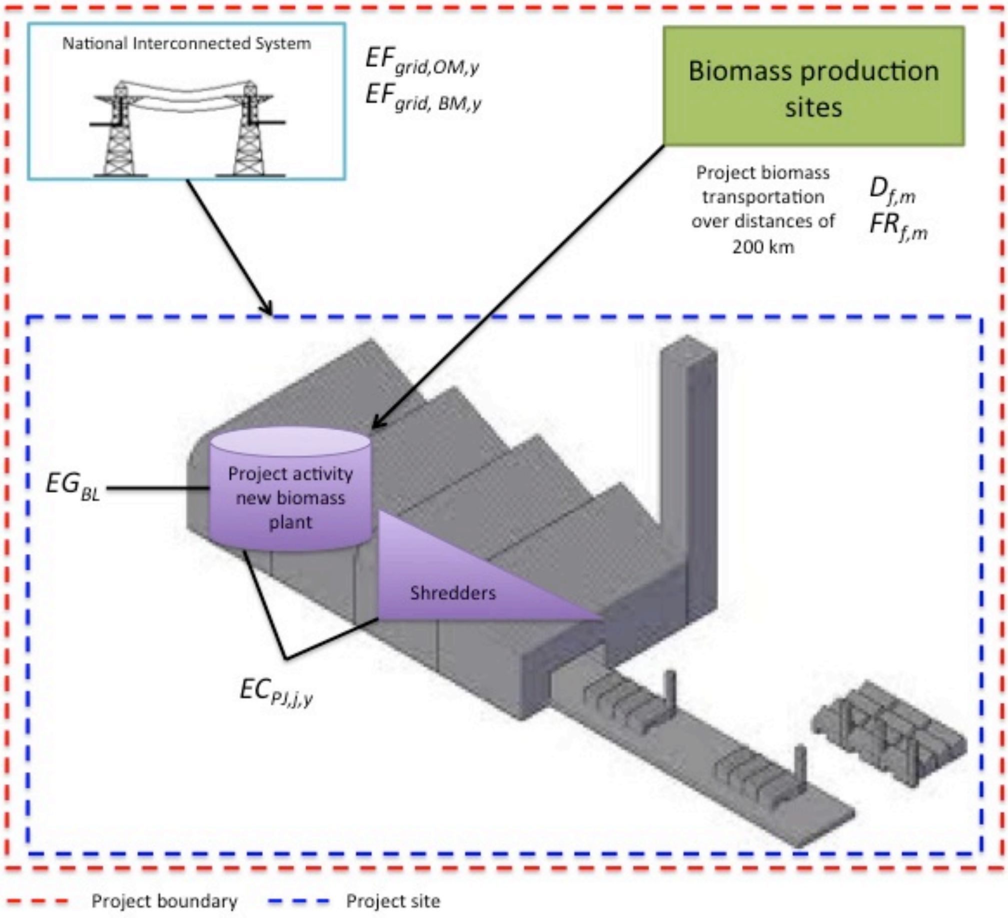

Figure 2: Project boundary

Table 3. Emissions sources included in the project boundary

	Source	Gas	Included?	Justification/Explanation
Baseline emissions	CO_2 emissions from electricity generation in the grid that are displaced due to the project activity	CO_2	Yes	Main emission source.
		CH_4	No	Minor emission source.
		N_2O	No	Minor emission source.
Project emissions	CO_2 emissions from electricity consumption of the grid in the plant and shredders of the project activity	CO_2	Yes	Main emission source.
		CH_4	No	Minor emission source.
		N_2O	No	Minor emission source.
	CO_2 emissions from the transportation of biomass over 200 km of distance	CO_2	Yes	Main emission source.
		CH_4	No	Minor emission source.
		N_2O	No	Minor emission source.

B.4. Establishment and description of baseline scenario

Prior to the implementation of the project activity, part of the electricity consumed at the site was generated at on-site captive power plants (2 biomass units and 3 small-scale hydro plants - A and B) and the rest was imported from the grid (C). The thermal energy was generated by on-site captive biomass plants (D), different from the 2 biomass units aforementioned that produced electricity (A).

In the baseline scenario, the electricity would still be generated by the 3 hydro (B) and 2 biomass power units (A) and by the grid (C). The thermal energy would still be generated by on-site captive biomass

plants, but those would be new thermal plants (F) instead of the old ones (D), as the old ones (D) reached the end of their operational lifetime.

In the project scenario, the PP decided to acquire a cogeneration plant (E) instead of the new biomass thermal units (F) to replace the old biomass thermal units (D), so that it would also reduce GHG emissions through displacing electricity consume from the grid (C). Only the electricity before imported from the grid (C) and the thermal energy before produced by the old thermal units (D) were replaced by the cogeneration unit (E), as the 2 biomass (A) and 3 hydro (B) units continued its normal operation.

The following table shows the energy sources for electricity and thermal energy in the three scenarios (prior to the project, baseline and project).

Energy Source	Scenario prior to the project activity		Baseline Scenario		Project Scenario	
	Electricity	Thermal	Electricity	Thermal	Electricity	Thermal
A - 2 biomass power units	X		X		X	
B - 3 small hydro power units	X		X		X	
C - Grid	X		X			
D - Old biomass thermal units		X				
E - New biomass cogeneration unit					X	X
F - New biomass thermal units				X		

In that sense, the baseline scenario, which must be applied only to the electricity accounted for in the PDD (amount that moved from C in the baseline to E in the project), would be: electricity is imported from the grid and heat is produced from biomass.

The AMS-I.D/version 07 was used in the first crediting period, and the following description was applied to the baseline of the project activity:

"(…) *the baseline is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO_2equ/kWh) calculated in a transparent and conservative manner as:*

(a) The average of the "approximate operating margin" and the "build margin", where:

(i) The "approximate operating margin" is the weighted average emissions (in kg CO_2equ/kWh) of all generating sources serving the system, excluding hydro, geothermal, wind, low-cost biomass, nuclear and solar generation;

(ii) The "build margin" is the weighted average emissions (in kg CO_2equ/kWh) of recent capacity additions to the system, which capacity additions are defined as the greater (in MWh) of most recent 20% of existing plants or the 5 most recent plants."

In its current version (17^{th}), AMS-I.D is not applicable to the project activity, since it does cover cogeneration systems that displace electricity consumption from the grid. As discussed above, AMS-I-C/version 19 is the applicable methodology to the second crediting period. AMS-I-C/version 19, paragraph 19, sub-paragraph (e), describes the baseline scenario of the project activity: "Electricity is imported from a grid and/or produced in an on-site captive power plant using fossil fuels (with a possibility of export to the grid); steam/heat is produced from biomass".

As per AMS-I-C/version 19, baseline emissions for this kind of project activity shall be calculated according to AMS.I.F. The version 02 of the later methodology indicates that the baseline emissions are the product of the amount electricity displaced with the electricity produced by the renewable generating unit and an emission factor. It is worth mentioning that this method is equivalent to the one employed by AMS-I.D/version 07, which was used in the first crediting period.

Below the parameters used to calculate the baseline emissions to the second crediting period are depicted.

Table 4: Parameters used to calculate baseline emissions.

Parameter	Description	Unit	Value	Reference
$EG_{BL,y}$	Quantity of net electricity displaced as a result of the implementation of the CDM project activity in year y	MWh	43.531	calculated
EG_{gross}	Quantity of electricity generated by the project activity in the year y.	MWh	49.295	Value monitored during the last year (oct 2011 to sep 2012).
$EC_{shredder}$	Quantity of electricity consumed by the project shredders in the year y.	MWh	797	Value monitored during the last year (oct 2011 to sep 2012).
EC_{Plant}	Quantity of electricity consumed by the project plant in the year y.	MWh	4.967	Value monitored during the last year (oct 2011 to sep 2012).
$EF_{CO2,y} = EF_{grid,CM,y}$	Combined margin CO_2 emission factor in year y	tCO_2/MWh	0,1522	Calculated
$EF_{grid,BM,y}$	Build margin CO_2 emission factor in year y	tCO_2/MWh	0,1056	Brazilian DNA, 2011
$EF_{grid,OM,y}$	Operating margin CO_2 emission factor in year y	tCO_2/MWh	0,2920	Brazilian DNA, 2011
W_{OM}	Weighting of operating margin emissions factor	%	25%	"Tool to calculate the emission factor for an electricity system"/version 2.2.1
W_{BM}	Weighting of build margin emissions factor	%	75%	"Tool to calculate the emission factor for an electricity system"/version 2.2.1

B.5. Demonstration of additionality

According to the Procedures for Renewal of the Crediting Period of a Registered CDM Project Activity the reassessment of the additionality is not applicable for the 2nd crediting period, but an assessment of the validity of the baseline is required.

In the first crediting period, the project activity accrued from two emission reduction components: renewable electricity generation and avoidance of methane emissions, which would occur due to the utilization of biomass residues that would otherwise be disposed under anaerobic conditions. In the present crediting period the project activity accrues only from the renewable electricity generation component, therefore only the validity of the corresponding baseline will be assessed.

As previously mentioned, the baseline scenario whose validity will be assessed is: **"Electricity is imported from a grid (…); steam/heat is produced from biomass".** The assessment was carried out according to the stepwise procedure outlined in the "Tool to assess the validity of the original/current baseline and to update the baseline at the renewal of a crediting period" as follows:

Step 1: Assess the validity of the current baseline for the next crediting period
Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectorial policies

With the objective of increasing the participation of electricity produced from wind and biomass sources and from small hydroelectric plants (*Pequenas Centrais Hidroelétricas* - PCHs) in the National Interconnected System (SIN), the Program of Incentive to Alternative Sources of Electric Energy (*Programa de Incentivo às Fontes Alternativas de Energia Elétrica* - PROINFA[6]) was launched. In 30 March 2004, just after the project activity validation, this program was regulated by the Decree 5.025/2004 which indicated that PROINFA aims at reducing greenhouse gases emissions in the terms of Kyoto Protocol, by providing financial incentives to the production of renewable energy from the aforementioned technologies.

[6] Programa de Incentivo às Fontes Alternativas de Energia Elétrica . Available at: http://www.mme.gov.br/programas/proinfa. Accession date: 19/03/2012.

Besides PROINFA, another incentive mechanism for biomass-based electricity generation is the Reserve Energy Auction (*Leilão de Energia de Reserva* - LER), which is organized for the purchase of electricity from wind and biomass sources and PCHs to be exported to the SIN. In the last Auction (nº 003/2011) six from seven biomass plants under LER consist in sugar cane bagasse-fired plants and only one is based on woodchips/biomass residues.

However, it is important to notice that both incentive mechanisms do not impact the project activity baseline, since they do not encompass electricity generation for captive consumption. Thus, it is possible to conclude that no relevant national and/or sectorial policies affected the validity of the project activity baseline.

Step 1.2: Assess the impact of circumstances

The Decennial Plan of Electricity Expansion 2020 (*Plano Decenal de Expansão de Energia*)[7], highlights that there is an expressive potential for the generation of electricity from biomass, especially sugar cane bagasse, but does not analyze the electricity generation by other biomass residues, such as forestry residues. In the same line, MARCONATO & SANTINI (2008)[8] also indicates that in Brazil the main viable biomass source for electricity generation is sugar cane bagasse, and argues that the timber biomass faces barriers due to the decentralized production and diffuse market.

Also, SIN electricity is still available in the region and could supply the project proponent demands without constraints (it actually remains delivering part of the energy demand of Celulose Irani plant). Therefore, the current circumstances do not impact the validity of the project activity baseline.

Step 1.3: Assess whether the continuation of use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested.

The project activity is the implementation of a Greenfield power generation plant, thus this step is not applicable.

Step 1.4: Assessment of the validity of the data and parameters

The electricity generation component had some data and parameters updated according to the most recent values available. For instance, the weighting of the operation and building margin emission factors changed from 50% to 25% and from 50% to 75%, respectively, and the grid operating margin emission factor now shall be monitored and updated ex-post. Also, project emissions due to biomass transportation over 200 km of distance from the project site shall be included for the second crediting period.

B.6. Emission reductions
B.6.1. Explanation of methodological choices

Emission reductions calculation

Emission reductions of the project activity are calculated as follows:

$$(1)\ ER_y = BE_y - PE_y - LE_y$$

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[7] Brasil, Ministério de Minas e Energia, Empresa de Pesquisa Energética. Plano Decenal de Expansão de Energia 2008/2017 / Ministério de Minas e Energia. Empresa de Pesquisa Energética. Rio de Janeiro: EPE, 2009. Available at: http://www.epe.gov.br/PDEE/Forms/EPEEstudo.aspx. Accession date: 21/05/2010.

[8] Marconato, M.S. & Santini, G.A. 2008. Alternativas para a geração de energia renovável no Brasil: opção pela biomassa. XLVI Congresso da Sociedade Brasileira de Economia, Administração e Sociologia Rural. Rio Branco – AC, 17pp.

Where:

ER_y	Emissions reductions in the year y (tCO_2e);
BE_y	Baseline emissions of the displacement of electricity consumption from grid in the year y (tCO_2e);
PE_y	Project emissions during year y (tCO_2e);
LE_y	Leakage emissions during year *y* (tCO_2e).

Baseline emissions

The baseline emissions are determined according to paragraph 14 of AMS-I.F/version 02 as "*the product of amount electricity displaced with the electricity produced by the renewable generating unit and an emission factor*" as follows:

(2) $$BE_y = EG_{BL,y} * EF_{CO2,y}$$

Where:

BE_y	Baseline emissions in year *y* (tCO_2e);
$EG_{BL,y}$	Quantity of net electricity displaced as a result of the implementation of the CDM project activity in year y (MWh);
$EF_{CO2,y}$	Emission factor (tCO_2e/MWh).

Only the net electricity generated will be taken into account. Thus, the energy consumed by the project shredder and by the biomass plant will be discounted as demonstrated in the following equation.

(3) $$EG_{BL,y} = EG_{gross} - EC_{shredder} - EC_{plant}$$

Where:

$EG_{BL,y}$	Quantity of net electricity displaced as a result of the implementation of the CDM project activity in year y (MWh);
EG_{gross}	Quantity of electricity generated by the project activity in the year y (MWh);
$EC_{sheredder}$	Quantity of electricity consumed by the project shredders in the year y (MWh);
EC_{plant}	Quantity of electricity consumed by the project plant in the year y (MWh).

Regarding to the emission factor, the AMS-I.C/version19 determines that this parameter shall be calculated as per procedures established by AMS-I.D. Following the paragraph 12 of AMS-I.D/version 17 the project activity falls under option (a), which indicates the "Tool to calculate the Emission Factor for an electricity system" to the calculation of the grid emission factor.

The project activity will displace electricity consumption of the Brazilian Interconnected System (SIN). The Brazilian DNA has published the delineation of SIN to be adopted for the purposes of CDM projects. As per Resolution nº8 of the Brazilian DNA, the electric grid considered in this project activity is considered as a single system consisted by the sub-markets of SIN as the definition of the electric system of the project. Off-grid plants will not be included in the calculation of $EF_{grid,CM,y}$.

$EF_{grid,CM,y}$ will be calculated using the latest version of the "Tool to calculate the emission factor for an electricity system". The following formulae applies:

(4) $EF_{grid,CM,y} = EF_{grid,OM,y} \cdot w_{OM} + EF_{grid,BM} \cdot w_{BM}$

Where:

$EF_{grid,CM,y}$	Combined margin CO_2 emission factor in year y (tCO_2/MWh);
$EF_{grid,BM,y}$	Build margin CO_2 emission factor in year y (tCO_2/MWh);
$EF_{grid,OM,y}$	Operating margin CO_2 emission factor in year y (tCO_2/MWh);
w_{OM}	Weighting of operating margin emissions factor (25%);
w_{BM}	Weighting of build margin emissions factor (75%).

The weighting factors for build and operating margin for the second crediting period were selected according to guidance provided in the "Tool to calculate the emission factor for an electricity system".

For the second crediting period, the operating margin emission factor will be updated annually, *ex-post*, while build margin emission factor shall be fixed *ex ante*.

The parameters $EF_{grid,OM,y}$ and $EF_{grid,BM,y}$ are calculated and published by the Brazilian Inter-ministerial Commission for Global Climate Change, the Brazilian Designated National Authority, according to the most recent version of the "Tool to calculate the emission factor for an electricity system". By using these published values and the yearly electricity generating ($EG_{BL,y}$) it will be possible to calculate the associated baseline emissions (BE_y).

Project emissions

The project emissions associated to the electricity generation component are related to biomass transportation, when the itineraries distance exceeds 200 km. Normally the biomass suppliers are located in areas inside of 200 km radius from that project activity site. Whenever the biomass transportation surpasses this limit, emissions due to transportation will be accounted using the option B of the Tool "Project and leakage emissions from road transportation of freight"/version 01.0.0 as follows.

(5) $PE_{TR,m} = \sum_{f} D_{f,m} * FR_{f,m} * EF_{CO2,f} * 10^{-6}$

Where:

$PE_{TR,m}$	Project emissions from road transportation of freight monitoring period *m* (t CO_2);
$D_{f,m}$	Return trip road distance between the origin and destination of freight transportation activity f in monitoring period *m* (km);
$FR_{f,m}$	Total mass of freight transported in freight transportation activity f in monitoring period *m* (t);
$EF_{CO2,f}$	Default CO2 emission factor for freight transportation activity f (g CO_2 / t km);
f	Freight transportation activities conducted in the project activity in monitoring period *m*.

Another source of project emissions can be related to the electricity consumption of the project plant and shredders. This consumption is normally deducted from the energy generated by the project activity, but whenever is exceeds the projects generation the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption"/version 01 (Option A1 to calculate the emission factor) will be applied as follows.

(6) $$PE_{EC,y} = \sum_{j} EC_{PJ,j,y} * EF_{EL,j,y} * (1 + TDL_{j,y})$$

Where:

$PE_{EC,y}$	Project emissions from electricity consumption in year y (tCO_2/yr);
$EC_{PJ,j,y}$	Quantity of electricity consumed by the project electricity consumption source j in year y (MWh/yr);
$EF_{EL,j,y}$	Emission factor for electricity generation for source j in year y (tCO_2/MWh);
$TDL_{j,y}$	Average technical transmission and distribution losses for providing electricity to source j in year y (20%).

Leakage emissions

According to AMS-I.C/version 19 the leakage emissions can be neglected since no equipment was transferred from or to another activity. However, according to the "General guidance on leakage in biomass project activities"/version 03 the leakage emissions from competing use of biomass shall be evaluated.

Brasil has a large wood industry, with more than 1200 sawmills. Most industries (87%) are located in the Southern region. As an example, Parana and Santa Catarina states host almost 80% of all *Pinus* spp. wood consumption (Sant'anna et.al[9]). The Brazilian technologies in sawmills in general are very poor, and less than 50% of wood is transformed in products. The other 50% are wood residues. Given the large number of sawmills in south region the biomass residue generation is concentrated in south region, creating an excess of biomass residues that the market cannot absorb.

[9] Sant'Anna, Mário; Teddy A. Rayzel; Mário C. M Wanzuita, 2004. Indústria consumidora de Pinus no Brasil. Rev. da Madeira. no 83 - ano 14 - Agosto de 2004

This fact can be demonstrated by the study of Pöyry Silviconsult (2012)[10], which indicated a surplus of woody residues in the neighboring region of Vargem Bonita (project activity site). These researchers studied the region and have obtained data from industries that mechanically process wood. The results indicated the existence of available biomass that could be sold and used for energy purposes. Their study assumes conservative approaches based on a sample of approximately 95% of potential woody residues consumer industries in the region covered by the survey, as indicated by information collected by PSC from January to December 2011.

The results of Pöyry Silviconsult (2012) estimates are demonstrated in the table below:

Table 5: Surplus of biomass residues according to the industries' data.

	200 km radius	150 km radius	100 km radius
Biomass residues production (t/year)	3,800,000	2,800,000	1,400,000
Biomass residues consume[11] (t/year)	2,500,000	1,000,000	600,000
Biomass residues surplus (%)	34,2	64,3	57,1

As demonstrated above, there are 34,2% of biomass residues surplus in the region, considering the most conservative scenario presented in Pöyry Silviconsult study. Therefore leakage from competing use can be neglected for the second crediting period.

B.6.2. Data and parameters fixed ex ante

Data / Parameter	ω_{OM}
Unit	%
Description	Weighting of operating margin emissions factor
Source of data	"Tool to calculate the emission factor for an electricity system" (Version 2.2.1).
Value(s) applied	25
Choice of data or Measurement methods and procedures	This value was selected because the project activity does not consist on wind or solar energy generation, and is under the second crediting period.
Purpose of data	Calculation of baseline and project emissions
Additional comment	This value will be adopted during the second crediting period.

Data / Parameter	ω_{BM}
Unit	%
Description	Weighting of operating build emissions factor
Source of data	"Tool to calculate the emission factor for an electricity system" (Version 2.2.1).
Value(s) applied	75
Choice of data or Measurement methods and procedures	This value was selected because the project activity does not consist on wind or solar energy generation, and is under the second crediting period.
Purpose of data	Calculation of baseline and project emissions
Additional comment	This value will be adopted during the second crediting period.

[10] Pöyry Silviconsult, 2012. Mercado de Biomassa: Pinus e Eucalyptus. 14 pp.
[11] Including the project activity consume.

Data / Parameter	$EF_{grid, BM,y}$
Unit	tCO_2/MWh
Description	Build margin CO_2 emission factor in year y
Source of data	Brazilian Interministerial Commission on Global Climate Change
Value(s) applied	0.1056
Choice of data or Measurement methods and procedures	As per the most recent version of the "Tool to calculate the emission factor for an electricity system" regarding the second crediting period.
Purpose of data	Calculation of baseline and project emissions
Additional comment	Ex-ante estimated build margin emission factor of the National Interconnected System (2011), as published by the Brazilian DNA.

Data / Parameter	$EF_{CO2,f}$
Unit	gCO_2/t.km
Description	Default CO_2 emission factor for freight transportation activity *f*
Source of data	Tool "Project and leakage emissions from road transportation of freight"/version 01.0.0
Value(s) applied	Vehicle class: Heavy vehicles; Emission factor (gCO_2/t.km): 129
Choice of data or Measurement methods and procedures	Biomass transportation is carried out by Heavy vehicles (Trucks). Thus, each time that biomass transportation itineraries distance exceeds 200 km from the project activity site, the emissions will be calculated.
Purpose of data	Calculation of project emissions
Additional comment	---

B.6.3. Ex-ante calculation of emission reductions

For the second crediting period the baseline emissions of the electricity generation corresponds to the net electricity generation by the biomass plant multiplied by the grid emission factor. The net electricity generation is the difference between the gross electricity generation minus the electricity consumption of the plant and the shredders, and the grid emission factor is calculated as required by the "Tool to calculate the emission factor for an electricity system" (Version 2.2.1). The calculations are depicted below:

$$BE_y = EG_{BL,y} * EF_{CO2,y}$$

Parameter	Description	Unit	Value	Reference
BE_y	Baseline emissions in year *y*	tCO2	6.625	calculated
EG_{BL}	Quantity of net electricity displaced as a result of the implementation of the CDM project activity in year y	MWh	43.531	calculated
$EF_{CO2,y}$	Emission factor	tCO2/MWh	0,1522	calculated

$$EG_{BL,y} = EG_{gross} - EC_{shredder} - EC_{plant}$$

Parameter	Description	Unit	Value	Reference
$EG_{BL,y}$	Quantity of net electricity displaced as a result of the implementation of the CDM project activity in year y	MWh	43.531	calculated
EG_{gross}	Quantity of electricity generated by the project activity in the year y.	MWh	49.295	Value monitored during the last year (oct 2011 to sep 2012).
$EC_{shredder}$	Quantity of electricity consumed by the project shredders in the year y.	MWh	797	Value monitored during the last year (oct 2011 to sep 2012).
EC_{Plant}	Quantity of electricity consumed by the project plant in the year y.	MWh	4.967	Value monitored during the last year (oct 2011 to sep 2012).

$$EF_{CO_2,y} = EF_{grid,CM,y} = EF_{grid,OM,y} \cdot w_{OM} + EF_{grid,BM} \cdot w_{BM}$$

Parameter	Description	Unit	Value	Reference
$EF_{CO2,y} = EF_{grid,CM,y}$	Combined margin CO_2 emission factor in year y	tCO_2/MWh	0,1522	Calculated
$EF_{grid,BM,y}$	Build margin CO_2 emission factor in year y	tCO_2/MWh	0,1056	Brazilian DNA, 2011
$EF_{grid,OM,y}$	Operating margin CO_2 emission factor in year y	tCO_2/MWh	0,2920	Brazilian DNA, 2011
W_{OM}	Weighting of operating margin emissions factor	%	25%	"Tool to calculate the emission factor for an electricity system"/version 2.2.1
W_{BM}	Weighting of build margin emissions factor	%	75%	"Tool to calculate the emission factor for an electricity system"/version 2.2.1

Project emissions

Since project proponent expects to generate enough electricity to supply the plant and the shredders and to export electricity to the grid, project emissions attributed to electricity consumption are here neglected. However, the project proponent has contracted biomass suppliers distant from over 200 km from the plant (from October 2011 to September 2012), therefore project emissions attributed to biomass transportation regarding AMS-I.C requirements are here accounted.

Supplier	$D_{f,m}$ = Round trip distance from the project plant (km)	$FR_{f,m}$ = Mass of freight (t)	$D_{f,m}$ x $FR_{f,m}$ (t.km)
1	420	1.644,48	690.681,60
2	480	143,58	68.918,40
3	280	20.905,45	5.853.526,00
4	320	7.291,30	2.333.216,00
5	310	1.227,20	380.432,00
6	240	121,56	29.174,40
7	415	1.109,15	460.297,25
8	350	5.723,74	2.003.309,00
9	260	414,04	107.650,40
10	310	1.159,24	359.364,40
11	240	1.040,81	249.794,40
12	380	4.651,60	1.767.608,00
TOTAL	-	45.432,15	14.303.971,85

BIOMASS TRANSPORT EMISSIONS				
$PE_{TR,m} = \sum_f D_{f,m} * FR_{f,m} * EF_{CO2,f} * 10^{-6}$				
Parameter	**Description**	**Unit**	**Value**	**Reference**
$PE_{TR,m}$	Project emissions from road transportation of freight monitoring period *m*	tCO2	1.845,21	
$EF_{CO2,f}$	Default CO2 emission factor for freight transportation activity f	g CO2/t.km	129	"Project and leakage emissions from road transportation of freight"/version01.0.0
$D_{f,m}$	Return trip road distance between the origin and destination of freight transportation activity f in monitoring period *m*	km	14.303.971,85	$\sum_f D_{f,m} * FR_{f,m}$
$FR_{f,m}$	Total mass of freight transported in freight transportation activity f in monitoring period *m*	t		
f	Freight transportation activities conducted in the project activity in monitoring period *m*.			

Leakage emissions

As described in section B.6.1 leakage emissions are not applicable or were neglected.

B.6.4. Summary of ex-ante estimates of emission reductions

Year	Baseline emissions (tCO_2 e)	Project emissions (tCO_2 e)	Leakage (tCO_2 e)	Emission reductions (tCO_2 e)
October 2011	1,656	462	0	1,194
2012	6,625	1,846	0	4,779
2013	6,625	1,846	0	4,779
2014	6,625	1,846	0	4,779
2015	6,625	1,846	0	4,779
2016	6,625	1,846	0	4,779
2017	6,625	1,846	0	4,779
September 2018	4,968	1,384	0	3,584
Total	46,374	12,922	0	33,452
Total number of crediting years	7			
Annual average over the crediting period	6,624	1,846	0	4,778

B.7. Monitoring plan

B.7.1. Data and parameters to be monitored

Data / Parameter	$EF_{grid,CM,y}$
Unit	tCO_2/MWh
Description	Combined margin CO_2 emission factor in year y
Source of data	Calculated
Value(s) applied	0.1522
Measurement methods and procedures	As per the most recent version "Tool to calculate the emission factor for an electricity system".
Monitoring frequency	Annually.
QA/QC procedures	As per the most recent version of the "Tool to calculate the emission factor for an electricity system".
Purpose of data	Calculation of baseline and project emissions
Additional comment	Calculated accordingly formula (4) in section B.6.1 of this PDD, as stated in the "Tool to calculate the emission factor for an electricity system", version 02.2.1 in step 6 a (Calculate the combined margin emissions factor – Weighted average CM"). For calculation of project emissions $EF_{grid,CM,y} = EF_{EL,j,y}$.

Data / Parameter	$EF_{grid,OM,y}$
Unit	tCO_2/MWh
Description	Operating margin CO_2 emission factor in year y
Source of data	Brazilian Interministerial Commission on Global Climate Change
Value(s) applied	0.2920
Measurement methods and procedures	As per the most recent version "Tool to calculate the emission factor for an electricity system".
Monitoring frequency	Annually.
QA/QC procedures	As per the most recent version of the "Tool to calculate the emission factor for an electricity system".
Purpose of data	Calculation of baseline and project emissions
Additional comment	For the second crediting period, the operating margin emission factor will be updated annually, *ex-post*. *Ex-ante* estimated operating margin emission factor of the National Interconnected System (2011), as published by the Brazilian DNA.

Data / Parameter	$EG_{BL,y}$
Unit	MWh
Description	Quantity of net electricity displaced in year *y*.
Source of data	On-site measurements
Value(s) applied	43,531
Measurement methods and procedures	The net electricity generated corresponds to the difference from the gross electricity (EG_{gross}) produced by the project plant minus the consumption of the plant (EC_{plant}) and the project shredders ($EC_{shredder}$). The EG_{gross}, EC_{plant}, $EC_{shredder}$will be continuously analyzed and monitored. Values will be aggregated monthly and yearly for each parameter. The meter used to monitor EG_{gross} is produced by Weg, model MFR3. According to the latest calibration certificates, the meter presents an accuracy of ±2% specified by the producer. The calibration process is made every 3 years, according to internal Quality Procedure A19P02-MAN-6-300. For information regarding monitoring of EC_{plant} and $EC_{shredder}$ please refer to the next item, which describes the monitoring of $EC_{PJ,j,y}$.
Monitoring frequency	Continuously.
QA/QC procedures	The Weg Electricity Meter used in the measurements of gross electricity generation is frequently calibrated, as well as the Allen-Bradley Electricity Meters that measure the electricity consumption of the plant and shredder.
Purpose of data	Calculation of baseline emissions
Additional comment	

Data / Parameter	$EC_{PJ,j,y} = EC_{plant} + EC_{shredder}$
Unit	MWh
Description	Quantity of electricity consumed by the project electricity consumption source j in year y.
Source of data	On-site measurements
Value(s) applied	5,763
Measurement methods and procedures	Electricity meters will measure the electricity consumption of the plant and shredder of the project activity, which will be continuously analyzed and monitored. Values will be aggregated monthly and yearly for each parameter. The meters used are produced by Allen-Bradley, model Powermonitor 3000. According to the latest calibration certificates, the meters present an accuracy of ±1% specified by the producer. The calibration process is made every 3 years, according to internal Quality Procedure A19P02-MAN-6-300.
Monitoring frequency	Continuously.
QA/QC procedures	-
Purpose of data	Calculation of project emissions
Additional comment	The Allen-Bradley Electricity Meters used in the measurements of electricity consumption of the plant and shredder are frequently calibrated. Whenever the electricity consumption exceeds the project activity electricity generation the consumption of the project plant and shredders will be applied in the formulae provided by the equation 6 of the section B.6.1.

Data / Parameter	$D_{f,m}$
Unit	Kilometre
Description	Return trip road distance between the origin and destination of freight transportation activity *f* in monitoring period *m*
Source of data	Records by project participants.
Value(s) applied	<table><tr><th>Supplier</th><th>$D_{f,m}$ (km)</th></tr><tr><td>1</td><td>420</td></tr><tr><td>2</td><td>480</td></tr><tr><td>3</td><td>280</td></tr><tr><td>4</td><td>320</td></tr><tr><td>5</td><td>310</td></tr><tr><td>6</td><td>240</td></tr><tr><td>7</td><td>415</td></tr><tr><td>8</td><td>350</td></tr><tr><td>9</td><td>260</td></tr><tr><td>10</td><td>310</td></tr><tr><td>11</td><td>240</td></tr><tr><td>12</td><td>380</td></tr></table>
Measurement methods and procedures	The project participants will record the address of the biomass supplier and calculate the distance by a road map. Whenever the round trip distance exceeds 200 km of distance from the project activity site, this parameter will be applied for the transport emissions calculation.
Monitoring frequency	Continuously.
QA/QC procedures	-
Purpose of data	Calculation of project emissions
Additional comment	-

Data / Parameter	$FR_{f,m}$
Unit	Tones
Description	Total mass of freight transported in freight transportation activity *f* in monitoring period *m*
Source of data	Records by project participants.
Value(s) applied	see table below
Measurement methods and procedures	This parameter will be measured continually (at every freight arrival to the plant) by two scales, for the suppliers that are located in a round trip distance of over 200 km from the project activity site. Such measured data shall be aggregated in monthly and yearly values from each supplier and for the whole plant. The two scales used by the project activity were produced by Toledo, model 820. According to the latest calibration certificates, the scales present a resolution of 10 kg and 20 kg for a calibrated range of 11 tons. The calibration process is made every 120 days, according to internal Quality Procedure A19P02-MAN-6-300. This parameter will be applied for the transport emissions calculation.
Monitoring frequency	Continuously.
QA/QC procedures	-
Purpose of data	Calculation of project emissions
Additional comment	-

Supplier	$FR_{f,m}$ (t)
1	1.644,48
2	143,58
3	20.905,45
4	7.291,30
5	1.227,20
6	121,56
7	1.109,15
8	5.723,74
9	414,04
10	1.159,24
11	1.040,81
12	4.651,60

Data / Parameter	$TDL_{j,y}$
Unit	%
Description	Average technical transmission and distribution losses for providing electricity to source j.
Source of data	"Tool to calculate baseline, project and/or leakage emissions from electricity consumption" (Version 01).
Value(s) applied	20
Measurement methods and procedures	Default value for project emissions framed on scenario A1 of the "Tool to calculate baseline, project and/or leakage emissions from electricity consumption" (Version 01).
Monitoring frequency	Annually.
QA/QC procedures	-
Purpose of data	Calculation of project emissions
Additional comment	-

B.7.2. Sampling plan

Not applicable. None of the parameters above will be determined by a sampling approach.

B.7.3. Other elements of monitoring plan

In the second crediting period, Celulose Irani (Project Proponent - PP) will keep on monitoring continuously the gross electricity generation and deducting, from it, the plant and shredders energy consumption to determine the net electricity produced by the project activity as required by the methodology AMS-I.C. Also, the PP will monitor the grid operating margin emission factor according to the updates of Brazilian DNA.

Project Proponent will record the biomass suppliers' distance from the project activity site and the mass of biomass transported in order to calculate emissions from biomass transport whenever it exceeds 200 km from the project site.

The monitoring data will be provided to WayCarbon periodically by the Environmental Department of Celulose Irani. With regards to quality control, the Celulose Irani has been awarded a series of internationally recognized certifications, including ISO 9001-2000. Celulose Irani will use these systems to ensure that data collected for the project are subject to the most rigid quality control systems.

All data collected as part of monitoring will be archived and kept at least for 2 years after the end of the crediting period or 2 years after the last issuance of CER for this project activity, whichever occurs later.

SECTION C. Duration and crediting period
C.1. Duration of project activity
C.1.1. Start date of project activity

01/09/2004

C.1.2. Expected operational lifetime of project activity

30 years and zero months.

C.2. Crediting period of project activity
C.2.1. Type of crediting period

Renewable crediting period. (second crediting period)

C.2.2. Start date of crediting period

01/10/2011

C.2.3. Length of crediting period

7 years and zero months.

SECTION D. Environmental impacts
D.1. Analysis of environmental impacts

In the Brazilian environmental license system, the proponent of a new achievement must present the project to the state or federal environmental agency, to provide a preliminary environmental license. In

this license the environmental agency may request, as a condition to provide the installation and operation environmental licenses, an environmental impact assessment for projects with the potential for significant environmental impacts.

The Celulose Irani Biomass generation plant's license requisition was conducted by Fundação do Meio Ambiente do Estado de Santa Catarina (FATMA/SC), the environmental agency of Santa Catarina State. Through the licensing process no environmental impact assessment was required and Celulose Irani obtained the Operation License N°0612/2010 (Valid until November 2014), referent to the activity of the project activity plant.

In order to remain in compliance with the environmental legislation, the project proponent will request to the Environmental Authority (FATMA), 120 days before the current license expires, the renewal of the Operation License, as required by the Law 14.675/2009.

D.2. Environmental impact assessment

Not applicable.

SECTION E. Local stakeholder consultation
E.1. Solicitation of comments from local stakeholders

According to the Resolution #1 dated on December 2, 2003, from the Inter-Ministerial Commission of Climate Change (Comissão Interministerial de Mudança Global do Clima - CIMGC) decreed on July 7th, 1999[12], any CDM projects must send a letter with description of the project and an invitation for comments by local stakeholders. In this case, letters were sent to the following local stakeholders:

- City Hall of Vargem Bonita;
- Chamber of Alderman of Vargem Bonita;
- Environment agencies from the State and Local Authority;
- Brazilian Forum of NGOs;
- District Attorney (known in Portuguese as Ministério Público, i.e. the permanent institution essential for legal functions responsible for defending the legal order, democracy and social/individual interests) and;
- Local communities associations.

Local stakeholders were invited to raise their concerns and provide comments on the project activity for 30 days after they received the letter of invitation. EcoSecurities and Celulose Irani were prepared to answer any doubts about the project during this period. Letters were dispatched by fax or email to the institution mentioned above.

For the renewal of the crediting period this procedure do not need to be developed.

E.2. Summary of comments received

Not applicable.

E.3. Report on consideration of comments received

Not applicable.

[12]Source: http://www.mct.gov.br/clima/comunic/pdf/Resolução01p.pdf

SECTION F. Approval and authorization

According to the "Procedure for renewal of the crediting period of a registered CDM project activity", version 06.0, paragraph 5: "For the purpose of renewal of the crediting period it is not necessary to obtain a new letter of approval from Parties involved".

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Appendix 1: Contact information of project participants

Organization	Celulose Irani S.A.
Street/P.O. Box	Rodovia BR 153, km 47 – Campina da Alegria
Building	
City	Vargem Bonita
State/Region	Santa Catarina
Postcode	89600-000
Country	Brazil
Telephone	+55 49 3548-9090
Fax	+55 49 3548-9255
E-mail	
Website	www.irani.com.br
Contact person	
Title	Manager
Salutation	Mr.
Last name	Farina
Middle name	Alexis
First name	Leandro
Department	
Mobile	+55 49 9127-9224
Direct fax	
Direct tel.	+55 49 3548-9090
Personal e-mail	leandrofarina@irani.com.br

Organization	EcoSecurities Ltd.
Street/P.O. Box	21 Beaumont Street
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Postcode	OX1 2NH
Country	United Kingdom of Great Britain and Northern Ireland
Telephone	+44 (0) 1865 202 635
Fax	+44 (0) 1865 202 635
E-mail	br@ecosecurities.com
Website	www.ecosecurities.com
Contact person	James Thompson
Title	
Salutation	Mr.
Last name	Thompson
Middle name	
First name	James
Department	
Mobile	
Direct fax	
Direct tel.	
Personal e-mail	

Organization	J.P. Morgan Ventures Energy Corporation
Street/P.O. Box	270 Park Avenue
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City	New York
State/Region	
Postcode	10017-2014
Country	United States of America
Telephone	1-212-270-6000
Fax	
E-mail	
Website	http://www.jpmorganchase.com
Contact person	Etienne Amic
Title	Managing Director
Salutation	Mr.
Last name	Amic
Middle name	
First name	Etienne
Department	
Mobile	
Direct fax	
Direct tel.	
Personal e-mail	

Appendix 2: Affirmation regarding public funding

Celulose Irani will not receive any ODA for the development of this project.

Appendix 3: Applicability of selected methodology

All pertinent information is provided throughout the text.

Appendix 4: Further background information on ex ante calculation of emission reductions

All pertinent information is provided throughout the text.

Appendix 5: Further background information on monitoring plan

All pertinent information is provided throughout the text.

Appendix 6: Summary of post registration changes

For the second crediting period the methane avoidance component was withdraw.

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History of the document

Version	Date	Nature of revision
04.1	11 April 2012	Editorial revision to change version 02 line in history box from Annex 06 to Annex 06b.
04.0	EB 66 13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the project design document form for CDM project activities" (EB 66, Annex 8).
03	EB 25, Annex 15 26 July 2006	
02	EB 14, Annex 06b 14 June 2004	
01	EB 05, Paragraph 12 03 August 2002	Initial adoption.
Decision Class: Regulatory **Document Type:** Form **Business Function:** Registration		