CLEAN DEVELOPMENT MECHANISM
PROJECT DESIGN DOCUMENT FORM (CDM-SSC-PDD)
Version 03 - in effect as of: 22 December 2006

CONTENTS

Annexes

Revision history of this document

Version Number	Date	Description and reason of revision
01	21 January 2003	Initial adoption
02	8 July 2005	•The Board agreed to revise the CDM SSC PDD to reflect guidance and clarifications provided by the Board since version 01 of this document. •As a consequence, the guidelines for completing CDM SSC PDD have been revised accordingly to version 2. The latest version can be found at <http://cdm.unfccc.int/Reference/Documents>.
03	22 December 2006	•The Board agreed to revise the CDM project design document for small-scale activities (CDM-SSC-PDD), taking into account CDM-PDD and CDM-NM.

SECTION A. General description of small-scale project activity

A.1 Title of the small-scale project activity:

Trombini / Green Domus – Curitiba - Biomass for Thermal Energy
Version 01
26/12/2007

A.2. Description of the small-scale project activity:

Trombini Industrial S.A. has started its industrial activities in 1962, and at present its products include recycled paper, corrugated cardboard boxes and paper bags in its various factories throughout the country. The project activity aims to use primarily biomass residue (pieces of various types of wood and firewood) instead of fossil fuel in the process of steam generation for industrial use.
Trombini's plant in Curitiba manufactures:
At sector "CP", brown paper for packaging;
At sector "PO", corrugated cardboard.
In the manufacture of brown paper for packaging, steam is used for drying paper, cooking starch and preparing polymers.
In the manufacture of corrugated cardboard, steam is used to warm up the machine cylinders where the paper goes through various stages until the corrugated cardboard plate is ready.
The boilers that are the object of this project belong to the supporting area of the production process and are away from the paper machines.

The features of the boiler installed at "CP-Curitiba" are: (see Annex 3)
Manufacturer: Dedini S/A Industrias de Base;
Model: "CSCT 750";
Generated power: 17.99 MW and
Measured efficiency: 90%.

The features of the boiler installed at "PO-Curitiba" are: (see Anex 3)
Manufacturer: ATA Combustão Técnica S/A;
Model: ATA 26 H-3 with furnace 22 Alp.
Generated power: 2,48 MW;
Measured efficiency: 86%

The project activity reduces greenhouse effect GHG gases emission because biomass is used in the boiler, instead of fossil fuel to generate steam.
The biomass is acquired from various local sawmills which, if not for the project, would burn it outside or it would simply be left in the woods to decay.
Considering the uncertainties in relation to the guarantee of biomass supply, there still remain in the place old boilers that use fossil fuel, to be used in case of absence of biomass in the place, or in case of maintenance and repairs in the new boilers.
The project activity contributes in several ways for sustainable development, namely:

a) It uses remains of other productive process (wood chips) that, if not for the project, would be burned, abandoned outdoors for decay or sent to a landfill.
b) Biomass being considered a "neutral carbon", the project complies with CDM rules.
c) It diminishes expressively the burning of fossil fuels reducing atmosphere contamination with greenhouse gases GEE, as well as other harmful pollutants originated from such burnings.
d) It encourages improvements in the manufacturing technology of boiler's burners that use biomass (firewood or wood chips) since it is difficult sustain the steam demand and keep pressure stable on biomass burners.
e) The technology used in steam production through biomass encourages the companies that have productive processes generating residues which can be used as fuel not to dispose of them in an inappropriate manner, as they can be an additional income source for their businesses.
f) Another economic activity is created in the area, that being biomass handling from its origin and in the project site.

A.3. Project participants:

Name of the country involved	Private project participants	Does the involved country wish to be considered project participant? (Yes/No)
Brasil (host)	• Trombini Industrial S.A. (Private entity) • Green Domus Desenvolvimento Sustentável Ltda . (Private entity)	No

A.4. Technical description of the small-scale project activity:

A.4.1. Location of the small-scale project activity:

>>

A.4.1.1. Host Party(ies):

Brazil

A.4.1.2. Region/State/Province etc.:

Southern Region – State of Paraná

A.4.1.3. City/Town/Community etc:

City: Curitiba

A.4.1.4. Details of physical location, including information allowing the unique identification of this small-scale project activity :

Rua Olympio Trombini, 619 – Vista Alegre
Curitiba - PR
82020-040
Brasil

A.4.2. Type and category(ies) and technology/measure of the small-scale project activity:

Small-scale project activity
Sectoral Scope 1 – Energy industries (renewable / non-renewable sources)
Type I: Renewable energy projects
Category I.C.: Thermal energy for the user with or without electricity

A.4.3 Estimated amount of emission reductions over the chosen crediting period:

Emissions reduction total for the first 7 years project period:

Years	Emissions reduction estimate per year in CO_2e metric tons
2009	59248
2010	59248
2011	59248
2012	59248
2013	59248
2014	59248
2015	59248
Reductions estimated total (CO_2e metric tons)	**414736**
Total crediting period in years	**7**
Average of emissions reduction during the crediting period (CO_2e metric tons)	59248

A.4.4. Public funding of the small-scale project activity:

There was no public funding for the project activity, not of the host country, neither of other parties included in the Convention Annex I.

A.4.5. Confirmation that the small-scale project activity is not a debundled component of a large scale project activity:

The project activity is not a separate component of a major project, since there is no other small-scale project activity registered, or in the process of being registered, with the same project participants, in the same project category and technology, registered in the last 2 years, and the project boundaries are within a radius of 1 km of the small-scale project activity proposed here.

SECTION B. Application of a baseline and monitoring methodology

B.1. Title and reference of the approved baseline and monitoring methodology applied to the small-scale project activity:

Version 12 of AMS I.C.
Thermal energy for the user with or without electricity.

B.2 Justification of the choice of the project category:

As directed in AMS I.C version 12, the conditions to be observed to classify the project in the category are:
Technology/measurement:

1. This category comprises renewable energy technologies that supply userswith thermal energy that displaces fossil fuels.

The proposed small-scale project activity uses biomass instead of fossil fuel in a boiler, to generate steam for the production processes of the industry:
a) To dry paper, cook starch and prepare polymers in sector "CP".
b) To warm up the machine cylinders to corrugate board in sector "PO".

2. The thermal generation capacity will be less than 45 MW.

The maximum generation capacity of the boilers is:
Boiler Dedini CSCT 750: 34,7 MW.
Boiler ATA 26 – H-3: 4,2 MW.

Therefore, the maximum generation capacity of the project is 38,9 MW, less than the established 45 MW.

Conditions 3 and 4 are not applicable to the proposed project activity.

B.3. Description of the project boundary:

The physical and geographical location of the factory Trombini Industrial S/A in Curitiba, where the units CP-Curitiba and PO-Curitiba are, circumscribe the site of the project activity.

B.4. Description of baseline and its development:

For renewable energy technologies to substitute the ones that use fossil fuels, the simplified baseline is the consumption of fuel of the technologies that would have been employed in the absence of the project activity multiplied by a substituted fossil fuel emission coefficient. The *"IPCC Guidelines– 2006"* reference values were used.
For steam produced using fossil fuel, the baseline of emissions is calculated as follows:

$$BE_y = HG_y \times EFCO_2 / \eta_{th}$$

where:

BE_y: emissions in the baseline during year y, in tCO_2e
HG_y: net quantity of steam produced by the project activity during year y in TJ.
$EFCO_2$: Emission factor of CO_2 per unit of energy by the fuel previously used in tCO_2/TJ
η_{th} : Efficiency of the system with the fossil fuel used in the absence of the project activity.

The efficiency of the units in the baseline was determined through measurements carried out on site.

B.5. Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered small-scale CDM project activity:

To substitute the existent boilers burners by new ones that use biomass (wood chips), complies with CDM principles, since this fuel is considered "neutral carbon".

According to Annex A of Appendix B of "Simplified modalities and procedures for small scale clean development machanism project activities" (version 6 of September 30th, 2005) it is demonstrated that the alternative of the project activity is unique, and it would not have happened due to the barriers:

a) Alternative scenarios

a1) Unit CP-Curitiba:
The natural alternative for the project activity would be the boiler of unit "CP-Curitiba" to go on generating the necessary steam for the production line using fossil fuel. As a matter of fact, in 1998 the boiler was adapted to substitute biomass (wood) by oil BPF-3A (fossil fuel).
The fossil fuel(BPF-3A) boiler was kept on the site as an alternative boiler. (See annex 3)

a2) Unit PO-Curitiba
The natural alternative for the project activity would be the boiler of unit "PO-Curitiba" that used biomass (wood) should then start using fossil fuel (oil BPF-3A) as the "CP-Curitiba" boiler, for the reasons described below.
The fossil fuel (shale oil) boiler was kept on the site as an alternative boiler. (See annex 3)

The substitution of the existing boiler for a new one, fueled by biomass meets the following barriers:

b) Investment barrier:

b1) Unit CP-Curitiba:
The adaptation of a biomass burner to the existing boiler in order to substitute oil BPF 3A (fossil fuel), its implantation together with a receiving, stocking and transport systems to the chip wood burner and all other peripheral systems demanded an investment of approximately US$ 1,700,000.
To go from oil to biomass – that was done in 1998 – the boiler had already spent more resources, thus to reinvest resources in yet another transformation was a difficult decision, and for that the CDM incentives were considered significant.

b2) Unit PO-Curitiba:
The adaptation of a new biomass burner (wood chips) to the existing boiler to substitute the existing one fueled by wood demanded an investment of US$ 400,000, much more than the expense to acquire an oil burner BPF-3A. Again, CDM incentives were relevant.

c) Technological barrier:

It is difficult for boilers that use biomass in the burner to have a steady steam flux and maintain the pressure stable.

One knows that biomass boilers maintenance is harder and more difficult than the ones fueled by oil BPF 3A or shale oil.

The stocking and logistics space needed for handling biomass is much bigger than the one used for fossil fuel because, apart from occupying a bigger volume (wood chips), it is needed in larger quantities, since its efficiency in the conversion fuel / energy is lower than the fossil fuels, its heat-producing power being around 2.400 Kcal/Kg, while the fossil fuel is 9.500 Kcal/Kg.
In the oil boilers, the fuel comes directly from the deposit tanks, without human intervention. The advantage of oil BPF 3A and shale oil, being a fossil fuel, is having its supply and quality granted, minimizing production risks.
It is important to emphasize that Brazil is self-sufficient in oil production, and that, in itself, is already a guarantee of supplying.

d) Usual practices:

In 1998 Trombini had transformed its boiler, which used wood, to use fossil fuel: as it were, it did not attend the steam demand and could not keep the pressure stable.
Apart from that, Trombini has, in its other factories, boilers fueled with different types of fuel, such as:

- Factory in the county of Farroupilha, state of Rio Grande do Sul: boiler fueled by natural gas;
- Factory in the county of Curitiba, state of Paraná: 2 boilers fueled by biomass, 1 fueled by shale oil (alternative), 1 fueled by oil BPF-3A (alternative);
- Factory in the county of Fraiburgo, state of Santa Catarina: 2 boilers fueled by biomass and 1 fueled by black liquor;
- County of Barra, state of Paraná: 1 small hydro-electric station

This clearly demonstrates that there is no usual market practice for this sector.

Nevertheless, from 2003 on, a strong movement for the use of biomass started, based in the incentives of the Kyoto Protocol.

e) Other barriers:

e.1) Although by 2003 Brazilian companies were anxious to be part of Kyoto Protocol through Clean Development Mechanism - CDM, as the first CDM project of the world was “Nova Gerar”, the Consulting companies were not so interested on small-scale projects that would generate small amounts of CERs.
Only by 2005 those companies started working on projects with smaller CDM results on CERs.
Its expected on countries with the geographical extension like Brazil to reaching difficulties for specialized CDM companies.
For that reason many companies as Trombini Industrial S/A were late on their CDM projects.
It is important to acknowledge that these dichotomy between companies that wants to officialize their CDM projects and CDM Consulting companies shall last for a while.
e2) We have, today, a reasonable quantity of biomass available for consumption, with the companies tendency of substituting fossil fuels by biomass (in Brazil, so far there are 36 projects) its availability tends to be reduced, thus it might become scarce, risking its supply and turning the generation unstable;

e3) The use of fossil fuels for the type of activity of Trombini in Brazil has no legal restrictions: therefore the maintenance of the old system would not have faced legal barriers.

e4) The use of biomass in boilers burners does not meet legal obstacles either.

Trombini has all environmental licenses needed to function.

The conclusion is that the project activity is additional and the income from CERs are very important for the project feasibility as time goes by. We also consider that the emissions reduction activity has a very important publicity impact.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

- Baseline emissions:

In the methodology AMS I.C., baseline emissions are calculated through the formula:

$$BEy = \frac{HG_y \times EFCO_2}{hth_{CP}}$$ (see item B.4.)

Considering that we have 2 (two) boilers in the project, the baseline emissions will be calculate as follows:

$BE_y = BE_{\mathbf{CP},y} + BE_{\mathbf{PO},y}$ where:

$$BE_{CP,y} = \frac{HG_{CP,y} \times EFCO_2}{hth_{CP}}$$ where:

$BE_{\mathbf{CP},y}$ = baseline emissions of the boiler at unit CP-Curitiba in year "y".
$HG_{\mathbf{CP},y}$ = net quantity of steam produced by CP-Curitiba during year "y".
hth_{CP} = boiler efficiency at unit CP-Curitiba.

and

$$BE_{PO,y} = \frac{HG_{PO,y} \times EFCO_2}{hth_{PO}}$$ where:

$BE_{\mathbf{PO},y}$ = baseline emissions of the boiler at unit PO-Curitiba in year "y".
$HG_{\mathbf{PO},y}$ = baseline emissions of the boiler at unit PO-Curitiba in year "y".
hth_{PO} = boiler efficiency at unit CP-Curitiba.

- Leakages:

The leakages in Category I.C. are considered when the equipment is transferred to other activities, and this does not happen in this project. Therefore:

Leakages = 0

- Emissions reduction:

Emissions reductions will be calculated by the formula:

$RE_y = BE_y$ - Leakages

B.6.2. Data and parameters that are available at validation:

For CP-Curitiba unit, were used as baseline the data from the CSCT 750 boiler, which works on BPF-3A.

Data / Parameter:	**F_{CP}**
Data unit:	t/h
Description:	Steam flow generated on the CP-Curitiba Boiler
Source of data used:	Direct measurements at the site
Value applied:	21 t/h
Justification of the choice of data or description of measurement methods and procedures actually applied :	Use a flow meter
Any comment:	

Data / Parameter:	**T_{CP}**
Data unit:	°C
Description:	Steam temperature from the CP-Curitiba boiler
Source of data used:	Direct measurements at the site
Value applied:	1000 °C
Justification of the choice of data or description of measurement methods and procedures actually applied :	Use a thermometer
Any comment:	

Data / Parameter:	**P_{CP}**
Data unit:	MPa
Description:	Work pressure of the steam generated by the CP-Curitiba boiler

Source of data used:	Direct measurements at the site
Value applied:	20 Kgf/cm² = 1,961 MPa
Justification of the choice of data or description of measurement methods and procedures actually applied :	Use a manometer
Any comment:	

Data / Parameter:	$h th_{CP}$
Data unit:	%
Description:	Fossil fuel boiler efficiency (CP-Curitiba) – baseline
Source of data used:	Direct measurements at the site
Value applied:	90%
Justification of the choice of data or description of measurement methods and procedures actually applied :	
Any comment:	

Data / Parameter:	**$Disp_{CP}$**
Data unit:	Hours per year
Description:	CP-Curitiba Boiler availability during the year.
Source of data used:	Direct measurements at the site
Value applied:	8472 hours
Justification of the choice of data or description of measurement methods and procedures actually applied :	CP-Curitiba boilers stop 72 hour for maintenance and repair every 3 months or 288 hours per year.
Any comment:	

Data / Parameter:	**IE_{CP}**
Data unit:	TJ/t
Description:	Internal energy of the steam based on temperature and pressure of the CP-Curitiba boiler
Source of data used:	Steam Temperature and pressure
Value applied:	0,004048 TJ/t
Justification of the choice of data or description of	Value calculated according to "Fundamentos da Termodinâmica" from: "Sonntag , Borgnakke , Van Wylen.

measurement methods and procedures actually applied :	
Any comment:	

Data / Parameter:	**$EFCO2_{CP}$**
Data unit:	t CO_2e / TJ
Description:	Emission Factor of the fuel used on the CP-Curitiba fossil fuel boiler -baseline (BPF-3A oil).
Source of data used:	Tab. 2.3 – IPCC – Gidelines – 2006)
Value applied:	73,30 t CO_2e / TJ
Justification of the choice of data or description of measurement methods and procedures actually applied :	Default value from IPCC Guidelines - 2006
Any comment:	

For the PO-Curitiba unit, were used for baseline the information of the boiler that work with shale oil since those are more conservative and measurable.

Data / Parameter:	**F_{PO}**
Data unit:	t/h
Description:	Steam flow generated on the PO-Curitiba boiler
Source of data used:	Direct measurements at the site
Value applied:	4 t/h
Justification of the choice of data or description of measurement methods and procedures actually applied :	Use a flow meter
Any comment:	

Data / Parameter:	**T_{PO}**
Data unit:	°C
Description:	Steam temperature from the PO-Curitiba boiler
Source of data used:	Direct measurements at the site
Value applied:	198 °C
Justification of the choice of data or description of measurement methods and procedures actually applied :	Use a thermometer

Any comment:	

Data / Parameter:	**P_{PO}**
Data unit:	MPa
Description:	Work preesure of the steam generated by the PO-Curitiba boiler
Source of data used:	Direct measurements at the site
Value applied:	14,5 Kgf/cm² = 1,4220 MPa
Justification of the choice of data or description of measurement methods and procedures actually applied :	Use a manometer
Any comment:	

Data / Parameter:	**$h th_{PO}$**
Data unit:	%
Description:	Fossil fuel boiler efficiency (PO-Curitiba - shale oil) - baseline
Source of data used:	Direct measurements at the site
Value applied:	84%
Justification of the choice of data or description of measurement methods and procedures actually applied :	
Any comment:	

Data / Parameter:	**$Disp_{CP}$**
Data unit:	Hours per year
Description:	PO-Curitiba Boiler availability during the year.
Source of data used:	Direct measurements at the site
Value applied:	8472 hours / year
Justification of the choice of data or description of measurement methods and procedures actually applied :	PO-Curitiba boilers stop 72 hour for maintenace and repare every 3 months os 288 hours per year.
Any comment:	

Data / Parameter:	**IE_{PO}**
Data unit:	TJ/t
Description:	Internal energy of the steam based on temperature and pressure of the PO-Curitiba boiler

Source of data used:	Steam Temperature and pressure
Value applied:	0,002600 TJ/t
Justification of the choice of data or description of measurement methods and procedures actually applied :	Value calculated according to "Fundamentos da Termodinâmica" from: "Sonntag , Borgnakke , Van Wylen.
Any comment:	

Data / Parameter:	**$EFCO2_{PO}$**
Data unit:	tCO_2e / TJ
Description:	Emission Factor of the used fuel used on the Po-Curitiba fossil fuel boiler - baseline (shale oil).
Source of data used:	Tab. 2.3 – IPCC – Gidelines – 2006)
Value applied:	73,30 tCO_2e / TJ
Justification of the choice of data or description of measurement methods and procedures actually applied :	Default value IPCC Guidelines - 2006
Any comment:	

B.6.3 Ex-ante calculation of emission reductions:

a) CP-Curitiba:

Available Parameters:

Boiler: CSCT 750
Fuel: BPF-3A oil (fóssil)
F_{CP} = 21 t/h
P_{CP} = 20 KGf/cm² = 1,961 MPa
T_{CP} = until 1200°C, considered 1000°C
hth_{CP} = 90%
$EFCO_2$ (BPF-3A) = 73,3 tCO_2e / TJ

Calculated parameters:

IE_{CP} = 4048 KJ/Kg, From the bibliographies.
Power = F_{CP} x IE_{CP}
$Disp_{CP}$ = 8472 hours per year
HG_{CP} = Power x $Disp_{CP}$

$$BE_{CP,y} = \frac{HG_{CP,y} \times EFCO_2}{hth_{CP}} = 52790 \text{ tCO2e}$$

b) PO-Curitiba:

Available Parameters:

Boiler: "Eônia"
Fuel: shale oil (fossil)
F_{PO} = 4 t/h
P_{PO} = 14,5 KGf/cm² = 1,4220 MPa
T_{PO} = 198°C
hth_{PO} = 84%
$EFCO_2$ (shale oil) = 73,3 tCO_2e / TJ

Calculated Parameters:

IE_{PO} = 2600 KJ/Kg, From the bibliographies.
Power = F_{PO} x IE_{PO}
$Disp_{PO}$ = 8472 hours per year
HG_{PO} = Potência x $Disp_{CP}$

$$BE_{PO,y} = \frac{HG_{PO,y} \times EFCO_2}{hth_{PO}} = 6458 \text{ tCO2e}$$

B.6.4 Summary of the ex-ante estimation of emission reductions:

Year	Baseline emissions Estimative - CP-Curitiba	Baseline emissions Estimative - PO-Curitiba	Lekeage estimative	Final Emission reduction Estimatives
2009	**52790**	**6458**	**0**	**59248**
2010	**52790**	**6458**	**0**	**59248**
2011	**52790**	**6458**	**0**	**59248**
2012	**52790**	**6458**	**0**	**59248**
2013	**52790**	**6458**	**0**	**59248**
2014	**52790**	**6458**	**0**	**59248**
2015	**52790**	**6458**	**0**	**59248**
Total ($tonCO_2e$)	**369530**	**45206**	**0**	**414736**

B.7 Application of a monitoring methodology and description of the monitoring plan:

B.7.1 Data and parameters monitored:

The following CP-Curitiba data will be monitored:

Data / Parameter:	**$F_{CP,y}$**
Data unit:	Tons (t/year)
Description:	Amount of steam produced by the CP-Curitiba biomass boiler on the year "y".
Source of data to be used:	Monthly measurements
Value of data	This parameter was not used for *ex-ante* estimative.
Description of measurement methods and procedures to be applied:	Measured twice a day using a flow measurer multiplied by the monthly hours of operation.
QA/QC procedures to be applied:	The measurement equipments will be certified and will have proper maintenance.
Any comment:	Data will be stored during the crediting period and 2 years after.

Data / Parameter:	**$T_{CP,y}$**
Data unit:	°C
Description:	Steam Temperature from CP-Curitiba boiler during the year "y".
Source of data to be used:	Direct measurements at site, made twice a day.
Value of data	This parameter was not used for *ex-ante* estimative.
Description of measurement methods and procedures to be applied:	Measured with termometer.
QA/QC procedures to be applied:	The measurement equipments will be certified and will have proper maintenance.
Any comment:	Data will be stored during the crediting period and 2 years after.

Data / Parameter:	**$P_{CP,y}$**
Data unit:	MPa
Description:	Work pressure of the steam generated by the CP-Curitiba boiler
Source of data to be used:	Direct measurements at site, made twice a day.
Value of data	This parameter was not used for *ex-ante* estimative.
Description of measurement methods and procedures to be applied:	Measured with manometer.
QA/QC procedures to	The measurement equipments will be certified and will have proper maintenance.

be applied:	
Any comment:	Data will be stored during the crediting period and 2 years after.

Data / Parameter:	$\mathbf{Q_{CP,y}}$
Data unit:	Tons (t)
Description:	Amount of biomass used on CP-Curitiba during the year "y"
Source of data to be used:	Measured monthly.
Value of data	This parameter was not used for *ex-ante* estimative.
Description of measurement methods and procedures to be applied:	The amount of biomass is verified at the origin, the monitoring will be done using invoice.
QA/QC procedures to be applied:	
Any comment:	Data will be stored during the crediting period and 2 years after.

The following PO-Curitiba data will be monitored:

Data / Parameter:	$\mathbf{F_{PO,y}}$
Data unit:	Amount of steam produced by the PO-Curitiba biomass boiler on the year "y".
Description:	Monthly measurements
Source of data to be used:	This parameter was not used for *ex-ante* estimative.
Value of data	Measured twice a day using a flow measurer multiplied by the monthly hours of operation.
Description of measurement methods and procedures to be applied:	The measurement equipments will be certified and will have proper maintenance.
QA/QC procedures to be applied:	Data will be stored during the crediting period and 2 years after.
Any comment:	Amount of steam produced by the CP-Curitiba biomass boiler on the "y".

Data / Parameter:	$\mathbf{T_{PO,y}}$
Data unit:	°C
Description:	Steam Temperature from PO-Curitiba boiler during the year "y".
Source of data to be used:	Direct measurements at site, made twice a day.
Value of data	This parameter was not used for *ex-ante* estimative.
Description of measurement methods and procedures to be applied:	Measured with termometer.
QA/QC procedures to	The measurement equipments will be certified and will have proper maintenance.

be applied:	
Any comment:	Data will be stored during the crediting period and 2 years after.

Data / Parameter:	**$P_{PO,y}$**
Data unit:	MPa
Description:	Work pressure of the steam generated by the PO-Curitiba boiler
Source of data to be used:	Direct measurements at site, made twice a day.
Value of data	This parameter was not used for *ex-ante* estimative.
Description of measurement methods and procedures to be applied:	Measured with manometer.
QA/QC procedures to be applied:	The measurement equipments will be certified and will have proper maintenance.
Any comment:	Data will be stored during the crediting period and 2 years after.

Data / Parameter:	**$Q_{PO,y}$**
Data unit:	Tons (t)
Description:	Amount of biomass used on CP-Curitiba during the year "y"
Source of data to be used:	Measured monthly..
Value of data	This parameter was not used for *ex-ante* estimative
Description of measurement methods and procedures to be applied:	The amount of biomass is verified at the origin, the monitoring will be done using invoice.
QA/QC procedures to be applied:	Data will be stored during the crediting period and 2 years after.
Any comment:	Amount of biomass used on CP-Curitiba during the year "y"

B.7.2 Description of the monitoring plan:

Trombini Industrial S.A. established a Quality for Project, Development, Production and Commercialization Managing System for its industrial processes and this system was audited and conforms to standard NBR ISO 9001:2000. Being it so, there is no need to change monitoring procedures and QA/QC for the variables and parameters required for the CDM project activity.

B.8 Date of completion of the application of the baseline and monitoring methodology and the name of the responsible person(s)/entity(ies)

Date of complementary application of methodology for the project activity:
26/12/2007

Persons/entities responsible for the project

Green Domus Desenvolvimento Sustentável Ltda (Project participant)
Rua Ribeiro do Vale, 318 - Brooklin
Sao Paulo - SP
Brazil
Tel: +55 11 5093 4854
e-mail: greendomus@greendomus.com.br
site: www.greendomus.com.br

André Leonel Leal: andrell@greendomus.com.br
Nino Sergio Bottini ninosb@greendomus.com.br
Felipe Jané Bottini felipejb@greendomus.com.br

SECTION C. Duration of the project activity / crediting period

C.1 Duration of the project activity:

C.1.1. Starting date of the project activity:

August/2004

C.1.2. Expected operational lifetime of the project activity:

25 years

C.2 Choice of the crediting period and related information:

C.2.1. Renewable crediting period

C.2.1.1. Starting date of the first crediting period:

01/01/ 2009

C.2.1.2. Length of the first crediting period:

7 years

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

Not applicable

C.2.2.2. Length:

Not applicable

SECTION D. Environmental impacts

D.1. If required by the host Party, documentation on the analysis of the environmental impacts of the project activity:

Brazilian environmental laws do not require any special license for the type of fuel substitution object of the project activity.
Trombini Industrial S.A. has all environmental licenses required by Brazilian laws for its industrial activities, for its eucalyptus plantation, and acquires certified biomass from its suppliers according to the laws in force.

D.2. If environmental impacts are considered significant by the project participants or the host Party, please provide conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party:

SECTION E. Stakeholders' comments

E.1. Brief description how comments by local stakeholders have been invited and compiled:

Brazilian DNA is the *Interministerial Commission for the Global Change of Climate – CIMGC* created by decree on 07/07/1999, that issued on 11/09/2005 Resolution n° 1 determining how, when and to whom consultations have to be sent.
The following entities were consulted:

Prefeitura Municipal de Curitiba
Palácio 29 de março
Av. Cândido Abreu, 817 – 2º andar
Curitiba - PR
80530-908

Câmara Municipal de Curitiba
Palácio Rio Branco
Rua Barão do Rio Branco s/nº
Curitiba - PR
80010-902

Secretaria Municipal do Meio Ambiente
Av. Cândido Abreu, 817 – Centro Cívico
Curitiba - PR
80530-908

Secretaria de Estado do Meio Ambiente e Recursos Hídricos
Rua Desembargador Motta, 3.384
Curitiba - PR
80430-200

Instituto Ambiental do Paraná
Rua Engenheiro Rebouças, 1.206
Curitiba - PR
80215-100

Ministério Público do Estado do Paraná
Rua Marechal Floriano Peixoto, 1.251 – Rebouças
Curitiba - PR
80230-110

Fórum Brasileiro de ONGs e Movimentos Sociais para o Meio Ambiente
SCS – Quadra 08 – Bloco B – 50
Edifício "Venâncio 2000" – 1º andar
Brasília - DF
70333-900

Associação Protetora do Meio Ambiente Verde Vida Sul
Rua Emiliano Perneta, 10 – cj. 1301 A - Batel
Curitiba - PR
80250-100

Associação de Defesa do Meio Ambiente de Reimer
Av. República Argentina, 1347 - sala 3 - Água Verde
Curitiba - PR
80000-000

E.2. Summary of the comments received:

So far, no comment was received.

E.3. Report on how due account was taken of any comments received:

Not applicable since so far no comment was received.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	Trombini Industrial S.A.
Street/P.O.Box:	Rua Olympio Trombini, 619 – Vista Alegre
Building:	
City:	Curitiba
State/Region:	State of Paraná
Postfix/ZIP:	80820-590
Country:	Brazil
Telephone:	+ 55 41 2169 1100
FAX:	+ 55 41 2169 1414
E-Mail:	
URL:	www.trombini.com.br
Represented by:	José Marcelino Gonçalves
Title:	Paper Production Manager - Curitiba
Salutation:	Mr.
Last Name:	Gonçalves
Middle Name:	Marcelino
First Name:	José
Department:	Paper Production
Mobile:	
Direct FAX:	
Direct tel:	+ 55 41 2169 1274
Personal E-Mail:	jgonçalves@trombini.com.br

Organization:	Green Domus Desenvolvimento Sustentável Ltda
Street/P.O.Box:	Rua Ribeiro do Vale, 318 - Brooklin
Building:	
City:	São Paulo
State/Region:	State of São Paulo
Postfix/ZIP:	04568-000
Country:	Brazil
Telephone:	+ 55 11 5093 4854
FAX:	+ 55 11 5093 4854
E-Mail:	greendomus@greendomus.com.br
URL:	www.greendomus.com.br
Represented by:	Nino Sergio Bottini
Title:	Director
Salutation:	Sr.
Last Name:	Bottini
Middle Name:	Sergio
First Name:	Nino

Department:	Tecnical Departament
Mobile:	
Direct FAX:	55 11 5093 4854
Direct tel:	55 11 5093 4854
Personal E-Mail:	ninosb@greendomus.com.br

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

No public funding was used from the parties included in Annex 1.

Annex 3

BASELINE INFORMATION

CP- Curitiba:

The boiler "Dedini", model "CSCT 750" was installed in 1981 and used firewood as fuel. With the development and more sophistication of the machines fueled with the boiler steam it was observed that they could not keepe a stable pressure, interfering too much in the factory production and in the product quality. Thus, in 1998 the boiler was converted to use fossil fuel (oil BPF-3A) with the following features:

Mnufacturer: Dedini S/A Indústrias de Base
Model: CSCT 750
Capacity t/h (steam): Installed = 35 t/h; effective = 21 t/h
Working temperature: up to 1200°C (for calculations considered 1000°C)
Working pressure: 20 Kgf/cm²
Generated pressure: 21.15 MW
Measured efficiency: 90%
Fuel: oil BPF-3A

In 2004, slightly before the Kyoto Protocol went in force, Trombini had to decide which fuel it had to use in boiler ATA 26 at unit PO – Curitiba, that used firewood. It had to choose among keeping the firewood, change to oil BPF-3A as in boiler CSCT 750, or biomass (wood chips). One single solution was chosen.

That decision of using biomass (wood chips) was strongly influenced by the possibility of getting additional subsidies related to project CDM incentives, since the boiler CSCT 750 had already been modified 6 years before into oil fuel.

Nevertheless, in 2004 there were many doubts about enough biomass availability in the market, so much so that an alternative boiler fueled by oil was kept at CP-Curitiba ready to be used, with the following features:

Manufacturer: Dedini S/A Indústrias de Base
Model: KEYSTONE 11M
Capacity t/h (steam): 18 t/h
Working temperature: 1,000°C
Working pressure: 20 Kgf/cm²
Generated potency: 18.22 MW
Efficiency: 90%
Fuel: oil BPF-3ª

The boiler CSCT 750, adapted to use biomass, had from then on the following features:

Manufacturer: Dedini S/A Indústrias de Base
Model: CSCT 750
Capacity t/h (steam): Installed = 28 t/h; effective = 20 t/h.
Working temperatures: 1,200 °C (for calculations considered 1000°C)
Working pressure: 19 Kgf/cm²
Generated potency: 17.99 MW
Measured efficiency: 90%
Fuel: biomass

PO- Curitiba:

The boiler ATA 26 with ante-furnace model H-3 was installed in 1974 and used oil BPF as fuel: following the example of boiler CSCT 750 of CP-Curitiba, was converted into firewood fuel in 1982.

When CSCT 750 was modified to use oil BPF in 1998, the ATA modification decision was postponed as, apart from the costs incurred, it was still able to provide for the unit needs, although not in a satisfactory way.

In 2004 a decision had to be taken in relation to the fuel to be used in the boiler: oil BPF-3A, as in the CSCT 750, or biomass.

As already mentioned, the decision was taken for both boilers, that is, both were adapted for the use of biomass (wood chips) as fuel.

Similar to the CP-Curitiba, the unit PO-Curitiba, taking uncertainties into account, kept on site an alternative boiler fueled by schist oil, with the following features:

Manufacturer: Indústria de Caldeiras Eureka Santino
Model: Eônia – Fogo Tubular Compacta
Capacity t/h (steam): Installed:6 t/h, effective: 4 t/h.
Working temperature: 198 °C
Working pressure: 14.5 Kgf/cm²
Generated potency: 2.43 MW
Fuel: schist oil
Efficiency: 84%

The boiler ATA 26, adapted to use biomass (wood chips) has now the following features:

Manufacturer: ATA Combustão Técnica S.A.
Model: H-3 with ante-furnace 22 Alp
Capacity t/h (steam): Installed: 5.8 t/h; effective: 4 t/h.
Working temperature: 198°C
Working pressure: 14.5 Kgf/cm²
Generated potency: 2.48 MW
Measured efficiency: 86%
Fuel: biomass

Annex 4

MONITORING INFORMATION

- - - - -