CLEAN DEVELOPMENT MECHANISM
MONITORING REPORT

Central Energética do Rio Pardo Cogeneration Project

(CDM Registration Reference Number 0209)

Monitored Period: 01 May 2003 to 31 May 2006
Crediting Period: 01 May 2003 to 30 April 2010
~~**Monitored Period:**~~
~~**01 May 2003 to 31 December 2005**~~

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Section A. General description of project activity

A.1. Title of the project activity

Central Energética do Rio Pardo cogeneration project ("CERPA Cogeneration Project").

Document version number: ~~01~~02, ~~21~~05/~~June~~July/2006.

Monitoring Report based on the PDD Version Number: 4B, from 21/12/2005.

A.2. Description of the project activity

The primary objective of the CERPA Cogeneration Project is to help meet Brazil's rising demand for energy due to economic growth and to improve the supply of electricity, while contributing to the environmental, social and economic sustainability by increasing renewable energy's share of the total Brazilian (and the Latin America and the Caribbean region's) electricity consumption.

Usina da Pedra is a sugar mill located in Serrana, state of São Paulo. The company is owned by the Biagi family, which is one of the most traditional producers in the sugar industry in Brazil. Irmãos Biagi S/A, the family company, owns two other sugarcane mills (Ibirá Mill and Buriti Mill). Usina da Pedra produces sugar, ~~and~~ anhydrous and hydrated alcohol, as well as generates its own electricity. ~~During the 2003 – 2004 crop season, Usina da Pedra processed 3,341,870 tones of sugarcane, produced 3,871,428 sugar sacks (50Kg each), 90,516,000 liters of anhydrous alcohol, and 92,271,000 liters of hydrated alcohol.~~

~~In May 2003, CERPA, which is the thermoelectric plant of Usina da Pedra, sold its first MWh to the local power utility CPFL (*Companhia Paulista de Força e Luz*). Currently, there is a PPA signed with CPFL to commercialise 18 MW during the season.~~

In 2003, CERPA ~~in 2003~~ upgraded its equipment with the objective of using bagasse more efficiently to cogenerate electricity ~~(see to Figure 1)~~. A more efficient cogeneration of this renewable fuel allows Usina da Pedra mill to sell a surplus of electricity to the grid and creates a competitive advantage. The electricity sold to the grid diversifies income to the mill and it helps meet Brazil's rising demand for energy due to economic growth and to improve the supply of electricity, while contributing to the environmental, social and economic sustainability by increasing renewable energy's share of the total Brazilian (and the Latin America and the Caribbean region's) electricity consumption.

In May 2003, CERPA, which is the thermoelectric plant of Usina da Pedra, sold its first MWh to the local power utility CPFL (*Companhia Paulista de Força e Luz*). Currently, there is a PPA signed with CPFL to commercialise 18 MW.

CERPA operates with a configuration using a high-pressure boiler and a multiple stage backpressure turbine coupled with two new 15 MW generators. There are 12 MW for internal consuming and 18 MW of power surplus, operating at full capacity during the crop-season (May to November) and part of the capacity during intersafra, when the production allows it. T~~t~~he plant exports approximately from 45,000 MWh to ~~60~~85,000 MWh every year since 2003, assuming 90% capacity factor.

A.3. Cerpa Energia Monitoring Report

The GHG emissions reduction during the period from May 2003 to ~~December~~ May ~~2005~~ 2006 was achieved through the dispatched electricity generated by Usina da Pedra, that displaced a mix of electricity generation in the Brazilian South-Southeast-Midwest interconnected grid.

The Monitoring Report is based on the electricity delivered to the grid by Usina da Pedra. The amount of energy delivered is monitored by the energy producer (seller) and by the power utility (buyer) meters. The power utility – Companhia Paulista de Força e Luz (CPFL) - is responsible to inform CCEE – *Câmara Comercializadora de Energia Elétrica* about the total of the energy delivered to the grid. CCEE makes feasible and regulates the electricity energy commercialization.

Calculation of the emissions reduction is based on validated and registered parameters fixed in the PDD and justified during the validation. The baseline emission factor for project activities as Usinas Itamarati for the Brazilian South-Southeast-Midwest grid is 0.2677 tCO2/MWh.

A.4. Period of the monitoring report and amount of monitored emissions reductions

Period of the monitoring report: 01/May/2003 – 31/~~Dec~~May/~~2005~~2006

Amount of monitored emissions reductions: ~~48,648.4~~ 55,055.6 tCO_2

Total crediting period of the project: 01/May/2003 – 30/April/2010

A.5. Date of completing the monitoring report

The date of completing the monitoring report was ~~21~~05/~~June~~July/2006.

A.6. Personnel Responsible

Project Manager – Sylvio Ortega Filho (Central Energética do Rio Pardo Ltda.)

Monitoring Report – Ricardo Esparta (Ecoinvest Assessoria Ltda.)

Section B. Monitoring methodology and plan

B.1. Name and reference of approved monitoring methodology applied to the project activity

AM0015 – "Bagasse-based cogeneration connected to an electricity grid"

B.2. Justification of the choice of the methodology and why it is applicable to the project activity:

~~The chosen methodology is applicable to all bagasse based cogeneration projects connected to the grid. The monitoring methodology and plan considers monitoring emission reductions generated from cogeneration projects using sugarcane bagasse as fuel.~~CERPA is a cogeneration project connected to the electricity grid. The project has fulfilled all the "additionality" requisites (see application of the "additionality tool [1] " below) and has demonstrated why the project would not occur in the absence of the CDM.

During a period of restructuring the entire electricity market, as is the current Brazilian situation, investment uncertainty is the main barrier for small renewable energy power projects. In this scenario these projects compete with existing plants (operating margin) and with new projects (build margin), which usually attract the attention of financial investors. Operating and Build Margins have been used to calculate the emission factor for the connected grid.

The methodology AM0015, for cogeneration projects, uses derived margins, which have been applied in the context of the project activity through the determination of the emissions factor for the South-Southeast-Midwest subsystem of the interconnected Brazilian grid (electricity system that is connected by transmission lines to the project electricity system and in which power plants can be dispatched without significant transmission constraints).

~~The main data to be considered in determining the emissions reductions is the electricity exported to the grid. The emissions reduction is reached by applying an emissions factor through the electricity dispatched to the grid, that is verified and monitor by a two party verification: by the power plant that sells the electricity and by the utility company that buys the electricity.~~

[1] Tool for the demonstration and assessment of additionality. UNFCCC, CDM Executive Board 16th Meeting Report, 22 October 2004, Annex 1. Web-site: http://cdm.unfccc.int/

B.3. Data to be monitored:

ID number	Data type	Data variable	Data unit	Measured (m), calculated (c) or estimated (e)	Recording frequency	Proportion of monitored data	How will the data be archived? (electronic/ paper)	For how long is archived data to be kept?	Comment
1	Electricity generation of the Project delivered to grid	EG_y	MWh	m	15 minutes measurement and Monthly Recording	100%	Electronic and paper	During the credit period and two years after	The electricity delivered to the grid is monitored both by the project owner (seller) and the energy buyer. A Brazilian government entity, CCEE – Câmara Comercializadora de Energia Elétrica - controls and monitors the electricity available on the national interconnected grid. The amount of electricity delivered to the grid by the project activity is available on CCEE's web-site.
2	CO_2 emission factor of the grid	EF_y	tCO_2/MWh	c	At the validation	0%	Electronic	During the credit period and two years after	Data will be archived according to internal procedures.
3	CO_2 Operating Margin emission factor of the grid	$EF_{OM,y}$	tCO_2/MWh	c	At the validation	0%	Electronic	During the credit period and two years after	
4	CO_2 Build Margin emission factor of the grid	$Ef_{BM,y}$	tCO_2/MWh	c	At the validation	0%	Electronic	During the credit period and two years after	

Section C. Monitored data

As the project is neither associated with leakage effects nor with new emissions of pollutants and all other pertinent data is necessary to be analysed and presented only at the validation phase of the project, the only data that has to be monitored going forward during the life of the contract is the electricity supplied to the grid by the project (EG_y).

The main data to be considered in determining the emissions reductions is the electricity exported to the grid. The emissions reduction is reached by applying an emissions factor through the electricity dispatched to the grid, that is verified and monitored by a two party verification: by the power plant that sells the electricity and by the utility company that buys the electricity.

This data is monitored through a spreadsheet that ~~has to~~ collects information by meters installed in the exit of the mill and entrance of the transmission lines and by the sales receipts issued by the electricity utility to the mill.

C.1. Data collected in order to monitor project emissions

GHG emissions by the project activity are zero.

C.2. Data collected in order to monitor baseline emissions

Usina da Pedra Generation (MWh)				
Month	**2003**	**2004**	**2005**	**2006**
January	-	-	-	1,597.30
February	-	-	-	-
March	-	-	-	5,112.80
April	-	-	-	5,061.80
May	44.79	858.72	8,908.89	12,162.30
June	7,859.10	5,720.39	10,773.83	-
July	11,491.96	11,396.92	11,322.07	-
August	11,991.81	9,899.85	12,033.97	-
September	6,890.60	11,673.90	12,002.94	-
October	4,395.50	7,166.80	12,655.06	-
November	3,043.40	5,760.00	7,227.34	-
December	-	2,924.12	5,685.18	-
Total	**45,717.16**	**55,400.70**	**80,609.27**	**23,934.20**

Table 1 – Electricity generation delivered to grid by Usina da Pedra
(Sources: Usina da Pedra)

Emission factors for the Brazilian South-Southeast-Midwest interconnected grid				
Baseline (including imports)	EF_{OM} [tCO2/MWh]	Load [MWh]	LCMR [GWh]	Imports [MWh]
2002	0,8504	275.402.896	258.720	1.607.395
2003	0,9378	288.493.929	274.649	459.586
2004	0,8726	297.879.874	284.748	1.468.275
	Total (2001-2003) =	861.776.699	818.118	3.535.256
	$EF_{OM, simple-adjusted}$ [tCO2/MWh]	$EF_{BM,2004}$	Lambda	
	0,4310	0,1045	λ_{2002}	
	Alternative weights	Default weights	0,5053	
	w_{OM} = 0,75	w_{OM} = 0,5	λ_{2003}	
	w_{BM} = 0,25	w_{BM} = 0,5	0,5312	
	EF_{CM} [tCO2/MWh]	Default EF_{OM} [tCO2/MWh]	λ_{2004}	
	0,3494	0,2677	0,5041	

Table 2 – CO_2 emission factor of the grid/ CO_2 Operating Margin emission factor of the grid/ CO_2 Build Margin emission factor of the grid

Section D. Calculation of GHG emission by sources

The Monitoring Report applies the *ex ante* validated emission factor for project activities for the Brazilian South-Southeast-Midwest interconnected grid. Calculation of the emissions reduction is based on validated and registered parameters fixed in the PDD and justified during the validation. As shown in the table above, the CO2 emission factor of the grid is 0.2677 tCO2e/MWh.

D.1 Describe the formulae used to calculate emissions reductions

The emission reductions by the project activity (ERy) during a given period of year y are the product of the baseline emissions factor (*EFy*, in tCO2e/MWh) times the electricity supplied by the project to the grid at the same period of year y (*EGy*, in MWh), as follows:

$$ER_y = EF_y \cdot EG_y \qquad \textbf{Equation 1}$$

D.2 Tables providing values obtained when applying formulae above

Usina da Pedra			
Year	**Electricity Generation (MWh)**	**Baseline Emission Factor (tCO2e/MWh)**	**Emissions Reduction (tCO2e)**
2003 (01/May/2003 to 31/Dec/2003)	45,717.2	0.2677	12,238.5
2004 (01/Jan/2004 to 31/Dec/2004)	55,400.7	0.2677	14,830.8
2005 (01/Jan/2005 to 31/Dec/2005)	80,609.3	0.2677	21,579.1
2006 (01/Jan/2006 to 31/May/2006)	23,934.2	0.2677	6,407.2
		Total (tCO2e)	**55,055.6**

Annexes

Annex 1 - Contact information

Organization:	Cerpa – Central Energética Rio Pardo Ltda.
Street/P.O. Box:	Usina da Pedra, Zona Rural
City:	Serrana
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