CLEAN DEVELOPMENT MECHANISM
MONITORING REPORT

Zillo Lorenzetti Bagasse Cogeneration Project

(CDM Registration Reference Number 0202)

Monitored Period:
01 January 2006 to 10 December 2006

-- TABLE OF CONTENTS –

Section A. General description of project activity

A.1. Title of the project activity

Zillo Lorenzetti Bagasse Cogeneration Project.

Document version number: 03, 05/July/2007.

Monitoring Report based on the PDD Version Number: 3B, from 21/December/2005.

A.2. Description of the project activity

The primary objective of the Zillo Lorenzetti Bagasse 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.

The project activity consists of the expansion of the bagasse cogeneration facilities at Usina Barra Grande de Lençóis (BGL) and Açucareira Zillo Lorenzetti (AZL), two Zillo Lorenzetti Group's sugar mills. With the expansion of the cogeneration plants, the mills have been able to export electricity from a renewable and sustainable source of energy, sugarcane bagasse, to the interconnected national grid.

The Zillo Lorenzetti Group (ZL Group) owns three sugarcane mills (Usina Barra Grande de Lençóis S/A – Usina Barra Grande, Açucareira Zillo Lorenzetti S/A – Usina São José and, Açucareira Quatá S/A – Usina Quatá) that produce sugar and ethylic alcohol (anhydrous and hydrated), as well as generate its own electricity. The Group initiated its operation in 1939 and is fully owned by Zillo and Lorenzetti families. During the 2003 - 2004 crop season, ZL Group processed 8,530,000 tonnes of sugarcane, produced 575,000 tonnes of sugar and 420,000 m³ of alcohol. The ZL Group is one of the biggest conglomerates in the sector, and currently is the second largest sugarcane processor in Brazil.

In the end of the 2002-crop season BGL and AZL retrofitted their equipment with the objective of using bagasse more efficiently to cogenerate and export a higher amount of electricity. A more efficient cogeneration of this renewable fuel allows both mill to sell a surplus of electricity to the grid and creates a competitive advantage.

The Zillo Lorenzetti Bagasse Cogeneration Project is divided in two different phases. The Phase 1 started in 2001 when both sugar mills substituted their generators, increasing the power potential at their power plants. The Phase 2 started in 2002 only at BGL, when that mill retrofitted its power plant. Before the Phase 1**,** AZL mill power plant use to operate burning all the bagasse produced in the milling process in four boilers operating at 21 kgf/cm^2 and one boiler operating at 42 kgf/cm^2 and three steam turbo-generators (1,750 kVA, 6,625 kVA and 3,750 kVA). Under this configuration the plant was energy self-sufficient. A small amount of bagasse was stored for start-up/shut-down situations.

A.3. Zillo Lorenzetti Monitoring Report

The GHG emissions reduction during the period from January 01st, 2006 to December 10th, 2006 was achieved through the dispatched electricity generated by Zillo Lorenzetti Bagasse Cogeneration Project in its second verification, that displaced a mix of electricity generation in the Brazilian South-Southeast-Midwest interconnected grid. The electric energy generated was sold to the CPFL Comercialização Brasil Ltda.

The Monitoring Report is based on the electricity delivered to the grid by Usina Barra Grande de Lençóis (BGL) and Açucareira Zillo Lorenzetti (AZL). The amount of energy delivered is monitored by the energy producer (seller) and by the power utility (buyer) meters. The power utility 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.

BGL has 1 meter from CPFL, at the substation and AZL has 2 meters from CPFL, one for each of the two electrical branches.

The operators of the cogeneration system have electronic education and participated in courses about working safety in installations and electricity services, as NR10. NR10 is a norm that fixes the minimum conditions to guarantee the safety of the employees that work with electric installations.

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

Period of the monitoring report: 01/January/2006 – 10/December/2006

Amount of monitored emissions reductions: 62,603 tCO_2

Total crediting period of the project: 15/June/2001 – 14/June/2008

A.5. Date of completing the monitoring report

The date of completing the monitoring report was 05/July/2007.

A.6. Personnel Responsible

Project Manager – Paulo Cesar Ferrari (Empresas Zillo Lorenzetti)

Monitoring Report – A. Ricardo J. 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 provides procedures/conditions to determine if the referred methodology is applicable to the Zillo Lorenzetti Bagasse Cogeneration Project activity.

The Zillo Lorenzetti Bagasse Cogeneration Project is installed inside the BGL and AZL sugarcane mills. The sugar mills retrofitted the power plant in order to generate excess electricity to export to the grid using the same quantity of bagasse as before the retrofitting entirely supplied by both sugarcane mills.

The project is located within the BGL and AZL sugar mills premises using the bagasse produced from the sugarcane milling process; therefore, no other entity could develop this project. The government does not control sugar mills in Brazil; therefore projects such as the Zillo Lorenzetti Bagasse Cogeneration Project could only be set up by the private sector.

Both sugar mills produce the same amount of sugarcane and bagasse as before the project activity was implemented. The fluctuation of the amount of sugarcane produced and, consequently the bagasse is due to climate, crop and market conditions that could vary from year to year. Additionally, the percentage of fibre present in the sugarcane could influence in the amount of bagasse.

The sugar mills, generally, store a small amount of bagasse for the next season in order to start plant operations when the new crop season/ harvest begins. The bagasse is stored from the end of the harvest season in November in the South/Southeast region, until the beginning of the following harvest season in May. The volume of bagasse stored between seasons is insignificant, less than 5% of the total amount of bagasse generated during the year or during the harvest period.

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 website.
2	CO_2 emission factor of the grid	EF_y	tCO_2/MWh	c	At the validation and crediting period renewal	0%	Electronic	During the credit period and two years after	Data is available upon request. Factors are calculated according to AM0015 (2004). Data will be archived during the crediting period according to internal procedures.
3	CO_2 Operating Margin emission factor of the grid	$EF_{OM,y}$	tCO_2/MWh	c	At the validation and crediting period renewal	0%	Electronic	During the credit period and two years after	Data is available upon request. Factors are calculated according to AM0015 (2004). Data will be archived during the crediting period according to internal procedures.
4	CO_2 Build Margin emission factor of the grid	$Ef_{BM,y}$	tCO_2/MWh	c	At the validation and crediting	0%	Electronic	During the credit period and two years	Data is available upon request. Factors are calculated according to AM0015 (2004). Data will be archived during the crediting

					period renewal			after	period according to internal procedures.
5	Fraction of time during which low-cost/must-run sources are on the margin	λ_y	Non dimensional	c	At the validation and crediting period renewal	0%	Electronic	During the credit period and two years after	Data is available upon request. Factors are calculated according to AM0015 (2004). Data will be archived during the crediting period according to internal procedures.

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 collects the measurement meters and by the sales receipts issued by the electricity utility to the mill.

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

According Monitoring Methodology AM0015 – "Bagasse-based cogeneration connected to an electricity grid", data of CO2 emissions from fossil fuels combusted due to the project activity at the project site are required, where relevant.

The only emissions due to fossil fuels at the project site are due to the transportation of sugar cane, by trucks, to the sugar mill. This transportation existed already in the baseline, and did not change because of the project, so that there are no net changes in CO_2 emissions from fossil fuels due to the project activity. A document provided by Caldema - the boilers´ manufacturer - stating that the equipment was designed to burn sugar cane bagasse and must not be put in operation burning other types of fuels were presented to DOE.

Also, Zillo monitors constantly that there are no relevant sources of fossil fuel emissions due to the project activity at the project site, and confirms that project emissions are zero.

Considering information above, GHG emissions by the project activity are zero.

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

Generated Energy in 2006 (MWh)			
Months	**AZL Facility**	**BGL Facility**	**TOTAL**
May	3,788.314	5,539.352	9,327.666
June	6,753.598	21,638.402	28,392.000
July	6,938.440	28,451.634	35,390.074
August	7,435.471	30,136.529	37,572.000
September	7,386.246	38,768.703	46,154.949
October	7,044.130	29,983.945	37,028.075
November	4,215.113	19,704.646	23,919.759
December	5.771	16,066.227	16,071.998

TOTAL	43,567.083	190,289.438	233,856.521

Table 1 – Electricity generation delivered to grid by Empresas Zillo Lorenzetti
(Sources: Empresas Zillo Lorenzetti)

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**
	$EF_{OM,\ simple\text{-}adjusted}$ [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

Year	Electricity Generation (MWh)	Baseline Emission Factor (tCO2e/MWh)	Emissions Reduction (tCO2e)
2006 (01/Jan/2006 to 10/Dec/2006)	233,856.52	0.2677	62,603.39

Annexes

Annex 1 - Contact information

Organization:	Usina Barra Grande de Lençóis S/A
Street/P.O. Box:	Rodovia Marechal Rondon, km 289
City:	Lençóis Paulista
State/Region:	São Paulo
Postfix/ZIP:	
Country:	Brazil
Salutation:	Mr.
Last name:	Ferrari
Middle name:	Cesar
First name:	Paulo
Telephone:	
E-Mail:	pferrari@zilloren.com.br

Organization:	Açucareira Zillo Lorenzetti S/A
Street/P.O. Box:	Fazenda São José, Zona Rural
City:	Macatuba
State/Region:	São Paulo
Postfix/ZIP:	
Country:	Brazil
Salutation:	Mr.
Last name:	Ferrari
Middle name:	Cesar
First name:	Paulo
Telephone:	
E-Mail:	pferrari@zilloren.com.br

Organization:	Ecoinvest Assessoria Ltda.
Street/P.O. Box:	Rua Padre João Manoel, 222
City:	São Paulo
State/Region:	SP
Postfix/ZIP:	01411-000
Country:	Brazil
Salutation:	Mr.
Last name:	Esparta
Middle name:	
First name:	Ricardo
Telephone:	+55 (11) 3063-9068
E-Mail:	esparta@ecoinvestcarbon.com