

**CLEAN DEVELOPMENT MECHANISM
MONITORING REPORT**

Pesqueiro Energia Small Hydroelectric Project

(CDM Registration Reference Number 0242)

**Monitored Period:
27 January 2003 to 31 March 2006**

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Section A. General description of project activity

A.1. Title of the project activity

Pesqueiro Energia Small Hydroelectric Project (hereafter referred to as “*Pesqueiro Project*”).

Monitoring Report based on the PDD Version Number: 1B, from 03/Jan/2006

A.2. Description of the project activity

The primary objective of the *Pesqueiro 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 Latin America and the Caribbean region countries have expressed their commitment towards achieving a target of 10% renewable energy of the total energy use in the region. Through an initiative of the Ministers of the Environment in 2002 (UNEP-LAC, 2002), a preliminary meeting of the World Summit for Sustainable Development (WSSD) was held in Johannesburg in 2002. In the WSSD final Plan of Implementation no specific targets or timeframes were stated, however, their importance was recognized for achieving sustainability in accordance with the Millennium Development Goals¹.

The *Pesqueiro Project* is located in the south of Brazil, where the largest coal reserves are located as well as the biggest amount of thermo power plants using this fuel. The project consists of a small-hydro power plant (12.44 MW) located on the Jaguariaíva River, in the city of Jaguariaíva, state of Paraná. Jaguariaíva is a city with 33,837 inhabitants (IBGE, 2004) located next to the agricultural region of Ponta Grossa.

Pesqueiro Energia S.A. is a special purpose company (SPC) which includes a run-of-river small hydro power plant and a very small reservoir (0.33 km²) with minor environmental impact. The entrepreneurship is a joint venture owned by three agricultural cooperatives. These agricultural cooperatives control three smaller cooperatives created specifically to commercialize the electricity generated by the power plant. These three controlled cooperatives specialize in agricultural electrification have 2,500 km in transmission lines and commercialize more than 100,000 MWh per year. The number of associates is approximately 3,000 and the number of customers is more than 7,000. *Pesqueiro Project* delivers, since January 2003, about 80,000 MWh/year (with an estimated minimum capacity factor of 75%) to the South-Southeast-Midwest interconnected grid.

¹ WSSD Plan of Implementation, Paragraph 19 (e): "Diversify energy supply by developing advanced, cleaner, more efficient, affordable and cost-effective energy technologies, including fossil fuel technologies and renewable energy technologies, hydro included, and their transfer to developing countries on concessional terms as mutually agreed. With a sense of urgency, substantially increase the global share of renewable energy sources with the objective of increasing its contribution to total energy supply, recognizing the role of national and voluntary regional targets as well as initiatives, where they exist, and ensuring that energy policies are supportive to developing countries' efforts to eradicate poverty, and regularly evaluate available data to review progress to this end."

A.3. Pesqueiro Energia Monitoring Report

The GHG emissions reduction during the period from January 2003 to December 2005 was achieved through the dispatched electricity generated by Pesqueiro Small Hydroelectric Plant, 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 Pesqueiro Small hydro Plant. The amount of energy delivered is monitored by the energy producer, through Electra Comercializadora de Energia, which represents the seller, as well as by CCEE – Câmara Comercializadora de Energia Elétrica, that controls all electricity delivered to the grid and assures, for the buyer, that the electricity generated is delivered to the grid.

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 small-scale project activities for the Brazilian South-Southeast-Midwest grid is 0.5217 tCO₂e/MWh.

A.4. Period of the monitoring report and amount of monitored emissions reductions
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Period of the monitoring report: 27/Jan/2003 – 31/Mar/2006

Amount of monitored emissions reductions: 136,727 tCO₂

A.5. Date of completing the monitoring report
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The date of completing the monitoring report was 05/May/2006.

A.6. Personnel Responsible

Project Manager – Rosmir Cesar de Oliveira (Pesqueiro Energia S.A.)

Project Monitoring – Osmar Nesi (Electra Comercializadora de Energia Ltda.)

Monitoring Report – Fernando de Souza Machado (Ecoinvest Assessoria Ltda.)

Section B. Monitoring methodology and plan

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

AMS I.D - Renewable electricity generation for a grid.

Type I - Renewable Energy Projects

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

This Monitoring Plan has been chosen as it is suggested in the option (a) of Type I, Category D of CDM small-scale project activity categories contained in Appendix B of the simplified M&P for CDM small-scale project activity and applies to electricity capacity additions from small-scale run-of-river hydro power plants.

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

According to option (a) of Type I, Category D of CDM small-scale project activity categories contained in Appendix B of the simplified M&P for CDM small-scale project activity, monitoring shall consist of metering the electricity generated by the renewable technology. At the project validation, the calculation of the CO₂ emission factor of the grid as well as the CO₂ Operating Margin and the CO₂ Build Margin emission factors of the grid were also required. However, these data should be checked only once, at the validation.

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

Pesqueiro Energia S.A				
Month	Year			
	2003	2004	2005	2006
	Generation (MWh)	Generation (MWh)	Generation (MWh)	Generation (MWh)
January	1,448.777	7,459.186	8,620.399	7,288.707
February	6,944.627	6,849.190	7,323.615	7,123.827
March	7,756.512	7,387.003	6,202.847	5,888.454
April	7,580.385	6,851.443	5,678.188	
May	7,026.609	8,507.096	5,744.271	
June	6,558.492	8,312.441	5,928.518	
July	6,613.302	8,655.538	5,710.681	
August	5,140.468	6,737.168	4,736.841	
September	5,263.553	5,446.675	7,831.374	
October	5,831.525	7,123.796	8,362.090	
November	6,152.343	7,174.901	7,290.688	
December	7,295.085	7,618.369	6,616.350	
Total	73,611.678	88,122.806	80,045.862	20,300.988

Table 1 – Electricity generation delivered to grid by Pesqueiro Small Hydro Plant
(Sources: CCEE – Câmara de Comercialização de Energia Elétrica, Electra Comercializadora de Energia Ltda.)

SSC Emission factors for the Brazilian South-Southeast-Midwest interconnected grid		
Small-scale baseline (without imports)	OM (tCO ₂ e/MWh)	Total generation (MWh)
2002	0.9304	276,731,024
2003	0.9680	295,666,969
2004	0.9431	301,422,617
	Average OM (2002-2004, tCO ₂ e/MWh)	Total = 873,820,610
	0.9472	BM 2004 (tCO ₂ e/MWh)
	OM*0.5+BM*0.5 (tCO ₂ e/MWh)	0.0962
	0.5217	

Table 2 – CO₂ emission factor of the grid/ CO₂ Operating Margin emission factor of the grid/ CO₂ 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 Small Scale project activities for the Brazilian South-Southeast-Midwest interconnected grid. As shown in the table above, the CO₂ emission factor of the grid is 0.5217 tCO₂e/MWh

D.1 Describe the formulae used to calculate emissions reductions

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

$$ER_y = EF_y \cdot EG_y \quad \text{Equation 1}$$

D.2 Tables providing values obtained when applying formulae above

Pesqueiro Energia S.A

Year	Electricity Generation (MWh)	Baseline Emission Factor (tCO ₂ e/MWh)	Emissions Reduction (tCO ₂ e)
2003 (27/Jan/2003 to 31/Dec/2003)	73,611.678	0.5217	38,403.212
2004 (01/Jan/2004 to 31/Dec/2004)	88,122.806	0.5217	45,973.668
2005 (01/Jan/2005 to 31/Dec/2005)	80,045.862	0.5217	41,759.926
2006 (01/Jan/2006 to 31/Mar/2006)	20,300.988	0.5217	10,591.025

Total (tCO₂e)	136,727.832
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Annexes

Annex 1 - Contact information

Organization:	Pesqueiro Energia S. A.
Street/P.O. Box:	Rua das Flores, 382
City:	Castro
State/Region:	PR
Postfix/ZIP:	84166-980
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Organization:	Ecoinvest Assessoria Ltda.
Street/P.O. Box:	Rua Padre João Manoel, 222
City:	São Paulo
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