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:

>>
Salto Buriti Hydroelectric Project
PDD Version Number 01
29/08/2007

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

The Salto Buriti Hydroelectric Project (hereafter, the "Project") developed by Buriti Energia S/A (hereafter referred to as the "Project Developer") consists of the installation of a small hydroelectric plant with an installed capacity of 12MW, located in the Curuá River, in the municipality of Novo Progresso, Pará State.

The plant has the objective to provide renewable electricity to the municipalities of Novo Progresso and Castelo dos Sonhos, in Pará State. A transmission line of an estimated 209 km will be built by the project developer and will be connected to the Pará isolated grid system (hereafter referred to as "the Grid") in the municipality of Novo Progresso.

The grid is located in Pará State, in the Amazonian region. This is a very remote area, where the development of electricity supply infrastructure has been difficult. In most of the Amazonian region, the solution for the electricity supply problem, in the remote areas, has been the implementation of an isolated electricity system based on thermal power plants, fired by fossil fuels, mainly diesel oil.

The plant will bring renewable electricity to develop this remote area both socially and economically, which is a notoriously difficult task. This project will increase the supply of electricity to the grid, offsetting thermal generation with a renewable source of energy generation. It is necessary to account for project emissions from the reservoir as the power density of the proposed project will be 4.14 W/m². The calculation of emissions reductions can be found in section B.6.

The participants of the project recognize that this Project activity is helping Brazil to fulfil its goals of promoting sustainable development. Specifically, the project is in line with host-country specific CDM requirements due to the following reasons:

- Contributes to local environmental sustainability, since it decreases the dependence on fossil fuels, thus improving air quality.
- Contributes towards better working conditions and increases employment opportunities in the area where the project is located.
- Contributes towards better revenue distribution since it assists the regional/local economic development.
- Contributes development of technological capacity because part of the technology comes from developed countries (Germany), but the hand labour and technical maintenance will be provided inside Brazil, consolidating the technology in the country.

- Contributes to regional integration and connection with other sectors. The project facilitates the increase of small hydroelectric plants as a generating source in the region and therefore may encourage other similar companies to replicate this technology.

A.3. Project participants:

Table 1 - Project participants

Name of party involved (*) ((host) indicates a host party)	Private and/or public entity(ies) Project participants (*) (as applicable)	Kindly indicate if the party involved wishes to be considered as project participant (Yes/No)
Brazil (host)	Buriti Energia S/A	No
United Kingdom of Great Britain and Northern Ireland	EcoSecurities Group PLC	No

(*) In accordance with the CDM modalities and procedures, at the time of making the CDM-PDD public at the stage of validation, a Party involved may or may not have provided its approval. At the time requesting registration, the approval by the Party(ies) involved is required.

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. (the “Host Country”)

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

Pará State.

A.4.1.3. City/Town/Community etc:

Novo Progresso Municipality.

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

The exact location of the project is defined using GPS coordinates 08°46'29"S; 54°57'01"W

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

According to Annex A of the Kyoto Protocol, this project fits in UNFCCC Sectoral Category 1: Energy Industries (renewable / non-renewable sources).

The project consists of a plant that generates renewable electricity to supply electricity to the grid. The hydro power plant has four sets of equipment. Each set consists of one Horizontal Axle Francis type turbine and generators, provided by Energ Power Ltda. In a Francis turbine, water flows through the rotor of the turbine; the flow forms a right angle to the turbine axle.

Table 2 – Turbine technical description

Turbine Type	Horizontal Axle Francis
Nominal Capacity	5.75 MW

Table 3 - Generator technical description

Nominal Power	6.25 MVA
Synchronous Speed	400 rpm
Equipment Set Efficiency	87%

By legal definition of the Brazilian Power Regulatory Agency (ANEEL – *Agência Nacional de Energia Elétrica*), resolution number 652, issued on December 9th, 2003, small hydro plants in Brazil must have installed capacity greater than 1MW but not more than 30MW.

A low level diversion dam raises the water level of the river sufficiently to enable an intake structure to be located on the side of the river. The diversion dam consists of water intake structures, a spillway and an adduction structure. A 138 kV transmission line from the switchyard to the Centrais Elétricas do Pará (CELPA), the system concessionaire, sub-station at Novo Progresso is used to connect the plant to the grid.

The technology used in the project is environmentally safe and sound. A run-of-river hydro plant requires only a minimally sized diversion dam, which stores water to generate electricity for short periods of time; the project's reservoir area is 2.9 km^2. The project power density is 4.14 W/m^2, in compliance with the applicability condition of EB decision[1].

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

Table 4 - Estimated Emissions Reductions from the Project

Years	Annual estimation of emission reductions in tonnes of CO2e
2008(since April)	41,344
2009	51,498
2010	51,498
2011	51,498
2012	51,498

[1] Annex 5, EB 23

2013	51,498
2014	51,498
2015	51,498
2016	51,498
2017	51,498
2018(until March)	10,154
Total estimated reductions (tonnes of CO2e)	514,980
Total number of Crediting years	10
Annual average over the crediting period of estimated reductions (tonnes of CO2e)	51,498

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

The project will not receive any public funding from Parties included in Annex I of the UNFCCC.

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

Considering the paragraph 2 of the Appendix C of the Simplified Modalities and Procedures for Small-Scale CDM project Activities, the Project is not a debundled component of a large project activity, beacuse it is the unique project proposed by Buriti Energia S/A.

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:

1. The baseline methodology: AMS 1.D - Grid connected renewable electricity generation, version 12, approved in EB 33.
2. The tool for demonstration and assessment of additionality: the approved methodology of "The tool for demonstration and assessment of additionality", Version 03, in effect as of 16 February 2007 (EB29). More information about the methodology can be obtained at: http://cdm.unfccc.int/methodologies/PAmethodologies/approved.html.

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

According to the sectoral scope list presented by UNFCCC (http://cdm.unfccc.int/), the project is related to sectoral scope 1: Energy industries (renewable - / non-renewable sources) and is applicable to small scale project type 1 (Renewable Energy), methodology I.D. –renewable electricity generation for a grid.

The total installed capacity of the project activity is 12MW which is below the eligibility limit of 15 MW for small scale projects.

B.3. Description of the project boundary:

The project boundary includes the Pará Isolated Grid, the physical site of the plant as well as the reservoir area. For the baseline determination, only CO2 emissions from electricity generation in fossil fuel fired power that is displaced due to the project activity were accounted for.

Although the reservoir area is included in the spatial extent of the project boundary, since the project power density is greater than 4 W/m², but lower than 10 W/m², it is necessary to account for project emissions.

The grid boundary is clearly defined as the spatial extent of the power plants that can be dispatched without significant transmission constraints. Specifically for this project the grid in question is the Pará Isolated System.

Table 5 - GHG included or excluded in the project boundary

	Source	**Gas**	**Included?**	Justification / Explanation
Baseline	Grid electricity production	CO_2	Included	According to ACM0002, only CO_2 emissions from electricity generation in fossil fuel fired power that is displaced due to the project activity should be accounted for.
		CH_4	Excluded	According to ACM0002
		N_2O	Excluded	According to ACM0002
Project Activity	Hydro electric electricity production	CO_2	Included	According to Annex 5, EB 23, hydroelectric power plants with power densities greater than 4 but less than 10 W/m^2 have to use a default emission factor of 90 gCO_2eq/kWh to calculate project emissions. Project power density is 4.14 W/m², hence this source of emission is included.
		CH_4	Excluded	
		N_2O	Excluded	

B.4. Description of baseline and its development:

The project consists of a new electricity generation facility that will supply electricity to the grid. As stated in the methodology, for project activities that do not modify or retrofit an existing electricity generation facility, the baseline scenario is the following:

For a system where all generators use exclusively fuel oil and/or diesel fuel, the baseline is the annual kWh generated by the renewable unit times an emission coefficient for a modern diesel generating unit of the relevant capacity operating at optimal load, calculations described in section B.6.1.

The technology employed in the baseline is the technology already used in the grid. Electricity generation in the grid is based on thermoelectric plants, internal combustion technology and diesel fueled. The baseline is defined as the Pará isolated grid system; it consists of 6 thermoelectric plants, adding 10.725 MW of installed capacity. The electricity generation in the grid is 100% thermoelectric; therefore, the technology described above is the one to be employed in the absence of the project activity.

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:

General Context:

According to the audit report from the Brazilian Court of Audit (2004), the Brazilian Electricity System mainly consists of an interconnected system that is divided into regions of South, Southeast, Middle-West, Northeast and part of the North, the other part of the North Region is isolated from the Brazilian Interconnected system.. Pará State, a very remote area, is not connected to this system. Being interconnected is difficult as building and maintaining transmission lines in the middle of the rainforest is complex and expensive. In the rainforest, power sources must be built near the user. Therefore, in order to minimize electricity supply risks in this remote area, the solution has been the implementation of isolated electricity systems, based on thermal fossil fuel fired power plants.

In 1993, in order to promote the development of the North region through the decrease of consumer electricity cost, the Brazilian Government passed a law - 8631/93 - that obliged all energy concessionaires to divide proportionally the costs of fossil fuel (diesel or fuel oil) consumed in isolated systems in the North region. Subsequently, electricity would be supplied to consumers at a reasonable price. This obligation to divide fuel costs is called CCC -"Conta Consumo de Combustíveis", meaning Fuel Consumption Account.

Besides CCC, the government also created the CCC Subrogation in 1999 (law no. 9648/98). This policy was implemented because CCC only applied to electricity generation from thermal units fired by fossil fuels. The CCC subrogation states that renewable energy can apply for the subsidy. Therefore, the subrogation of CCC resources facilitates the replacement of fossil fuel consumption by other alternative and renewable sources, as for example, hydro energy (Tolmasquim, 2004).

CCC Subrogation could represent an attractive incentive: according to ANEEL (National Electricity Agency), the costs associated with the implementation of new renewable energy generation unit can be subsided by 50% to 75% and the internal rate of return for these investments will increase considerably. However, there are two main obstacles involved in the CCC Subrogation that will be detailed below and need to be specifically considered for the implementation of the project activity.

In spite of the CCC laws which were created to make electricity affordable to the local population, according to "ANEEL CCC + CCC subrogation utilization guide", other legal devices should be created to help the transition from thermal to renewable energy; the Kyoto Protocol is suggested as an alternative.

However, even with the existence of the CCC subrogation subsidy, as quoted from the Brazilian Court of Audit, there is "lack of interest, from energy concessionaires, to lose the guaranteed CCC resources in order to support generation investments on the basis of alternative sources. Moreover, the North Region concessionaires present an unfavourable economic financial situation. This conjuncture brings unreliability related to capital spending in renewable sources projects to the investors of the generation area …" (Translated from Brazilian Court of Audit, 2004, paragraph 113).

Laws and regulations are different for isolated systems than for interconnected systems. The main distinguishing factor between the two types of systems is the pattern of electricity generation. Interconnected systems are characterized by the participation of private entities while for isolated systems, the government is the dominant provider. Interconnected systems functioning is controlled by three institutions: ONS, the system operator and body responsible for optimization, coordination, control and operation of the system; ANEEL, the national electricity agency, responsible for inspection and regulation of production, transmission, distribution and commercialization of electricity; and MAE, the electricity wholesale market, where electricity transactions are made based on a spot market and regulated by ANEEL. All market transactions are completed at auctions. In 1994, to replace MAE, the CCEE (Câmara *de Comércio de Energia Elétrica* – Electricity Energy Commercialization Chamber) was created; it is responsible, inter alia, for MAE's actions. The system in the Rondônia-Acre area, where the project is located, is not interconnected, thus the generation, distribution and commercialization characteristics are different to those of the main interconnected grids and are mainly based on the state model.

In conclusion, isolated systems have a particular pattern of regulation, totally different from that of connected systems. Such isolated systems are unlikely to be connected to the main grid because the interconnection is difficult for the reasons outlined above.

The determination of project scenario additionality is done considering the general context described above and, as a guidance, using latest version of the "Tool for the demonstration and assessment of additionality" agreed by the Executive Board, which follows the following steps:

Project participants wish to have the crediting period starting after to the registration of their project activity. In spite of that, the communication between the project developer and the carbon consultants started before the project starting date.

The early stages of the Project construction began in 2002. A short period of time after, the construction was halted, due to lack of funds and was subsequently re-started in August 2006 following the refinancing of the project considering CDM revenues. For the assessment of additionality it is important to note that CDM consideration represented an important part in the decision to go ahead with the project. This situation of starting construction prior to all the financing being in place is common amongst the electric sector in Brazil, where action started on the ground tends to make it easier to get licenses and authorizations with the Electricity Agency and attract investors. Actually this situation is so common that the Electricity Agency has now established a stated period for authorized entities began project construction, after that time those entities will loose the concession to explore the electric potential.

The starting date of the project activity is defined as the date in which the construction of the project re-started. Prior to that date, project developers were in contact with carbon consultants and during that communication CDM revenues were seriously considered for the project feasibility.

Step 1. Identification of alternatives to the project activity consistent with current laws and regulations

Sub-step 1a. Define alternatives to the project activity:

All realistic and credible baseline alternatives to the project activity were identified and are listed below.

Scenario 1 Continuation of current practices, i.e. electricity will continue to be generated by the existing generation mix, predominantly fossil-fuel-fired thermal plants operating in the grid;

Scenario 2 Construction of a thermoelectric plant, with internal combustion technology, diesel fuelled and with a energy output similar to the project activity and;

Scenario 3 Undertaking of the Project Activity not as a CDM project.

Sub-step 1b. Enforcement of applicable laws and regulations:

Scenario 1 – Is consistent with current laws and regulations. There is no regulation in Brazil to prevent continuation of the current practice.

Scenario 2 – Is consistent with current laws and regulations. There is no regulation in Brazil to prevent implementation of thermoelectric plants.

Scenario 3 – Is consistent with current laws and regulations. There is no regulation in Brazil to prevent implementation of hydroelectric plants.

Step 2. Investment Analysis

Sub-step 2a: Determine appropriate analysis method

According to the tool for the demonstration and assessment of additionality, one of three options must be applied for this step: simple cost analysis (where no benefits other than CDM income exist for the project), investment comparison analysis (where comparable alternatives to the project exist) or benchmark analysis.

Option three was chosen (benchmark analysis).

Sub-step 2b: Option III - Apply benchmark analysis

The Net Present Value (NPV) will be used as the most appropriate financial indicator for the analysis. The NPV places a valuation, in terms of present value, of the future income associated with a project or investment alternative; it measures the present value of cash flows generated by the project. The decision to go ahead with project will not be made unless the NPV is positive. A positive NPV generates value to the company and a negative NPV represents a loss to the company.

In order to perform a benchmark analysis using NPV, a discount rate must be chosen. The basis for the selected discount rate used in the financial analysis is the SELIC rate (Sistema Especial de Liquidação e Custodia, that is, Special System of Clearance and Custody), set by the Banco Central do Brasil (Central Bank of Brazil)); this rate represents the expected return of a low risk investment fund[2]. Financial analyses resulting in a negative NPV means that the investment return is lower than the discount rate and thus lower than the return from a low risk investment. A positive NPV represents a return higher than a conservative investment. Scenarios with a negative NPV present significant financial/economical barriers In 2005, the year when the decision to invest in the project activity was taken, the SELIC rate oscillated between 19.77% and 17.74% (Brazil Central Bank, http://www.bcb.gov.br/?english). In order to be conservative, 17% has been taken as a reference value for the financial analysis. The financial analysis compares the project activity to the benchmark, represented by the SELIC rate.

Sub-step 2c: Calculation and comparison of financial indicators

Table 6 shows the financial analysis for the project activity without carbon finance. As demonstrated, the project NPV without carbon is negative, proving that the Project is not attractive for investors, which inhibits the project's implementation. The cash flow analysis was done for a 12 years period, the average length of loans in the electricity sector. See Annex 3 for more information about the Financial Analysis.

Table 6 - Project Financial Analysis Results

Financial Analysis	Values
Discount Reate	17.00%
NPV	-R$ 9,861,154.52

Sub-step 2d: Sensitivity analysis

A sensitivity analysis was conducted by altering the following parameters:

- Electricity generation increase;
- Taxes reduction;
- O&M costs reduction;
- Investment reduction.

These parameters were selected as they are the most likely to fluctuate over time. Financial analyses were performed altering these parameters by 10% and assessing what the impact on the project NPV would be (see Table 7 below).

[2] Central Bank of Brazil http://www.bcb.gov.br/?SELICEN

Table 7 - Sensitivity analysis summary

Sensitivity Analysis	Variation	Project NPV
Electricity Generation	10%	-R$ 8,801,197.81
Taxes Costs	-10%	-R$ 9,406,887.36
O&M Costs	-10%	-R$ 7,907,136.36
Investments	-10%	-R$ 5,135,867.33

The financial analysis shows that even if the critical parameters are varied more than expected, the NPV of the project is still negative and therefore not financially attractive for a rational investor.

Step 4. Common Practice Analysis

Sub-step 4a: Analyse other activities similar to the proposed project activity

The additionality tool specifies that projects are considered similar if "they occur in the same country/region or rely on a broadly similar technology, are of a similar scale, and take place in a comparable environment with respect to regulatory framework, investment climate, access to technology, access to financing, etc." For this Project an analysis of similar activities in the isolated systems from the North Region of Brazil and an analysis of the grid which the project is connected to, are considered to be the most appropriate, as investment conditions and some regulatory requirements tend to define these systems rather than regions.

Table 8 - Isolated Systems Configuration in 2006 (source: Eletrobras)

	Number of units		Installed Capacity (MW)	
	Hydro	Thermal	Hydro	Thermal
All Isolated Systems in Brazil	61	1,443	628.549	3,391.543
Pará Isolated Systems	0	173	0	158.817

Table 8 above includes information about the isolated systems in Brazil. Table 9 shows the same data in percentage form. The data was taken from the Operational Plan for 2006, a public report issued by ELETROBRÁS.

Sub-step 4b: Discuss any similar options that are occurring

As shown by the information provided above, generating electricity in hydroelectric plants is not a common activity in isolated systems from the North Region of Brazil. Hydropower stations comprise an insignificant part of the installed capacity of isolated systems.

Table 9 – Thermal and Hydro units in Pará and in all isolated systems in Brazil, 2006 (source: Eletrobras)

	Number of units		Installed Capacity (MW)	
	Pará Isolated Systems	All	Pará Isolated Systems	All
Total	173	1,504	158.817	4,020.092
Hydro	0%	4.06%	0%	15.64%
Thermal	100%	95.94%	100%	84.36%

Thermal electricity installed capacity and generation inside isolated systems has historically increased since 2001 until 2006. According to the Operational Plan for 2003 (ELETROBRAS), forecasted hydro generation was 2,048 GWh, while thermal generation was 6,991 GWh. Furthermore, thermal generation was projected to increase by 9% and hydro generation to decrease by 5%. In the Operational Plan for 2005, a comparison between thermal and hydro generations, for years 2004 and 2005, indicates a clear predominance of thermal generation, hydro generation is in average 257MW and thermal generation is in average 900MW. In the Operational Plan for 2006, thermal installed capacity remains higher than hydro installed capacity. In comparing the 2005 and 2006 reports, it can be seen that the 2005 thermal installed capacity increased by 7.76% while hydro installed capacity decreased 3.83%.

Therefore, based on these data, it is clearly demonstrated that the prevailing practice of energy generation and installed capacity in the Pará isolated systems is predominantly thermal and, consequently, the trend in the region is the construction of fossil fuel based thermal units rather than the construction of hydro units.

All steps of the Tool for the demonstration and assessment of additionality were satisfied, thus the project is additional to what would have occurred in absence of the project activity.

B.6. Emission reductions:

B.6.1. Explanation of methodological choices:

According to Annex 5, EB 23, hydroelectric power plants with power densities greater than 4 but less than 10 W/m^2 have to account for project emissions due to the reservoir. The Project power density is 4.14 W/m^2, thus a default emission factor of 90 gCO_2eq/kWh is used to estimate project emissions.

$$PE_y = \frac{EF_{res} \cdot EG_y}{1000} \qquad (1)$$

Where:

PE_y Emissions from reservoir expressed as tCO_2e/year

EF_{res} is the default emission factor for emissions from reservoirs, and the default value as per EB23 is 90 Kg CO_2e /MWh.

EG_y is the annual net electricity generated from the Project and delivered to the grid

Baseline Emissions: (*BE*) resulting from the electricity supplied and/or not consumed from the grid is calculated as follows,

$$BE = EG_y \cdot EF \qquad (2)$$

Where,

EG_y is the annual net electricity generated from the Project and delivered to the grid

For a system where all generators use exclusively fuel oil and/or diesel fuel, the baseline is the annual kWh generated by the renewable unit times an emission coefficient for a modern diesel generating unit of the relevant capacity operating at optimal load as given in Table I.D.1 of the methodology AMS 1.D.

Leakage Emissions: (*L*) no leakage emissions calculation is needed.

Emission Reductions: (*ER*)

$$ER = BE - PE \qquad (3)$$

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

Data / Parameter:	EF_y
Data unit:	tCO_2/MWh
Description:	Grid emission factor. Is the CO_2 emissions intensity of the electricity displaced in the grid
Source of data used:	Methodology AMS I.D
Value applied:	0.8000
Justification of the choice of data or description of measurement methods and procedures actually applied :	For a system where all generators use exclusively fuel oil and/or diesel fuel the Baseline Emission Factor is provided by the methodology. The Grid consists of a Mini-grid with 24 hour service, with more than 200 kW of installed capacity.
Any comment:	

Data / Parameter:	Area submerged
Data unit:	km^2
Description:	Surface area of the reservoir
Source of data used:	Basic Project (from the Portuguese: *Projeto Básico*)
Value applied:	2.9
Justification of the choice of data or description of measurement methods and procedures actually applied :	

Any comment:	The area submerged is defined at the highest water level of the dam.

B.6.3 Ex-ante calculation of emission reductions:

All equations used to estimate the emission reductions were provided in section B.6.1. The grid emission factor is provided by the methodology. Project emissions, equation (1), Baseline emissions, equation (2) and emissions reduction calculations, equation (3) were completed also according to the methodology. Detailed information of how the equations were used, and values applied are provided in Table 10.

Table 10 - The ex-ante emission reductions values and calculations

Parameter	Formula	Value	Unit
EF	Default methodology value used	0.8000	tCO_2/MWh
Installed_capacity	-	12.00	MW
EG	-	72,533	MWh
Reservoir_area	-	2.9	km²
Power density	= Installed_capacity/Reservoir_area	4.14	MW/km²
BE	= EG * EF	58,026	tCO_2e
PE	= EFres * EG / 1000	6,528	tCO_2e
ER	= BE - PE	51,498	tCO_2e

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

Table 11 - Ex-ante estimation

Years	Estimation of project activity emissions (tonnes of CO_2e)	Estimation of baseline emissions (tonnes of CO_2e)	Estimation of leakage (tonnes of CO_2e)	Estimation of emission reductions (tonnes of CO_2e)
2008(since April)	2,176	43,520	0	41,344
2009	6,528	58,026	0	51,498
2010	6,528	58,026	0	51,498
2011	6,528	58,026	0	51,498
2012	6,528	58,026	0	51,498
2013	6,528	58,026	0	51,498
2014	6,528	58,026	0	51,498
2015	6,528	58,026	0	51,498
2016	6,528	58,026	0	51,498
2017	6,528	58,026	0	51,498
2018(until March)	4,352	14,506	0	10,154
Total (tonnes of CO_2e)	65,280	580,260	0	514,980
Average	6,528	58,026	0	51,498

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

B.7.1 Data and parameters monitored:

Data / Parameter:	EG_y
Data unit:	MWh
Description:	Net electricity delivered to the grid
Source of data to be used:	Project developer and CELPA
Value of data applied for the purpose of calculating expected emission reductions in section B.5	72,533 MWh (Reference electricity generation from Basic Project)
Description of measurement methods and procedures to be applied:	Data collected will be the continuous reading from the plant meters and the monthly reading from the utility meter. The utility monthly reading is used for issuing the electricity sale invoices (this document will show the amount of energy supplied to the grid).
QA/QC procedures to be applied:	According to national standards, equipment will be subject to a regular maintenance, calibration and testing regime to ensure accuracy. Collected data has low uncertainty levels and to guarantee its accuracy it will be cross checked with the electricity sales receipts obtained from the grid operator.
Any comment:	Data will be archived at least for two years after crediting period.

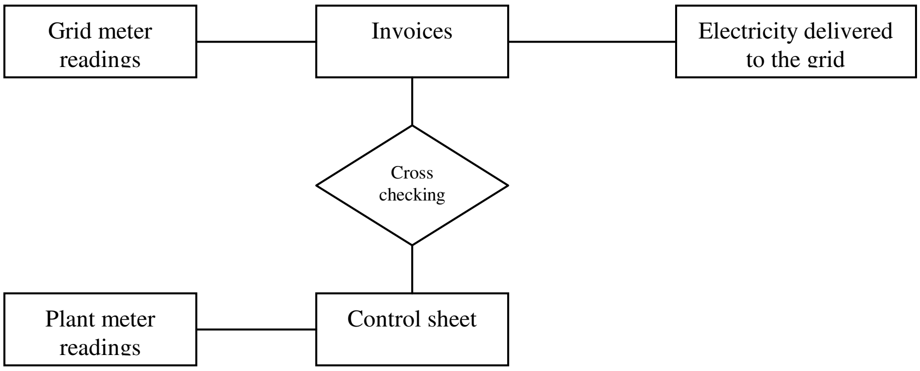
B.7.2 Description of the monitoring plan:

The monitoring of this type of project consists of metering the electricity generated by the renewable technology. Below you find the description of monitoring procedures for data measurement, quality assurance and quality control.

1. Monitoring organisation

The grid operator reads the meter in a monthly basis and this data will be used by the project developer to issue electricity sale invoices. Those invoices contain the amount of electricity delivered to the grid and will be used to calculate the amount of CERs generated from the project activity.

Power plant operators read, on an hourly basis, the gross electricity generated, in order to control the plant operation. These readings are also used to check the consistency of the amount of electricity stated in the invoices read by the grid operator.



Metering of Electricity Supplied to the Grid

The main electricity meter for establishing the electricity delivered to the grid will be installed at the grid end of the transmission line. This electricity meter will be the revenue meter to measure the quantity of electricity that the project will be paid for. As this meter provides the main data for CER measurement, it will be the key part of the verification process.

Data will also be measured continuously by the plant operator and at the end of each month the monitoring data will be filed electronically and a back-up will be made regularly. The project developer will keep the electricity sale invoices. Data will be archived electronically and on paper and will be kept for at least two years after the crediting period.

The electricity meter should meet relevant local standards at the time of installation. The meter will be installed by either the project developer or the grid company in accordance with Brazilian standards, established by INMETRO *(“Instituto Nacional de Metrologia, Normalização e Qualidade Industrial”*- entity responsible for calibration standards) and by ANEEL. Records of the meter (type, make, model and calibration documentation) will be retained in the quality control system.

Quality Control and Quality Assurance

Quality control and quality assurance procedures will guarantee the quality of data collected. The electricity meter(s) will undergo maintenance subject to industry standards. Moreover, meter(s) are calibrated by the distribution concessionaire CELPA - which signs a long term PPA with the plants - in accordance with national standards established by INMETRO *(“Instituto Nacional de Metrologia, Normalização e Qualidade Industrial”*- entity responsible for calibration standards) and recalibrated according to CELPA internal procedures or manufacturer specifications. Documents will be available during the verification.

To guarantee the consistency and accuracy of the data collected from the meter(s), data will be cross-checked with the sale invoices which will show the amount of electricity supplied to the grid.

Before the crediting period starts, the organisation of the monitoring team will be established and clear roles and responsibilities will be assigned to all staff involved in the CDM project.

Data will be read off the meter and energy sale invoices will be collected from the small hydro by the plant operation personnel. This information will be transferred to EcoSecurities on a monthly basis in order to monitor emission reductions.

The energy generating equipment will not be transferred from another activity; therefore, leakage effects do not need to be accounted.

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

The baseline study and the monitoring methodology were concluded on 29/08/2007. The entity determining the baseline study and the monitoring methodology and participating in the project as the Carbon Advisor is EcoSecurities Brasil Ltda.

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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:

01/08/2006

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

30 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:

Not applicable

C.2.1.2. Length of the first crediting period:

Not applicable

C.2.2. Fixed crediting period:

C.2.2.1. Starting date:

The crediting period will start on 01/04/2008, or on the date of registration of the CDM project activity, whichever is later.

C.2.2.2. Length:

10 years – 0 months

SECTION D. Environmental impacts

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

The Project generates no emissions of greenhouse gases, produces no toxic waste, and has limited, controllable and reversible effects on the environment because the project is a small run-of-river hydropower plant which uses water directly from the river; it includes a small storage area designed only to allow the water to flow through the water intake to the turbine. The project can be easily integrated into the landscape and is compatible with the protection of water, fauna and flora.

As for a regulatory permit, the project developer has authorization, as issued by ANEEL (ANEEL Resolution nº 407, issued on 06/08/2002 and Resolution nº 321, issued on 19/09/2005) to operate as an independent power producer.

As for the environmental permits, the project has the necessary environmental licenses. The license of installation was issued by the state environmental agency, SECRETARIA EXECUTIVA DE CIENCIA TECNOLOGIA E MEIO AMBIENTE, LI number 0180/2006 issued on 18/10/2006.

A SER (Simplified Environmental Report) was requested by the environmental agency; it was developed in order to identify and undertake ultimate environmental impacts due to the project activity. Regarding the SER, the project activity has no significant negative impacts to the environment, offering overall benefits to the local society; moreover, the SER analyzes the undertaking in environmental perspectives, identifying and assessing the possible environmental impacts and listing its mitigation actions.

Additionally, a PRDA (Program for Recovering of Degraded Areas) and a Monitoring Plan were developed with the purpose to analyse and address eventual negative impacts derived from the project activity. The impacts due to the project are not significant and mitigation will be taken.

All documents related to operational and environmental licensing are public and can be obtained from the state environmental agency.

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:

There are no significant environmental impacts.

SECTION E. Stakeholders' comments

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

According to Resolution #1 dated December 2nd, 2003 from the Brazilian Inter-Ministerial Commission of Climate Change (Comissão Interministerial de Mudança Global do Clima -CIMGC), any CDM project must send a letter with a 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 Novo Progresso;
- District Attorney (the Ministério Público, i.e. the permanent institution essential for legal functions responsible for defending the legal order, democracy and social/individual interests);
- Chamber of Deputy of Novo Progresso;
- SECRETARIA EXECUTIVA DE CIENCIA TECNOLOGIA E MEIO AMBIENTE;
- Brazilian Fórum of NGOs
- Environmental Agency of Novo Progresso
- Local community associations

Local stakeholders were invited to raise their concerns and provide comments on the project activity for a period of 30 days after receiving the letter of invitation.

Although project proponents tried to find local community associations, none were found. Project proponents will justify this situation to the Brazilian DNA.

E.2. Summary of the comments received:

To date no formal comments have been received from stakeholders.

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

To date no formal comments have been received from stakeholders.

Annex 1

CONTACT INFORMATION ON PARTICIPANTS IN THE PROJECT ACTIVITY

Organization:	Buriti Energia S/A
Street/P.O.Box:	Avenida Miguel Sutil, 12.727
Building:	
City:	Cuiabá
State/Region:	Mato Grosso
Postfix/ZIP:	
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Telephone:	
FAX:	
E-Mail:	
URL:	
Represented by:	
Title:	
Salutation:	
Last Name:	
Middle Name:	
First Name:	
Department:	
Mobile:	
Direct FAX:	
Direct tel:	
Personal E-Mail:	

Project Annex 1 participant:

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Represented by:	
Title:	COO & President
Salutation:	Dr.
Last Name:	Moura Costa
Middle Name:	
First Name:	Pedro

Mobile:	
Direct FAX:	
Direct tel:	+44 1865 202 635
Personal E-Mail:	cdm@ecosecurities.com

Annex 2

INFORMATION REGARDING PUBLIC FUNDING

This project will not receive any public funding from Annex 1 parties

Annex 3

BASELINE INFORMATION

Table 12 - FA input parameters

Investment	R$ 42,966,227.98	Report: Orçamento Padrão Eletrobras
Subsidy	R$ 32,192,727.74	ANEEL Resolution 231 05
Number of instalments (subsidy)[3]	11	ANEEL resolution 146 05
Guaranteed electricity generation(MWh)	72532.8	Projeto Básico
O&M Costs (R$/MWh)	77.15	Alternativas energéticas sustentáveis no Brasil /Mauricio Tiomno Tolmasquim, coordenador. - Rio de Janerio: Relume Dumará: COPPE: CENERGIA, 2004
Electricity Tariff (R$/MWh)	119	Project PPA
Investment	R$ 42,966,227.98	Report: Orçamento Padrão Eletrobras

[3] Subsidy received after operation start, on a monthly basis. Due to delays, expected operation starting date is February, 2008.

Annex 4

MONITORING INFORMATION

Please refer to section B.7 above.

Annex 5

The Brazilian electricity system is mainly composed of the Brazilian Interconnected System (SIN – Sistema Interligado Nacional); about 97% of the electricity generation capacity is included in the SIN. The SIN is an immense grid system, predominantly based on hydroelectric plants. It is comprised by plants located in the South, Southeast, Midwest, Northeast and part of the North Region. The remaining 3% of electricity generation capacity corresponds to small isolated grids, predominantly thermal, fuelled with fossil fuels.

The SIN is divided into two main systems, the S-SE-MW and the N-NE. The isolated systems are located in the Amazonian region; one example of an isolated system is the Rondonia-Acre Isolated System located in the north-western part of Brazil. Figure 1 illustrates the Brazilian electricity system.

For the purposes of the CDM, there are two grid emission factors for the SIN and one emission factor for each isolated system. Calculations are done according to the approved methodology ACM0002. Refer to Table 13 for applicable values for the SIN and Rondonia-Acre systems.

Table 13 - Grid emission factors

Grid System	EF(tCO_2/MWh)
N-NE	0.0767
S-SE-MW	0.2611
Rondonia-Acre	0.9525

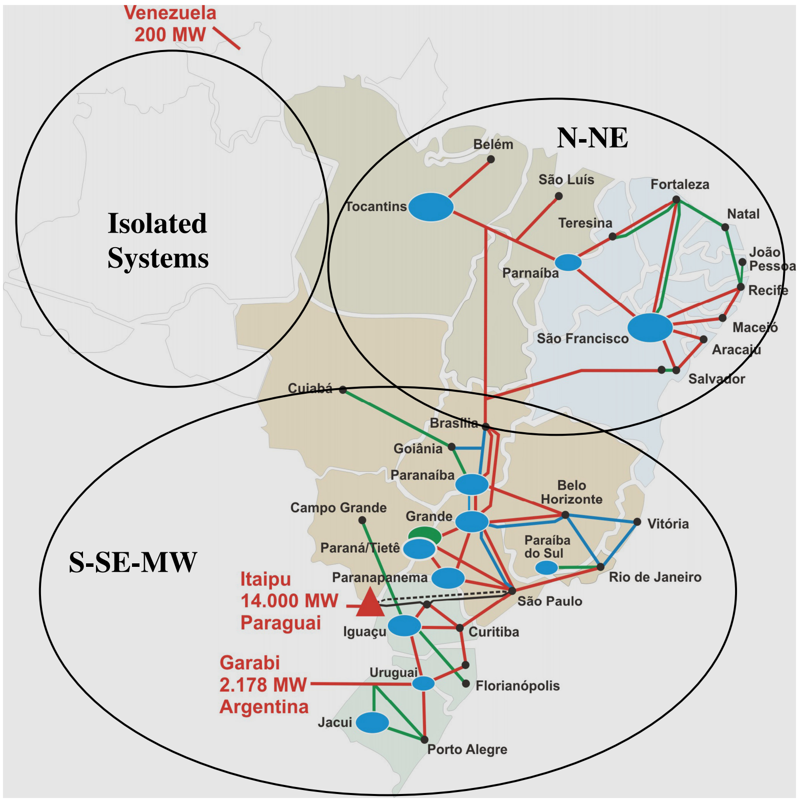

Figure 1 - Brazilian electric system

Annex 6
REFERENCES

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