VALIDATION REPORT
RIALMA COMPANHIA ENERGÉTICA S/A. – SANTA EDWIGES II SMALL HYDRO POWER PLANT – SMALL SCALE CDM PROJECT

REPORT NO. BVQI/BRA/2006-002

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BUREAU VERITAS QUALITY INTERNATIONAL

VALIDATION REPORT

Date of first issue: May 17th, 2006	Project No.: 61837
Approved by: Ashok Mammen	Organisational unit: BVQI Holdings
Client: **RIALMA COMPANHIA ENERGÉTICA S/A**	Client ref.: Bruno Macedo

Summary:
Bureau Veritas Quality International (BVQI) has made a validation of the Rialma Companhia Energética S/A. – Santa Edwiges II Small Hydro Power Plant (hereafter called "the project") located in municipalities of Buritinópolis and Mambaí, State of Goiás, Brazil, on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan (March 2006); ii) follow-up interviews with project stakeholders (March 2006); iii) resolution of outstanding issues and the issuance of the final validation report and opinion (March 2006); iv) revision of the validation report due to the comments of the Designated National Authority(July 2006); v)new validation due to the presentation of a new version of the PDD by the project participants(October/November 2006). The overall validation, from Contract Review to Validation Report & Opinion, was conducted using internal procedures (BMS, September 2003), which were audited by the UN CDM Accreditation Team in December 2004.

The first output of the validation process is a list of Clarification and Corrective Actions Requests (CR and CAR), presented in Appendix A.

In summary, it is BVQI's opinion that the project correctly applies the Clean Development Mechanism Project Design Document Form (CDM-PDD) – Version 02; the Guidelines for Completing the Simplified Project Design Document (cdm-ssc-pdd) and the Form for Submissions on Methodologies for Small-Scale CDM Project Activities (F-CDM-SSC-subm)Version 01, the Approved Baseline Methodology AMS-I.D "Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories" - Version 09; the Tool for the demonstration and assessment of additionality – Version 02; and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

Report No.: BVQI/BRA/2006-002	Subject Group: GHG/CDM	
Report title: Santa Edwiges II small hydro power plant project		
Work carried out by: Claudia Freitas, Sergio Carvalho		
Work reviewed by: Ashok Mammen		
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Indexing terms

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Abbreviations

ACM	Approved Consolidated Methodology
AGMA	Agência Goiana de Meio Ambiente
AMS	Approved Methodology Simplified
BMS	BVQI Management System
BVQI	Bureau Veritas Quality International
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CER	Certified Emission Reductions
CR	Clarification Request
CO_2	Carbon Dioxide
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
GHG	Green House Gas(es)
I	Interview
IETA	International Emissions Trading Association
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organisation for Standardization
LI	Installation Licence
LO	Operation Licence
LP	Preliminary Licence
MoV	Means of Verification
MP	Monitoring Plan
NGO	Non Government Organisation
OM	Operating Margin
ONS	Operador Nacional do Sistema Elétrico (Brazilian National Dispatch Center)
PCF	Prototype Carbon Fund
PDD	Project Design Document
SELIC	Sistema Especial de Liquidação e Custódia (SELIC rate is na economic reference index established by the Brazilian Cental Bank)
S-SE-CO	South-Southeast-Midwest
UNFCCC	United Nations Framework Convention for Climate Change

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1 INTRODUCTION

RIALMA COMPANHIA ENERGÉTICA S.A (hereafter called "the client") has commissioned Bureau Veritas Quality International (BVQI) to validate its renewable energy project activity Rialma Companhia Energética S/A. – Santa Edwiges II Small Hydro Power Plant – Small Scale CDM Project. (hereafter called "the project") at Mambaí and Buritinópolis municipalities, State of Goiás, Brazil.

This report summarises the findings of the validation of the project, performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

The validation serves as a project design verification and is a requirement of all Client projects. The validation is an independent third party assessment of the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design, as documented, is sound and reasonable, and meets the stated requirements and identified criteria. Validation is a requirement for all CDM projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of certified emission reductions (CERs).

UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. BVQI has, based on the recommendations in the Validation and Verification Manual (IETA/PCF, v. 3.3, 2004), employed a risk-based approach in the validation, focusing on the identification of significant risks for project implementation and the generation of CERs.

The validation is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 GHG Project Description

The primary objective of Santa Edwiges II Small Hydro Power Plant 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.

Santa Edwiges II Small Hydro Power Plant consists of a run-of-river small-hydro power plant (13 MW), that has a small reservoir (2.99 km²) with minor environmental impact.

The region where the small hydro power plant is located is at the end of a grid, The plant will contribute with an already existing grid , relieving it.

Rialma Companhia Energética S/A is the owner of Santa Edwiges II. The company was originated from a split in Rialma S/A Centrais Elétricas Rio das Almas, in order to specifically administrate Santa Edwiges II activities.

The project is located in the Midwest of Brazil. It is located in the Buritis River, between Mambaí and Buritinópolis, state of Goiás, at the intersection of longitude 46°11'34,6'' W and latitude 14o21' 20,4'' S, about 300 Km from Brasília (Federal District).

1.4 Validation team

The validation team consists of the following personnel:

Eng. Claudia Freitas	BVQI Brazil	GHG Auditor
MSc Sergio Carvalho	BVQI Brazil	Team Leader GHG Auditor
Dr Ashok Mammen	BVQI India	Internal Reviewer

2 METHODOLOGY

The overall validation, from Contract Review to Validation Report & Opinion, was conducted using internal procedures (BMS, September 2003) which were audited by the CDM Accreditation Team in December 2004In order to ensure transparency, a validation protocol was customised for the project, according to the Validation and Verification Manual (IETA/PCF, v. 3.3, 2004). The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The validation protocol serves the following purposes:

- It organises, details and clarifies the requirements a CDM project is expected to meet;
- It ensures a transparent validation process where the validator will document how a particular requirement has been validated and the result of the validation.

The validation protocol consists of five tables. The different columns in these tables are described in Figure 1.

The completed validation protocol is enclosed in Appendix A to this report.

Validation Protocol Table 1: Mandatory Requirements			
Requirement	**Reference**	**Conclusion**	**Cross reference**
The requirements the project must meet.	Gives reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided (**OK**), a **Corrective Action Request (CAR)** or a **Clarification Request (CR)** of risk or non-compliance with stated requirements. The CAR's and CR's are numbered and presented to the client in the Validation Report.	Used to refer to the relevant protocol questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent validation process.

Validation Protocol Table 2: Requirement checklist				
Checklist Question	**Reference**	**Means of verification (MoV)**	**Comment**	**Draft and/or Final Conclusion**
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in several sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Gives reference to documents where the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question. (See below). **Clarification Request (CR)** is used when the validation team has identified a need for further clarification.

Validation Protocol Table 3: Methodology checklist				
Checklist Question	**Reference**	**Means of verification (MoV)**	**Comment**	**Draft and/or Final Conclusion**
The various requirements of the baseline and monitoring methodologies are specified in this checklist. The checklist is organised in several sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	Baseline and monitoring methodologies	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question. (See below). **Clarification Request (CR)** is used when the validation team has identified a need for further clarification.

Validation Protocol Table 4: Legal requirements				
Checklist Question	**Reference**	**Means of verification (MoV)**	**Comment**	**Draft and/or Final Conclusion**
The national legal requirements the project must meet.	National Sustainable Policies.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (**OK**), or a **Corrective Action Request (CAR)** due to non-compliance with the checklist question. (See below). **Clarification Request (CR)** is used when the validation team has identified a need for further clarification.

Validation Protocol Table 5: Resolution of Corrective Action and Clarification Requests			
Report clarifications and corrective action requests	**Ref. to checklist question in tables 2, 3 and 4**	**Summary of project owner response**	**Validation conclusion**
If the conclusions from the Validation are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	Reference to the checklist question number in Tables 2, 3 and 4 where the Corrective Action Request or Clarification Request is explained.	The responses given by the Client or other project participants during the communications with the validation team should be summarised in this section.	This section should summarise the validation team's responses and final conclusions. The conclusions should also be included in Tables 2,3 and 4, under "Final Conclusion".

Figure 1 Validation protocol tables

2.1 Review of Documents

The Project Design Document (PDD) submitted by RIALMA COMPANHIA ENERGÉTICA S/A – Santa Edwiges II Small Hydro Power Plant / and additional background documents related to the project design and baseline, i.e., Resolução Interministerial 01/03 , Resolução Interministerial 02/05 , Clean Development Mechanism Project Design Document Form (CDM-PDD) – Version 02 , Guidelines for completing CDM-SSC-PDD and F-CDM-SSC– Version 01 , Approved Consolidated Baseline Methodology AMS-I.D "Indicative simplified baseline and monitoring methodologies for selecting small-scale CDM project activity categories - version 09 , Tool for the demonstration and assessment of additionality – Version 02 , Kyoto Protocol to the United Nations Framework Convention on Climate Change , Clarifications on Validation Requirements to be Checked by a Designated Operational Entity,

Approved Consolidated Methodology ACM-0002/06 Consolidated baseline methodology for grid-connected electricity generation from renewable sources-version 05 were reviewed.

The following documents were used as references to the validation work, in addition to internal BVQI procedures: IETA/PCF – Validation and Verification Manual (v. 3.3, Mar 2004) ; ISO 14064-3 - Greenhouse gases —Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions ; ISO 14064-2 - Greenhouse gases — Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements .

2.2 Follow-up Interviews

On March 20th, 2006 BVQI performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of the client were interviewed (see References). The main topics of the interviews are summarised in Table 1.

Table 1 Interview topics

Interviewed organisation	Interview topics
RIALMA COMPANHIA ENERGÉTICA S/A	➢ Environmental legal requirements related to the project ➢ Technical characteristics of the project
ECOINVEST	➢ Project category ➢ Actual reduction of tons of GHG ➢ Barriers to the project ➢ Methodology ➢ Origin of data ➢ Invitation of stakeholders for comments

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation was to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for BVQI positive conclusion on the project design.

To guarantee the transparency of the validation process, the concerns raised are documented in more detail in the validation protocol in Appendix A.

3 VALIDATION FINDINGS

In the following sections the findings of the validation are stated. The validation findings for each validation subject are presented as follows:

1) The findings from the desk review of the original project design documents and the findings from interviews during the follow up visit are summarised. A more detailed record of these findings can be found in the Validation Protocol in Appendix A.
2) Where BVQI had identified issues that needed clarification or that represented a risk to the fulfilment of the project objectives, a Clarification or Corrective Action Request, respectively, have been issued. The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the Project resulted in twelve Corrective Action Requests and twenty two Clarification Requests.
3) The conclusions of the validation process are presented.

3.1 Project Design

The primary objective of Santa Edwiges II Small Hydro Power Plant is to help meet Brazil's rising demand for energy due to economic growth and to improve the supply of electricity by increasing renewable energy's share of the total Brazilian electricity consumption.

The Santa Edwiges II Small Hydro Power Plant project uses water from the Buritis River to generate electricity, with a 13 MW (below the eligibility limit of 15 MW for small-scale project) installed capacity. SHPP Santa Edwiges II facility contains a small dam (reservoir area 2.99 km_2), which stores water in order to generate electricity for short periods of time.

Run-of-river projects do not include significant water storage, and must therefore make complete use of the water flow. A typical run-of-river scheme involves a low-level diversion dam and is usually located on swift flowing streams.

Santa Edwiges II, a greenhouse gas (GHG) free power generation project, will result in GHG emissions reductions as the result of the displacement of generation from fossil-fuel thermal plants that would have otherwise delivered to the interconnected grid.

The data related to project location, installed capacity of the plant and reservoir area were confirmed by BVQI in the operation license of the plant.

BVQI could confirm that the project is not deemed to be a debundled component of a large project activity due to fact that there is no a

registered small-scale CDM project activity or a request for registration by another small-scale project activity:
• By the same project participants;
• Whose project boundary is within 1 km of the project boundary of the proposed small-scale activity at the closest point.

3.2 Baseline

The project falls under approved methodology AMS I.D //, and fulfils the applicable items of the "additionality" prerequisites demonstrating that it would not occur in the absence o CDM project under financial point of view.

ACM0002 is applicable to grid-connected run-of-river hydroelectric power plants without significant reservoir size like the hydroelectric power plant Santa Edwiges II of Rialma..

According to AMS I.D the baseline is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO2equ/kWh) calculated in a transparent and conservative manner. It was chosen by the project proponent the option a) A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the approved methodology ACM 0002.

The project fulfils the requirements of Category I.D –Renewable electricity generation for a grid because it is a renewable energy generation with a maximum output capacity of 13 MW, which will not increase beyond 15 MW.

To determine the baseline the project participants follows the requirements of ACM 0002

To define the alternatives to the project activity there are two-sided analysis, taking into consideration owner and the perspective of the host country.

From the project owner's perspective, the alternative to the project activity is the continuation of the current situation, the investment of surplus capital in the financial market.

The baseline scenario is the continuation of the current situation of electricity supplied by large hydro and thermal power stations.

No evidences concerning that national policies and circumstances relevant to the baseline of the proposed project activity were considered.

The project was set up with an expected financial IRR (Internal Rate of Return) of 14.89% per year, without the benefit of the CER revenues. The inclusion of the revenues from CERs makes the project's IRR increase from 14.89% to 16.11. That data was obtained from the cash flow of the project .

The additionality of the project is demonstrated by applying the "Tool for demonstration and assessment of additionality" as required by ACM0002 as follows:

Step 0. Preliminary screening based on the starting date of the project activity:

Not applicable.

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

The possible baseline scenarios considered are: a) the continuation of the current situation with the national electricity grid being supplied by large hydro projects and by fossil fuel power plants and b) to invest in and install a new electricity generator as a run-of-river facility in order to supply electricity to the grid. Both scenarios are in compliance with all applicable legal and regulatory requirements.

Step 2. Investment analysis

Not applicable

Step 3. Barrier analysis

Investment Barrier (Long-term funding)

The project activity is under development on a project finance basis structure. To finance construction, the project sponsor contracted the financing line of FCO (Fundo Constitucional do Centro-Oeste - Constitutional Fund of Brazilian Midwest). The project was set up with an expected financial IRR (Internal Rate of Return) of approximately 14.89% per year, without the benefit of the CER revenues.and 16.11% considering the CERs revenues.

The project's IRR is very similar to the SELIC rate in effect at the time of financing although the project is a riskier investment as compared to Brazilian government bonds. The SELIC Rate has been very volatile ranging from a minimum of 15% p.a. in January 2001 to a maximum of 45% p.a. in March 1999. Hence, it is demonstrated that project is not financially attractive and thus faces investment barriers.

Lack of Infrastructure

The regions where the projects are located are isolated and undeveloped. There is a lack of infrastructure, such as roads, reliable electricity supply, communication and transports. In addition, there were no qualified personnel available in the regions due to the lack of schools and universities. Although the mentioned lack of infrastructure will increase the cost of the project, this barrier is to be considered when calculating the IRR and developing the project

Institutional Barrier

The validation team can confirm that the regulatory environment for the electricity sector in Brazil undergoes frequent changes , which causes uncertainties for investors and developers of similar projects, which could be evidenced by the low number of small hydroelectric power plants implemented in the electric market of Brazil.

Common practice analysis:

From the energy generation point of view the business as usual on the Brazilian electricity market is to continue with large hydro and thermal power projects, which represent the majority of the installed capacity. From the financial point of view the project sponsor could invest their resources in different financial market investments

Step 5. Impact of CDM Registration

It is demonstrated that the sale of CERs will provide the incentives for the project to overcome the presented barriers.

Given the above and in particular the investment and institutional barriers that the project faces,it is sufficiently demonstrated that the project is not a likely baseline scenario.

The implementation of Santa Edwiges II project connected to the Brazilian interconnected power grid will generate an estimated emission annual reduction of 16,513tCO_2e, and a total emission reduction of 115,589 tCO_2e over 7 years, up to and including 2013. It is required justification for the of calculation of the emission factor.

3.3 Monitoring Plan

The chosen monitoring methodology is applicable to grid connected renewable energy projects. The methodology consists of metering the electricity generated by the renewable technology. This fits of the operation at Santa Edwiges II project, so the choice of methodology is justified.

The main data to be considered in determining the emission reductions is the electricity exported to the grid. The emission reductions is reached by applying an emission factor through the electricity dispatched to the grid, which is verified and monitored by the power plant that sells the electricity.

The monitoring plan based on monitoring the amount of electricity supplied to the grid. The reliability of this monitoring parameter is assured through two-party verification of the amount of electricity sold to the S-SE-MW grid. The baseline emission factor is determined ex-ante and will only be updated at renewal of the crediting period.

Details of the data to be collected, the frequency of data recording, its certainty, and format and storage location are described. The recording frequency of the data seems appropriate for the project. Algorithms and formulas used have also been clearly established as well as the period for which data will be archived.

All the requirements of the applicable methodology AMS I.D version 9 are fulfilled by the project activity.

3.4 Calculation of GHG Emissions

Based on the renewable source of technology, the project emissions are nil. Therefore, no calculation of estimate of GHG emissions is necessary.

No leakage was identified. Therefore, no calculation of estimate of GHG emissions is necessary.
The baseline emissions are proportional to the electricity delivered to the grid throughout the project's lifetime. Baseline emissions due to displacement of electricity are calculated by multiplying the electricity baseline emissions factor with the electricity generation of the project activity.

The emission reductions by the project activity (ER_y) during a given year y are the product of the baseline emissions factor (EF_y, in tCO_2e/MWh) times the electricity supplied by the project to the grid (EG_y, in MWh), as follows:

$$ER_y = Ef_y \times EG_y$$

Considering that Santa Edwiges II has installed capacity of 13 MW and small reservoir 2.99 km² its power density will be greater than 4 and an emission factor was applied.

The full implementation of the Santa Edwiges II project connected to the Brazilian electricity interconnected grid will avoid an average estimated yearly emission of around 16,513 tCO_2e, and a total reduction of about 115,589 tCO_2e over 7 years crediting period (up to and including 2013, see Table 5 of the PDD).

3.5 Sustainable Development Impacts

As for the regulatory permits, Santa Edwiges II Small Hydro Power Plant has the authorization issued by ANEEL (ANEEL Resolution n° 116, issued on April 5th, 2001) to operate as an independent power producer, which gives the right to operate the Santa Edwiges II Small Hydro Power Plant.

As for the environmental permits, the proponent of any project that involves the construction, installation, expansion, and operation of any polluting or potentially polluting activity or any activity capable of causing environmental degradation is required to secure a series of permits from the respective state environmental agency. In addition, any such activity requires the preparation of an environmental assessment report, prior to obtaining construction and operation permits. Three types of permits are required. The first is the preliminary permit (*Licença Prévia* or L.P.) issued during the planning phase of the project and which contains basic requirements to be complied with during the construction, and operating stages. The second is the construction permit (*Licença de Instalação* or L.I.) and, the final one is the operating permit (*Licença de Operação* or L.O.).

The preparation of an Environmental Impact Assessment is compulsory to obtain the construction and the operation licenses. In the process a report containing an investigation of the following aspects was prepared:

- Impacts to climate and air quality.
- Geological and soil impacts.
- Hydrological impacts (surface and groundwater).
- Impacts to the flora and animal life.
- Socio-economical (necessary infra-structure, legal and institutional, etc.).

The result of a successful submission of those assessments is the preliminary license (LP), which reflects the environmental local agency positive understanding about the environmental project concepts. To get the construction license (LI) it will be necessary to present either: (a) additional information into previous assessment; or (b) a new more detailed simplified assessment; or (c) the “Environmental Basic Project”, according environmental local agency decision at the LP issued. The operation license (LO) will be obtained as result of pre-operational tests

during the construction phase, carried out to verify if all exigencies made by environmental local agency were satisfied.

The project has the necessary environmental licenses. The operating permit/licenses were issued by the state environmental agency, AGMA *(Agência Goiana de Meio Ambiente)*, LO no. 731/2005 , issued on October 21th, 2005. LI was issued on May 14 th , 2004 and LP on April 27th, 2001. All documents related to operational and environmental licensing are public and can be obtained at the state environmental agency (AGMA-GO).

3.6 Comments by Local Stakeholders

Public discussion with local stakeholders is compulsory for obtaining the environmental construction and operating licenses. The legislation also requests the announcement of the issuance of the licenses (LP, LI and LO) in the official journal (*Diário Oficial da União*) and in the regional newspaper to make the process public and allow public information and opinion.

Besides the stakeholders comments for the environmental licenses, the Brazilian Designated Authority, "Comissão Interministerial de Mudanças Globais do Clima" requires comments from local stakeholders according to the Resolution no 1, issued on 11th September 2003, in order to provide the letter of approval.

The Resolution determines that copies of the invitations for comments sent by the project proponents at least to the following agents involved in and affected by project activities:

- Municipal governments and City Councils;
- State and Municipal Environmental Agencies;
- Brazilian Forum of NGOs and Social Movements for Environment and Development;
- Community associations;
- State Attorney for the Public Interest;

Invitation letters were sent to the following stakeholders

- Prefeitura Municipal de Buritinópolis (Buritinópolis City Hall)
- Prefeitura Municipal de Mambaí (Mambaí City Hall)
- Prefeitura Municipal de Posse (Posse City Hall)
- Câmara Municipal de Buritinópolis (Municipal Assembly of Buritinópolis)

- Câmara Municipal de Mambaí (Municipal Assembly of Mambaí)
- Câmara Municipal de Posse (Municipal Assembly of Posse)
- Agência Ambiental de Goiás (State of Goiás Environmental Agency)
- Secretaria do Meio Ambiente de Buritinópolis (Buritinópolis Environmental Agency)
- Secretaria do Meio Ambiente de Mambaí (Mambaí Environmental Agency)
- Secretaria do Meio Ambiente de Posse (Posse Environmental Agency)
- Ministério Público do Estado de Goiás (State Attorney for the Public Interests of the State of Goiás)
- FBOMS – Fórum Brasileiro de ONGs e Movimentos Sociais para o Desenvolvimento e Meio Ambiente (Brazilian Forum of NGOs and Social Movements for the Development and Environment)
- Associação dos Pequenos Agricultores do Gerais (Gerais Peasants Association)
- Associação Comunitária dos Pequenos Produtores Agrícolas do Médio Nordeste Goiano (Médio Nordeste Goiano Peasants Association)
- Associação dos Moradores do Setor dos Funcionários de Posse

The way used to get the the comments from stakeholders is considered adequate once the invitation letters were sent directly to the persons and organizations required by the Brazilian DNA. Besides there were sufficient time for the response.

All comments were favorable to the project..

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

According to the modalities for the Validation of CDM projects, the validator shall make publicly available the project design document and receive, within 30 days, comments from Parties, stakeholders and UNFCCC accredited non-governmental organisations and make them publicly available.

BVQI published the project documents on the UNFCCC CDM website (http://cdm.unfccc.int) on 2006-02-18 and invited comments until 2006-03-19 by Parties, stakeholders and non-governmental organisations. No comments were received.

5 VALIDATION OPINION

BVQI has performed a validation of the SANTA EDWIGES II Project in Brazil. The validation was performed on the basis of UNFCCC criteria and host country criteria, also on the criteria given to provide for consistent project operations, monitoring and reporting.

The validation consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan (March 2006); ii) follow-up interviews with project stakeholders (March 2006); iii) the resolution of outstanding issues and the issuance of the final validation report and opinion (from May to November 2006).

Santa Edwiges II is a run-of-river small hydro power plant generating renewable energy. The capacity of the proposed project activity is the maximum output of 13 MW.

The review of the project design documentation and the subsequent follow-up interviews have provided BVQI with sufficient evidence to determine the fulfilment of stated criteria. In our opinion, the project correctly applies the Clean Development Mechanism Project Design Document Form (CDM-PDD) – Version 02; the Guidelines for completing CDM-SSC-PDD – Version 01; the Approved Consolidated Baseline Methodology AMS-I.D ““Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories” - Version 09, the Tool for the demonstration and assessment of additionality – Version 02, and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

The validation is based on the information made available to us and the engagement conditions detailed in this report.

Date: Date:

_____ _____

Ashok Mammen Sergio Carvalho

Internal Reviewer Team Leader

6 REFERENCES

Category 1 Documents:
Documents provided by RIALMA COMPANHIA ENERGÉTICA SA that relate directly to the GHG components of the project.

/1/ **Clean development mechanism – Project design document (CDM-PDD) – Rialma Companhia Energética S/A -Santa Edwiges II – Small Hydro Power Plant Small Scale CDM PROJECT.** Version 1, Feb 2006

/2/ **Clean development mechanism – Project design document (CDM-PDD) – Rialma Companhia Energética S/A -Santa Edwiges II – Small Hydro Power Plant Small Scale CDM PROJECT.** Version 2, March 2006

/3/ **Clean development mechanism – Project design document (CDM-PDD) – Rialma Companhia Energética S/A -Santa Edwiges II – Small Hydro Power Plant Small Scale CDM PROJECT.** Version 3, July 2006

/4/ **Clean development mechanism – Project design document (CDM-PDD) – Rialma Companhia Energética S/A -Santa Edwiges II – Small Hydro Power Plant Small Scale CDM PROJECT.** Version 4, September 2006

/5/ **Clean development mechanism – Project design document (CDM-PDD) – Rialma Companhia Energética S/A -Santa Edwiges II – Small Hydro Power Plant Small Scale CDM PROJECT.** Version 5, October 2006

/6/ **Clean development mechanism – Project design document (CDM-PDD) – Rialma Companhia Energética S/A -Santa Edwiges II – Small Hydro Power Plant Small Scale CDM PROJECT.** Version 6, October 2006

/7/ **Clean development mechanism – Project design document (CDM-PDD) – Rialma Companhia Energética S/A -Santa Edwiges II – Small Hydro Power Plant Small Scale CDM PROJECT.** Version 7, October 2006

/8/ **Clean development mechanism – Project design document (CDM-PDD) – Rialma Companhia Energética S/A -Santa Edwiges II – Small Hydro Power Plant Small Scale CDM PROJECT.** Version 8, November 2006

/9/ **Resolução Interministerial 01.** Comissão Interministerial de Mudança Global do Clima, Sep, 2003

Category 2 Documents:

Background documents related to the design and/or methodologies employed in the design or other reference documents.

/10/ **Resolução Interministerial 02.** Comissão Interministerial de Mudança Global do Clima, Aug, 2005.

/11/ **Clean Development Mechanism Project Design Document Form** (CDM-PDD) – Version 02

/12/ **Guidelines for completing CDM-SSC-PDD and F-CDM-SSC**– Version 01 /

/13/ **Approved Consolidated Baseline Methodology AMS-I.D** "Indicative simplified baseline and monitoring methodologies for selecting small-scale CDM project activity categories - version 09

/14/ **Tool for the demonstration and assessment of additionality** – Version 02

/15/ **Kyoto Protocol to the United Nations Framework Convention on Climate Change,** Dec, 1997

/16/ **Clarifications on validation requirements to be checked by a Designated Operational Entity**. UNFCCC/CCNUCC, Sep, 2004

/17/ **Approved Consolidated Methodology ACM-0002/06** Consolidated baseline methodology for grid-connected electricity generation from renewable sources-version 06

/18/ **IETA/PCF – Validation and Verification Manual (v. 3.3, Mar 2004)**

/19/ **ISO 14064-3 - Greenhouse gases — Part 3: Specification with guidance for the validation and verification of greenhouse gas assertions**

/20/ **ISO 14064-2 - Greenhouse gases — Part 2: Specification with guidance at the project level for quantification, monitoring and reporting of greenhouse gas emission reductions or removal enhancements**

Records reviewed:

The following records were reviewed during validation process.

/21/ Santa Edwiges II cash flow

/22/ Copies of the letters sent to stakeholders and post office confirmation of receipt communication

/23/ Water impounding permit no 741/2005

/24/ Operation License no 731/2005

Persons interviewed:

List persons interviewed during the validation, or persons that contributed with other information that are not included in the documents listed above.

/25/ USINA SANTA EDWIGES II
- Emival Ramos Caiado Filho
- Frederick Lins e Silva

/26/ ECOINVEST
- Melissa Hirschheimer

RIALMA COMPANHIA ENERGÉTICA S/A – SANTA EDWIGES II SMALL HYDRO POWER PLANT

CDM PROJECT VALIDATION PROTOCOL

Table 1 Mandatory Requirements for Clean Development Mechanism (CDM) Project Activities

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
1. The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3.	Kyoto Protocol Art.12.2	The project will result in GHG emissions reductions as the result of the displacement of generation from fossil fuel thermal plants.	Table 2 and question E.2.1
2. The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof.	Kyoto Protocol Art. 12.2, Marrakesh Accords, CDM Modalities §40a	The final decision from the DNA will be available only after its first meeting after the receiving of the all documents necessary for evaluation, including this validation report, according to Article 6th of Resolução Interministerial 01/03.	--
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC.	Kyoto Protocol Art.12.2.	The project will result in GHG emissions reductions as the result of the displacement of	Table 2 and question E.2.1

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
		generation from fossil fuel thermal plants.	question E.2.1
4. The project shall have the written approval of voluntary participation from the designated national authorities of each party involved.	Kyoto Protocol Art. 12.5a, Marrakesh Accords, CDM Modalities §40a	According to Resolução interministerial 01/03, the confirmation by Brazil government is the final step, after PDD and validation report submission.	-
5. The emission reductions shall be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	OK	Table 2, question D.3.1
6. Reduction in GHG emissions shall be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity.	Kyoto Protocol Art. 12.5c, Marrakesh Accords, CDM Modalities §43	Data with the estimated emissions reduction is presented	Question E.2.1
7. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance.	Marrakech Accords	The project will not receive any public funding from Parties included in Annex I.	-
8. Parties participating in the CDM shall designate a national authority for the CDM.	Marrakech Accords, CDM Modalities §29	Comissão Interministerial de Mudança Global do Clima is the Host Party Designated National Authority	-
9. The host country shall be a Party to the Kyoto Protocol.	Marrakech Accords, CDM Modalities §30	Comissão Interministerial de Mudança Global do Clima	-
10. Comments by local stakeholders shall be invited, a summary of	Marrakech	Stakeholders have not yet	Table 2, question

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
these provided and how due account was taken of any comments received.	Accords, CDM Modalities §37b	been invited for comments as required by DNA.	G.1.2
11. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out.	Marrakech Accords, CDM Modalities §37c	OK	Table 2, question F.1
12. Baseline and monitoring methodology shall be previously approved by the CDM Methodology Panel.	Marrakech Accords, CDM Modalities §37e	Appendix B of the simplified modalities and procedures for small-scale CDM project activities – Version 05 – 25/02/2005; Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories AMS I.D/ Version 9	Table 2, questions B.1.1 and D.1.1
13. Provisions for monitoring, verification and reporting shall be in accordance with the modalities described in the Marrakech Accords and relevant decisions of the COP/MOP.	Marrakech Accords, CDM Modalities §37f	OK	Table 2, question D.3.1
14. Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available.	Marrakech Accords, CDM Modalities, §40	No comments were received.	
15. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national	Marrakech Accords, CDM	The baseline scenario chosen for this project is in accordance	

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
and/or sectorial policies and circumstances.	Modalities, §45c,d	to approved small-scale project activity.	Table 2, question B.1.1
16. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to force major.	Marrakech Accords, CDM Modalities, §47	OK	-
17. The project design document shall be in conformance with the UNFCCC CDM-PDD format.	Marrakech Accords, CDM Modalities, Appendix B, EB Decisions	OK	-

Table 2 Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A. General Description of the small-scale Project Activity					
A.1 Title of the small-scale Project Activity					
A.1. 1. Is the title of the project activity presented?		DR	Rialma Companhia Energética S/A – Santa Edwiges II Small Hidro Power Plant – Small Scale CDM Project	OK	OK
A.2. **Description of the small-scale project activity**					
A.2.1. Is the purpose of the project activity included?		DR	The project consists of a run-of-river small-hydro power plant (13 MW) and its objective is to help Brazil to meet rising demand for energy due to economic grow and to improve the supply of electricity.	OK	OK
A.2.2. Is the view of the project participants on the contribution of the project activity to sustainable development included?		DR	It is not included in A.2 of the PDD the view of the participants on the contribution of the project activity to sustainable development	CAR 1	
A.3. **Project Participants**					
A.3.1. Are Party(ies) and private and/or public entities involved in the project activity listed?		DR	Rialma Companhia Energética S/A Ecoinvest Carbon	OK	OK
A.3.2. The data of the project participants are presented in tabular format?		DR	See Table 1 of the PDD	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A.3.3. Is contact information provided in annex 1 of the PDD?		DR	Rialma Companhia Energética S/A - telephone 55 61 3234-4214 Contact Name ; Mr Bruno Macedo Ecoinvest Carbon Telephone: 55 11 3063-9068 Contact: Mr Carlos de Mathias Martins	OK	OK
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)		DR	Brazil	OK	OK
A.4.1.2. Region/State/Province etc.		DR	Midwest region of Brazil, State of Goiás	OK	OK
A.4.1.3. City/Town/Community etc.		DR	Mambai and Buritinópolis	OK	OK
A.4.1.4. Detailed description of the physical location, including information allowing the unique identification of this project activity		DR	The project is located in the Buritis River, between Mambaí and Buritinópolis, at the intersection of longitude 46º11'34,6'' W and latitude 14º 21'20,4'' S, about 300 km far from Brasilia, (Federal District). There is a discrepancy between the number of the figure illustrating the project location and the text where such figure is mentioned (item A.4.1.4 of PDD)	OK CR 1	OK OK
A.4.2. Type and category(ies) and technology of the small-scale project activity					
A.4.2.1. Is the type and category of the project activity specified?	2	DR	According to version 07 (Nov, 2005) of the "Appendix B of the simplified modalities and	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			procedures for small-scale CDM project activities" the type and category of the project activity I.D. (Grid connected renewable electricity generation)		
A.4.2.2. Is it justified how the proposed project activity conforms to the project type and category selected?	2	DR	It is justified at item A.4.2 of the PDD	OK	OK
A.4.2.3. Is it described that the project is eligible as small-scale category ?		DR	It is justified at item A.4.2 of the PDD	OK	OK
A.4.2.4. Is it described that the project will remain under the limits for small-scale project activities types every year over the credit period?		DR I	There is no evidence if the project activity will remain under the limits for small-scale project activities types every year over the credit period	CR 2	OK
A.4.2.5. Is it described how the project is environmentally safety the Host Party?		DR I	There is no evidence that the project is environmentally safe as recommended by Guidelines for Completing the Simplified Project Design Document (CDM-SSC-PDD) and the Form for Submissions on Methodologies for Small-Scale CDM Project Activities (F-CDM-SSC-SUBM)	CR 3	OK
A.4.2.6. Is it described how the sound technology will be transferred to the Host Party?		DR I	There is no evidence that the project will transfer sound technology to the Host Party recommended by Guidelines for Completing the Simplified Project Design Document (CDM-SSC-PDD) and the Form for Submissions on Methodologies for Small-Scale CDM Project Activities	CR 4	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			(F-CDM-SSC-SUBM)		
A.4.2.7. Is it described how know how is transferred to the Host Party?		DR	It is described at item A.4.2.of the PDD that all equipments used in the project were developed and manufactures in Brazil	OK	OK
A.4.3. Brief explanation of how the anthropogenic emissions of anthropogenic greenhouse gas (GHGs) by sources are to be reduced by the proposed small-scale project activity, including why the emissions reduction would not occur in the absence of the proposed small-scale project activity, taking into account national and/or sectorial policies and circumstances					
A.4.3.1. Is It stated how anthropogenic GHG emission reductions are to be achieved?		DR	There will be reduction in the emission of greenhouse gases throughout the project because of the displacement of generation of electricity from fossil-fuel thermal plants that would have otherwise delivered to the interconnected grid.	OK	OK
A.4.3.2. Is it indicated the chosen crediting period of the project?		DR	The crediting period is presented at Table 3 of PDD. The presented period is from January 2007 to December 2013.	OK	OK
A.4.3.3. Is it provided the total estimation of emission reduction in tCO_2e ?		DR	The estimation of emission reduction is presented at Table 3 of PDD.	OK	OK
A.4.3.4. Is it provided the estimated annual reduction for the		DR	The estimated annual reduction is	OK	OK

	CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
	chosen credit period in tCO_2e?			presented at Table 3 of PDD.		
A.4.3.5.	Are the data from questions A.4.3.2 to A.4.3.4 above presented in tabular format?		DR	Yes	OK	OK
A.4.4.	Public funding of the small-scale project activity					
A.4.4.1.	Does the project activity use anypublic funding from Parties included in Annex I to the Convention?		DR	The project will not receive any public funding .	OK	OK
A.4.5.	Confirmation that the small-scale project activity is not a debundled component of a larger project activity					
A.4.5.1.	Is the project activity not a debundled component of larger project activity?	3	DR	The project is not a part of larger project activity	OK	OK
B. Application of a baseline methodology						
B.1.	**Title and reference of the approved baseline baseline methodology applied to the small-scale project activity**					
B.1.1.	Is it presented the project activity category in accordance to Appendix B?	2	DR	It is not indicated the project activity category	CAR 2	OK
B.2.	**Project category applicable to the small-scale project activity**					
B.2.1.	Is it justified the choice of the applicable baseline for the project category?	2	DR I	The capacity of the proposed project activity is 13 MW and will not exceed the limit of 15 MW, established at Appendix B. The Operation Permit is not available	CR 5	OK
B.2.2.	Are the basic assumptions of the baseline methodology in the context of the project activity		DR	The baseline scenario is the continuation of the current situation of electricity supplied	OK	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
presented?			by large hydro and thermal power stations. According to AMS I.D the baseline is the kWh produced by the renewable generating unit multiplied by an emission coefficient (measured in kg CO2equ/kWh) calculated in a transparent and conservative manner. It was chosen by the project proponent the option a) A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the approved methodology ACM 0002		
B.2.3. Are presented the key information and data used to determine the baseline scenario in table form?		DR	It is declared that the baseline scenario is the continuation of the current situation of electricity supplied by large hydro and thermal power stations. The information is not presented in table form. Version 4 of the PDD (section E.1.2.4) presents all the information considered by the project participant to determine the baseline scenario, following all the steps required by the methodology ACM 0002. Although the analysis of this version some CRs were raised as follow:	CAR 3	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			Figures 11,12 and 13 mentioned in the section E.1.2.4 are not presented in the version 4 of the PDD	CR19	OK
			As defined in ACM 0002 step 2 Calculate the build margin emission factor, the project participants shall choose between one of the following options (Option 1. Calculate the Build Margin emission factor EFBM,y ex-ante) or (Option 2. For the first crediting period, the Build Margin emission factor EFBM,y must be updated annually ex-post for the year in which actual project generation and associated emissions reductions occur). The PDD doesn't specify the option used for the project as required by ACM 0002.	CR20	OK
			According to ACM 0002 note 5, pag 6 "Low operating cost and must run resources typically include hydro, geothermal, wind, low-cost biomass, nuclear and solar generation". The PDD version 4 to calculate. In the last paragraph of section E.1.2.4 is stated that "The Low-cost/Must-run generation was determined as the total generation minus fossil-fuelled thermal plants". Please explain why the others hypothesis of energy generation were not considered .	CAR12	OK

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			Section E.1.2.4 The statement that "All this information has been provided to the validators, and extensively discussed with them, in order to make all points crystal clear" is not adequate because the new calculation of the emission factor was introduced in the version 4 of the PDD without any previous discussion between the validation team and the project proponent. On the hand the validation team agrees that all the points have to be crystal clear. Please omit the statement in the last paragraph of the section E.1.2.4	CR21	OK
B.3 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					
B.3.1. Does the proposed project activity qualify to use simplified methodologies?	2	DR	It is not specified if the project activity qualifies to use simplified methodologies	CR 6	OK
B.3.2. Is the proposed project activity additional?	2	DR	Please present the attractive rate of project activity and the justification for it. Please present the cash flow of the project according to the version 4 of the PDD.	CR 7 CR22	OK OK