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# VALIDATION REPORT

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**Cristalino Energia Ltda**  
**MGM Carbon Portfolio S.a.r.l**  
**Cristalino Small hydroelectric Power Plant**

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#### Summary

SGS has performed a validation of the project Cristalino Small Hydroelectric Power Plant. The Validation was performed on the basis of the UNFCCC criteria and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting. Using a risk based approach, the review of the project design documentation and the subsequent follow-up interviews have provided SGS with sufficient evidence to determine the fulfilment of the stated criteria.

The project activity consists of the installation of a small hydroelectric plant with installed capacity of 4.0 MW. The plant is located on the Barra Preta River, in the municipality of Manuel Ribas, Paraná State, Brazil.

Total amount of emission reductions estimated for the first crediting period of is 44,219 tCO<sub>2</sub>e.

SGS will request the registration of the Cristalino Small Hydroelectric Power Plant as a CDM project activity, once the written approval by the DNA of the participating Parties and the confirmation by the DNA of Brazil and DNA of UK that the project assists in achieving sustainable development has been received.

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## Abbreviations

ACM	Approved Consolidated Methodology
ANEEL	Agencia Nacional de Energia Elétrica (Brazilian Agency of Power Electricity).
CAR	Corrective Action Request
CER	Certified Emission Reduction
DNA	Designated National Authority
EF	Emission Factor
ER	Emissions Reduction
MP	Monitoring Plan
NIR	New Information Request
PDD	Project design Document
SGS	Société Générale de Surveillance

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Annex 3: Overview of findings

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## 1 Introduction

### 1.1 Objective

Cristalino Energia Ltda has commissioned SGS to perform the validation of the project Cristalino Small Hydroelectric power plant with regard to the relevant requirements for CDM project activities. The purpose of a validation is to have an independent third party assess 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 seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of Certified Emission Reduction (CER). UNFCCC criteria refer to the Kyoto Protocol criteria and the CDM rules and modalities and related decisions by the COP/MOP and the CDM Executive Board.

### 1.2 Scope

The scope of the validation 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. SGS has 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

This report summarizes the results of the validation of Cristalino Small Hydroelectric Power Plant, performed on the basis of UNFCCC criteria. The validation has been performed as a desk review of the project documents presented by Cristalino Energia Ltda and MGM Carbon Portfolifo S.a.r.l and a site visit carried out on 24 and 25<sup>th</sup> May 2007, where the details of the project activity were verified on-site. During the site visit, Cristalino's manager and MGM consultant were interviewed.

The project activity consists of the installation of a small hydroelectric plant with an installed capacity of 4.0 MW, located in Barra Preta River, in the municipality of Manuel Ribas, Paraná State, Brazil. The project has the objective to provide renewable electricity from Cristalino Energia Ltda and dispatch the energy to interconnected system. The project activity has a small reservoir with 880 m<sup>2</sup> of area (Ref.6), offering lower environmental impact compared to large hydro powers. This project will increase the supply of renewable source of energy to the grid, avoiding the use of fossil fuel that would be burned in thermal power plants.

Total amount of emission reductions estimated for the first crediting period is 44,219 t CO<sub>2</sub>e.

#### Baseline Scenario:

No investment in clean power generation; electricity generation by the existing generation mix operating in the grid. The baseline scenario is the continuation of the current situation of electricity supplied by large hydro and thermal power plants.

#### With-project scenario:

The installation of a small hydroelectric plant with installed capacity of 4.0 MW to provide renewable electricity to the grid. The project reduces emissions of greenhouse gas (GHG) by avoiding electricity

generation by fossil fuel sources and its CO<sub>2</sub> emissions, which would be emitted in the absence of the project.

Leakage: No leakage is expected.

#### Environmental and social impacts:

The project is in line with host-country specific CDM requirements. It is expected that the project activity will help Brazil to fulfil its goals of promoting sustainable development. The contributions of the project activity comprises, among others: decreasing the dependence on fossil fuels, increasing of energy supply and providing local distributed generation, contributing to the regional/local economic development.

The construction and operation of the plant have followed the legal requirements regarding environmental protection and control. During the site visit and the validation exercise, documented evidence regarding the environmental assessments was verified (see Ref.8, 9 and 10).

#### **1.4 The names and roles of the validation team members**

<b>Name</b>	<b>Role</b>
<i>Aurea Nardelli – SGS Brazil</i>	<i>Lead Assessor</i>
<i>Geisa Principe – SGS Brazil</i>	<i>Assessor</i>

Statement of Competence of team members are attached at Annex IV.

## **2 Methodology**

### **2.1 Review of CDM-PDD and additional documentation**

The validation is performed primarily as a document review of the publicly available project documents. The assessment is performed by trained assessors using a validation protocol.

A site visit is usually required to verify assumptions in the baseline. Additional information can be required to complete the validation, which may be obtained from public sources or through telephone and face-to-face interviews with key stakeholders (including the project developers and Government and NGO representatives in the host country). These may be undertaken by the local SGS affiliate. The results of this local assessment are summarized in Annex 1 to this report.

### **2.2 Use of the validation protocol**

The validation protocol used for the assessment is partly based on the templates of the IETA / World Bank Validation and Verification Manual and partly on the experience of SGS with the validation of CDM projects. It serves the following purposes:

- it organises, details and clarifies the requirements the project is expected to meet; and
- it documents both how a particular requirement has been validated and the result of the validation.

The validation protocol consists of several tables. The different columns in these tables are described below.

<b>Checklist Question</b>	<b>Means of verification (MoV)</b>	<b>Comment</b>	<b>Draft and/or Final Conclusion</b>
<i>The various requirements are linked to checklist questions the project should meet.</i>	<i>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.</i>	<i>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.</i>	<i>This is either acceptable based on evidence provided (Y), or a <b>Corrective Action Request (CAR)</b> due to non-compliance with the checklist question (See below). <b>New Information Request (NIR)</b> is used when the validation team has identified a need for further clarification.</i>

The completed validation protocol for this project is attached as Annex 2 to this report

## 2.3 Findings

As an outcome of the validation process, the team can raise different types of findings

In general, where insufficient or inaccurate information is available and clarification or new information is required the Assessor shall raise a **New Information Request (NIR)** specifying what additional information is required.

Where a non-conformance arises the Assessor shall raise a **Corrective Action Request (CAR)**. A CAR

is issued, where:

- I. mistakes have been made with a direct influence on project results;
- II. validation protocol requirements have not been met; or
- III. there is a risk that the project would not be accepted as a CDM project or that emission reductions will not be verified.

The validation process may be halted until this information has been made available to the assessors' satisfaction. Failure to address a NIR may result in a CAR. Information or clarifications provided as a result of an NIR may also lead to a CAR.

**Observations** may be raised which are for the benefit of future projects and future verification or validation actors. These have no impact upon the completion of the validation or verification activity.

Corrective Action Requests and New Information Requests are raised in the draft validation protocol and detailed in a separate form (Annex 3). In this form, the Project Developer is given the opportunity to "close" outstanding CARs and respond to NIRs and Observations.

## **2.4 Internal quality control**

Following the completion of the assessment process and a recommendation by the Assessment team, all documentation will be forwarded to a Technical Reviewer. The task of the Technical Reviewer is to check that all procedures have been followed and all conclusions are justified. The Technical Reviewer will either accept or reject the recommendation made by the assessment team.

## **3 Determination Findings**

### **3.1 Participation requirements**

Brazil is listed as the host Party. Brazil ratified the Kyoto Protocol on 23<sup>rd</sup> August 2002. ([http://unfccc.int/files/essential\\_background/kyoto\\_protocol/application/pdf/kpstats.pdf](http://unfccc.int/files/essential_background/kyoto_protocol/application/pdf/kpstats.pdf)).

At time of the validation, no Letter of Approval from the host country had been provided. The Letter of Approval will be signed when the DNA of Brazil receive and analyse the validation report.

United Kingdom is listed as Annex 1 party. UK ratified the Kyoto Protocol on 31<sup>st</sup> May 2002. ([http://unfccc.int/files/essential\\_background/kyoto\\_protocol/application/pdf/kpstats.pdf](http://unfccc.int/files/essential_background/kyoto_protocol/application/pdf/kpstats.pdf))

No letter of approval from Annex I country was provided to the validator. CAR 10 was raised.

### **3.2 Baseline selection and additionality**

From the discussion provided in the first version of the PDD, it was not possible to conclude if the project is additional under the CDM rules. It was applied the “Tool for the demonstration and assessment of additionality”, but the steps of the tool (mainly the “Investment analysis”) were not followed correctly. The discussion of additionality was not clear and was not supported by objective evidences and information, as additional evidences regarding economic analysis or references of the sources of information mentioned. CAR 2 was raised.

During the site visit it was also verified that the project was financed (80% of the total investments) by the Banco Regional de Desenvolvimento do Extremo - BRDE. This information was not transparent in the PDD, nothing was mentioned about this financing in the discussion of the barriers. It was not clearly justified why the project faced the lack of local long-term financing. NIR 8 was raised.

To clarify NIR 8, the discussion of additionality was revised (PDD version 2), see also the closing out details of CAR 2. It was concluded that the financial barrier was not the strongest barrier faced by the project, as the sponsor had access to financing of 80% of the costs of the plant. The project proponents decided to discuss the barrier of the “Prevailing Business Practice”. The information about the financial barriers was excluded of the PDD. NIR 8 was closed out.

To close out CAR 2, The PDD was revised (see version 2). The “Tool”, used in the version 1, was replaced by the Attachment A to Appendix B. The references mentioned to support the discussion were included in the PDD. Barrier due to “Prevailing Practice” - where prevailing practice or existing regulatory or policy requirements would have led to implementation of a technology with higher emissions - was used by project developer to discuss the additionality. The discussion was based on the small participation of small hydro plants in Brazilian power market (less than 2% of the total generation in Brazil) and on the trends of the Brazilian power generation sector. Specifically in the Paraná State, where the plant is installed, small hydro plants represent 1.07% of the total installed capacity. The references and sources of information mentioned in the PDD were confirmed. It was verified that there are 28 small hydro plants installed (with capacity under the limit of 15 MW), among them only 3 (including Cristalino plant and excluding other CDM projects) are



registered as independent power generator. The other plants are registered as public service or producers for auto-supplying.

It was also verified from ANEEL data that there are three power plants been constructed in the Paraná State, which will add 30,530 MW to the grid. These three plants are all thermal plants (using wood biomass or natural gas).

From this discussion, it was demonstrated that the small hydroelectric power plants are not a business-as-usual scenario (the information provided in the revised PDD, version 2, was confirmed at Aneel website: <http://www.aneel.gov.br/area.cfm?idArea=15&idPerfil=2>). It was confirmed that is common practice in Brazil the power generation from large hydroelectric plants and thermal fossil fuel plants. CAR 2 was closed out.

It was evidenced that CDM was seriously considered when the company decided to implement the project, as demonstrated in the directors meeting notes (carried out on 25 May 2005, Ref. 15).

As the project provided an explanation to show that the project activity would not have occurred due to at least one of the barriers required for the small scale project activities, Cristalino Small Hydroelectric Power Plant was considered additional.

### **3.3 Application of Baseline methodology and calculation of emission factors**

The methodology applied to this Small Scale Project Activity is Type 1: Renewable energy projects. Category, D: Grid connected renewable electricity generation, version 11.

Baseline calculations are done according to Appendix B of the simplified modalities and procedures for small-scale CDM project activities.

Cristalino Small hydroelectric power plant uses the renewable hydro potential of the Barra Preta River to generate electricity with 4.0 MW of total installed capacity (under the eligibility limit of 15 MW for small scale projects). This activity confirms with category I.D Renewable electricity generation for a grid, that comprises renewable energy generation units that supply electricity to an electricity distribution system that is or would have been supplied by at least one fossil fuel or non-renewable biomass fired generation unit.

It was verified on site that the project is not a debundled component of a larger activity. The project is located in the Barra Preta River and is an independent hydro power plant generating electricity and supplying to the grid, unrelated to any other CDM project activity in the region. In addition, the UNFCCC website was verified and does not show another registered project with the same characteristics in the same place.

As described in the PDD, the baseline calculations were performed following the Appendix B of the simplified modalities and procedures for small-scale CDM project activities. The baseline emissions should be calculated as the amount of electricity (kWh) produced by the renewable generating unit multiplied by an emission coefficient calculated in a transparent and conservative manner.

During the desk study it was not possible to verify the baseline information provided in the Annex 3 of PDD. The complete spreadsheets with data and formulas used for calculation of the EF grid were not available for the validation team. NIR 7 was raised

To clarify NIR 7, the spreadsheet with data and formulas for EF calculation was provided to the validation team (ref. 4). The data and formula for calculation of the EF were checked and it was possible to confirm the information provided in the PDD. The calculation of the baseline Emission Factors was performed as required by the methodology ACM0002 (version 6) as a combined margin

(CM) emission factor, consisting of the combination of operating margin (OM) and build margin (BM) emission factors. The parameters were calculated *ex-ante* based on the most recent information available at the time of PDD submission (data from 2003 to 2005). Details about the data used for calculation of OM and BM emission factors were presented in the PDD and its annexes. NIR 7 was closed out.

The grid emission factor calculated from OM and BM emission factors above mentioned and applied for baseline emission reductions estimative was 0.2611 tCO<sub>2</sub>e/MWh. It is considered fixed along the first crediting period. It was verified that the estimative of Baseline Emissions, Project Emissions and Emissions Reductions was calculated applying the correct emission factor and the formulas required by the methodology (PDD, version 2).

### **3.4 Application of Monitoring methodology and Monitoring Plan**

According to Type I, Category D of small-scale project activity categories contained in Appendix B of the Simplified M&P for CDM Small-Scale Project Activity, monitoring shall consist of metering the electricity generated by the renewable technology.

During the desk study, it was verified that the description of the Monitoring Plan (section B.7.2 of PDD, version 1) was not complete. The organizational chart indicates the management/operational structure, but no information about responsibilities and activities was provided. NIR 3 was raised. Detailed information related to the monitoring plan (procedures, calibration certificates among others) was not available during the site visit to clarify NIR 3. CAR 09 was raised.

It is also informed in the Annex 4 that a spreadsheet model was developed for the project (an electronic worksheet will be complete on a monthly basis and will automatically provide annual totals in terms of GHG reductions achieved by the project). This spreadsheet was not available to the validation team during the desk study and site visit. NIR 5 was raised.

To close out CAR 09, additional information and evidences related to the monitoring plan was provided to the validation team. The work instruction OP 004466, Vol 1, 21/02/2005 was verified. It was identified that the responsible for the project is manager of the Cristalino project. Copies of the calibration certificates of the meters installed were provided: EXAUT (Energia e Automação), issued on 09/06/2005 referring to the SAGA 1000 meters serial numbers 504455 and 504456 (Ref.3). It was informed that the meters will be calibrated each 3 years.

The revised PDD (version 2) included additional information under the description of the monitoring plan (section B.7.2). The procedures that will be prepared before the starting of the crediting period were identified and listed in the PDD (version 2). The spreadsheet presented in the Annex 4 of the PDD was prepared and sent to the validation team (ref. 11). It was not in use yet, as there is not monitoring data. NIR 5 and CAR 09 were closed out and the Observation (1) was raised. Observation 1: procedures required to implement the monitoring plan shall be completely prepared and in place before the starting date of the crediting period.

Considering that the Observation (1) will be addressed adequately before the starting of the crediting period, the monitoring plan described in the final PDD is in line with the monitoring methodology mentioned in category I.D. The data monitored in combination with an emission factor will be used for calculation the achieved emission reductions.

### 3.5 Project design

The Cristalino project consists in the installation of a small hydroelectric power plant. The project activity will reduce emissions of greenhouse gas (GHG) as the result of the displacement of generation from fossil-fuel thermal plants that would have otherwise been delivered to the interconnected grid.

The project uses state of the art technology applied to this kind of plant. The facility contains a small dam, which corresponds to the natural water body of the Barra Preta River, which stores water in order to generate electricity for short periods of time. It was designed to function designed as run of river scheme.

The project boundary encompasses the physical, geographical site of the hydropower generation source, which is represented by the Barra Preta River basin close to the power plant facility and the interconnected grid. The generation system described in the PDD is according to the equipments verified on site by the local assessor. It was presented the document issued by ANEEL (Ref. 5), which informed the installed capacity of 4.0 MW.

The operational lifetime assumed is 25 years. This exceeds the renewable crediting period of 7 years. The starting date of the first crediting period will be 1<sup>st</sup> March 2008.

In some pages of the PDD, the project was referenced as “FAXSHP project”, which is not the correct name. CAR 1 was raised. To close out CAR 1 the PDD was revised (see version 2, ref. 1) and the name of the project was corrected (it was changes for CristalSHP). CAR 1 was closed out.

The other information presented in the final PDD (location, specification and installed capacity of the SHP, total amount of electricity generated and sources of external data and references regarding baseline scenario and additionality) was accurate and reliable, as confirmed by the validation team.

The project design engineering reflects current good practices and is not likely to be substituted by other or more efficient technologies within the project period. Small hydro is considered to be one of the most cost effective power plants in Brazil.

### 3.6 Environmental Impacts

The project with a power capacity of 4.0 MW, is a low impact plant whose dam, designed to function as run of river, will flood 880m<sup>2</sup> under regular operation conditions. Run-of-river schemes do not include significant water storage, and must therefore make complete use of the water flow.

Considering this characteristics, it was not expected to have significant adverse environmental impacts from this kind of project.

No references or source of information was provided for the following statement in section D.2: *“The environmental impacts associated with the project activity are modest because the regional topography allows the dam to be naturally contained in a valley. Furthermore, this valley has a low demographic and land use rate”*. It was not clear if this information is from an environmental evaluation or other document mentioned in the section D.1. NIR 4 was raised.

To close out NIR 4, the environmental licenses were provided, as indicated below:

- Installation license, N° 2892, issued by Instituto Ambiental do Paraná – IAP, valid until 31<sup>st</sup> May 2007 (ref.09).
- Operation license, N° 7536, issued by Instituto Ambiental do Paraná – IAP, valid until 30<sup>th</sup> May 2008 (ref.10).

It was also verified the Environmental Control Plan, issued on 4<sup>th</sup> February, 2003 – Instituto Ambiental do Paraná – IAP (Environmental Agency). See ref.8.

Regarding to the information about “environmental impacts...” the sponsor had not evidence about this affirmation so it was excluded of the revised PDD (version 2).

The current licenses issued by the State Environmental Agency were considered evidences that the project has been implemented in compliance with the legal requirements related to environmental impacts. NIR 4 was closed out.

### **3.7 Local stakeholder comments**

The local stakeholder consultation is required by Brazilian DNA. It is necessary to invite the relevant stakeholders, before the validation process starts. It was not possible to check during the desk study if the stakeholder consultation process was carried out in accordance with the DNA requirements. The PDD did not provide a list of the stakeholders consulted, detailing the names of the organizations and agencies contacted. NIR 6 was raised. During the site visit, it was verified the complete list of names of the local stakeholders consulted. The letters sent to local stakeholders were verified. The complete list of stakeholders was included in the revised PDD (version 2). NIR 6 was closed out.

It was confirmed that the letters were sent in December, 2006. The following stakeholders were invited to comment on the project:

- Municipality of Manuel Ribas - PR
- City Council of Manuel Ribas - PR
- Municipal Environmental Agency of Manuel Ribas – PR (Secretária da Agricultura e Meio Ambiente)
- State Environmental Agency – PR (Instituto Ambiental do Paraná)
- Brazilian Forum of NGOs and Social Movements for Environmental and Development
- Community association and workers union (Associação Comercial e Industrial de Manoel Ribas and Sindicatos dos Trabalhadores Rurais de Manoel Ribas)
- State Attorney of the Manuel Ribas - PR

The comments received during the consultation process were supportive to the project. It was not required change in the project activity or specific response. This explanation about comments received from local stakeholders was included in the PDD, section E.2.

## **4 Comments by Parties, Stakeholders and NGOs**

In accordance with sub-paragraphs 40 (b) and (c) of the CDM modalities and procedures, the project design document of a proposed CDM project activity shall be made publicly available and the DOE shall invite comments on the validation requirements from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available. This chapter describes this process for this project.

### **4.1 Description of how and when the PDD was made publicly available**

The PDD and the monitoring plan for this project were made available on the SGS website <http://cdm.unfccc.int/Projects/Validation/DB/YZI57AA9CU3PCRD7ZQTKVIK2IAPJXN/view.html> and were open for comments from 18 April 2007 to 19 May 2007. Comments were invited through the UNFCCC CDM homepage.

### **4.2 Compilation of all comments received**

No comment was received to the DOE during the 30 days commenting period.

#### 4.3 Explanation of how comments have been taken into account

No comment was received.

### 5 Validation opinion

Actions have been taken to close out nine findings. There is a CAR outstanding, related to the letter of approval from Annex 1 party (United Kingdom).

SGS has performed a validation of project: Cristalino Small Hydroelectric Power plant. The validation was performed on the basis of the UNFCCC criteria and host country criteria, as well as criteria given to provide consistent project operations, monitoring and reporting.

Using a risk based approach, the validation of the project design documentation and the subsequent follow-up interviews have provided SGS with sufficient evidence to determine the fulfilment of the stated criteria.

By the displacement of fossil fuels by renewable energy sources in the generation of electricity, the project results in reducing greenhouse gas emissions that are real, measurable and give long-term benefits to the mitigation of climate change. A review of the barriers presented demonstrates that the proposed project activity was not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. If the project is implemented as designed, the project is likely to achieve the estimated amount of emission reductions.

The validation is based on the information made available to SGS and the engagement conditions detailed in the report. The validation has been performed using a risk based approach as described above. The only purpose of this report is its use during the registration process as part of the CDM project cycle. Hence SGS can not be held liable by any party for decisions made or not made based on the validation opinion, which will go beyond that purpose

### 6 List of persons interviewed

<b>Date</b>	<b>Name</b>	<b>Position</b>	<b>Short description of subject discussed</b>
24 and 25 May, 2007	João Franco	Consultant - MGM	Technical issues, findings, monitoring plan, baseline, licenses.
24 and 25 May, 2007	Victor Pulz	Consultant – MGM	Technical issues, findings, licenses.
24 and 25 May, 2007	Walter	Cristalino Energia Ltda	Licenses, stakeholder consultation process, findings, operational issues, monitoring plan.

### 7 Document references

Category 1 Documents (documents provided by the Client that relate directly to the GHG components of the project, (i.e. the CDM Project Design Document, confirmation by the host Party on contribution to sustainable development and written approval of voluntary participation from the designated national authority):

- /1/ Project Design Document, Cristalino Small Hydroelectric Power Plant, Version 1 (02/02/2007), Version 2 (24/07/2007), Version 3 (30/10/2007).
- /2/ AMS-I.D: - Grid connected renewable electricity generation (Simplified baseline and monitoring methodologies for selected small scale CDM project activity - Type I – Renewable Energy Projects/ I.D. Grid connected renewable electricity generation), Version 11 (18/05/2007).

Category 2 Documents (background documents used to check project assumptions and confirm the validity of information given in the Category 1 documents and in validation interviews):

- /3/ Calibration Certificate of the electricity meter (monitoring plan)
- /4/ BR-Grid EF SSECO-2003 to 2005-2006.08.28 (Emission factor calculation data)
- /5/ ANEEL license N° 651
- /6/ Information about the reservoir area
- /7/ ANEEL license N° 981
- /8/ PCA – Environmental control plan of the project
- /9/ Installation license
- /10/ Operation license
- /11/ Spreadsheet MGM (monitoring plan)
- /12/ ANEEL License N° 113
- /13/ Spreadsheet for CERs calculation
- /14/ Financing information
- /15/ Cristalino Energia Meeting notes (25 May 2002)

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## VAL 0950 – 02 Cristalino Small Hydroelectric Power Plant - Annex 1 - Local assessment checklist

This checklist is designed to provide confirmation of in-country data and information provided in the Project Design Document. It serves as a “reality check” on the project. It is to be completed by a local assessor from SGS Brazil

Issue	Findings	Source /Means of Verification	Further action / clarification / information required?
Confirm the installed capacity informed in the PDD (4 MW); check the equipment installed on-site and the ANEEL document.	Confirmed the installed capacity. It was presented the ANEEL license, N° 651, issued on 26 <sup>th</sup> November 2002 (ref. 5).	Site visit/DR	No



Issue	Findings	Source /Means of Verification	Further action / clarification / information required?
<p>Confirm the locality (Barra Preta river, coordinates etc).</p> <p>Check if the project is not a debundled project.</p> <p>Inform details of evidences verified on-site.</p>	<p>It was presented the ANEEL license, N° 651 (ref.5) that confirms the localities.</p> <p>The project is localized in the Barra Preta river, Manuel Ribas municipality – Paraná.</p> <p>Coordinates: 24 34'19"S e 51 33'31" W</p> <p>Cristalino SHP is not debundled project.</p>	Site visit/DR/I	No
<p>Confirm if the plant is run-off-river and if the flood area is 880 m². (check the environmental license and studies, check maps or topographic maps of the dam).</p>	<p>Confirmed the flood area of the 880m² in the Environmental document <i>"Memorial Técnico Descritivo – reservatório"</i> (ref. 6).</p>	Site visit/DR	No
<p>Give evidences of who is the responsible part of the project. For example, confirm if the company's name is shown in ANEEL licenses or environmental licenses.</p>	<p>Verified that Cristalino Energia Ltda is responsible of the project. Evidences were confirmed on site visit (ref. 5 and 9).</p>	Site visit/DR/I	No
<p>Confirm what data was used for estimate the energy produced annually (is applied some capacity factor?). How many MWh the plant will generate/year?</p>	<p>The data used for estimate the energy was obtained from ANEEL license, N° 981, issued on 9<sup>th</sup> August 2005: permission to starting operation of the plant (ref. 7).</p> <p>Capacity factor: 0,70%</p> <p>(The license ANEEL N° 113-03-2003 (ref. 12) defines 2.83 MW as the ensured energy.</p> <p>Capacity factor= <math>2.83 : 4 = 0.70</math>.</p>	Site visit/DR	No



Issue	Findings	Source /Means of Verification	Further action / clarification / information required?
Check which evidences confirm the project starting date.	ANEEL license, N° 981, issued on 8 <sup>th</sup> August 2005 that evidences the project starting date (ref. 7).	Site visit/DR	No
All the financial investment was done with own capital? Any financing? Please confirm.	No. 80% of the project was financed by a bank (Banco Regional de Desenvolvimento do Extremo - BRDE). Total cost of the project: R\$ 7.795.764,92 Total financed: R\$ 5.050.000,00 Ref. 14	Site visit/DR/I	See also NIR 8
Confirm by document review, interviews and on-site observations if the monitoring plan is implemented (responsibilities, procedures and work instructions, archiving time, calibration and maintenance of the meters:.. Please provide detailed evidences (if possible, copies of calibration certificates, copies of procedures or work instructions etc).	It was verified on-site that there is no monitoring plan implemented yet. There is no implemented procedures to (backup, calibration, internal auditing). It was informed that the monitoring plan will be implemented before crediting period.	Site visit/DR/I	See NIR 3 and CAR 9
Is there an operation authorization issued by ANEEL? Please check and provided details. Ask copy of this authorization.	Yes. Authorization by ANEEL, N° 981, issued on 9 <sup>th</sup> August 2005 (ref.7).	Site visit/DR	No
Verify the environmental licensing process. Check the	Verified on site the Environmental Control Plan, issued on 4 <sup>th</sup> February, 2003 – Instituto Ambiental do Paraná – IAP (Environmental Agency). See	Site visit/DR	No

Issue	Findings	Source /Means of Verification	Further action / clarification / information required?
<p>environmental studies (if there is a PCA, a RAP and a PRAD or other study and plan required by IAP). Check the current operation license and the conditions defined by the environmental agency.</p> <p>Ask copies of the current license and record the details of all relevant documents verified on-site.</p>	<p>ref.8.</p> <p>The following documents related to compliance with legal requirements were provided:</p> <ul style="list-style-type: none"> <li>- Installation license, N° 2892 – Instituto Ambiental do Paraná – IAP, valid 31st May 2007 (ref.9).</li> <li>- Operation License, N° 7536 – Instituto Ambiental do Paraná – IAP, valid until 30th May 2008 (ref.10).</li> </ul>		
<p>Verify if this conclusion presented in the PDD (section D.2) is from an environmental study: “The environmental impacts associated with the project activity are modest because the regional topography allows the dam to be naturally contained in a valley. Furthermore, this valley has a low demographic and land use rate”. If no, who mentioned this conclusion about the impacts evaluation? It could be confirmed on-site?</p>	<p>There is no document that clarifies this affirmation.</p>	<p>Site visit/DR/I</p>	<p>See NIR 4</p>

Issue	Findings	Source /Means of Verification	Further action / clarification / information required?
<p>Check the calculation of OM, BM and the emission factor of the grid (formulas and data used for the calculation).</p> <p>Ask for the complete spreadsheets with data used for the calculation and for reaching the value of EF=0.2611 tCO<sub>2</sub>e/MWh.</p> <p>Ask copy of this spreadsheet.</p>	<p>The spreadsheets with the calculation were verified on site.</p> <p>The emission factor was confirmed by the local assessor.</p> <p>Copy of the spreadsheet with data used for EF grid calculation was provided. See reference ref.4.</p>	DR/I	No
<p>Verify and record <u>the names</u> of each stakeholder invited to comment on the project. It is possible to confirm the invitation by ARs?</p> <p>Are they covering the DNA requirements?</p> <p>Ask copies of ARs.</p>	<p>Confirmed the letters sent in December, 2006.</p> <ul style="list-style-type: none"> <li>▪ Municipal Government of the Manuel Ribas - PR</li> <li>▪ City Councils of the Manuel Ribas - PR</li> <li>▪ Municipal Environmental Agency of the Manuel Ribas – PR (Secretária da Agricultura e Meio Ambiente)</li> <li>▪ State Environmental Agency – PR (Instituto Ambiental do Paraná)</li> <li>▪ Brazilian Forum of NGOs and Social Movements for Environmental and Development</li> <li>▪ Community associations (Associação Comercial e Industrial de Manoel Ribas and Sindicatos dos Trabalhadores Rurais de Manoel Ribas)</li> <li>▪ State Attorney of the Manuel Ribas - PR</li> </ul>	Site visit/DR	No

Issue	Findings	Source /Means of Verification	Further action / clarification / information required?
Confirm the letter and material sent to the stakeholders (language, media etc).	All letters sent to the stakeholders were confirmed.	Site visit/DR	No
Check the responses and comments received from the stakeholders.	Two comments were received (from FBOMS and the Municipal Chamber). No changes in the project or specific response were required.	Site visit/DR	No
Annex 4 "Monitoring plan": check the spreadsheet mentioned in the PDD for data input and results. Ask copy of the spreadsheet.	See NIR 5: The spreadsheet was presented (ref.11), however, it is not implemented. The monitoring plan will be implemented before the crediting period (see CAR 09).	Site visit/DR	No

## ANNEX 2 - Validation Protocol (Cristalino Small Hydroelectric Power Plant – CDM.Val. 0950 – BR02)

This validation protocol is designed to ensure that the project meets the requirements for CDM projects that are detailed in paragraph 37 of the CDM modalities and procedures. Each requirement is covered in a separate table. The following requirements are discussed in this protocol:

Requirement	Description	
Participation requirements	The participation requirements as set out in Decision 17/CP.7 need to be satisfied	Covered in table 1
Baseline and monitoring methodology	The baseline and monitoring methodology complies with the requirements pertaining to a methodology previously approved by the Executive Board	Baseline methodology is covered in table 9 Monitoring methodology is covered in table 9
Additionality	The project activity is expected to result in a reduction in anthropogenic emissions by sources of greenhouse gases that are additional to any that would occur in the absence of the proposed project activity	Covered in table 9
Monitoring plan	Provisions for monitoring, verification and reporting are in accordance with relevant decisions of the COP/MOP	Covered in table 9
Environmental impacts	Project participants have submitted to the designated operational entity documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts and, if those impacts are considered significant by the project participants or the host Party, have undertaken an environmental impact assessment in accordance with procedures as required by the host Party;	Covered in table 9
Comments by local stakeholders	Comments by local stakeholders have been invited, a summary of the comments received has been provided, and a report to the designated operational entity on how due account was taken of any comments has been received;	Covered in Table 7
Other requirements	The project activity conforms to all other requirements for CDM project activities in relevant decisions by the COP/MOP and the Executive Board.	Covered in Table 8

Small sale projects and AR projects have specific requirements which are covered in Table 9-11. Small scale SSC projects have special requirements which might deviate from the requirements of other CDM projects. These requirements are tested in table 9. Please note that some questions in table 9 overlap with questions in the other tables. Where the questions in table 9 contradict or overlap questions elsewhere in the checklist, the questions in table 9 shall prevail. For the validation of small scale projects, assessor is required to address the questions in table 9 first before starting with the questions in the other tables.

Further remarks on the use of this document:

- text in *italic blue* is meant as guidance for the assessor
- MoV = Means of Verification, DR= Document Review, I= Interview

This protocol should be adapted as required. For example, if the project is not a small scale project or an AR project, some tables can be deleted.

**Table 1 Participation Requirements for Clean Development Mechanism (CDM) Project Activities (Ref PDD, Letters of Approval and UNFCCC website)**

REQUIREMENT	MoV	Ref	Comment	Draft finding	Concl
1.1 The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3 and be entered into voluntarily.	DR	PDD	No letter of approval from Annex I country, United Kingdom was provided to the validator.	CAR 10	
1.2 The project shall assist non-Annex I Parties in achieving sustainable development and shall have obtained confirmation by the host country thereof, and be entered into voluntarily	DR	PDD	No Letter of approval by host country (Brazil) has been submitted to the validator.  The LoA will be sent after the Brazilian DNA analyse and approve the project.	Send the validation report to DNA.	
1.3 All Parties (listed in Section A3 of the PDD) have ratified the Kyoto protocol and are allowed to participate in CDM projects	PDD	UNFCCC Web site	Yes. Brazil ratified the protocol on 23 August 2002.  UK ratified the Kyoto Protocol on 31 <sup>st</sup> May 2002.	Ok	Ok
1.4 The project results in reductions of GHG emissions or increases in sequestration when compared to the baseline; and the project can be reasonably shown to be different from the baseline scenario	PDD	DR	The project activity reduces emissions of greenhouse gas (GHG) as the result of the displacement of generation from fossil-	Ok	Ok

REQUIREMENT	MoV	Ref	Comment	Draft finding	Concl
			fuel thermal plants that would have otherwise been delivered to the interconnected grid.		
1.5 Parties, stakeholders and UNFCCC accredited NGOs shall have been invited to comment on the validation requirements for minimum 30 days (45 days for AR projects), and the project design document and comments have been made publicly available	DR	PDD UNF CCC web site	Yes, PDD was publicly available from 18 April to 17 May 2007. <a href="http://cdm.unfccc.int/Projects/Validation/DB/YZI57AA9CU3PCRD7ZQTKVIK2IAPJXN/view.html">http://cdm.unfccc.int/Projects/Validation/DB/YZI57AA9CU3PCRD7ZQTKVIK2IAPJXN/view.html</a> No comments were received.	Ok	Ok
1.6 The project has correctly completed a Project Design Document, using the current version and exactly following the guidance	DR	PDD	Yes; it was used the current version of the PDD.	Ok	Ok
1.7 The project shall not make use of Official Development Assistance (ODA), nor result in the diversion of such ODA	DR	PDD	The project does not made use of ODA.	Ok	Ok
1.8 For AR projects, the host country shall have issued a communication providing a single definition of minimum tree cover, minimum land area value and minimum tree height. Has such a letter been issued and are the definitions consistently applied throughout the PDD?			N/A		
1.9 Does the project meet the additional requirements detailed in: Table 9 for SSC projects Table 10 for AR projects Table 11 for AR SSC projects			N/A		
1.10 Is the current version of the PDD complete and does it clearly reflect all the information presented during the validation assessment.	DR	PDD	The PDD did not clearly reflect all the information presented during the validation assessment. It is informed in the Annex 4 that a spreadsheet model was developed for the project (an electronic worksheet will be complete on a monthly basis and will automatically provide annual totals in terms of GHG reductions	NIR 5	Ok

REQUIREMENT	MoV	Ref	Comment	Draft finding	Concl
			<p>achieved by the project). This spreadsheet was not available to the validation team during the desk study. <u>NIR 5 was raised.</u></p> <p>To close out NIR 5, the spreadsheet was provided (Ref. 11). There is no data registered as the project was not started the monitoring yet. <u>NIR 5 was closed out.</u></p>		
1.11 Does the PDD use accurate and reliable information that can be verified in an objective manner?	DR	PDD Site visit	<p>In some pages of the PDD, the project is referenced as "FAXSHP project", which is not the correct name. <u>CAR 1 was raised.</u></p> <p>To close out CAR 1 the PDD was revised (see version 2, ref. 1) and the name of the project was corrected. <u>CAR 1 was closed out.</u></p>	CAR 1	Ok
			<p><u>NIR 7:</u> It was not possible to verify the baseline information provided in the Annex 3 of PDD. The complete spreadsheets with data and formulas used for calculation of the EF grid were not available for the validation team during the desk study.</p> <p>To clarify NIR 7, the data were verified on-site by the local assessor. In addition, the spreadsheet with formulas and data was provided to the validation team. It was confirmed that the EF calculation used the data available</p>	NIR 7	Ok



REQUIREMENT	MoV	Ref	Comment	Draft finding	Concl
			from official sources (ONS) and followed the methods defined by ACM0002. The EF used for baseline emissions estimative (EF=0.2611 tCO <sub>2</sub> e/MWh) was confirmed. <u>NIR 7 was closed out.</u>		

**Table 2** Baseline methodology(ies) (Ref: PDD Section B and E and Annex 3 and AM) - NA

**Table 3** Additionality (Ref: PDD Section B3 and AM) - NA

**Table 4** Monitoring methodology (PDD Section D and AM) - NA

**Table 5** Monitoring plan (PDD Annex 4)- NA

**Table 6** Environmental Impacts (Ref PDD Section F and relevant local legislation) - NA

**Table 7** Comments by local stakeholders (Ref PDD Section G) - NA

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
7.1 Have relevant stakeholders been consulted?	PDD/ Letters	DR Site visit	Yes. It was confirmed on site by document review. See also NIR 6.	Ok	Ok
7.2 Have appropriate media been used to invite comments by local stakeholders?	PDD/ Letters	DR	Yes, verified the letters sent in local language to local stakeholders.	Ok	Ok
7.3 If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	PDD/ Letters	DR	<u>NIR 6</u> : It was not possible to check during the desk study if the stakeholder consultation process was carried out in accordance with the DNA requirements. The PDD did not provide a list of the stakeholders consulted, detailing the names of the organizations and agencies contacted.  NIR 6 closing out details: During the site visit, it was verified the complete list of names of the local stakeholders consulted.	NIR 6	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			The letters sent to local stakeholders were verified and the receipts of the mailing were available. The complete list of stakeholders was included in the revised PDD (version 2). <u>NIR 6 was closed out.</u>		
7.4 Is a summary of the stakeholder comments received provided?	PDD	DR	During the site visit, it was presented one comment from the Municipal Chamber of Manuel Ribas.	Ok	Ok
7.5 Has due account been taken of any stakeholder comments received?	PDD	DR	The presented comments were positive, emphasizing the project will contribute to the local sustainable development. It was included in the section E.2 of revised PDD.	Ok	Ok

**Table 8 Other requirements**

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
<b>8.1 Project Design Document</b>					
8.1.1 Editorial issues: does the project correctly apply the PDD template and has the document been completed without modifying/adding headings or logo, format or font.	PDD	DR	Yes, it was correctly applied.	Ok	Ok
8.1.2 Substantive issues: does the PDD address all the specific requirements under each header. If requirements are not applicable / not relevant, this must be stated and justified	PDD	DR	Yes, it was correctly applied.	Ok	Ok
<b>8.2 Technology to be employed</b>					
8.2.1 Does the project design engineering reflect current good practices?	PDD	DR/ Site Visit	Yes.	Ok	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
8.2.2 Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	PDD	DR/I Site Visit	It is the technology applied for small hydroelectric plants (run-of-river power plant).	Ok	Ok
8.2.3 Is the project technology likely to be substituted by other or more efficient technologies within the project period?	PDD	DR/I	It was not expected.	Ok	Ok
8.2.4 Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	PDD	DR/I	No. The power generation is the core business of the Cristalino and the required abilities are part of the routine of the plant.	Ok	Ok
<b>8.3 Duration of the Project/ Crediting Period</b>					
8.3.1 Are the project's starting date and operational lifetime clearly defined and reasonable?	PDD	DR	Starting date: 09/08/2005 Lifetime: 25 years.	Ok	Ok
8.3.2 Is the assumed crediting time clearly defined and reasonable (renewable crediting period of max. two x 7 years or fixed crediting period of max. 10 years)?	PDD	DR	Yes, renewable period of 7 years.	Ok	Ok
8.3.3 Does the project's operational lifetime exceed the crediting period	PDD	DR	Yes. The operational lifetime is 25 years.	Ok	Ok

**Table 9 Additional requirements for SSC projects**

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
SSC projects use the SSC PDD and simplified baseline and monitoring methodologies as detailed in Appendix B (to the Modalities and Procedures for Small scale CDM projects, Annex II to Decision 21/CP.8) Indicative simplified baseline and monitoring methodologies for selected small scale CDM project activity categories					
9.1 Does the project qualify as a small scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM?	PDD	DR	Yes, renewable energy generation for a grid with installed capacity of 4.0 MW (lower than 15 MW - the limit for small scale projects).	Ok	Ok
9.2 The project conforms to one of the categories listed in Appendix B to	PDD	DR	Yes, ID – Grid connected renewable electricity	Ok	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
Annex II to Decision 21/CP8			generation.		
9.3 The small scale project activity is not a debundled component of a larger project activity?	PDD	DR/I	Verified during site visit and checking the information available at UNFCCC website. The project activity is not debundled of a larger activity, there is no other project registered in the same place.	Ok	Ok
9.4 PDD has been prepared in accordance with appendix A of Annex II to Decision 21/CP8	PDD	DR	Yes, the current version is correctly applied.	Ok	Ok
9.5 The project uses a simplified baseline and monitoring methodology specified in Appendix B. If not, they may propose changes to the meths or a new SSC project category	PDD	DR	The project applied AMS type I, renewable energy projects. Category I.D – grid connected renewable electricity generation, version 11 (18/05/2007).	Ok	Ok
9.6 Is there any bundling of SSC activities into one PDD? If so, does the monitoring plan consider sampling of activities? Refer to para 19 of Annex II. Also, note bundling provisions in SSC Briefing Note and SSC meths I C / I D and III D and Para 22e of Appendix B	PDD	DR	No.	Ok	Ok
9.7 Is EIA required by host party? If not, none is required irrespective of SHC. If yes, has one been performed consistent with local requirements?	PDD	DR	NIR 4: No references or source of information was provided for the following statement in section D.2: <i>“The environmental impacts associated with the project activity are modest because the regional topography allows the dam to be naturally contained in a valley. Furthermore, this valley has a low demographic and land use rate”</i> . Is this from an environmental evaluation or other document mentioned in the section D.1 (as the Environmental Basic Project ( <i>Projeto</i>	NIR 4	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			<p><i>Básico Ambiental</i>, PBA) or Preliminary Environmental Assessment?)</p> <p><u>NIR 4 closing out details:</u> The environmental licenses (ref. 9 and 10) and the Environmental Control Plan (ref. 8) were verified during the site visit and are in compliance with the applicable requirements. Regarding to the information about “environmental impacts...” the sponsor had not documented evidence about this affirmation so it was excluded of the revised PDD (version 2). <u>NIR 4 was closed out.</u></p>		
<p>9.8 The project results in emission reductions that area additional in accordance with the following requirements:</p> <p>(para 26) The project is additional if emissions are reduced below those in the absence of the project</p> <p>(Para 27) Simplified baseline can be used; if not, baseline proposed shall cover all gases, sectors and sources listed in Annex A to the KP</p> <p>Para 28) One or more barriers as detailed in attachment A to Appendix B to Annex II will be used to demonstrate that the project would not proceed without the CDM</p>	PDD	DR	<p><u>CAR 2:</u> From the discussion provided in the PDD, it was not possible to conclude if the project is additional under the CDM rules. The project did not apply the Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM projects activities and decided to use the “Tool for the demonstration and assessment of additionality”. The discussion of additionality was not clear and was not supported by objective evidences and information. The step 3 “Barrier analysis” was not clear; there was a lot of descriptive information and the discussion was</p>	<p>CAR 2</p> <p>NIR 8</p>	Ok

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			<p>not linked objectively to the Cristalino hydroelectric project. It was not clearly demonstrated that the identified barriers are prohibitive to the project but not for the alternatives.</p> <p>The discussion of “Prevailing Business Practice” under the Step 3 is confused. The complete sources of information used to support the Step 4 were not provided in the PDD (it is only mentioned “Agência Nacional de Energia Elétrica (ANEEL)” , but it was not provided the complete source or the names and dates of the documents consulted).</p> <p>The conclusion in the page 21 is similar to the old “Step 5” of the version 2 of the “Tool” and included confused information, not supported by the barriers analysis provided in the PDD (as the conclusion: “<i>An increase of approximately 100 to 200 basis points (???) , derived from CERs, would be an important factor in determination to start such project</i>”...).</p> <p><u>To close out CAR 2:</u> The PDD was revised (see version 2). The “Tool”, used in the version 1, was replaced by the Attachment A to Appendix B. The references mentioned to support the discussion were included</p>		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			<p>in the PDD. Barrier due to Prevailing Practice was used by project developer to discuss the additionality. The discussion was based on the small participation of small hydro plants in Brazilian power market. From this discussion, it was demonstrated that the small hydroelectric power plants are not a business-as-usual scenario (the information provided in the revised PDD, version 2, was confirmed at Aneel website). <u>CAR 2 was closed out.</u></p> <p><u>NIR 8:</u> During the site visit it was verified that the project was financed (80% of the total investments) by the Banco Regional de Desenvolvimento do Extremo - BRDE. This information was not transparent in the PDD version 1, nothing was mentioned about this financing in the discussion of the financial barriers. Considering this fact, it should be justify why the project faced the lack of local long-term financing.</p> <p>The discussion of additionality was revised (PDD version 2), see also closing out details of CAR 2. It was concluded that the financial barrier was not the strongest barrier faced by the project, as</p>		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			the sponsor had access to financing of 80% of the costs of the plant. The project proponents decided to discuss the barrier of the "Prevailing Business Practice". The information about the financial barriers was excluded of the PDD. <u>NIR 8 was closed out.</u>		
9.9 Leakage is calculated according to the provisions of the SSC methodologies in Appendix B ( <a href="http://cdm.unfccc.int/Projects/pac/ssclistmeth.pdf">http://cdm.unfccc.int/Projects/pac/ssclistmeth.pdf</a> )	PDD	DR	Leakage is not applicable.	Ok	Ok
9.10 The project boundary shall be constructed in accordance with the requirements of the SSC meths in Appendix B	PDD	DR	The boundary of project activities encompasses the Cristalino plant and the South-Southeast-Midwest national system.	Ok	Ok
9.11 The Monitoring plan shall be consistent with the requirements of the SSC methodology in Appendix B and shall provide for the collection and archiving of data needed to determine project emissions, baseline emissions and leakage.	PDD	DR	<p><u>NIR 3:</u> The description of the Monitoring Plan (section B.7.2, page 29 of PDD) was not complete. The organizational chart indicates the management/operational structure, but no information about responsibilities and activities to be performed by the personnel was provided.</p> <p>It was verified on-site that there is no procedure for monitoring implemented. <u>CAR 09 was raised.</u></p> <p>CAR 09 closing out details: The work instruction OP 004466, Vol 1, 21/02/2005 was verified.</p> <p>It was identified that the responsible for the project is manager of the Cristalino project. Copies</p>	NIR 3 CAR 9	Ok Obs. 1



CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			of the calibration certificates of the meters installed were provided: EXAUT (Energia e Automação), issued on 09/06/2005 referring to the SAGA 1000 meters serial numbers 504455 and 504456 (Ref.3) It was informed that the meters will be calibrated each 3 years. The revised PDD (version 2) included additional information regarding the monitoring plan. <u>CAR 09 was closed out and the Observation (1) was raised:</u> <u>Observation 1:</u> procedures required to implement the monitoring plan shall be completely prepared and in place before the starting date of the crediting period.		
9.12 The monitoring plan shall present good monitoring practice appropriate to the circumstances of the project activity (para 33)	PDD	DR	See NIR 3 and CAR 9	NIR 3 CAR 9	Ok Obs.1
9.13 If project activities are bundled, separate monitoring plan shall be prepared for each of the activities or an overall plan reflecting good monitoring practice will be prepared, consistent with the above requirements	PDD	DR	The project is not bundled.	Ok	Ok

**Table 10 Additional requirements for AR projects**

**Table 11 Additional requirements for SSC AR projects**

**Table 12 Additional information to be verified by local assessors / site visit (see Annex 1 – Local checklist)**

## ANNEX 3 - FINDINGS OVERVIEW

### FINDINGS FROM VALIDATION OF CRISTALINO SMALL HYDROELECTRIC POWER PLANT– VAL0950 - 02

Each Table below represents a finding from the validation assessment. The findings are numbered consecutively, approximately in the order that they have been identified.

Description of table:

Type	Findings are either New Information Requests (NIR) or Corrective Action Requests (CAR). CARs are items that must be addressed before a project can receive a recommendation for registration. NIRs may lead to the raising of CARs. Observations are included at the end and may or may not be addressed. They are primarily to act as signposts for the verifying DOE.
Issue	Details the content of the finding
Ref	refers to the item number in the Validation Protocol
Response	Please insert response to finding, starting with the date of entry.

Rows for comments and further response will be appended to the table until the Findings has been addressed to the satisfaction of the Lead Assessor.

Please note that this is an open list and more findings may be added as validation progresses.

Date: 23/05/2007

Raised by: Aurea Nardelli

No.	Type	Issue	Ref
1	CAR	In some pages of the PDD, the project is referenced as “FAXSHP project”, which is not the correct name.	1.11
Date: 25/06/2007 [Comments]: In the new version (02) these mistakes were corrected.			
Date: 27/07/2007 – Aurea Nardelli [Acceptance and close out]: The revised PDD was addressed the mistake. CAR 1 was closed. out.			

Date: 23/05/2007

Raised by: Aurea Nardelli

No.	Type	Issue	Ref
2	CAR	From the discussion provided in the PDD, it was not possible to conclude if the project is additional under the CDM rules. The project did not apply the Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM projects activities and decided to use the “Tool for the demonstration and assessment of additionality”. The discussion of additionality was not clear and was not supported by objective evidences and information. The step 3 “Barrier analysis” was not clear; there was a lot of descriptive information and the discussion was not linked objectively to the Cristalino hydroelectric project. It was not clearly demonstrated that the identified barriers are prohibitive to the project but not for the alternatives.	9.8

		<p>The discussion of “Prevailing Business Practice” under the Step 3 is confused. The complete sources of information used to support the Step 4 were not provided in the PDD (it is only mentioned “Agência Nacional de Energia Elétrica (ANEEL)”, but it was not provided the complete source or the names and dates of the documents consulted).</p> <p>The conclusion in the page 21 is similar to the old “Step 5” of the version 2 of the “Tool” and included confused information, not supported by the barriers analysis provided in the PDD (as the conclusion: “<i>An increase of approximately 100 to 200 basis points (???)</i>, derived from CERs, would be an important factor in determination to start such project”...).</p>	
<p>Date: 25/06/2007</p> <p>[Comments]: The project is now applying the Attachment A to Appendix B of the simplified modalities and procedures for small-scale CDM project activities. The explanation regarding the Brazilian electricity market in the last years and the presented barriers, such as</p> <ul style="list-style-type: none"> <li>- Investment Barrier (Long-term funding)</li> <li>- Institutional Barrier</li> <li>- Prevailing Business Practice. Aneel’s complete data source was provided: (Capacidade Geração Brasil) clearly demonstrates that CristalSHP is not a business-as-usual scenario in a country where large hydro and thermal fossil fuel projects are preferable. With the financial benefit derived from the CERs, it is anticipated that the project developer would benefit from this new source of revenues and would then decide to develop such project. The paragraph: “An increase of approximately 100 to 200 ...” it was excluded of the current version of the PDD.</li> </ul>			
<p>Date: 27/07/2007 – Aurea Nardelli</p> <p>[Acceptance and close out]: The PDD was revised (see version 2). The “Tool”, used in the version 1, was replaced by the Attachment A to Appendix B. The references mentioned to support the discussion were included in the PDD. Barrier due to Prevailing Practice was used by project developer to discuss the additionality. The discussion was based on the small participation of small hydro plants in Brazilian power market. From this discussion, it was demonstrated that the small hydroelectric power plants are not a business-as-usual scenario (the information provided in the revised PDD, version 2, was confirmed at Aneel website). CAR 2 was closed out.</p>			

Date: 23/05/2007

Raised by: Aurea Nardelli

No.	Type	Issue	Ref
3	NIR	The description of the Monitoring Plan (section B.7.2, page 29 of PDD) was not complete. The organizational chart indicates the management/operational structure, but no information about responsibilities and activities to be performed by the personnel was provided.	9.11/9.12
<p>Date: 25/05/2007</p> <p>[Comments]: The PDD will be updated, including more detailed information regarding the monitoring activities and the equipment system.</p>			
<p>Date: 28/05/2007 – Aurea Nardelli</p> <p>[Acceptance and close out]: Detailed information (procedures, calibration certificates) was not available during the site visit. CAR 09 was raised.</p>			

Date: 23/05/2007

Raised by: Aurea Nardelli

No.	Type	Issue	Ref
4	NIR	No references or source of information was provided for the following statement in section D.2: <i>"The environmental impacts associated with the project activity are modest because the regional topography allows the dam to be naturally contained in a valley. Furthermore, this valley has a low demographic and land use rate"</i> . Is this from an environmental evaluation or other document mentioned in the section D.1 (as the Environmental Basic Project ( <i>Projeto Básico Ambiental</i> , PBA) or Preliminary Environmental Assessment?)	9.7

Date: 25/06/2007

[Comments]: The environmental impact information stated above was informed by the sponsor, and it was verified during on-site visiting.

Date: 27/07/2007 – Aurea Nardelli

[Acceptance and close out]: The environmental licenses and the Environmental Control Plan were verified during the site visit and are in compliance with the applicable requirements. Regarding to the information about "environmental impacts..." the sponsor had not documented evidence about this affirmation so it was excluded of the revised PDD (version 2). NIR 4 was closed out.

Date: 23/05/2007

Raised by: Aurea Nardelli

No.	Type	Issue	Ref
5	NIR	The PDD did not clearly reflect all the information presented during the validation assessment. It is informed in the Annex 4 that a spreadsheet model was developed for the project (an electronic worksheet will be complete on a monthly basis and will automatically provide annual totals in terms of GHG reductions achieved by the project). This spreadsheet was not available to the validation team during the desk study.	1.10/9.1 2

Date: 25/06/2007

[Comments]: The requested spreadsheet is being sent to SGS.

Date: 27/07/2007 – Aurea Nardelli

[Acceptance and close out]: The spreadsheet was prepared and sent to the validation team (ref. 11 of the validation report). It was not in use yet, as there is not monitoring data. NIR 5 was closed out.

Date: 23/05/2007

Raised by: Aurea Nardelli

No.	Type	Issue	Ref
6	NIR	It was not possible to check during the desk study if the stakeholder consultation process was carried out in accordance with the DNA requirements. The PDD did not provide a list of the stakeholders consulted, detailing the names of the organizations and agencies	7.3

		contacted.	
Date: 25/06/2007			
[Comments]: The invited entities were included in the PDD			
Date: 27/07/2007 – Aurea Nardelli			
[Acceptance and close out]: The complete list of local stakeholders invited was checked during the site visit. Documented evidences of the mailing were presented and it was possible to confirm that the stakeholder consultation was performed as required by Brazilian DNA requisites. The version 2 of PDD included the list with the names of the organizations. NIR 6 was closed out.			

Date: 23/05/2007

Raised by: Aurea Nardelli

No.	Type	Issue	Ref
7	NIR	It was not possible to verify the baseline information provided in the Annex 3 of PDD. The complete spreadsheets with data and formulas used for calculation of the EF grid were not available for the validation team during the desk study.	1.11
Date: 25/06/2007			
[Comments]: The requested spreadsheets were sent to SGS, on 04 may 2007. These worksheets are being sent to SGS.			
Date: 27/07/2007 – Aurea Nardelli			
[Acceptance and close out]: The data were verified on-site by the local assessor. In addition, the spreadsheet with formulas and data was provided to the validation team. It was confirmed that the EF calculation used the data available from official sources (ONS) and followed the methods defined by ACM0002. The EF used for baseline emissions estimative (EF=0.2611 tCO <sub>2</sub> e) was confirmed. NIR 7 was closed out.			

Date: 28/05/2007

Raised by: Aurea Nardelli

No.	Type	Issue	Ref
8	NIR	During the site visit it was verified that the project was financed (80% of the total investments) by the Banco Regional de Desenvolvimento do Extremo - BRDE. This information was not transparent in the PDD, nothing was mentioned about this financing in the discussion of the barriers. Considering this fact, please justify why the project faced the lack of local long-term financing.	9.8
Date: 25/06/2007			
[Comments]: The sponsor informed that the project has been 80% of the total investment financed. For obtaining this financing, the PPs were obligated to offer any other guarantee, such as landed properties. Moreover, if the project had not obtained any financing, the difficulties to obtain long term funding as explained, would have lead to consider that there is a barrier. Therefore, the PPs would have to invest their own capital (if available).			
Date: 27/07/2007 – Aurea Nardelli			
[Acceptance and close out]: The discussion of additionality was revised (PDD version 2), see also closing out details of CAR 2. It was concluded that the financial barrier was not the strongest barrier faced by the project, as the sponsor had access to financing of 80% of the costs of the			

plant. The project proponents decided to discuss the barrier of the "Prevailing Business Practice". The information about the financial barriers was excluded of the PDD. NIR 8 was closed out.

Date: 28/05/2007

Raised by: Aurea Nardelli

No.	Type	Issue	Ref
9	CAR	During the site visit it was verified that the procedures required for the implementation of good monitoring practices were not prepared. There is no mention in the PDD about procedures for data collection, maintenance and/or calibration of meters and for archiving of data related to the CDM project.	9.11/9.12

Date: 25/06/2007

[Comments]: The PDD was updated, and it included more detailed information regarding the monitoring activities and the equipment system. Some issues were clarified during the site visit.

Date: 27/07/2007 – Aurea Nardelli

[Acceptance and close out]: The work instruction OP 004466, Vol 1, 21/02/2005 was verified. It was identified that the responsible for the project is manager of the Cristalino project. Copies of the calibration certificates of the meters installed were provided: EXAUT (Energia e Automação), issued on 09/06/2005 referring to the SAGA 1000 meters serial numbers 504455 and 504456 (Ref.3 of the validation report). It was informed that the meters will be calibrated each 3 years. The revised PDD (version 2) included additional information regarding the monitoring plan. CAR 09 was closed out and the Observation (1) was raised.

Date: 26/07/2007

Raised by: Geisa Principe/Aurea Nardelli

No.	Type	Issue	Ref
10	CAR	No letter of approval from Annex I country, United Kingdom, was provided to the validator.	1.1

Date: 29/07/2007

[Comments]: The letter of approval is being provided, and it will be presented at the time of requesting registration.

Date:

[Acceptance and close out]:

Observation 1: Procedures required to implement the monitoring plan shall be completely prepared and in place before the starting date of the crediting period.