VALIDATION REPORT

PESQUEIRO ENERGIA SMALL HYDROELECTRIC PROJECT IN BRAZIL

REPORT NO. 2005-0595

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DET NORSKE VERITAS

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VALIDATION REPORT

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Summary:

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the "Pesqueiro Energia Small Hydroelectric Project –PESHP" (hereafter called "the project") in 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 modalities and procedures, the simplified modalities and procedures for small-scale CDM project activities and the subsequent decisions by the CDM Executive Board.

The validation consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan, ii) follow-up interviews with project stakeholders and iii) the resolution of outstanding issues and the issuance of the final validation report and opinion. This validation report summarizes the findings of the validation.

In summary, it is DNV Certification's opinion that the "Pesqueiro Energia Small Hydroelectric Project – PESHP" as described in the revised PDD of June 2005, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the simplified baseline and monitoring methodology for type I.D small-scale CDM project activities. Hence, DNV will request the registration of the" Pesqueiro Energia Small Hydroelectric Project –PESHP" as CDM project activity. Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive the written approval of the DNA of Brazil, including confirmation that the project assists in achieving sustainable development.

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Work carried out by: Luis Filipe Tavares, Cintia Dias	
Work verified by: Michael Lehmann	

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Abbreviations

ANEEL	Agência Nacional de Energia Elétrica (Brazilian National Electricity Agency)
BM	Build margin
BNDES	Brazilian Bank for Development
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEF	Carbon Emission Factor
CER	Certified Emission Reduction
CH_4	Methane
CL	Clarification request
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
COPEL	Companhia de Energia Elétrica do Paraná
DNV	Det Norske Veritas
DNA	Designated National Authority
GHG	Greenhouse gas(es)
GWP	Global Warming Potential
IAP	Environment Paraná State Institute
IPCC	Intergovernmental Panel on Climate Change
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
NGO	Non-governmental Organisation
ODA	Official Development Assistance
ONS	Brazilian National Electric System Operator
PDD	Project Design Document
PESHP	Pesqueiro Energia Small Hydroelectric Project
S/SE/MW	South/ Southeast/Midwest (one of two regional grids in Brazil)
SE	Electrical Sub Station
UNFCCC	United Nations Framework Convention on Climate Change

1 INTRODUCTION

Pesqueiro Energia S.A. has commissioned Det Norske Veritas Certification Ltd. (DNV) to validate the "Pesqueiro Energia Small Hydroelectric Project (PESHP)", at Jaguariaíva Municipality; Paraná State, Brazil, (hereafter called "the project").

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

The validation team consists of the following personnel:

Mr. Luis Filipe Tavares	DNV Rio de Janeiro	Team leader
Ms. Cintia Dias	DNV Rio de Janeiro	CDM auditor
Mr. Michael Lehmann	DNV Oslo	Energy sector expert, Technical reviewer

1.1 Validation Objective

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, and the project's compliance with relevant UNFCCC and host Party criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the 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).

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document (PDD). The PDD is reviewed against the criteria stated in Article 12 of the Kyoto Protocol, the CDM modalities and procedures as agreed in the Marrakech Accords and the relevant decisions by the CDM Executive Board. The validation team has, based on the recommendations in the Validation and Verification Manual /4/, employed a risk-based approach, 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 project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

1.3 Pesqueiro Energia Small Hydroelectric Project

The project is located in the South of Brazil. The project consists of a run-of-river small-hydro power plant (12.44 MW) and a small reservoir (0.33 km²) located in the Jaguariaíva River, in the city of Jaguariaíva, state of Paraná. The project has already been implemented and started operation 27 January 2003. It delivers about 80 000 MWh/year to the South-Southeast-Midwest interconnected grid, with an estimated minimum capacity factor of 75%. The entrepreneurship is a joint venture owned by three agricultural cooperatives.

Emission reductions are claimed from displacing grid electricity with electricity generated by the small hydroelectric power plant and supplied to the grid. The estimated amount of GHG emission reductions from the project is 291 434 tCO_2e during the first crediting period (7 years), resulting in estimated average annual emission reductions of 41 633 tCO_2e.

2 METHODOLOGY

The validation consisted of the following three phases:

I a desk review of the project design documents;
II follow-up interviews with project stakeholders;
III the resolution of outstanding issues and the issuance of the final validation report and opinion.

In order to ensure transparency, a validation protocol was customised for the project, according to the Validation and Verification Manual /4/. 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 three tables. The different columns in these tables are described in Figure 1.

The completed validation protocol for the "Pesqueiro Energia Small Hydroelectric Project" is enclosed in Appendix A to this report. Findings established during the validation can either be seen as a non-fulfilment of validation protocol criteria or where a risk to the fulfilment of project objectives is identified. Corrective Action Requests (CAR) are 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 certified.

The term Clarification may be used where additional information is needed to fully clarify an issue.

Validation Protocol Table 1: Mandatory Requirements for CDM Project Activities			
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)** of risk or non-compliance with stated requirements or a request for **Clarification (CL)** where further clarifications are needed.*	*Used to refer to the relevant checklist 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 seven different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.	*Gives reference to documents where the answer to 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).A request for **Clarification (CL)** is used when the validation team has identified a need for further clarification.*

Validation Protocol Table 3: Resolution of Corrective Action Requests and Requests for Clarification			
Draft report corrective action requests and requests for clarifications	***Ref. to Table 2***	***Summary of project participants' response***	***Final conclusion***
If the conclusions from the draft 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 Table 2 where the Corrective Action Request or Clarification Request is explained.*	*The responses given by the 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 Table 2, under "Final Conclusion".*

Figure 1 Validation protocol tables

2.1 Review of Documents

The PDD (version 1 of April 2005) /1/ submitted by Pesqueiro Energia S.A. and Ecoinvest in April 2005 and a revised version of the PDD /2/ submitted in June 2005 was reviewed by DNV. In addition, a spreadsheet containing calculations of the Combined Margin (ONS Emission Factor SSECO) /3/ was reviewed.

Other documents, such as the Environmental Impact Assessment, the Environmental Licences and licence requirements as well as the letters sent to local stakeholders, were reviewed during the follow up interviews in order to ensure the accuracy of the relevant information.

2.2 Follow-up Interviews

DNV performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Pesqueiro Energia S.A. /9//10/ and Ecoinvest /8/ were interviewed on 13 June 2005.

The main topics of the interviews were:

- Environment licenses and legal compliance;
- Local Stakeholders invitation to comments;
- Additionality of the project;
- Cash flow analysis and IRR;
- Baseline emission calculations;
- Calibration requirements;
- Monitoring, reporting and QA/QC procedures.

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation was to resolve the requests for corrective actions and clarification and any other outstanding issues which needed to be clarified for DNV's positive conclusion on the project design.

The initial validation of the project identified three *Corrective Action Requests.* These *Corrective Action Requests* were presented to the project participant in DNV's draft validation report of 3 May 2005 (rev. 0). The project participant's response to DNV's draft validation report findings, including the submission of a revised PDD in June 2005, addressed the *Corrective Action Requests* to DNV's satisfaction. To guarantee the transparency of the validation process, the concerns raised are documented in Table 3 of the validation protocol in Appendix A.

3 VALIDATION FINDINGS

The findings of the validation are stated in the following sections. The validation criteria (requirements), the means of verification and the results from validating the identified criteria are documented in more detail in the validation protocol in Appendix A.

The validation findings relate to the project design as documented and described in the PDD of June 2005 /2/.

3.1 Participation Requirements

The project participant is Pesqueiro Energia S.A of Brazil. The host Party Brazil meets all relevant participation requirements. No Annex I Party is yet identified for the project.

3.2 Project Design

The project consists of a run-of-river small hydro power plant with two simple Francis turbines with total 12.44 MW generation capacity and a small reservoir of 0.33 km^2. The project design engineering seems to reflect current good practice.

Electricity generated will be dispatched to the regional grid. The project is a renewable energy project activity with an output capacity of less than 15 MW and is thus eligible as type I.D small-scale CDM project activity (*Renewable Energy Projects / Renewable electricity generation for a grid*) as outlined in Appendix B of the simplified modalities and procedures for a small-scale CDM project activities /5/. The project is not a debundled component of a larger project activity.

A renewable seven years crediting period is selected, starting on 27 January 2003. The expected operational lifetime of the project is 25 years.

The project is expected to bring social (employment,), environmental (fauna and flora preservation) and economic benefits, thus contributing to sustainable development objectives of the Brazilian Government.

The validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards Brazil.

3.3 Project Baseline and Additionality

The project applies the simplified baseline methodology for type I.D small-scale CDM project activities (AMS-I.D) /5/. This category is applicable as the project consists of a renewable energy generation unit that supplies electricity to an electricity distribution system (i.e. the South-Southeast-Midwest interconnected grid of Brazil) that is supplied by at least one fossil fuel generating unit. The baseline emission coefficient is determined as the average of the approximate operating margin (OM) and the build margin (BM), i.e. the combined margin, in accordance with AMS-I.D. Average plant efficiencies for different power plant types established in an IEA study on the Brazilian grid /7/ and IPCC carbon emission factors for specific fuels were applied to calculate plant specific emission coefficients.

The additionality of the project is demonstrated by applying the "Tool for the demonstration and assessment of additionality" /6/: The application of the tool for the demonstration and assessment of additionality instead of the barrier analysis required for small-scale CDM projects is appropriate as the tool includes a barrier analysis and provides further elements that improve the

demonstration of the additionality. The "Tool for the demonstration and assessment of additionality" is applied as follows:

Step 0: The starting date of the CDM project activity, i.e. January 2003, falls between 1 January 2000 and the date of the registration of the first CDM project activity (November 2004). Evidence of the starting date was verified in the follow-up interviews through an ANEEL letter confirming that the start-up of PCH Pesqueiro was on 27 January 2003. Evidence that that the CDM was seriously considered as the factor in the decision to implement the project was presented in the form of a confidentiality agreement between Pesqueiro Energia S.A. and a company that trades carbon credits signed in August 2002.

Step 1: The possible baseline scenarios considered are to: a) invest the surplus capital in the financial market and b) invest in and install a new electricity generator as a run-of-river facility in order to be able to supply electricity to the grid. Both scenarios are in compliance with all applicable legal and regulatory requirements.

Step 2: Not applicable (Only step 3 is selected)

Step 3. Investment barriers, institutional barriers and barriers due to prevailing practice are presented. DNV was able to confirm that the Brazilian market lacks availability of long-term capital. The project does not qualify for the Proinfa program and thus the whole investment had to be raised through private equity even though the IRR is only around 17%. DNV was also able to confirm that the regulatory environment for the electricity sector changes a lot and often in Brazil, which causes uncertainties for developers of small hydropower projects. Finally, the former government's thermoelectricity priority plan did not foster small hydropower plants. In conclusion, it is sufficiently demonstrated that project faces barriers and can thus be seen as additional.

Step 4: Small hydro-electricity projects are not common practice in Brazil.

Step 5: It is demonstrated that the sale of CERs will provide the necessary incentives for the project to overcome the presented barriers.

3.4 Monitoring Plan

The project applies the monitoring methodology established according to the simplified monitoring methodology for type I.D small-scale CDM project activities (AMS-I.D). The main parameter is to meter the electricity generated and supplied to the grid.

Detailed monitoring procedures, including responsibilities for project management, procedures for QA/QC of monitoring reports and calibration, although not described on the PDD, have been developed and were verified during follow-up interviews and were considered adequate.

3.5 Calculation of GHG Emissions

Project emissions are considered zero for this project. The calculations of baseline emissions are established according to paragraph 7 of AMS I.D. which is the kWh produced by the hydroelectric power plant multiplied by an emission coefficient (kg CO_2e/kWh) calculated as the average of the "approximate operating margin" and the "build margin". The system boundaries are the S/SE/MW regional Brazilian grid.

The combined margin emission coefficient is calculated as 0.5211 tCO_2e/MWh. To calculate this emission coefficient, the project uses generation data for the years 2001 to 2003 from ONS for 120 generations units dispatched centrally by ONS in the South/Southeast/Midwest (S/SE/MW)

interconnected grid. The ONS dataset does not include power plants that are locally dispatched. Data for the years 2001-2003 are the most recent statistics available and the data was verified against the data published on the ONS website. 2004 data was not publicly available at the time of writing the PDD.

It is justified to only include plants dispatched by ONS although they only represent about 80% of the total installed capacity. Data for the remaining plants is not publicly available. Also, these plants operate either based on power purchase agreements which are not under control of the dispatch authority, or they are located in non-interconnected systems to which ONS has no access. Hence, these plants are not likely to be affected by a CDM project and the power plants dispatched by ONS are thus representative for the operating margin.

The build margin emission coefficient is correctly calculated considering the 20% capacity additions of the most recently installed plants dispatched by ONS.

Even though the S/SE/MW grid is connected with the North-Northeast grid, the energy flow between these grids is heavily limited by the transmission lines capacity. Given the relative small capacity of the project, it is hence deemed appropriate to consider data on the S/SE/MW grid only.

3.6 Environmental Impacts

Pesqueiro Energia has been granted the Operational Environmental License number 08408 issued by the state Environmental State Agency (IAP-Instituto Ambiental do Paraná) on 6 September 2002. The permit was issued after an analysis of possible environmental impacts, i.e. geological and soil, hydrological, flora and fauna impacts. As the project uses a small reservoir only and can be considered as a run-of-river hydropower plant, no significant impacts are foreseen nor identified.

3.7 Comments by Local Stakeholders

Local stakeholders were invited initially trough public discussion during the environmental license issuing process. No comments were received.

In addition, local stakeholders, such as the Municipal Government, the state and municipal agencies, the Brazilian forum of NGOs, neighbouring communities and the office of the attorney general, were invited to comment on the project, in accordance with the requirements of Resolution 1 of the Brazilian DNA. The letters sent to the local stakeholders were verified during site visit. No comments were received.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

DNV Certification published the PDD of April 2005 on the DNV Climate Change web site (http://www.dnv.com/certification/ClimateChange) and Parties, stakeholders and NGOs were, through the UNFCCC CDM web site, invited to provide comments within a 30 days period from 30 April 2005 to 30 May 2005.

One comment was received on 02 May 2005. The comment received (in unedited form) is given in the below text box.

Comment by:	Axel Michaelowa, Hamburg Institute of International Economics (HWWA)
Inserted On:	2005-05-02
Subject:	Baseline fuel use data-PESP
Comment:	The IEA study referred to regarding power plant fuel use data in the PDD is outdated. Actual fuel use data should be used

***DNV's response**:*

The project uses actual generation data for the years 2001 to 2003 for 120 generation units dispatched centrally by ONS in the S/SE/MW grid. Actual fuel use data is not publicly available in Brazil due to competitive concerns. The project does not apply the IEA study's fuel data. It only applies the average plant efficiencies for different power plant types established in the IEA study. Together with IPCC carbon emission factors for specific fuels these are multiplied by the actual electricity generation to arrive at the total CO_2 emissions. In the absence of publicly available fuel use data in Brazil, the use of average plant efficiencies for different power plant types established in the IEA study and IPCC carbon emission factors for specific fuels are deemed appropriate.

5 VALIDATION OPINION

Det Norske Veritas Certification Ltd. (DNV) has performed a validation of the "Pesqueiro Energia Small Hydroelectric Project –PESHP" at Jaguariaíva Municipality; Paraná State, Brazil, (hereafter called "the project"). The validation was performed on the basis of UNFCCC criteria for small-scale CDM project activities and relevant Brazilian criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The project participant is Pesqueiro Energia S.A. No Annex I Party is yet identified for the project. Brazil meets the requirements to participate in the CDM.

The run-of-river small hydro power plant with a capacity of 12.44 MW and with a small reservoir is not expected to have considerable environmental impacts. An Environmental Impact Study as required by Brazilian law has been carried out and the project has received the environmental licences by IAP.

By promoting renewable energy, the project is in line with the current sustainable development priorities of Brazil.

Being a renewable energy project activity with an output capacity of less than 15 MW, the project meets the criteria for Renewable electricity generation for the grid (Category I.D) small-scale CDM project activities as defined in Appendix B of the simplified modalities and procedures for small-scale CDM project activities.

A combined margin emission coefficient of 0.5211 tCO2e/MWh is calculated in accordance with the simplified baseline methodology for category I.D small-scale CDM project activities, i.e. the average of the approximate operating margin and the build margin. The determination of this combined margin emission coefficient is based on actual electricity generation data provided by the National Electricity System Operator (ONS) for the years 2001- 2003 in the South/Southeast/Midwest grid.

The additionality of the project is demonstrated through a barrier test. The presented barriers demonstrate that the project is not a likely baseline scenario.

By displacing fossil fuel-based electricity, the project results in reductions of CO_2 emissions that are real, measurable and give long-term benefits to the mitigation of climate change. Given that the project is operated as designed, the project is likely to achieve the estimated amount of emission reductions.

The monitoring plan sufficiently specifies the monitoring requirements.

In summary, it is DNV's opinion that the "Pesqueiro Energia Small Hydroelectric Project – PESHP" as described in the revised and resubmitted project design document of June 2005, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology for category I.D small-scale CDM project activities. Hence, DNV will request the registration of the" Pesqueiro Energia Small Hydroelectric Project –PESHP" as CDM project activity.

Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive the written approval of the DNA of Brazil, including confirmation that the project assists in achieving sustainable development.

REFERENCES

Documents provided by the project proponent that relate directly to the project:

/1/ Project Design Document for the Pesqueiro Energia Small Hydroelectric Project (PESHP). Version 1 (April 2005)

/2/ Project Design Document for the Pesqueiro Energia Small Hydroelectric Project (PESHP). Version 2 (June 2005)

/3/ Spreadsheet of Calculation of Combined Margin (ONS Emission Factor SSECO 2001-2003 v 2005-06-22)

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

/4/ International Emission Trading Association (IETA) & the World Bank's Prototype Carbon Fund (PCF): *Validation and Verification Manual*. http://www.vvmanual.info

/5/ Appendix B of the simplified modalities and procedures for small-scale CDM project activities: *Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories*. Version 05: 25 February 2005.

/6/ CDM EB: *Tool for the demonstration and assessment of additionality*, EB 16 Report, Annex 1.

/7/ Bosi, M., A. Laurence, P. Maldonado, R. Schaeffer, A. F. Simoes, H. Winkler and J.-M. Lukamba. *Road testing baselines for greenhouse gas mitigation projects in the electric power sector*. OECD and IEA information paper, October 2002

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

/8/ Fernando Souza Machado – Ecoinvest

/9/ Luis Alfredo Teixeira Strickert Coord. Adm. Com - Pesqueiro Energia S.A.

/10/ Rosmir César de Oliveira, Coordenador Geral - Pesqueiro Energia S.A.

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APPENDIX A

VALIDATION PROTOCOL
FOR SMALL-SCALE CDM PROJECT ACTIVITIES

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

Requirement	Reference	Conclusion	Cross Reference/Comment
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	NA	Table 2, Section E.4.1 No Annex I party has yet been identified.
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, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a	-	Table 2, Section A.3 Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive the written confirmation by the DNA of Brazil that the project assists in achieving sustainable development.
3. The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC	Kyoto Protocol Art. 12.2.	OK	Table 2, Section E.4.1
4. The project shall have the written approval of voluntary participation from the designated national authority of each party involved	Kyoto Protocol Art. 12.5a, Simplified Modalities and Procedures for Small Scale CDM Project Activities §23a	-	Prior to the submission of this validation report to the CDM Executive Board, DNV will have to receive the written approval of voluntary participation from the DNA of Brazil.
5. The emission reductions should be real, measurable and give long-term benefits related to the mitigation of climate change	Kyoto Protocol Art. 12.5b	OK	Table 2, Section E.1 to E.4
6. Reduction in GHG emissions must 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. 12.5.c, Simplified Modalities and Procedures for Small Scale CDM Project Activities §26	OK	Table 2, Section B.2.1

Requirement	Reference	Conclusion	Cross Reference/Comment
7. Potential public funding for the project from Parties in Annex I shall not be a diversion of official development assistance	Decision 17/CP.7	OK	The validation did not reveal any information that indicates that the project can be seen as a diversion of ODA funding towards Brazil.
8. Parties participating in the CDM shall designate a national authority for the CDM	CDM Modalities and Procedures § 29	OK	The Brazilian designated national authority for the CDM is the Comissão Interministerial de Mudança Global do Clima
9. The host Party and the participating Annex I Party shall be a Party to the Kyoto Protocol	CDM Modalities and Procedures § 30, 31b	OK	Brazil ratified the Kyoto Protocol on 23 August 2002
10. The participating Annex I Party's assigned amount shall have been calculated and recorded	CDM Modalities and Procedures §31b	Not applicable	No participating Annex I Party
11. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol Article 5 and 7	CDM Modalities and Procedures §31b	Not applicable	No participating Annex I Party
12. The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakesh Accords and shall not be a debundled component of a larger project activity	Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c	OK	Table 2, Section A.1
13. The project design document shall conform with the Small Scale CDM Project Design Document format	Simplified Modalities and Procedures for Small Scale CDM Project Activities, Appendix A	OK (~~CAR 1~~)	The PDD is in line with the CDM-PDD for small-scale CDM project activities (version 01 of 21 January 2003).
14. The proposed project activity shall confirm to one of the project categories defined for small scale CDM project activities and uses the simplified baseline and monitoring methodology for that project category	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22e	OK	Table 2, Section A.1.3, B and D
15. Comments by local stakeholders are invited, and a summary of these provided	Simplified Modalities and Procedures for Small	OK	Table 2, Section G

Requirement	Reference	Conclusion	Cross Reference/Comment
	Scale CDM Project Activities §22b		
16. If required by the host country, an analysis of the environmental impacts of the project activity is carried out and documented	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22c	OK	Table 2, Section F
17. Parties, stakeholders and UNFCCC accredited NGOs have been invited to comment on the validation requirements and comments have been made publicly available	Simplified Modalities and Procedures for Small Scale CDM Project Activities §23b,c,d	OK	The PDD has been published on http://www.dnv.com/certification/ClimateChange. Parties, stakeholders and NGOs have been – through the UNFCCC CDM website – invited to provide comments on the validation requirement from 30 April 2005 to 30 May 2005 One comment was received and addressed in the validation report.

Table 2 Requirements Checklist

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
A. **Project Description** The project design is assessed.					
A.1. Small scale project activity It is assess whether the project qualifies as small scale CDM project activity.					
A.1.1. 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?	/1/	DR	Being a renewable energy project activity, with an output capacity of less than 15 MW, i.e. 12,44 MW, the project qualifies as a small-scale CDM project activity according to category (i) defined in paragraph 6, subparagraph (c) of decision 17/CP.7 on the modalities and procedures for the CDM, and as defined by category I.D of Appendix B of the simplified modalities and procedures for small-scale CDM project activities.		OK
A.1.2. The small scale project activity is not a debundled component of a larger project activity?	/1/	DR	The project is not a debundled component of a larger project activity according to Appendix C of the simplified modalities and procedures for small-scale CDM project activities. The project consists in the use of potential energy of Jaguriaíva river and no other CDM projects are implemented by Pesqueiro Energia.		OK
A.1.3. Does proposed project activity confirm to one of the project categories defined for small scale CDM project activities?	/1/	DR	The project is a “Renewable electricity generation for a grid project activity” (AMS I.D) small-scale CDM project activity as defined in the simplified modalities and procedures for small-scale CDM project activities		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
A.2. Project Design Validation of project design focuses on the choice of technology and the design documentation of the project.					
A.2.1. Are the project's spatial (geographical) boundaries clearly defined?	/1/	DR	The project is located on Jaguriaíva river at Jaguriaíva municipality in Paraná State and has as boundaries the limits of the Pesqueiro small hydroelectric power plant according to AMS I.D. paragraph 4.		OK
A.2.2. Are the project's system (components and facilities used to mitigate GHG's) boundaries clearly defined?	/1/	DR	The project comprises two new simple Francis turbine with total capacity of 12,44 MW, installed by the Jaguariaíva river, operating as run-of-river plant and using water accumulated in a small reservoir.		OK
A.2.3. Does the project design engineering reflect current good practices?	/1/	DR	The Francis turbine technology used for the run-of-river small hydroelectric plant is a good practice in the electricity industry.		OK
A.2.4. Will the project result in technology transfer to the host country?	/1/	DR	Not necessarily. The Francis technology is supplied by several turbine manufactures.		OK
A.2.5. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period? Does the project make provisions for meeting training and maintenance needs?	/1/	DR	The project will require minimal additional training and project maintenance. Moreover, support from the manufacturer is assured.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
A.3. Contribution to Sustainable Development The project's contribution to sustainable development is assessed					
A.3.1. Will the project create other environmental or social benefits than GHG emission reductions?	/1/	DR	The project is likely to contribute to improvements of the flora and fauna conditions of the Jaguariaiva river.		OK
A.3.2. Will the project create any adverse environmental or social effects?	/1/	DR	Not foreseen		OK
A.3.3. Is the project in line with sustainable development policies of the host country?	/1/	DR	The project is in line with current sustainable development priorities in Brazil.		OK
A.3.4. Is the project in line with relevant legislation and plans in the host country?	/1//8/ /9/	DR/I	The project has an authorization issued by ANEEL to produce energy using Jaguariaiva river and has an Environmental Operation License issued by the IAP, which was renewed on 07 March 2005.		OK
B. **Project Baseline** The validation of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.					
B.1. Baseline Methodology It is assessed whether the project applies an appropriate baseline methodology.					
B.1.1. Is the selected baseline methodology in line with the baseline methodologies provided for the relevant project category?	/1/	DR	The project applies the Baseline methodology: simplified baseline methodology for type I.D small-scale CDM project activities, i.e. the average of the approximate operating margin and the build		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			margin.		
B.1.2. Is the baseline methodology applicable to the project being considered?	/1/	DR	The project applies the baseline methodology of Renewable electricity generation for a grid. This is applicable to the small hydroelectric typical run-of-river and electricity is supplied to the south-southeast-middle west grid.		OK
B.2. Baseline Determination It is assessed whether the project activity itself is not a likely baseline scenario and whether the selected baseline represents a likely baseline scenario.					
B.2.1. Is it demonstrated that the project activity itself is not a likely baseline scenario due to the existence of one or more of the following barriers: investment barriers, technology barriers, barriers due to prevailing practice or other barriers?	/1/	DR	The project applies the "Tool for the demonstration and assessment of additionality". Step 0. The starting date of the CDM project activity, i.e. January 2003, falls between 1 January 2000 and the date of the registration of the first CDM project activity (November 2004). Evidence of the starting date was verified in the follow-up interviews through an ANEEL letter confirming that the start-up of PCH Pesqueiro was on 27 January 2003. About the consideration of the CDM as the factor to implement the project, the PDD mentioned three documents, two documents were issued too close to the start-up of the project; on the other hand, one of them, a confidentiality agreement signed between Pesqueiro Energia S.A. and a company that trades carbon credits, was issued around the end of 2001. **Evidence of this document is requested**	~~CAR 2~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			Step 1. The possible baseline scenarios considered are: a) Invest the surplus capital in the financial market, b) Invest in and install a new electricity generator as a run-of-river facility in order to be able to supply electricity to the grid. Both scenarios are in compliance with all applicable legal and regulatory requirements; nonetheless, they are not mandatory. Step 2. Not applicable (Step 3 is selected) Step 3. Investment barriers, institutional barriers and barriers due to prevailing practice are presented. It was argued that the project is not a likely baseline scenario due to investment barriers, i.e. the lack of long term capital in the Brazilian market and the high interested rates practiced, such as through government loans. Another barrier is the high Brazilian interest rate that makes the financial market investments a more viable investment. Also, institutional barriers exist due to regulatory instability and high volatility of the electricity price**. However, more project specific evidence is needed for the barrier analysis. The current barrier analysis is very generic and more elaborations on how these generic barriers apply to the Pesqueiro project are needed**. A cash flow analysis has been checked and it resulted in an IRR of 17% for the project. This analysis was verified during the follow-up interviews and was considered adequate.		

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			Step 4. The common practice in the Brazilian electricity market relating to small hydroelectric is to apply to two incentive governmental programs: PCH-Com and PROINFA. The project proponent applied for the first, but it was not able to meet the guarantees asked by the bank responsible for the program (BNDES). The project was not able to enter PROINFA either. **DNV asks for a justification of not entering or being accepted by these two governmental programmes**. Step 5. The sale of CERs will provide the necessary incentives for the project to overcome the presented barriers.		
B.2.2. Is the application of the baseline methodology and the discussion and determination of the chosen baseline transparent and conservative?	/1/	DR	The combined margin emission coefficient is calculated as 0.523 tCO2e/MWh. To calculate this emission coefficient, the project uses the figures of years 2001 to 2003 from ANEEL for 120 generations units dispatched centralized by ONS and does not include power plants that are locally dispatched. Nonetheless, the AMS type I.D. defines that the "approximate operation margin" is the weighted average emissions of all generating sources serving the system, excluding hydro, geothermal, wind, low cost biomass, nuclear and solar generation. The "build margin" is the weighted average emissions of the greater (in MWh) of the most recent 20% capacity additions of existing plants or the 5 most recent plants. **Hence DNV requests calculations according to**	~~CAR 3~~	OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			this methodology or a justification of the conservativeness of these figures as well as a justification for the choice of S/SE/MW regional Brazilian grid.		
B.2.3. Are relevant national and/or sectoral policies and circumstances taken into account?	/1//8/ /9/	DR/I	The common practice in the Brazilian electricity market relating to small hydroelectric is to apply to two incentive governmental programs: PCH-Com and PROINFA. The project proponent applied for the first, but it was not able to meet the guarantees asked by the bank responsible for the program (BNDES). The project was not able to enter PROINFA either. DNV asks for a justification of not entering or being accepted by these two governmental programmes. See B.2.1	~~**CAR 2**~~	
B.2.4. Is the baseline selection compatible with the available data?	/1/	DR	See.B.2.2	~~**CAR 3**~~	
B.2.5. Does the selected baseline represent the most likely scenario describing what would have occurred in absence of the project activity?	/1/	DR	See B.2.1	~~**CAR 2**~~	
C. **Duration of the Project / Crediting Period** It is assessed whether the temporary boundaries of the project are clearly defined.					
C.1.1. Are the project's starting date and operational lifetime clearly defined?	/1/	DR	The project's starting date is 27 January 2003 and the expected operation lifetime of the project is more than 25 years.		OK
C.1.2. Is the assumed crediting time clearly defined (renewable crediting period of seven years with two possible renewals or	/1/	DR	A fixed 10 years crediting period has been chosen at first PDD version what was changed on PDD version 2 for a renewable crediting period of 7		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
fixed crediting period of 10 years with no renewal)?			years starting in 27 January 2003		
***D.* Monitoring Plan** The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed.					
D.1. Monitoring Methodology It is assessed whether the project applies an appropriate monitoring methodology.					
D.1.1. Is the selected monitoring methodology in line with the monitoring methodologies provided for the relevant project category?	/1/	DR	The monitoring methodology is according to AMS I.D.		OK
D.1.2. Is the monitoring methodology applicable to the project being considered?	/1/	DR	The monitoring methodology, i.e. metering the electricity, is in accordance with the AMS I.D. The Operating and Build Margin are calculated once prior to validation.		OK
D.1.3. Is the application of the monitoring methodology transparent?	/1/	DR	Yes		OK
D.1.4. Will the monitoring methodology give opportunity for real measurements of achieved emission reductions?	/1/	DR	Yes		OK
D.2. Monitoring of Project Emissions It is established whether the monitoring plan provides for reliable and complete project emission data over time.					
D.2.1. Are the choices of project emission	/1/	DR	The project consists only of a small hydroelectric		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
indicators reasonable?			facility and no project emissions are foreseen.		
D.3. Monitoring of Leakage It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.					
D.3.1. If applicable, are the choices of leakage indicators reasonable?	/1/	DR	The AMS I.D. defines leakage as the transfer of equipment from another activity. The project was implemented with new equipment, hence no leakage is expected.		OK
D.4. Monitoring of Baseline Emissions It is established whether the monitoring plan provides for reliable and complete project emission data over time.					
D.4.1. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/1/	DR	See B.2.2	~~**CAR 3**~~	OK
D.4.2. Will it be possible to monitor / measure the specified baseline emission indicators?	/1/	DR	See B.2.2		OK
D.4.3. Do the measuring technique and frequency comply with good monitoring practices?	/1/	DR	Yes. An emission coefficient for the baseline is calculated ex-ante and the actual electricity produced is metered ex-post.		OK
D.4.4. Are the provisions made for archiving baseline emission data sufficient to enable later verification?	/1/	DR	Yes. Data will be kept during the crediting period and two years after this period.		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
D.5. Project Management Planning It is checked that project implementation is properly prepared for and that critical arrangements are addressed.					
D.5.1. Is the authority and responsibility of project management clearly described?	/1/	DR	The PDD describes that the electricity delivered to the grid is monitored by the seller and the buyer. According to the follow up interview, Pesqueiro Energia S.A, by means of CERAL, will be responsible for the operational activities and ELETRORURAL for accounting activities. The measurements will be made through an electronic system implemented by Electra Energy, a company charged to commercialize the energy and responsible for the calibration of the energy measure gage. SE maintenance is the responsibility of COPEL, the electricity company responsible for connecting the electricity to the grid.		OK
D.5.2. Is the authority and responsibility for registration monitoring measurement and reporting clearly described?	/1/	DR	See D.5.1		OK
D.5.3. Are procedures identified for training of monitoring personnel?	/1/	DR	See D.5.1		OK
D.5.4. Are procedures identified for emergency preparedness for cases where emergencies can cause unintended emissions?	/1/	DR	Not applicable		OK
D.5.5. Are procedures identified for calibration of monitoring equipment?	/1/	DR	See D.5.1		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
D.5.6. Are procedures identified for maintenance of monitoring equipment and installations?	/1/	DR	See D..5.1		OK
D.5.7. Are procedures identified for monitoring, measurements and reporting?	/1/	DR	See D..5.1		OK
D.5.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)	/1/	DR	See D..5.1		OK
D.5.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/1/	DR	See D.5.1		OK
D.5.10. Are procedures identified for internal audits of GHG project compliance with operational requirements as applicable?	/1/	DR	See D.5.1		OK
D.5.11. Are procedures identified for project performance reviews?	/1/	DR	See D.5.1		OK
D.5.12. Are procedures identified for corrective actions?	/1/	DR	See D.5.1		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
E. **Calculation of GHG emission** It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.					
E.1. Project GHG Emissions The validation of predicted project GHG emissions focuses on transparency and completeness of calculations.					
E.1.1. Are all aspects related to direct and indirect project emissions captured in the project design?	/1/	DR	The project is a small hydroelectric unit, and no emission is expected.		OK
E.2. Leakage It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed.					
E.2.1. Are leakage calculation required for the selected project category and if yes, are the relevant leakage effects assessed?	/1/	DR	No leakage is foreseen. See D.3.1		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
E.3. Baseline GHG Emissions The validation of predicted baseline GHG emissions focuses on transparency and completeness of calculations.					
E.3.1. Are the baseline emission boundaries clearly defined and do they sufficiently cover sources for baseline emissions?	/1/	DR	The project boundary is defined as the limits of Jaguariaíva River Small hydroelectric plant and the system boundary is defined as the South/Southeast/Midwest regional Brazilian grid.		OK
E.3.2. Are all aspects related to direct and indirect baseline emissions captured in the project design?	/1/	DR	Yes		OK
E.3.3. Have all relevant greenhouse gases and sources been evaluated?	/1/	DR	The project considers only emission reductions related to CO_2 emitted by fossil fuel electricity generation in the grid and displaced by the project.		OK
E.3.4. Do the methodologies for calculating baseline emissions comply with existing good practice?	/1/	DR	According to AMS I.D.		OK
E.3.5. Are the calculations documented in a complete and transparent manner?	/1/	DR	See B.2.2	I	-
E.3.6. Have conservative assumptions been used?	/1/	DR	See B.2.2	I	-
E.3.7. Are uncertainties in the baseline emissions estimates properly addressed?	/1/	DR	See B.2.2		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
E.4. Emission Reductions Validation of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations.					
E.4.1. Will the project result in fewer GHG emissions than the baseline case?	/1/	DR	During the first 7 years crediting period, the project's expected emission reductions from the grid-electricity displacement component is 291 434 tCO2e. Given that the project is able to generate the stated amount of electricity, the estimated emission reductions are correctly estimated.		OK
***F.* Environmental Impacts** It is assessed whether environmental impacts of the project are sufficiently addressed.					
F.1.1. Does host country legislation require an analysis of the environmental impacts of the project activity?	/1//8//9/	DR/I	The project has received an Operational Environmental Licence issued by the IAP and it renewed the license on 07 March 2005, receiving a licence with a number 6786, which was issued after analysing an EIA. As the project uses a small reservoir and can be considered as a run-of-river, no significant impacts are identified.		OK
F.1.2. Does the project comply with environmental legislation in the host country?	/1//8//9/	DR/I	See F.1.1		OK
F.1.3. Will the project create any adverse environmental effects?	/1//8//9/	DR/I	See F.1.1		OK
F.1.4. Have environmental impacts been identified and addressed in the PDD?	/1//8//9/	DR/I	See F.1.1		OK

Checklist Question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
G. **Comments by Local Stakeholder** Validation of the local stakeholder consultation process.					
G.1.1. Have relevant stakeholders been consulted?	/1//8//9/	DR/I	Local stakeholders were initially invited to a public discussion during the environmental license issuing process. No comments were received. Complementarily, local stakeholders, such as the Municipal Government, the state and municipal agencies, the Brazilian forum of NGOs, neighbouring communities and the office of the attorney general, were invited to comment on the project, in accordance with the requirements of Resolution 1 of the Brazilian DNA. No comments were received		OK
G.1.2. Have appropriate media been used to invite comments by local stakeholders?	/1//8//9/	DR/I	See G.1.1		OK
G.1.3. 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?	/1//8//9/	DR/I	See G.1.1		OK
G.1.4. Is a summary of the comments received provided?	/1//8//9/	DR/I	See G.1.1		OK
G.1.5. Has due account been taken of any comments received?	/1//8//9/	DR/I	See G.1.1		OK

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
Error! Reference source not found. The reference of the person determining the baseline shall be completed and shall not be mentioned in Annex 1. Moreover, the section heading H (Annexes) needs to be deleted as the SSC-PDD shall be completed without modifying/adding headings.		The issue was changed at the 2nd Version of the PDD. (Ecoinvest-Pesqueiro CDM SSCPDD-v.2005.04.28 - 2nd Version.doc) "Mr. Ricardo Esparta, director of Ecoinvest. Ecoinvest Assessoria Ltda. Rua Padre João Manoel, 222 Cj-36 CEP – 01411-000 São Paulo – SP Brazil"	OK, the second PDD version complies with the PDD-SSC template version 1. This CAR is therefore closed.
CAR 2The project applies the "Tool for the demonstration and assessment of additionality". DNV requests some improvements on the demonstration of the additionality of the project in the following steps: Step 0. With regard to evidence to demonstrate that the consideration of the CDM was a factor to implement the project, the PDD mentioned three documents, two documents were issued too close to the start-up of the project; on the other hand, one of them, a confidentiality agreement signed between Pesqueiro Energia S.A. and a company that trades carbon credits, was issued around the end of 2001. Evidence of this document is requested Step 3. Investment barriers, institutional barriers and barriers due to prevailing	B.2.1	Step 0 - Although enormous uncertainties were presented at the time the project started to be developed (entry into force of the Protocol, size of the market/price of the CERs, lack of approved baseline/monitoring methodologies …) the project owners took the risk and seriously considered the incentive from the CDM in the decision to proceed with the activity. Because of the above mentioned uncertainties at the time the project owners decided to develop the Pesqueiro Project no other hard documentation related to the CDM was produced (although the CDM incentive was seriously considered). As described in the PDD the existing evidences refer to contacts that the project sponsors had before the project activity be operational. Please, find document attached. (ENC Seqüestro de Carbono) Step 3 - As described on the Step 3 - Investment	OK, the information provided has been verified and the presented information sufficiently demonstrates that the project is not a likely baseline scenario. This CAR is therefore closed.

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
practice are presented. It was argued that the project is not a likely baseline scenario due to investment barriers, i.e. the lack of long term capital in the Brazilian market and the high interested rates practiced, such as through government loans. Another barrier is the high Brazilian interest rate that makes the financial market investments a more viable investment. Also, institutional barriers exist due to regulatory instability and high volatility of the electricity price. However, more project specific evidence is needed for the barrier analysis. The current barrier analysis is very generic and more elaborations on how these generic barriers apply to the Pesqueiro project are needed. Step 4. The common practice in the Brazilian electricity market relating to small hydroelectric is to apply to two incentive governmental programs: PCH-Com and PROINFA. The project proponent applied for the first, but it was not able to meet the guarantees asked by the bank responsible for the program (BNDES). The project was not able to enter PROINFA either. DNV asks for a justification of not entering or being accepted by these two governmental programmes.		Barrier at the PDD, a strong and specific barrier related to Pesqueiro project is the lack of long-term funding. The project was developed on equity basis and didn't take advantage of the BNDES funding. At the time project started its construction it had no access to BNDES funding, therefore the project sponsors decided to proceed with it with own funds. As described in the PDD, the cost of own capital for Pesqueiro is of around 20% p.a. while BNDES funding line has annual interest rate around of 12% . Therefore the lack of BNDES long-term funding for Pesqueiro project represents a critical project specific barrier. Step 4 - Not a single project was submitted/selected under the PCH-COM program, in other words, the program was not implemented. Regarding PROINFA, only projects that will start operation in 2006 are eligible, therefore, the Pesqueiro does not qualify.	

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
CAR 3 The combined margin emission coefficient is calculated as 0.523 tCO2e/MWh. To calculate this emission coefficient, the project uses the figures of years 2001 to 2003 from ANEEL for 120 generations units dispatched centralized by ONS and does not include power plants that are locally dispatched. Nonetheless, the AMS type I.D. defines that the "approximate operation margin" is the weighted average emissions of all generating sources serving the system, excluding hydro, geothermal, wind, low cost biomass, nuclear and solar generation. The "build margin" is the weighted average emissions of the greater (in MWh) of the most recent 20% capacity additions of existing plants or the 5 most recent plants. Hence DNV requests calculations according to this methodology or a justification of the conservativeness of these figures as well as a justification for the choice of S/SE/MW regional Brazilian grid	B.2.2	The Brazilian electricity system has been historically divided into two subsystems: the North-Northeast (N-NE) and the South-Southeast-Midwest (S-SE-CO). This is due mainly to the historical evolution of the physical system, which was naturally developed nearby the biggest consuming centers of the country. The natural evolution of both systems is increasingly showing that integration is to happen in the future. In 1998, the Brazilian government was announcing the first leg of the interconnection line between S-SE-CO and N-NE. With investments of around US$ 700 million, the connection had the main purpose, in the government's view, at least, to help solve energy imbalances in the country: the S-SE-CO region could supply the N-NE in case it was necessary and vice-versa. Nevertheless, even after the interconnection had been established, technical papers still divided the Brazilian system in two (Bosi, 2000)*: "… where the Brazilian Electricity System is divided into three separate subsystems: (i) The South/Southeast/Midwest Interconnected System; (ii) The North/Northeast Interconnected System; and (iii) The Isolated Systems (which represent 300 locations that are electrically isolated from the interconnected systems)" Moreover, Bosi (2000) gives a strong argumentation in favor of having so-called multi-project baselines:	The revised baseline emission calculations are according to the simplified baseline methodology for category I.D small-scale CDM project activities. It is justified to only include plants dispatched by ONS although they only represent about 80% of the total installed capacity. Data for the remaining plants is not publicly available. Also, these plants operate either based on power purchase agreements which are not under control of the dispatch authority, or they are located in non-interconnected systems to which ONS has no access. Hence, these plants are not likely to be affected by a CDM project and the power plants dispatched by ONS are thus representative for the operating margin. The build margin emission coefficient is correctly calculated considering the 20% capacity additions of the most recently installed plants

* Bosi, M. *An Initial View on Methodologies for Emission Baselines: Electricity Generation Case Study*. International Energy Agency. Paris, 2000.

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
		"For large countries with different circumstances within their borders and different power grids based in these different regions, multi-project baselines in the electricity sector may need to be disaggregated below the country-level in order to provide a credible representation of 'what would have happened otherwise'". Finally, one has to take into account that even though the systems today are connected, the energy flow between N-NE and S-SE-CO is heavily limited by the transmission lines capacity. Therefore, only a fraction of the total energy generated in both subsystems is sent one way or another. It is natural that this fraction may change its direction and magnitude (up to the transmission line's capacity) depending on the hydrological patterns, climate and other uncontrolled factors. But it is not supposed to represent a significant amount of each subsystem's electricity demand. It has also to be considered that only in 2004 the interconnection between SE and NE was concluded, i.e., if project proponents are to be coherent with the generation database they have available as of the time of the PDD submission for validation, a situation where the electricity flow between the subsystems was even more restricted is to be considered. The Brazilian electricity system nowadays comprises of around 91.3 GW of installed capacity, in a total of 1,420 electricity generation enterprises. From those, nearly 70% are hydropower plants, around 10% are natural gas-fired power plants, 5.3% are diesel and fuel oil plants, 3.1% are biomass sources (sugarcane	dispatched by ONS. Even though the S/SE/MW grid is connected with the North-Northeast grid, the energy flow between these grids are heavily limited by the transmission lines capacity. Given the relative small capacity of the project, it is hence deemed appropriate to consider data on the S/SE/MW grid only. This CAR is therefore closed.

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
		bagasse, black liquor, wood, rice straw and biogas), 2% are nuclear plants, 1.4% are coal plants, and there are also 8.1 GW of installed capacity in neighboring countries (Argentina, Uruguay, Venezuela and Paraguay) that may dispatch electricity to the Brazilian grid. (http://www.aneel.gov.br/aplicacoes/capacidadebrasil/OperacaoCapacidadeBrasil.asp). This latter capacity is in fact comprised by mainly 6.3 GW of the Paraguayan part of Itaipu Binacional, a hydropower plant operated by both Brazil and Paraguay, but whose energy almost entirely is sent to the Brazilian grid. The Small Scale Approved methodology asks project proponents to account for "all generating sources serving the system". In that way, when applying this methodology, project proponents in Brazil should search for, and research, all power plants serving the Brazilian system. In fact, information on such generating sources is not publicly available in Brazil. The national dispatch center, ONS – Operador Nacional do Sistema – argues that dispatching information is strategic to the power agents and therefore cannot be made available. On the other hand, ANEEL, the electricity agency, provides information on power capacity and other legal matters on the electricity sector, but no dispatch information can be got through this entity. In that regard, project proponents looked for a plausible solution in order to be able to calculate the emission factor in Brazil in the most accurate way. Since real dispatch data is necessary after all, the	

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
		ONS was contacted, in order to let participants know until which degree of detail information could be provided. After several months of talks, plants' daily dispatch information was made available for years 2001, 2002 and 2003. Project proponents, discussing the feasibility of using such data, concluded it was the most proper information to be considered when determining the emission factor for the Brazilian grid. According to ANEEL, in fact, ONS centralized dispatched plants accounted for 75.547 MW of installed capacity by 31/12/2004, out of the total 98.848,5 MW installed in Brazil by the same date (http://www.aneel.gov.br/arquivos/PDF/Resumo_Gráficos_mai_2005.pdf), which includes capacity available in neighboring countries to export to Brazil and emergency plants, that are dispatched only during times of electricity constraints in the system. Therefore, even though the emission factor calculation is carried out without considering all generating sources serving the system, about 76.4% of the installed capacity serving Brazil is taken into account, which is a fair amount if one looks at the difficulty in getting dispatch information in Brazil. Moreover, the remaining 23.6% are plants that do not have their dispatch coordinated by ONS, since: either they operate based on power purchase agreements which are not under control of the dispatch authority; or they are located in non-interconnected systems to which ONS has no access. In that way, this portion is not likely to be affected by the CDM projects, and this is another	

Draft report corrective action requests and requests for clarification	Ref. to Table 2	Summary of project participants' response	Final conclusion
		reason for not taking them into account when determining the emission factor. Revised emission factors will be used in the revised version of the PDD (revised spreadsheet was already sent).	

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