VALIDATION OF
FERREIRA GOMES HYDRO POWER PLANT PROJECT ACTIVITY

Ferreira Gomes Energia S/A
(Municipality of Ferreira Gomes, State of Amapá, Brazil)

REPORT No.
CDMVAL-048-01

JANUARY, 2012

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Approved by:	*Eng. Francy Ramirez* *ICONTEC Technical reviewer*	*Organizational unit:*	*Instituto Colombiano de Normas Técnicas y Certificación – ICONTEC* *Carrera 37 52-95* *Bogotá - Colombia*
Client:	*Ferreira Gomes Energia S/A*	*Client ref.:*	*CDM-VAL-048*

Summary:

ICONTEC has performed the validation of the project: FERREIRA GOMES HYDRO POWER PLANT PROJECT ACTIVITY, the project is located geographically in the municipality of Ferreira Gomes in the state of Amapá, north region of Brazil,on the Araguari river. The proposed project activity under validation process is based on methodology ACM0002, Consolidated baseline methodology for grid connected electricity generation from renewable sources, Version 12.2.0, tool to calculate the emission factor for an electricity system version 02.2.1 and tool for the demonstration and assessment of additionality version 6.0.0.

The validation has been made, 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 and the subsequent decisions by the CDM Executive Board. This validation report summarizes the findings of the validation.

Energy production was calculated in an average of 1,315,752 MWh/year and expected to reduce GHG emissions in average 407,225 tCO2e annually compared with the baseline scenario in the first crediting period for 7 years. The project will be renewable for two periods.

The validation consisted of the following four phases: i) a desk review of the project design documents, ii) Visit on-site assessment, iii) follow up interviews with project stakeholders and iv) the resolution of outstanding issues and the issuance of the final validation report and opinion.

In summary, it is ICONTEC's opinion that the project: FERREIRA GOMES HYDRO POWER PLANT PROJECT ACTIVITY as described in the version 02 of the project design document /1/ is additional and meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology ACM0002 version 12.2.0, Consolidated baseline methodology for grid connected electricity generation from renewable sources. Hence, ICONTEC requests the registration of the project as CDM project activity.

Report No:	CDMVAL – 048-01	*Subject Group:*	*Scope: 1*	*Indexing terms:*
Report title: *Validation of Ferreira Gomes Hydro Power Plant Project Activity*				*Climate Change; Kyoto Protocol; Validation; Clean Development Mechanism*

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This report should not be read without reference to the annexed Validation Protocol.

Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CERs	Certified emission reductions
CL	Clarification Request
CO_2	Carbon Dioxide
CO_2eq	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
GHG	Greenhouse Gases
I	Interview
ICONTEC	Colombian Institute of technical standards and certification (Instituto Colombiano de Normas Técnicas y Certificación)
IPCC	Intergovernmental Panel on Climate Change
MoV	Means of verification
MP	Monitoring Plan
PDD	Project Design Document
UNFCCC	United Nations Framework Convention for Climate Change
ANEEL	National Electric Energy Agency
ONS	National Electric System Operator
SEMA	State Secretariat of environmental Amapa (Secretaria Estatual de medio ambiente do Amapa)
RIMA	Environmental Impact Report – RIMA (from portuguese Relatório de Impacto Ambiental)
IMAP	Institute for Environment and territorial ordering of Amapa (Instituto de medio ambienta y ordinamiento territorial de Amapa)
ICBMBio	Chico Mendes Institute for Biodiversity Conservation Instituto (Chico Mendes de conservación de la biodiversidad)
ANA	National water agency
CCEE	Electric Power Commercialization Chamber Câmara de Comércio de Energia Elétrica
MCT	Ministry of science and technology
PBA	Environmental basic plan
CIMGC	Interministerial Commission on Global Climate Change (Comissão Interministerial de Mudança Global do Clima)

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1. INTRODUCTION

FERREIRA GOMES ENERGIA S/A has commissioned ICONTEC to perform the Validation of Ferreira Gomes Hydro Power Plant Project Activity (hereafter called “the project”).

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

1.1 OBJECTIVE

The purpose of a validation is to have an independent third party to assess the project design. In particular, the project's baseline, monitoring plan, and the project’s compliance with relevant UNFCCC, and host Party’s 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 involves the independent and objective revision to determine that the project design meets the following criteria:

- the UNFCCC criteria: The Kyoto Protocol Article 12 criteria, the modalities and procedures for CDM (Marrakech Accords) and the relevant decisions by the CDM Executive Board, and

- Host Party criteria: National CDM requirements, including sustainable development priorities, and potential specific requirements contained in, for example, the preliminary approval by Designated National Authority or project agreements between involved parties.

ICONTEC, based on its ethics code and internal procedures for carrying out validation, verification and certification audits of CDM project activities (which, in turn, are based on the validation and verification manual) focused on the identification of significant risks for CER generation, and verification of the mitigation.

The validation does not mean to provide any consulting for the project participants. However, stated requests for clarifications and/or corrective actions may have provided input for improvement of the project design.

1.3 GHG PROJECT DESCRIPTION

The baseline scenario consists in the project's electricity generation that would have otherwise been generated by grid-connected power plants and by the addition of new generation sources. This scenario has been established using the ACM0002 methodology in its version 12.2.0 /21/, for the consolidated baseline methodology for grid-connected electricity generation from renewable sources. According to this, the project is expected to reduce GHG emissions in average 407,225 tCO_{2e} annually compared with the baseline scenario in the first crediting period for 7 years. The project will be renewable for two periods.

The energy generation studies and the capacity projection were elaborated by Odebrecht and Electronorte /2/, ANEEL approved these studies and thanks to that, the terms for the public bidding were elaborated. The public bidding was won by Ferreira Gomes S/A.

After the winning of the public bidding, the concession contract No. 02/2010-MME-UHE / 3/, was signed by the Ministry of mines and energy – (MEE for its abbreviation in Portuguese) and the Company Ferreira Gomes S.A. In this contract the location, the technical conditions, the minimum generation capacity installed (252MW), the installation points to the substation, the transmission line, the concession contract for 35 years, the energy generation guaranty and the schedules of activities were established among others. The contract was signed by the Minister of Mines and Energy and the Ferreira Gomes' Technical, Financial and Administrative Director and two witnesses, one from the Ministry and the other from Ferreira Gomes S.A.

As described in the PDD, Ferreira Gomes invested in the Ferreira Gomes Hydro Power Plant Project Activity based on the positive environmental and financial contribution of the CDM. The project reduces greenhouse gas emissions, specifically CO_2 in this case, by replacing energy that in the absence of the renewable energy power plant would be partially generated by fossil fuel plants that release greenhouse gases (GHG). In this way, the result of the commissioning of this power plant will reduce the GHG emissions of the Brazilian power plant infrastructure, reducing its contribution to the global climate change.

The ultimate objective of the project is not only to build a power plant to cover the expected increase in demand for electricity, but to contribute to the improvement in the efficiency of the electricity system in general; increasing the electricity service in the Country, while contributing to the sustainable development of the region with the reduction of CO2 emissions. In particular, this project activity contributes to the fulfillment of the following national sustainable development priorities:

- Reduction in the contamination of air and of water.
- Reduction in the consumption of fossil fuels.
- Increase in the use of renewable energy sources

The source point or commercial frontier is the Macapa substation. Two meters will be installed, the first one will be located in the Ferreira Gomes' substation that is situated inside the hydroelectric and the second one will be located in the Macapa substation. This energy will be distributed to the national system through the ONS. The billing will be done base on the measurement in the Macapa substation.

The technical specification of the generator and the turbines presented in the PDD, were confirmed with the Contract Supplied, supervision of montage and supervision of the purchase of turbines, generators and auxiliary equipments systems between Ferreira Gomes Energia S.A. and Voith Hydro da Amazonia Ltda, Alupar investimento S.A. and Voith Hydro Ltda, signed the May 5th 2011/4/. Icontec verified the original contract signed by the Ferreira Gomes' Technical, Financial and Administrative Director and the Operations Director from the hired company "Voith Hydro de Amazonia Ltda".

The description of the civil works of the hydroelectric plant were observed through:

- Plan: Canteiro de obras – UHE Ferreira Gomes. Construction Canteiro de obras planta FGE-DE2x-CAC19-0001-5 del 19/04/2011 /5/
- Plan: Central hidroeléctrica Ferreira Gomes. Construction general- planta piloto. FG-DE-2A – CO – A20-0001-R03 del 25/10/2010. /6/

Project participants list is: FERREIRA GOMES ENERGIA S/A (Private).

2. METHODOLOGY

The validation consists of the following four phases:

i) A desk review of the project design documents
ii) On-site Assessment
iii) Follow up interviews with project stakeholders
iv) The resolution of outstanding issues and the issuance of the final validation report and opinion.

The internal procedures defined the validation protocol which consists of four tables. The different columns in the table 3 are: Report clarifications and corrective action requests, reference to checklist question in table 2, Summary of project owner response and Validation conclusion.

The validation protocol resulting from the Validation of Ferreira Gomes Hydro Power Plant Project Activity is enclosed in Annex A of this report.

Findings established during the validation can be seen as:

- a non-fulfillment of validation protocol criteria, or
- an identified risk to the fulfillment of the project objectives

The findings could take the form of a Corrective Action Request (CAR), Forward action request (FAR) or a Clarifications Request (CL).

Corrective action requests (CAR) are issued, where:

i) the project participants have made mistakes which directly will influence the ability of the project activity to achieve real, measurable and additional emission reductions;
ii) the CDM requirements have not been met; or
iii) there is a risk that emission reductions cannot be monitored or calculated

A Forward Action Request is made to highlight issues related to project implementation that will require review during the next verification of the project activity.

A Clarification is required where information is insufficient, or not clear enough to establish whether a requirement is met.

2.1 REVIEW OF DOCUMENTS

PDD submitted by FERREIRA GOMES ENERGIA S/A and the additional background documents related to the project design and baseline were assessed during the validation.

Main documents reviewed during the desk review:

- PDD Ferreira Gomes Hydro Power Plant CDM Project Activity. Version 1. 15/09/2011./1/
- Baseline calculation data in spreadsheet: CERs JUN1150_v1.xls /7/
- Prior consideration received in UNFCCC at 06/07/2010. Confirmed through http://cdm.unfccc.int/Projects/PriorCDM/notifications/index_html?s=20

Main documents reviewed during on site visit:

- Letter of declaration sent by executive secretary of Interministerial Commission on Global Climate Change of Brazil to EQAO, confirmed received of the project documentation at 6/7/2010.
- Installation license # 056/2011. This document approve the construction of Ferreira Gomes hidroelectrical power. Is valid for 365 days from 10 June 2011.
- Information on maintenance and calibration of equipment related to the baseline calculation data
- Quality assurance documents
- See other documents in references, chapter 6.

- Contract Supplied, supervision of montage and supervision of the purchase of turbines, generators and auxiliary equipments systems between Ferreira Gomes Energia S.A. and Voith Hydro da Amazonia Ltda, Alupar investimento S.A. and Voith Hydro Ltda.
- Concession contract # 02 /2010 MME- UHE Ferreira Gomes.
- See other documents in references.

Web consulting that second sources information:

- http://www.alupar.com.br/alupar/web/conteudo_esi.asp?idioma=2&conta=48&tipo=34649
  In this page DOE was found that Ferreira Gomes is an Alupar´s company, and in 2010, by submitting the winning bid in Auction 003/2010, securing the concession contract for the Ferreira Gomes Hydropower Plant.

- http://www.mzweb.com.br/alupar/web/conteudo_esi.asp?idioma=2&conta=48&tipo=34652
  In this page ICONTEC, confirms the date of signing the contract.

- http://www.amapadigital.net/populacao_amapa.html . Population of the municipality, urban and rural.

- http://www.mct.gov.br/index.php/content/view/327813.html#ancora in this page found build margin and operational margin published for Ministry science and technology of Brazil for 2010 year.

- http://www.mct.gov.br/upd_blob/0024/24719.pdf in this page found the Resolution No. 8 of May 26,2008, in this document be indicated that Interministerial Commission on Global Climate Change adopted at its meeting on April 29, 2008, the single system formed by the union of sub-markets of the National Interconnected System (SIN) as a definition of "Electrical System Design" for any project activity under the Clean Development Mechanism (CDM) connected to the SIN.

2.2 FOLLOW UP INTERVIEWS

ICONTEC performed interviews with project stakeholders to confirm the selected information and to resolve issues identified during the desk review. The main topics of the interview are summarized in the Table 1.

Table 1. Follow up Interview

DATE	PLACE	INTERVIEW DELEGATE	ORGANIZATION	INTERVIEW TOPICS
21/11/2011		ANGELICA ASSINI	CARBOTRADER	MONITORING MANAGER
21/11/2011		DIEGO NORONHA	CARBOTRADER	PROJECT MANAGER

21/11/2011	Ferreira Gomes Energia Office's (Sao Paulo)	ARTHUR MORAES	CARBOTRADER	SOCIAL DIRECTOR
21/11/2011		ALEXANDRE HENRIQUEZ	FERREIRA GOMES	ADMINISTRATIVE AND FINANCIAL DIRECTOR
21/11/2011		ALEXANDER BARBOSA	FERREIRA GOMES	REGULATORY ADVISORY
22/11/2011		DAVI PAJARO NOGUEIRA	FERREIRA GOMES	ENVIRONMENTAL ENGINNER
22/11/2011		DANIEL DE FALCO	FERREIRA GOMES	BUSSINESS PLAN ANALYST
24/11/2011	On-site visit Ferreira Gomes Hydroelectric Project.	ELDO SILVA DOS SANTOS	SEMA	ENVIRONMENTAL ANALYST
24/11/2011	On-site visit Ferreira Gomes Hydroelectric Project.	MIGUEL NADER	FERREIRA GOMES	CIVIL ENGINNER

2.3 RESOLUTION OF FORWARD, CLARIFICATION AND CORRECTIVE ACTION REQUESTS

Corrective action and clarification requests raised by ICONTEC, presented to the project participants were resolved through communication and meetings between FERREIRA GOMES ENERGIA S/A and ICONTEC. To guarantee the transparency of the validation process, the concerns raised and the response provided by the project participants are documented in more detail in the validation protocol in Annex A.

Since modifications to the project design document were necessary to resolve ICONTEC´s concerns, the client decided to review the PDD and re-submit corrected versions of the PDD. After the period of public consultation from 28-09-2011 to 27-10-2011 and after reviewing the last version of the PDD version 02, 06/12/2011, ICONTEC issued this validation report and opinion.

2.4 INTERNAL QUALITY CONTROL

This report that includes the validation findings underwent a technical review before being submitted to the project participants.

The technical review and the quality control of the process was performed by an internal technical reviewer in accordance with ICONTEC internal procedures for carrying out validation, verification and certification audits of CDM project activities. The technical reviewers are qualified in accordance with ICONTEC qualification scheme for CDM validation and verification.

2.5 VALIDATION TEAM

The validation team consists of the following personnel:

Table 2. Validation team

ROLE/QUALIFICATION	*LAST NAME*	*FIRST NAME*	*COUNTRY*
Lead Auditor	*Urrego*	*Erika Lucia*	*Colombia*
Sectoral Energy Expert	*Gómez*	*Fernando*	*Colombia*

The validation team is qualified in accordance with ICONTEC qualification scheme for CDM validation and verification.

3 VALIDATION FINDINGS

3.1 OVERVIEW

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 Annex A.

3.2 PARTICIPATION REQUIREMENTS

The next sentence is indicated by the Interministerial Commission on Global Climate Change (Comissão Interministerial de Mudança Global do Clima – CIMGC): "*Prior to the submission of the Project Design Document and the Validation Report to the CDM Executive Board, the Project will have to receive the written approval of voluntary participation from the DNA of Brazil, including the confirmation that the Project assists the country in achieving sustainable development*".

The project participant of the project is: FERREIRA GOMES ENERGIA S/A.

The involvement of project participant has been approved through a Letter from the Designated National Authority dated xxxxxxxx.

The host country meets all participation requirements, and the Designated National Authority of the host country has approved the project with the letter of approval describing as follows:

Table 3. Approval letter

Date of issue:	
Description:	

Supporting documentation (if it is applicable)	*ANNEX B*			
Date of ICONTEC reception				
Entity that sent the letter to ICONTEC	*Project participants*		*Directly from the DNA*	
Means of validation employed to assess the authenticity				
Additional specification (if it is applicable)		*YES*	*NO*	*version number*[1]
	PDD			
ICONTEC Conclusion	*All parties involved have approved the project activity. The letters is authentic and valid for the proposed CDM project activity under validation. It confirms and it is unconditional with respect to:* *(a) The Party is a Party to the Kyoto Protocol;* *(b) Participation is voluntary;* *(c) In the case of the host Party, the proposed CDM project activity contributes to the sustainable development of the country;* *(d) It refers to the precise proposed CDM project activity title in the PDD being submitted for registration.*			

3.3 PROJECT DESIGN

During the visit to the project site it was found that the Ferreira Gomes Hydro Power Plant Project Activity, intends to construct a new power plant to make use of the hydroelectric potential of the Araguari River. The Project will add 252 MW and a new reservoir.

The project is located on the Araguari River, Atlantic North/Northeast basin, in the municipality of Ferreira Gomes – Amapá State, Brazil. The HPP will create a new a reservoir with 17.72 Km^2. The plant will be managed by the Ferreira Gomes Energia S/A, a special purpose society responsible for the power plant construction and operation. Project location, with UTM coordinates, was requested by the DOE, See CL 2.

During the visit, the main civil works that were found are mention as follow: excavation, land movement, river flow deviation and stone cracking for the construction of the dam.

The power plant will be connected to the National Interconnected System at Macapa substation through a 230 kV transmission line.

The technology to be employed, technical specifications of electricity meter, were confirmed by the following documents:

[1] This version is the same submitted for registration

Tender 004/2008 in EDITAL and related documents annex 6A and 6B were found in the web page www.aneel.gov.br, which confirm the existence and planning of transmission lines.

www.ons.org.br/home link mapas do SIN, on this page may obtain information from the expansion of transmission lines of the national grid by 2012. Issued on August 31, 2010. In the PDD this description is included.

The technology to be installed includes 3 conventional Kaplan type hydraulic turbines, synchronous aircooled generators, transformers, digital controls, and fiber-optic communication systems.

3.3.1 CDM Baseline Methodology

The CDM project has been developed using the methodology ACM0002 version 12.2.0.

According to this methodology the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to Ferreira Gomes Hydro Power Plant Project Activity will be connected to the ONS, so the project boundary must include all power plants providing electricity to the Brazilian grid system, as PDD declares.

ACM0002 Version 12.2.0: The greenhouse gases and emission sources included in the project boundary are CO_2 emissions from electricity generation in fossil fuel fired power plants of the national interconnected system that is displaced due to the project activity.

ICONTEC verified that the project complies with the applicability criteria of the methodology, as follows:

Table 4. Methodology applicability conditions analysis

Applicability condition	*Means of validation*
1. The project activity is the installation, capacity addition, retrofit or replacement of a power plant/unit of one of the following types: hydro power plant/unit (either with a run-of-river reservoir or an accumulation reservoir), wind power plant/unit, geothermal power plant/unit, solar power plant/unit, wave power plant/unit or tidal power plant/unit;	*Visit on site.* *The project activity is the installation of a new hydro power plant with an accumulation reservoir.* *Revised documentation:* *- Concession contract # 02 /2010 MME- UHE Ferreira Gomes./3/* *- Cofferdam installation license (cofferdams constructions) - 15/12/2010 (preparation for the work, use of explosives)./8/* *- Total installation license 10/06/2011./9/*
2. In case of hydro power plants, one of the following conditions must	*Visit on site. For this case the condition applicable is: The project activity results in new reservoirs and the power density of the power plant, as*

apply: ▪ *The project activity is implemented in an existing reservoir, with no change in the volume of reservoir; or* • *The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m2; or* • *The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4 W/m2.*	*per definitions given in the Project Emissions section, is greater than 4 W/m2.* *It was confirmed through the concession contract and public document topographic plan, that the dam size is 17.72 km^2 , it was observed in the plan: A2 contour map.pdf may 2011 /10/, where is shown the properties for sale general plan and the name of the owners.* *The power of 252 MW was established in the design contract and it was defined by the inventory and ANEEL.*

The methodology ACM 0002 version 12.2.0 reference use "tool to calculate the emission factor for an electricity system" version 02.2.1 validity from 29 September 2011. See CL 3.

The PDD of Ferreira Gomes hydro power plant complied with the forms PROJECT DESIGN DOCUMENT FORM (CDM PDD) Version 03 - in effect as of: 28 July 2006 and guidance establishing for the CDM- UNFCCC.

3.4 BASELINE DETERMINATION

The Ferreira Gomes hydro power plant, will generate electricity without emitting GHGs, the plant will be interconnected to the national grid and therefore displacing fossil fuel based electricity generation that would otherwise be supplied to the grid. The baseline scenario is identified as the continuation of the current situation, before implementing the project activity, of electricity supplied by hydro and thermal (gas natural and coal based) power stations.

Therefore, the baseline scenario is one where the electricity supplied by the project to the grid would be generated by the operation of the plants that are currently connected to the grid and by new plants added to the system.

The baseline emissions are to be calculated according to ACM0002, Consolidated baseline methodology for grid-connected electricity generation from renewable sources, Version 12.2.0. Under this methodology, the baseline scenario for a new grid-connected renewable power plant/unit is as follows:

"*Electricity delivered to the grid by the project activity would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations described in the "Tool to calculate the emission factor for an electricity system*"./23/

The calculation of the official baseline emission factor of the national grid in Brazil is provided by the Ministry science and technology, that is the same DNA, for use in CDM Projects, through the document located in the web: http://www.mct.gov.br/index.php/content/view/327813.html#ancora, data are available hourly, daily and monthly.

The data were collected by the commission CIMGC, 2008, to present as institutions calculate the emission factor for Brazil. The inputs to calculate the emission factor are handled confidentially by the Ministry of Science and Technology of Brazil.

ICONTEC verified that the Ministry science and technology calculations are based on the Tool to calculate the emission factor for an electricity system version 2.2.0., as indicated on the website http://www.mct.gov.br/index.php/content/view/74689.html. The scope of the document is exclusively applied to estimate certified emission reductions (CER) in CDM projects.

In the website the Ministry indicated the below copy textual:

"…the emission factor of the interconnected system for CDM purposes is a combination of the operating margin emission factor, which reflects the intensity of CO2 emissions sent at the margin, and the build margin emission factor, which reflects the intensity of CO2 emissions from the latest plants built. It is a broadly used algorithm to quantify the future contribution of a plant that will generate electric energy for the network in terms of a reduction in CO2 emissions in relation to a base scenario. This factor is used to quantify the emission that is being shifted in the margin. Its use is associated with CDM projects, and it is exclusively applied to estimate certified emission reductions (CER) in CDM projects"[2].

In this way, the ICONTEC deems that all the information, assumptions and data used in the baseline scenario are relevant, justified appropriately, correctly quoted and interpreted, supported by evidence and can be deemed reasonable, as they are supported by the DNA and energy authorities.

According to the previous description ICONTEC found that the project participant has correctly applied the selected methodology with respect to the Baseline identification. The scenario selected reasonably represents the anthropogenic emissions by sources of GHGs that would occur in the absence of the proposed CDM project activity. All estimates of the baseline emissions can be replicated using the data and parameter values provided in the section B.6 of PDD.

To verify the VVM in the paragraph 77, Icontec could confirm through the LP 0040/2010 Previous Licence issued on 09 April 2010/8/ point 2.26 /11/, that the presentation of complementary studies associated to the project implementation is an specific obligation for the project.

[2] Copyright © 2008
Esplanada dos Ministérios, Bloco E,
CEP: 70067-900, Brasília, DF Telefone: (61) 3317-7500
Ministério da Ciência, Tecnologia e Inovação

In the first period (July to September 2011) delivered to SEMA and elaborated by Ferreira Gomes, it was considered the burning of fossil fuels from stationary and mobile sources, and energy bought from the distribution net and the burning of biomass (timber).

Additionally, ICONTEC verified by visit on site, interview and desk review that the project is not expected to result in emissions other than those allowed by the methodology. Furthermore, ICONTEC is agree with the information on the greenhouse gases and emission sources shown in the Section B.3 table *Description of the sources and gases included in the project boundary, pag 8* of the PDD.

According to this information the total emission in absence of the project are 2,819,056 tonnes of CO2e during the 7 years crediting period, as indicated in Table 2 of the PDD.

3.5 ADDITIONALITY

3.5.1 Prior consideration of the CDM

The starting date of the Project activity was identified as 09/11/2010, the date when the concession contract No. 02/2010-MME-UHE Ferreira Gomes /3/ was signed, Icontec had access to the original document where the contract object is established, stating: .."Public facility for electric energy generation, that celebrates by the government represented by the Ministry of Mines and Energy – MME and the company Ferreira Gomes S.A.

The contract is the first real action executed by the PP in order to implement the activity project, so, according to the Glossary of CDM terms and paragraph 99 of the VVM, this date can be considered properly as the project starting date. According to this date the project is considered as a new project.

In this framework, ICONTEC verified that the following notifications, seeking to ensure the early consideration of the CDM, were issued:

- Form F-CDM-Prior consideration, posted on the UNFCCC website on 06/07/2010

CDM project activity complies with the requirements of the latest version of the Guidance on prior consideration of CDM.

3.5.2 Additionality analysis

In the Section B.5 of the PDD, PP has provided explanations for project additionality demonstrating through a thoroughly application of the "Tool for the demonstration and assessment of

additionality", Version 6.0.0,/24/ including: identification of alternatives, investment analysis, and common practice analysis.

The DOE carefully assessed and verified the reliability and creditability of all data, rationales, assumptions, justifications and documentation provided by project participants to support the demonstration of additionality, as described ahead, where can be seen that some CLAs were requested to obtain further explanations or justifications on some additionality demonstrations.

Step 1. Identification of alternatives to the project activity:

According to PDD, version 2, in this step the PP identified two alternatives: Continuation of current / baseline situation with electricity generation which has a high participation of fossil fuel plants and the proposed project activity undertaken without being registered as a CDM project activity.

The DOE deems that, given the institutional frame within the decisions are taken; the possibility of developing other project alternatives does not exist. Regarding the consistency with mandatory laws and regulations, by CL 4 the DOE asked the PP to clarify the concerns of each regulatory entity, which was done in the version 2 of the PDD.

Step 2. Investment analysis

An investment analysis was made to demonstrate that the project is not financially feasible without the revenues from the CERs. Benchmark analysis (Option III of the tool) was used. The DOE considers that this is the right decision, taking into account that there are no project alternatives to be compared, and the project does generate economic benefits other than CDM related income.

The financial indicator selected was the project internal rate of return (Project IRR) and the benchmark indicator was the Cost of Equity (Ke). These financial indicators are deemed suitable by the DOE, as they are appropriate for this kind of project, taking into account also that this is the common practice in analyzing energy projects.

The cost of equity (Ke) was calculated as the sum of a risk free rate of return (Rf), plus a Brazilian risk premium (ERP), plus a global equity risk premium (PEg).

$Ke = Rf + ERP + PEg$

The data and source used by the PP are the following:

Rf = 5.03% Average of return rates of American Bond (T-Bond) corresponding to years 2000 to 2009;

ERP (EMBI+ $_{2000-2009}$) = 5.2% Average of Brazilian Risk Premium, based on data from JP Morgan corresponding to years 2000 to 2009; (http://www.ipeadata.gov.br/Default.aspx)

PE_g = 5.77% Global Equit Risk Premium provided by Aswath Damodaran (http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ctryprem.html).

Therefore, in nominal terms:

$K_{e\ nominal}$ = 5.03% + 5.2% + 5.77% = 16.00%

In real terms, the PP considered the exclusion of the inflation rate 4.03%, so cost of equity for Ferreira Gomes Energia S.A is

$K_{e\ real}$ = 16.00% - 4.03% = 11.97%

The DOE is agree that this methodology of calculation follows the recommendations to the calculation of the equity presented in the "Guidelines on the assessment of investment analysis"/25/, published in 62 meeting of the CDM Executive Board (Annex 5). The specific source of data were verified by the DOE, therefore the DOE deems that 11.97% is an adequate IRR benchmark for this project.

Project IRR calculations

The cash flow for the project IRR calculations was presented by the PP in the excel spreadsheet: *Analise_Fin_FG_v2.xls*

The main inputs values of cash flow are the following, as presented in the Table 4 of the PDD:

Parameter	HPP Ferreira Gomes
Investment - Equity (R$)	390,202,986.00
Net Power (MW)	150.2
Energy Price (R$/MWh) – ACR (70%)	69.78
Energy Price (R$/MWh) – Free Market (30%)	132.00
Operation and Maintenance (R$/MWh)	3.44

Investment – Equity:

The value of R$ 390,202,986.00 corresponds to 48.13% of the total investment value of R$810,713,000.00, which is the equity parcel of the investment (Close to the default value suggested by the “Guidelines on the assessment of investment analysis”)/25/. This investment is verified in the Notice of Aution 03/2010 of ANEEL and audited by the Court of Account of the Union. Also, in this document is possible to verify that 51.87% of the sum to be invested is requested to the financial agent.

Net Power:

The value of 150.2 MW corresponds to the installed capacity of 252MW times the PLF of 0.596. These parameters were confirmed by the DOE in the ANEEL data base http://www.aneel.gov.br/aplicacoes/capacidadebrasil/energiaassegurada.asp (ANEEL Dispatch Nº 1.501, dated 27 May 2010.)

Energy prices:

As to energy prices, the values used to determine the energy volumes to be traded by the project activity both in the Regulated Hiring Environment (*ACR* from the portuguese - *Ambiente de Contratação Regulada*) and in the Free Market, come from the ANEEL auction which granted the exploitation rights of hydro potential Ferreira Gomes (auction 03/2010). At this announcement is stated that 70% of the energy must be traded in *ACR*, while other 30% can be traded in Free Market. In the auction results report issued by ANEEL on 09/2010, is possible to verify that the value of the energy to sales in *ACR*, offered by Alupar Investimentos S.A., owner of SPE Ferreira Gomes Energia S.A., is R$69.78/MWh. Therefore, this value represents the price of 70% of the energy to be traded by Ferreira Gomes Energia S.A. The other 30% will be traded in the Free Market, through bilateral agreements, for about R$132.00/MWh. This value comes from projections commissioned by project participants for the Brazilian energy market specialized consultancy – PSR (PSR has been a global provider of technological solutions and consulting services in the areas of electricity and natural gas since 1987), and reflects the scenario when the project activity starts generating (December 2014).

As a support document the page 5 of the Leilão_03_2010_Relatorio_Julgamento_preço_da_energia_ACR.pdf /20/ was consulted. This document establishes the energy prices in Brazil.

Considering the information sources consulted, the DOE deems that the energy prices used are suitable and conservative.

Operation and Maintenance

According to the commercial proposal to O&M services by the Company ENEX O&M, verified by the DOE, the annual costs of O&M are 4,524,000.00 R$, equivalent to 3.44 R$/MWh, which contains the sum of salaries and maintenance costs, which is deemed adequate by the DOE.

Other parameters used by the PP in the cash flow as fees, taxes and rates were rigorously examined and verified by the DOE in the onsite visit.

According to the cash flow just described, the IRR project calculated is 6.27%, far lower than the IRR benchmark of 16.0%, which demonstrate that the project is not financially feasible without the revenues from the CERs.

By CL 9 the DOE asked to the PP to run a cash flow including CDM revenues, only for reference purposes, besides to correct a wrong expression in the first paragraph in page 13 of the PDD version 1. The expression was corrected in the PDD version 2 and the new financial worksheet *Analise_Fin_FG_v2.xls /12/* included the project IRR calculation with the CDM revenues.

Sensitivity Analysis

A sensitivity analysis respect to the main variables was made. By this analysis the necessary variation in each variable in order to reach the IRR benchmark was found, with the following results:

Investment – Equity: -36.67%

Net Power: +53.75%

Energy price – Free market: +94.10%

Operation and Maintenance: -100% (Not enough)

As can be seen, all variations performed overcome the range of +/-10% recommended by the "Guidelines on the assessment of investment analysis". Based on this analysis it can be concluded that is highly unlikely that the project become financially feasible, even with the CDM incomes.

Step 3. Common practice analysis

In the PDD version 1, a rather complex common practice analysis was presented by filtering the number of hydro power plants in Brazil, according to the following criteria: Investment climate, similar scale, carbon finance incentives, purpose (auto generation).

By CL3 the PP was requested to update the PDD by applying the "*Guidelines on Common Practice*"/26/. In response, the PP followed a stepwise approach, described in the PDD version 2.

In the step 1 a range of power plants within the entire host country, as +/-50% of the design output or capacity of the proposed project activity, was selected.

In the step 2, plants selected in step 1, which have started commercial operation before the start date of the project, were identified.

In step 3, within plants identified in Step 2, those that apply technologies different to the technology applied in the proposed project activity were identified.

In step 4 the "*Guidelines on Common Practice*" was applied. The value calculated for parameters F, N_{diff} and N_{all} satisfy nearly the requirements of the guide.

The data presented in the PDD were confirmed through the ANEEL website, the entity that watches out the energy generation and monitories the company implementation activities.

In conclusion, ICONTEC considers that, based on the results of investment analysis and common practice analysis, just described, the HYDROELECTRIC FERREIRA GOMES PROJECT is additional.

3.6 MONITORING PLAN

The energy monitoring will be performed using 5 meters as follows: 3 meters one for each generator, 2 meters, one as a backup and the other as a principal. The inspection is carried out by ONS meters. All equipment is technically approved by ANEEL. The billing is by CCEE to be sent to Ferreira Gomes through SINERCOM platform that collects and distributes data to the generators.

The $Cap_{pj\text{-}Ferreira\ Gomes}$, will be permanently monitored, any change in the equipment must be reported to and approved by ANEEL. The capacity is monitored for the compliance with the equipment technical specifications, if these are change the $Cap_{pj\text{-}Ferreira\ Gomes}$ must be recalculated. All measuring control equipment is defined in Resolution 407 of October 19, 2000, the above is confirmed in http://www3.aneel.gov.br/Legisla%C3%A7%C3%A3o%20Basica/resolu%C3%A7es/res_aneel/2000/2000%20-%20RESOLU%C3%87%C3%83O%20No%20%20407.pdf

Regarding this area of the reservoir is controlled by SEMA and will be measured annually by Ferreira Gomes, it will be controlled by rule and if it exceeds, the gates will be opened to release water and keep the reservoir area. Gomes Ferreira also plans to conduct annual satellite measurements for each verification period, to demonstrate the maintenance of the reservoir area.

The measuring of water level in the reservoir was submitted to ANEEL and approved in the resolution done by ANA - national water agency and ANEEL No. 03 dated 10 August 2010, approving the planialtimetric in the Article 1, paragraph 2. It is define the number of rainfall stations. The installation, measurement and the daily frequency will be performed by ConstruServ.

During the validation it was indicated that the EF_{Res}, does not apply to the project, however, the PP has pointed it out because it was requested by the board on another project where the EF_{Res} did not apply, for this reason was shown in the PDD as a fixed value and unmonitored.

ICONTEC requested to the PP, through CL 6 and 7, to specify the flow of information and include the generation information checking system and include the organizational chart.

In order to ensure procedures of quality, the electricity meters will be subjected to regular maintenance and calibration, as required by the manufacturer guidelines.

3.7 CALCULATION OF GHG EMISSIONS

Baseline emissions, as presented in the table in section B.6.3 of the PDD, have been calculated by applying the formula:

$$BE_y = EF_{grid,CM,y} * EG_{PJ,y}$$

For the calculation $EF_{grid,CM,y}$ the six steps of "Tool to calculate the emission factor for an electricity system" (tCO_2/MWh), version 02.2.1 were applied. The Brazilian DNA has published the Resolution No 8 issued on May 26th, 2008[3], which defines the Brazilian Interconnected Grid as a single system that covers all the five macro-geographical regions of the country (North, Northeast, South, Southeast and Midwest), the boundaries of Brazilian electricity system are clearly defined.

For the purpose of estimation, the average annual generation of the plant ($EG_{PJ,y}$) during the crediting period is 1,315,752 MWh/yr. This figure has already been validated by the DOE.

The grid emission factor used is presented in the PDD as follow:

OM emission factor (tCO2/MWh) = 0.4787
BM emission factor (tCO2/MWh) = 0.1404
CM emission factor (tCO2/MWh) = 0.3095

The DOE verified that these figures have been extracted from MCT document, consulted in http://www.mct.gov.br/index.php/content/view/327118.html#ancora.

So, the annual baseline emissions are 1,315,752 * 0.3095 = 407,225 tCO2/year, as showed in the Section B.6.3 of the PDD and file: CERs JUN1150_v1.xls

Project emissions are considered as zero. Given that the power density of the project activity (PD) is greater than 10 W/m2, as calculated in Section B.6.1 of the PDD, it is correct to assume that project emission are zero, as indicated by the methodology.

Leakage emissions are not considered in this case according to the methodology.

[3] http://www.mct.gov.br/upd_blob/0024/24834.pdf

Therefore,

Emission reductions = Baseline emissions.

So, the project is intended to reduce **407,225 tCO2/year**, as indicated in the table in Section B.6.4 of the PDD.

3.8 ENVIRONMENTAL IMPACTS

On the 30/09/2008 was emitted a register issued by ANEEL and the 31/12/08 SEMA / AP emitted the terms of reference to present the environmental impact assessment EIA / RIMA. The Ferreira Gomes 22/12/2009 presented to SEMA the environmental studies.

The project has a direct influence in the municipality of Ferreira Gomes and Porto Grande and indirectly in Macapa.

All licenses, permits and notices of the different authorities involved in approving the project were provided by the project developer in paper by ICONTEC. These are listed below.

- Previous license LP 0040/2010 issued on April 2010 /11/
- Installation License to the construction site and borrow areas LI 0267/2010 issued on 28 September 2010. /13/
- Land dryer installation license LI 0278/2010 issued on 15 December 2010. /14/
- Authorization for removal of vegetation ASV No. 1601.5.2010.00014 (80,83 ha) /15/
- ICBMBio = Chico Mendes Institute for Biodiversity Conservation which manages the federal conservation units, confirmed through environmental license authorization N0.001/2009 that Ferreira Gomes Hydroelectric does not have an impact on the environmental conservation units. /16/
- Coordinator of the conservation units management Announces 004/2010 approving the project Ferreira Gomes Hydroelectric. /17/
- Installation license No. 056/2011 issued by the Secretary of State environment Amapa is issued in , Macapa in June 10, 2011, signed by the Director President / IMAP, it is evidenced by the original document. /18/

For the operation license, all the evidences of compliance with the obligations contained in the previous license must be presented.

Among the obligations assigned to Ferreira Gomes, it will control the water quality in 12 points using 19 parameters to verify that water quality does not suffer alterations with the construction of the project. Controlled by ANA - National Water Agency.

The website was consulted where the Project is mentioned:
http://malcolmallison.lamula.pe/2010/12/17/olas-surferazas-del-delta-del-amazonas-desaparecerian-por-represa/malcolmallison

This link was verified and it was found that the possibly affected zone that mentions the Link "Piratuba lake" is 133 km far away from the new Ferreira Gomes' dam, the area was left in the Basic Environmental Plan as influenced zone by the project.

It was verified that the Federal Ministry of Amapa was consulted on August 23, 2011 and did not present comments on the project.

ICONTEC could interview the Engineer Eldo Silva dos Santos, SEMA environment Analyst, at the meeting he indicated that the project has assigned an evaluation group for the Environmental Assessment Basic Plan for Hydroelectric Plant of Ferreira Gomes, whom will carry out a revision every two weeks for the environmental programs established in the PBA.

3.9 STAKEHOLDERS CONSULTATION

Three Public hearings were conducted in the municipalities of Ferreira Gomes, Porto Grande and Macapa. For all the meeting an act was written.

The invitations and the coordination of the hearings are conducted by SEMA and not for the project owner, this in compliance of the legislation established for these projects. 60 people from across the community attended.

The meetings date was February 24, 2010 in Ferreira Gomes, the act was done by SEMA from Ferreira Gomes, the meeting started at 10:00 am and ended 17:45.

The meetings were compiled and analyzed by EMS, who consolidated the information, the process ended with the granting of the previous license.

SEMA asked Ferreira Gomes the investment for the creation of an environmental reserve site, the answer is the reserve site would be developed and a meeting would be conducted to coordinate the details.

It was inquired about the potential environmental impacts associated to fishing, it was told that this is done in a different place that the project will impact, so that fishermen who were more influenced by the project did not comment. This is evidenced by the letter sent to Colonia de Pescadores Z-7 sent by Ferreira Gomes Energia SA, received by Mrs. Edna Tavares da Silva on August 23, 2011. Verified by mail receipt notice of Brasil /19/.

As part of the control over the project's influence in the community, the Secretary of Agriculture of

the municipality of Ferreira Gomes participated, who has the responsibility to ensure for the resources of the community.

Through the delivery date of the receipt of mail from Brazil, ICONTEC was able to confirm the delivery of the letters sent to stakeholders submitted the project, after this time there were no comments from interested parties regarding the project.

4. GLOBAL STAKEHOLDERS CONSULTATION

The PDD version 01 dated 15/09/2011 submitted by Ferreira Gomes Energia S/A, was made publicly available at UNFCCC website during a 30 days period from 28-09-2011 to 27-10-2011.
Parties, stakeholders and NGOs were invited to provide comments through the website.
During the global publication no comments were received from stakeholders, this information has been confirmed in the link http://cdm.unfccc.int/Projects/Validation/DB/0DC5DCMIUW5VSB03WLVSR9Z7EJ3PMK/view.html at 11/11/2011.

5. VALIDATION OPINION

ICONTEC has performed a validation of the Ferreira Gomes hydro power plant CDM project activity, in Brazil. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the Project Design Documentation and the subsequent follow up interviews has provided ICONTEC with sufficient evidence to determine the fulfillment of the stated criteria.

The project activity is being proposed as unilateral project by Ferreira Gomes Energia S/A, Brazil has provided approval of voluntary participation and meets all requirements to participate in CDM. The Brazilian DNA confirmed that the project helps in achieving sustainable development.

The project correctly applies the methodology: ACM0002 Version 12.2.0

The project involves the main civil structures are already in place, most of the construction works will concentrate on the construction of the power plant and the discharge works of a run-of-river hydropower plant with a capacity of 252 MWh/yr, in Brazil, his name is: Ferreira Gomes Hydro Power Plant CDM Project Activity. It is demonstrated that the project is 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.

The total emission reductions from the project are estimated to be on 407,225 tCO_{2e} per year over the selected 7 year crediting period. The emission reduction forecast has been checked and it is deemed likely that the stated amount is achieved because the underlying assumptions do not change.

In summary, it is ICONTEC's opinion that the Ferreira Gomes Hydro Power Plant CDM Project Activity, in Brazil, as described in the PDD version 02, is additional, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology ACM0002 Version 12.2.0 ICONTEC thus requests the registration of the project as a CDM project activity."

Bogotá, January, 2012

Diego Caballero
Director of conformity assessment
ICONTEC

REFERENCES

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

/1/ CDM Project Design Document, including Baseline Methodology and the Monitoring Plan.

/2/ Inventory studies and feasibility. Centrais Eletricas Brasileiras S.A. Eletrobras, Neoenergia Investimentos S.A.; Construtora Norberto Odebrecht S.A. y Centrais Eletricas do Norte do Brasil S.A. – Eletronorte.

/3/ Concession contract # 02 /2010 MME- UHE Ferreira Gomes

/4/ Contract Supplied, supervision of montage and supervision of the purchase of turbines, generators and auxiliary equipments systems between Ferreira Gomes Energia S.A. and Voith Hydro da Amazonia Ltda, Alupar investimento S.A. and Voith Hydro Ltda.

/5/ Plano: Canteiro de obras – UHE Ferreira Gomes. Construction Canteiro de obras planta FGE-DE2x-CAC19-0001-5 del 19/04/2011.

/6/ Plano: Central hidroeléctrica Ferreira Gomes. Construction general- planta piloto. FG-DE-2A – CO – A20-0001-R03 del 25/10/2010.

/7/ Baseline calculation data in spreadsheet: CERs JUN1150_v1.xls

/8/ Cofferdam installation license (cofferdams constructions) - 15/12/2010 (preparation for the work, use of explosives).

/9/ Total installation license 10/06/2011.

/10/ A2 Contour map.pdf of May 2011. (A2 mapa planialtimetric.pdf)

/11/ LP 0040/2010 Previous License issued on 09 April 2010.

/12/ *Analise_Fin_FG_v2.xls*

/13/ Installation License to the construction site and borrow areas LI 0267/2010 issued on 28 September 2010.

/14/ Land dryer installation license LI 0278/2010 issued on 15 December 2010.

/15/ Authorization for cutting vegetation ASV No. 1601.5.2010.00014 (80,83 ha)

/16/ License environmental N0.001/2009 of ICBMBio= Instituto Chico Mendes.

/17/ Coordinating management of conservation units Announces 004/2010 approving the hydroelectric project Ferreira Gomes.

/18/ Installation license No. 056/2011 of 10th june 2011, SEMA.

/19/ Mail delivery notice of Brazil.

/20/ Leilão_03_2010_Relatorio_Julgamento_preço_da_energia_ACR.pdf

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

/21/ Methodology ACM0002 version 12.2.0
/22/ Validation and Verification Manual. UNFCCC.
/23/ Tool to calculate the emission factor for an electricity system. Version 02.2.1.
/24/ Tool for the demonstration and assessment of additionality. Version 6.0.0.
/25/ Guidelines on the assessment of investment analysis. Version 05.
/26/ Guidelines on Common Practice. Version 01.0

ANNEX A. VALIDATION PROTOCOL

TABLE 1. MANDATORY REQUIREMENTS FOR 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*	*OK*	*No, the project will assist Parties included in Annex I at moment.*
2. *The project shall assist non-Annex I Parties in achieving sustainable development and the project has obtained confirmation by the host country that the project assists in achieving sustainable development*	*Kyoto Protocol Art. 12.2, Procedures for Small Scale CDM Project Activities §23a*		
3. *The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC*	*Kyoto Protocol Art.12.2.*	*OK*	*The project assists non-annex I parties*
4. *The project shall have the written approval of voluntary participation from the designated national authorities of each party involved* *Each letter confirms that:* *(a) The Party is a Party to the Kyoto Protocol;* *(b) Participation is voluntary;* *(c) In the case of the host Party, the proposed CDM project activity contributes to the sustainable development of the country;* *(d) It refers to the precise proposed CDM project activity title in the PDD being submitted for registration.*	*Kyoto Protocol Art. 12.5a, Procedures for Small Scale CDM Project Activities §23a* *V/V Manual art.44 to 48*	*OK*	*Pending*
5. *The emission reductions shall be actual, measurable and give long-term benefits related to the mitigation of climate change*	*Kyoto Protocol Art. 12.5b*	*OK*	*Yes, the emission reductions are calculated in chapter B.6 of the PDD and estimation of overall emission reductions is 407,225 tCO2/year.*
6. *Reduction in GHG emissions shall be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered*	*Kyoto Protocol Art. 12.5c, Marrakesh Accords, CDM Modalities §43*	*OK*	*This project is additional, cannot be developed in the absence of CDM.*

	CDM project activity			
7.	*In case that public funding from Parties included in Annex I is used for the project activity, these parties shall provide an affirmation that shuch funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of these parties*	*Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2*	*OK*	*There is no public funding.*
8.	*Parties participating in the CDM shall designate a national authority for the CDM*	*CDM Modalities and procedures §29*	*OK*	*MCT is the National Environmental Authority of Brazil is the designated national authority for the Clean Development Mechanism by UNFCCC Secretariat.*
9.	*The host party and the participant Annex I Party shall be a party to the Kyoto protocol*	*CDM Modalities and Procedures § 30, 31b*	*OK*	*Brazil signature: 29 April 1998* *Ratification acceptance: 23 August 2002* *Entry into force: 16 February 2005 .*
10.	*The participant Annex I Party's assigned amount shall have been calculated and recorded*	*CDM Modalities and Procedures §31b*	*OK*	*No Annex 1 country involved.*
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*	*OK*	*No Annex 1 country involved.*
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 (if applicable)*	*Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c Decision -/CMP.2, paragraph 28,*	*NA*	*NA*
13.	*The project design document shall conform with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website*	*Simplified Modalities and Procedures for Small Scale CDM Project Activities, Appendix A V/V manual art. 55*	*OK*	*The PDD is conforming to the latest template and guidance from the CDM Executive Board available at the website, for the date of the project.*
14.	*The proposed project activity shall conform 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*	*NA*	*NA*

	Activities §22e		
15. Comments by local stakeholders are invited, and a summary of these provided	*Simplified Modalities and Procedures for Small Scale CDM Project Activities §22b and VVM*	*OK*	*Section E in PDD*
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 and VVM*	*OK*	*The project comply with environmental impact assessment request by the environmental authority.*
17. Parties, stakeholders and UNFCCC accredited NGOs have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available (45 days for A/R projects)	*Simplified Modalities and Procedures for Small Scale CDM Project Activities §23b,c,d. and VVM*	*OK*	*The PDD version 01, 15th September 2011, submitted by Ferreira Gomes S/A, was made publicly available at ICONTEC's climate change website and UNFCCC website and Parties, stakeholders and NGOs were invited to provide comments through the CDM website during a 30 days period from 28/09/2011 to 27/10/2011.* *During the global publication no comments were received from stakeholders.*
18. The project participants are listed in tabular form in section A.3 of the PDD and this information is consistent with the contact details provided in annex 1 of the PDD.	*V/V Manual art.51*	*OK*	*The project participants are listed in section A.3 and this information is consistent with the contact details provided in annex 1 of the PDD.*

TABLE 2 REQUIREMENTS CHECKLIST (ACCORDING VALIDATION AND VERIFICATION MANUAL)

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
General Description of Project Activity *The project design is assessed.*					
1. Approval					
All Parties involved have approved the project activity.					
A letter of approval has been issued by the respective Party´s DNA and include the confirmation of: (a) The Party is a Party to the Kyoto Protocol; (b) Participation is voluntary; (c) In the case of the host Party, the proposed CDM project activity contributes to the sustainable development of the country; (d) It refers to the precise proposed CDM project activity title in the PDD being submitted for registration.	*PDD*	*I DR*			
2. Participation					
All project participants have been listed in a consistent manner in the project documentation, and their participation in the project activity has been approved by a Party to the Kyoto Protocol.	*PDD A.3.*	*I DR*	*The following parties are involved in the project activity: Brazil (Host party). The project participant is: Ferreira Gomes S/A (Private).*	*OK*	*OK*
The approval of participation has been issued from the relevant DNA	*Letter of approval UNFCCC*	*DR*	*Yes, The Ministry of science and technology is DNA designated in Brazil.*	*OK*	*OK*
3. Project design document					
3.1 The PDD used as a basis for validation shall be prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website.	*PDD*	*DR*	*The PDD is conforming to the latest template and guidance from the CDM Executive Board available of the website, for the date of the project.*	*OK*	*OK*
3.2 Does the PDD correctly describe the project boundary, including the physical delineation? (components and facilities used to mitigate GHG's	*PDD A.4.1.4*	*DR I*	*The project is located geographically in the municipalitys of Ferreira Gomes in the state of Amapá, north region of Brazill, the project is located on the Araguari river. See CL 2.*	*OK*	*OK*
3.3. Will the project result in technology transfer to the host	*PDD*	*DR*	*No, technology transfer project to the host country.*	*OK*	*OK*

country?	*A.2*	*I*			
3.4 Does the project require extensive initial training and maintenance efforts in order to work as intended during the project period? Does the project make provisions for meeting training and maintenance needs?	*PDD B.7.2*	*DR I*	*Yes, the project require extensive initial training and maintenance efforts for working as intended during the project period.*	*OK*	*OK*
4. Project description					
4.1 The PDD contains a clear description of the project activity that provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation.	*PDD A.2*	*DR*	*Yes, the PDD provides the reader with information necessary to understand clearly the activities to be undertaken by the project. See CL 1.*	*OK*	*OK*
4.2 Duration of the Project/ Crediting Period Are the project's starting date and operational lifetime clearly defined and reasonable?	*PDD C.2.1.1*	*DR I*	*Yes, the starting date is 01/01/2015 or with the registration of project activity on CDM, whichever occur later and operational lifetime is 31 years. The starting date of the project activity is 09/11/2010.*	*OK*	*OK*
4.3 Is the assumed crediting period clearly defined and reasonable (renewable crediting period of seven years with two possible renewals or fixed crediting period of 10 years with no renewal)?	*PDD C.2.*	*DR I*	*Yes, the crediting period is reasonable for 7 years, renewable for a total of three crediting periods, up to 21 years. See CL 10.*	*OK*	*OK*
5. Baseline and monitoring methodology					
5.1 General requirements *The baseline and monitoring methodologies selected by the project participants comply with the methodologies previously approved by the CDM Executive Board.*	*PDD B.1 ACM0002 version 12.2.0.*	*DR*	*Yes, the project applies the methodology ACM0002 version 12.2.0. Tool to calculate the emission factor for an electricity system version 02.2.1 Tool for the demonstration and assessment of additionality version 6.0.0. See CL 3.*	*OK*	*OK*
5.1.1 Is the selected monitoring methodology in line with the approved methodology and is applicable for this project?	*PDD B.7 ACM0002*	*DR*	*The monitoring methodology is the one approved. It is described in Chapter B.7. Application of a monitoring methodology and description of the monitoring plan del PDD.*	*OK*	*OK*

	version 12.2.0				
5.2 Applicability of the select methodology to the project activity *The methodology is correctly quoted and applied by comparing it with the actual text of the applicable version of the methodology available on the UNFCCC CDM website.*	*PDD B.2 ACM0002 version 12.2.0*	*DR*	*In section B.2. of the PDD it is explained why the project activity refers to ACM0002 version 12.2.0 See CL 4.*	*OK*	*OK*
5.3 Project boundary *The project boundary, including the physical delineation of the proposed CDM project activity included within the project boundary for the purpose of calculating project and baseline emissions for the proposed CDM project activity.*	*PDD B.3.*	*DR*	*The Project includes a physical delineation of the activities scope included in the calculation of project and the baseline emissions.*	*OK*	*OK*
5.3.1 Have been all sources and GHGs required by the methodology included within the project boundary?	*PDD B.3*	*DR I*	*During the visit to the project the information of Chapter B.3 was validated regarding GHG sources included in the methodology.*	*OK*	*OK*
5.4 Baseline identification *The PDD identify the baseline for the proposed CDM project activity, defined as the scenario that reasonably represents the anthropogenic emissions by sources of GHGs that would occur in the absence of the proposed CDM project activity.*	*PDD B.4*	*DR*	*In this project the baseline determination has been developed following documents:* *• UNFCCC-approved methodology: ACM0002, Consolidated baseline methodology for grid connected electricity generation from renewable sources, Version 12.2.0* *· Methodological tool: Tool for the demonstration and assessment of additionality, Version 6.0.0.* *· Methodological tool: Tool to calculate the emission factor for an electricity system, Version 02.2.1* *.*	*OK*	*OK*
5.4.1 Is the application of the methodology and the discussion and determination of the chosen baseline transparent and conservative?	*PDD B.4*	*DR*	*Yes, ICONTEC found that all information, assumptions and data used in the identification of the baseline scenario are transparent and conservative.*	*OK*	*OK*

5.4.2 Are the assumptions and data used in the identification of the baseline scenario relevant, justified appropriately, correctly quoted and interpreted, supported by evidence and can be deemed reasonable?	*PDD B.4*	*DR*	*Yes, ICONTEC found that all information, assumptions and data used in the identification of the baseline scenario are relevant, appropriately justified, correctly quoted and interpreted, supported by evidence and can be deemed reasonable.*	*OK*	*OK*
5.4.3 Are relevant national and/or sectoral policies and circumstances taken into account?	*PDD A.2*	*DR*	*Yes, circumstances and policies were taken into account in the project.*	*OK*	*OK*
5.4.4 Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?	*PDD B.5*	*DR I*	*Yes, the PDD presents more than one scenario, the alternatives are defined as follows:* *· The proposed project activity undertaken without being registered as a CDM project activity;* *· Continuation of current / baseline situation (no project activity undertaken).*	*OK*	*OK*
5.4.5 Does the steps taken and equations applied to calculate baseline emissions, comply with the requirements of the selected baseline and monitoring methodology.	*PDD B.6*	*DR*	*Formulae and equations used for calculating baseline emissions comply with the monitoring methodology.*	*OK*	*OK*
5.5 Algorithms and/or formulae used to determine emission reductions *The steps taken and equations applied to calculate project emissions, baseline emissions, leakage and emission reductions shall comply with the requirements of the selected baseline and monitoring methodology.*	*PDD B.6*	*DR*	*Formulae and equations used for calculating baseline emissions comply with the described in category ACM0002 version 12.2.0.* *See CL 5.*	*OK*	*OK*
5.5.1 The equations and parameters in the PDD have been correctly applied by comparing them to those in the selected approved methodology.	*PDD B.6*	*DR*	*Formulae and equations used for calculating baseline emissions comply with the described in category ACM0002 version 12.2.0.*	*OK*	*OK*
6 Additionality of a project activity					
6.1Prior consideration of CDM					

6.1.1 Is the start date of the project in accordance with the "Glossary of CDM terms"?	*PDD B.5.*	*DR*	*Yes, it is. The evidence are:* *- The starting date of the project activity was identified as 09/11/2010, date of signature Concession contract No. 02/2010- MME-UHE Ferreira Gomes.* *- Letter of declaration sent by executive secretary of Interministerial Commission on Global Climate Change of Brazil to EQAO, confirmed received of the project documentation at 6/7/2010.* *- Prior consideration of the CDM 6 July, 2010.*	*OK*	*OK*
6.1.2 If the project start date is prior to the date of publication of the PDD for stakeholder comments, have been demonstrated that the CDM benefits were considered necessary in the decision to undertake the project as a proposed CDM project activity?	*PDD B.5.*	*DR I*	*The project start date is November 9, 2010, and the communications at DNA is 06/07/2010 and the meetings with community were 17 May 2010, informing the community of the benefits of the project.*	*OK*	*OK*
6.1.3 Has the project been correctly identified as a new or existing project	*PDD*	*DR I*	*Yes, the project has been correctly identified as a new project activity.*	*OK*	*OK*
6.1.4.Does the evidence indicates: *a) awareness of the CDM project prior to the project activity start and that benefits were a decisive factor to proceed with the project,* *b) reliable evidence that indicates that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation, and* *c) Does the CDM project activity comply with the requirements of the latest version of the Guidance on early consideration of CDM?*	*PDD C.1.1*	*DR I*	*The project indicates that it is feasible only with CDM resources.* *The DOE was able to verify the continuing and real actions that are taken into account in the CDM project.* *The use of last version of the Guidance on early consideration of CDM was verified.*	*OK*	*OK*
6.2 Identification of alternatives					
6.2.1. Is the list of alternatives included as one of the options that the project activity is undertaken without being registered as a proposed CDM project activity?	*PDD B.5*	*DR*	*Considering the significant initial investment associated with hydroelectric power plants in* *Brazil, the project developer would not invest in the*	*OK*	*OK*

			project without the assistance of CDM		
6.2.2 Does the list contains all plausible alternatives that the DOE, on the basis of its local and sectoral knowledge, consider to be viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity?	*PDD B.5*	*DR*	*Yes, the project presents the alternatives that are possible in the Brazilian context.*	*OK*	*OK*
6.2.3 Does the alternative comply with all applicable and enforced legislation?	*PDD B.5.*	*DR*	*Yes, if the project doesn´t comply with the applicable legislation, couldn't development, because the legislation in Brazil is very hard.*	*OK*	*OK*
6.2.4. Have credible alternatives been identified to the project activity in order to determine the most realistic baseline scenario (unless the approved methodology that is selected by the proposed CDM project activity prescribes the baseline scenario and no further analysis is required)?	*PDD B.5.*	*DR*	*Alternatives identified are credible and can occur in the context of the hydropower in Brazil.*	*OK*	*OK*
6.3 Investment analysis (if applicable)					
6.3.1 If investment analysis has been used to demonstrate the additionality of the proposed CDM project activity, Does the PDD provide evidence that the proposed CDM project activity would not be: (a) The most economically or financially attractive alternative; or (b) Economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs)?	*PDD B.5*	*DR*	*According to the analysis of IRR, the project it's not economically or financially feasible without CERs. See CL 9.*	*OK*	*OK*
6.3.2 Which approach has been selected to demonstrate 6.3.1? (a) The proposed CDM project activity would produce no financial or economic benefits other than CDM-related income. Document the costs associated with the proposed CDM project activity and the alternatives identified and demonstrate that there is at least one alternative which is less costly than the proposed CDM project activity; (b) The proposed CDM project activity is less economically or financially attractive than at least one other credible and realistic alternative;	*PDD B.5*	*DR I*	*Option (c) was selected, using the project IRR as financial indicator in a benchmark analysis, where the Cost of Capital was taking as benchmark IRR.*	*OK*	*OK*

(c) The financial returns of the proposed CDM project activity would be insufficient to justify the required investment.					
6.3.3 Have the parameters of the financial calculations been correctly used?	*PDD B.5*	*DR I*	*Yes, the financial parameters were presented in the interview.*	*OK*	*OK*
6.3.4 Is the benchmark suitably applied?	*PDD B.5*	*DR I*	*Yes, comply with Tool for the demonstration and assessment of additionality, Version 6.0.0*	*OK*	*OK*
6.3.5 Are the assumptions appropriate and the financial calculations correct?	*PDD B.5*	*DR I*	*Yes, financial calculations are correct according to the information presented in the interview.*	*OK*	*OK*
6.4 Barrier analysis (if applicable)			*N.A.*		
6.4.1 Does the CDM project activity face barriers that prevent the implementation of this type of projects?			*N.A.*		
6.4.2 Does the CDM project activity face barriers that do not prevent the implementation of at least one of the alternatives?			*N.A.*		
6.5 Common practice analysis (*For proposed large-scale CDM project activities, unless the proposed project type is first-of-its kind)*					
6.5.1 Is the project activity widely observed and commonly carried out in the region?	*PDD B.5*	*DR I*	*The activity project not is a common practice, the information indicated in the PDD, has been confirmed by ICONTEC with information official of ANEEL published in web site. See CL 3*	*OK*	*OK*
6.5.2 If similar and operational projects are already widely observed and commonly carried out in the defined region, are there essential distinctions between the proposed CDM project activity and the other similar activities?	*PDD B.5*	*DR I*	*In step 4 the "Guidelines on Common Practice" was applied. The value calculated for parameters F, N_{diff} and N_{all} satisfy nearly the requirements of the guide. See CL 8.*	*OK*	*OK*
7 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.*					

7.1 Is the selected monitoring plan in line with the approved methodology and are applicable for this project?	*PDD B.7*	*DR I*	*The monitoring plan complies with the methodology ACM0002 version 12.2.0*	*OK*	*OK*
7.2 Are the means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified?	*PDD B.7*	*DR I*	*Yes, data and control means are sufficient to monitor emissions reduction.* *See CL 6 and 7.*	*OK*	*OK*
7.3 Monitoring of Project Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
7.3.1 Does the monitoring plan provide for the collection and filing of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	*PDD B.7.1*	*DR I*	*The project emissions are zero.*	*OK*	*OK*
7.4 Monitoring of Leakage *It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.*					
7.4.1 Does the monitoring plan provide for the collection and filing of all relevant data necessary for determining leakage?	*PDD B.6.1*	*DR I*	*According with ACM0002, v.12.2.0, no leakage emissions are considered.*	*OK*	*OK*
7.4.2 Are the choices of leakage indicators reasonable?			*N.A*		
7.4.3 Will it be possible to monitor the specified GHG leakage indicators?			*N.A*		
7.4.4 Will the indicators give opportunity for real measurement of leakage effects?			*N.A*		
7.5 Monitoring of Baseline Emissions *It is established whether the monitoring plan provides for reliable and complete project emission data over time.*					
7.5.1 Does the monitoring plan provide for the collection and filing of all relevant data necessary for determining baseline emissions during the crediting period?	*PDD B.7.2*	*DR I*	*Yes, the data will be stored electronically for two years after the end of the crediting period.*	*OK*	*OK*

7.5.2 Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	*PDD B.6.3*	*DR I*	*Yes, the indicators are reasonable.*	*OK*	*OK*
7.5.3 Will it be possible to monitor the specified baseline indicators?	*PDD B.6.3*	*DR I*	*Yes, it is possible to monitor by measuring the generation of energy.*	*OK*	*OK*
7.5.4 Will the indicators give opportunity for real measurements of baseline emissions?	*PDD B.6.3*	*DR I*	*Yes, the measuring is in real time.*	*OK*	*OK*
7.6 Project Management Planning *It is checked that project implementation is properly prepared for and that critical arrangements are addressed.*					
7.6.1 Is the authority and responsibility of project management clearly described?	*PDD B.7.2*	*DR I*	*Yes, Chapter B.7.2 describes the authority and responsibility for the personnel of the project.*	*OK*	*OK*
7.6.2 Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	*PDD B.7.2*	*DR I*	*Yes, Chapter B.7.2 describes the authority and responsibility for the personnel of the project.*	*OK*	*OK*
7.6.3 Are procedures for training of monitoring personnel identified?	*PDD B.7.2*	*DR I*	*Yes, Chapter B.7.2 describes the training that will be provided to the personnel.*	*OK*	*OK*
7.6.4 Are procedures for emergency preparedness for cases where emergencies can cause unintended emissions identified?	*PDD B.7.2*	*DR I*	*Yes, Chapter B.7.2 takes into account the controls for emergency situations.*	*OK*	*OK*
7.6.5 Are procedures for calibration of monitoring equipment identified?	*PDD B.7.2*	*DR I*	*Yes, Chapter B.7.2 indicates how the equipment calibrations will be done.*	*OK*	*OK*
7.6.6 Are procedures for maintenance of monitoring equipment and installations identified?	*PDD B.7.2*	*DR I*	*Yes, Chapter B.7.2 indicates how the equipment calibrations will be done.*	*OK*	*OK*
7.6.7 Are procedures for monitoring, measurements and reporting identified?	*PDD B.7.2*	*DR I*	*Yes, Chapter B.7.2 identifies the measurements, monitoring and reports that will be performed.*	*OK*	*OK*
7.6.8 Are procedures for day-to-day records handling identified (including what records to keep, storage area of records and	*PDD B.7.2*	*DR I*	*Yes, Chapter B.7.2 indicates that the monitoring is performed on line and in real time.*	*OK*	*OK*

how to process performance documentation)?					
7.6.9 Are procedures for dealing with possible monitoring data adjustments and uncertainties identified?	*PDD B.7.2*	*DR I*	*Yes, Chapter B.7.2 indicates the procedure to be followed.*	*OK*	*OK*
7.6.10 Are procedures for internal audits of GHG project compliance with operational requirements, where applicable, identified?	*PDD B.7.2*	*DR I*	*Yes, Chapter B.7.2 indicates the procedure to perform internal audit.*	*OK*	*OK*
7.6.11 Are procedures for project performance review identified?	*PDD B.7.2*	*DR I*	*Yes, Chapter B.7.2 indicates the procedure to be followed.*	*OK*	*OK*
7.6.12 Are procedures for corrective actions identified?	*PDD B.7.2*	*DR I*	*Yes, Chapter B.7.2 indicates the procedure to be followed.*	*OK*	*OK*
7.7. Calculation of GHG Emissions by Source *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 ex-ante estimated project GHG emissions focuses on transparency and completeness of calculations.*					
E.1.1 Are all aspects related to direct and indirect GHG emissions captured in the project design?	*PDD B.6.3*	*DR*	*Yes the project addressed the direct and indirect emissions.*	*OK*	*OK*
E.1.2 Have all relevant GHG and sources been evaluated?	*PDD B.6.3*	*DR I*	*Yes, all the sources were evaluated.*	*OK*	*OK*
E.1.3 Do the methodologies for calculating project emissions comply with existing good practices?	*PDD B.6.3*	*DR I*	*Yes, the GHG emission reduction achieved by the project activity will measure the quantity of electrical power supplied to the grid by the hydroelectric power station.*	*OK*	*OK*
E.1.4 Are the calculations documented in a complete manner?	*PDD B.6.3*	*DR I*	*Yes, the calculations are complete.*	*OK*	*OK*

E.1.5 Have conservative assumptions been used?	*PDD B.6.3*	*DR I*	*Yes, the project is conservative.*	*OK*	*OK*
E.1.6 Are uncertainties in the project emissions estimates properly addressed?	*PDD B.6.3*	*DR*	*Yes, the emissions estimates are properly addressed.*	*OK*	*OK*
7.8 Leakage *It is assessed whether there are leakage effects and they have been properly assessed, i.e. change of an emission which occurs outside the project boundary and which are measurable and attributable to the project.*					
7.8.1 Are leakage calculation required for the selected project category and if yes, are the relevant leakage effects assessed?			*N.A*		
7.8.2 Have these leakage effects been properly accounted for in calculations (If applicable)?			*N.A*		
7.8.3 Are the calculations documented in a complete and transparent manner (If applicable)?			*N.A*		
7.8.4 Have conservative assumptions been used when calculating leakage (If applicable)?			*N.A*		
7.8.5 Are uncertainties in the leakage estimates properly addressed (If applicable)?			*N.A*		
7.9 Baseline GHG Emissions *The validation of ex-ante estimated GHG emissions focuses on transparency and completeness of calculations.*					
7.9.1 Are the baseline emission boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	*PDD B.3.*	*DR I*	*The boundaries of the project is clearly defined.*	*OK*	*OK*
7.9.2 Are all aspects related to direct and indirect baseline emissions captured in the project design?	*PDD B.3.*	*DR I*	*Yes, direct and indirect baseline emissions were addressed.*	*OK*	*OK*
7.9.3 Have all relevant GHG and sources been evaluated?	*PDD B.3.*	*DR I*	*Yes the project assessed all the sources.*	*OK*	*OK*

7.9.4 Do the methodologies for calculating baseline emissions comply with existing good practices?	*PDD B.3.*	*DR I*	*Yes, the project complies with good practices of the methodology ACM0002. Version 12.2.0*	*OK*	*OK*
7.9.5 Are the calculation documented in a complete and transparent manner?	*PDD B.6.3*	*DR I*	*Yes, a spreadsheet detailing the calculation is provided for validation. Please find background information regarding the calculation in PDD section B.6.3 above.*	*OK*	*OK*
7.9.6 Have conservative assumptions been used	*PDD B.3.*	*DR I*	*Yes, conservative data have been taken.*	*OK*	*OK*
7.9.7 Are uncertainties in the baseline emissions estimates properly addressed?	*PDD B.3.*	*DR I*	*Emissions estimates were properly calculated.*	*OK*	*OK*
7.9.8 Does the steps taken and equations applied to calculate baseline emissions comply with the requirements of the selected baseline and monitoring methodology.	*PDD B.6.3*	*DR I*	*Yes, a spreadsheet detailing the calculation is provided for validation. Please find background information regarding the calculation in PDD section B.6.3 above.*	*OK*	*OK*
7.10 Emission Reductions *Validation of ex-ante estimated emissions.*					
7.10.1 Will the project result in fewer GHG emissions than the baseline scenario?	*PDD B.6.3*	*DR I*	*Yes, is expected to reduce 407,225 tCO2/year.*	*OK*	*OK*
7.10.2 Does the steps taken and equations applied to calculate emission reductions comply with the requirements of the selected baseline and monitoring methodology?	*PDD B.6.3*	*DR I*	*Please find background information regarding the calculation in PDD section B.6.3 above.*	*OK*	*OK*
8 Sustainable development *The project's contribution to sustainable development is assessed.*					
8.1 The letter of approval by the DNA of the host Party confirms the contribution of the proposed CDM project activity to the sustainable development of the host Party.	*Letter of approval*	*DR*		*OK*	*OK*
8.2 Will the project create other environmental or social benefits	*PDD*	*DR*	*The project generates positive impacts by increases*	*OK*	*OK*

than GHG emission reductions?	*Section D*		*clean electricity generation in the Brazilian grid, leading to a more stable and environmentally friendly supply and decreases dependence on fossil fuels; decreases pollution and therefore the social costs related to this.*		
8.3 Will the project create any adverse environmental or social effects?	*PDD Section D*	*DR*	*Installation and operation of the equipment being part of the CDM project do not generate negative environmental impacts; therefore the environmental impact assessment.*	*OK*	*OK*
8.4 Is the project in line with sustainable development policies of the host country?	*PDD Section D*	*DR*	*Yes, this project comply with sustainable policies.*	*OK*	*OK*
8.5 Is the project in line with relevant legislation and plans in the host country?	*PDD Section D*	*DR*	*There are not legal requirements that demand to do it.*	*OK*	*OK*
9 ***Local stakeholders consultation***					
9.1 Have relevant stakeholders been consulted?	*PDD E*	*DR I*	*Yes, it is See 3.9 Comments by local stakeholders in the validation report.*	*OK*	*OK*
9.2 Have appropriate media been used to invite comments by local stakeholders?	*PDD E*	*DR I*	*The notification was done by invitations to community members, NOG´s, representatives of the municipality and regional government.*	*OK*	*OK*
9.3 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 E.2*	*DR*	*Yes, the consultation process was carried out in accordance with regulations/laws of Brazil (host country). Article 3 of Resolution No. 7.*	*OK*	*OK*
9.4 Is a summary of the stakeholder comments received /provided?	*PDD E.2*	*DR*	*In section E.2 a summary of stakeholder comments is found.*	*OK*	*OK*

9.5 Has due account been taken of any stakeholder comments received?	*PDD Section E.2*	*DR*	*Comments or questions by the stakeholders were considered.*	*OK*	*OK*
9.6 Were the stakeholder invited to comment on the proposed CDM project activity prior to the publication of the PDD on the UNFCCC webs?	*PDD Section E.2*	*DR*	*Yes, the PDD was made publicly available at UNFCCC website during a 30 days period from period of public consultation from 28/09/2011 to 27/10/2011. Parties, stakeholders and NGOs were invited to provide comments through the website.* *No comments were received from stakeholders.*	*OK*	*OK*
10 Environmental impacts					
10.1 Does the host country legislation require analysis of the environmental impacts of the project activity?	*PDD D.1.*	*DR*	*Yes, it is. The construction of the hydroelectric plant has significant environmental impacts.*	*OK*	*OK*
10.2 Does the project comply with environmental legislation in the host country?	*PDD D.1.*	*DR*	*Yes, it is. This is requirements that explain in chapter 3.8 of validation report.*	*OK*	*OK*
10.3 Will the project create any adverse environmental impacts?	*PDD D.1.*	*DR*	*Installation and operation of the equipment being part of the CDM project do not generate negative environmental impacts.*	*OK*	*OK*
10.4 Have environmental impacts been identified and addressed in the PDD?	*PDD D.1.*	*DR*	*The project generates are positive impacts.*	*OK*	*OK*
SPECIFIC VALIDATION ACTIVITIES					
A.1 SMALL SCALE PROJECT ACTIVITY (IF APPLICABLE)					
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 (Decision-/CMP.2 (Further guidance relating to the clean development mechanism) revises the definitions for small-scale CDM project activities referred to in paragraph 6 (c) of decision 17/CP.7.)?			*NA*		

A.1.2 The small scale project activity is not a debundled component of a larger project activity?			*NA*		
A.1.3 Does the proposed project activity conforms to one of the project categories defined for small scale CDM project activities?			*NA*		
A.2 AFFORESTATION AND REFORESTATION (A/R) PROJECT ACTIVITIES UNDER THE CDM					
A.2.1 Project Boundary					
A.2.1.1 Does the PDD correctly describe the project boundary, including the physical delineation to the proposed afforestation or reforestation CDM project activity under the control of the project participants?			*N.A.*		
A.2.1.2 Does the project participants have for all areas of land planned for A/R CDM project activity, the control over afforestation or reforestation in accordance with the guidance specified in the EB 44 report, annex 16.42?			*N.A.*		
A.2.1.3 Does each discrete area of land has a unique identification?			*N.A.*		
A.3.1.4Does the control include at minimum the exclusive right, defined in a way acceptable under the legal system of the host country?			*N.A.*		
A.2.2 Selection of carbon pools					
Is the carbon pool selected in accordance with the selected methodology?			*N.A.*		
A.2.3 Eligibility of land					
Is the land within the planed project boundary eligible for an A/R CDM project?			*N.A.*		
A.2.4 Conservative choice and application of default data					
The application of default data in estimation of the net anthropogenic GHG removals by sinks results is conservative.			*N.A.*		

The guidelines on conservative choice and application of default data in the net anthropogenic GHG removals by sinks has been applied correctly in order to prevent any overestimation of reduction in anthropogenic emissions.			*N.A.*		
A.2.5 Approach proposed to address non permanence					
Does the PDD describe the approach proposed to address non permanence in accordance with paragraph 38 of the modalities and procedures for afforestation or reforestation CDM projects?			*N.A.*		
A.2.6 Timing of management activities, including harvesting cycles and verifications.					
Do the forest management plan and the monitoring plan ensure that a systematic coincidence of verification and peaks in carbon stocks is avoided?			*N.A.*		
A.2.7Socio-economic and environmental impacts, including impacts on biodiversity and natural ecosystems					
The documentation submitted to the DOE contains the analysis of the socio-economic impacts and environmental impacts, including impacts on biodiversity and natural ecosystems, and impacts outside the project boundary of the proposed A/R project activity.			*N.A.*		
A.3 PROJECT DESIGN OF SMALL-SCALE A/R PROJECT ACTIVITIES					
A.3.1 The small scale A/R project activities use the A/R requirements describe above.			*N.A.*		
A.3.2 The project activity qualifies as a proposed small-scale A/R CDM project activity and complies with the threshold for the proposed small-scale A/R projects.			*N.A.*		
A.3.4 The project activity complied with one of the types of small-scale A/R project activities defined in appendix B of the annex to decision 6/CMP.1.			*N.A.*		
A.3.5 The baseline, monitoring methodology and the methodology are applied correctly.			*N.A.*		
A.3.6 The proposed CDM project activity is not a part of a debundled large-scale A/R project activity, in accordance			*N.A.*		

with the rules defined in appendix C of the annex to decision 6/CMP.1.					
A.3.7 The proposed CDM project activity has been developed or implemented by low-income communities and individuals as confirmed by the host Party.			*N.A.*		
A.4 PROGRAM OF ACTIVITIES					
A.4.1 Operational and management arrangements for the PoA. The operational management arrangements are suitable for the PoA, and the coordination/management has controls of all records and information related to the implementation of individual CPAs.			*N.A.*		
A.4.2 *Eligibility criteria for CPAs* *The eligibility criteria in the POA-ADD are sufficient and include inter alia the means to demonstrating the additionality of the CPA and the applicability of the applied methodology.*			*N.A.*		

MoV: Means of verification DR: Document review I: interview

Validation Protocol Table 3: Resolution of Corrective Action, Forward Action and Clarification Request

Report clarifications and corrective action requests	***Ref. to checklist question in table 2***	***Summary of project owner response***	***Validation conclusion***
CL 1 *Explain in details how the connection from the Macapá substation to the grid will be done, indicating where the meters will be installed for calculating GHG emissions.*	*A.2* *B.7.2 of PDD*	Project Owner Response: More details about the connection lines and about the meters were provided.	Validation Team Response: In the page 30 and 31 of the PDD, was included details of the connection. Validation Team Conclusion: CLOSED
CL 2 *Clarify where Ferreira Gomes Hydroelectric Power Plant will be located, with UTM coordinates.*	*A.4.1.4 PDD*	Project Owner Response: The UTM coordinates was included in the item A.4.1.4	Validation Team Response: This was corrected in the new version of PDD. Validation Team Conclusion: CLOSED
CL 3 *Update the PDD with the last version of tool of additionality and Annex 12 GUIDELINES ON COMMON PRACTICE (Version 01.0)*	*B.4. Description of how the baseline scenario is identified and description of the identified baseline scenario.*	Project Owner Response: The PDD was updated accordingly the requests.	Validation Team Response: This was corrected in the new version of PDD. Validation Team Conclusion:

			CLOSED
CL 4 *The main issues concerned on each entity regulations should be mentioned.*	*B.5 PDD* *Sub-step 1b: Consistency with mandatory laws and regulations*	Project Owner Response: The main issues concerned on each entity were provided in the Sub-step 1b.	Validation Team Response: That information was clarified in the new version of PDD. Validation Team Conclusion: CLOSED
CL 5 *Explain the methods used for simplifying the* $EF_{Grid,\ OM\text{-}DD,y}$ *formula used in the calculation of the step 3 formula on page 26 of PDD version 1.*	*B.6.3 Ex –ante calculations of emission reductions*	Project Owner Response: The worksheet Calc_OM was provided in order to clarify the simplification of $EF_{Grid,OM\text{-}DD\ y}$. The value calculated is presented in the cell T2 and differs 0.7% of the value presented by CIMGC (to be used by project developers) due to the fact of that organ have more decimal places of the raw data to consider.	Validation Team Response: Actually, in ex-ante calculations, when $EG_{PJ,h}$ is assumed as $EG_{PJ,y}/8760$, the Emission factor OM of the grid $EF_{grid\ OM\ DD\ y}$ is independent of the project generation. Validation Team Conclusion: CLOSED
CL 6 *Clarify the flow of information and include the generation information checking system.*	*B.7.2. Monitoring plan*	Project Owner Response: A chart was added in order to make the understanding about generation data flow clear. Also information about checking system was added in the text and in the chart presented on item B.7.2 of monitoring plan.	Validation Team Response: The description of the flow information is clarified in the new version of PDD. Figure 3 pag 31.

			Validation Team Conclusion: CLOSED
CL 7 *Include the organizational chart of the people related with the project, indicating responsibility and authority.*	*B.7 of PDD*	Project Owner Response: The chart was included.	Validation Team Response: The new figure 5 included in the PDD, pag 34, clarified the organizational chart. Validation Team Conclusion: CLOSED
CL 8 *Confirm the information and data provided on the footnotes and also confirm its availability. Example: references 24, 25, 27 and 28 in PDD version 1.*	*Pag 21 common practice in PDD*	Project Owner Response: The information provided on the footnotes were revised in the PDD version 2.	Validation Team Response: All footnotes were corrected. Validation Team Conclusion: CLOSED
CL 9 *In the financial analysis include CDM revenue, for IRR comparison with and without the project.* *The IRR is not an annual value. Please clarify.*	*Analisys of sensibility* *and* *Pag 13 of PDD*	Project Owner Response: The CDM revenue was included in the financial worksheet and the corrections regarding IRR were done.	Validation Team Response: In the new financial worksheet *Analise_Fin_FG_v2.xls* the project IRR calculation with the CDM revenues was included. Also, in the PDD version 2 the wrong expression “annual value” was corrected. Validation Team Conclusion: CLOSED

CL 10 *Define the crediting period in PDD.*	*C.2.1.2 of PDD*	Project Owner Response: It was defined in the PDD version 2.	Validation Team Response: The crediting period was defined for 7 years renewable. Validation Team Conclusion: CLOSED
CL 11 *Indicate how the proposed CDM project activity boundary as a result of the implementation of the proposed CDM project activity are expected to contribute more than 1% of the overall expected average annual emissions reductions.*	*D.1 of PDD*	Project Owner Response: a report about GHG emissions of HPP Ferreira Gomes installation was provided to DOE (File: Emission_survey_FG). On the operation phase the project emissions are considered null and the project activity will avoid the emissions of about 400.000 tonnes of CO2 into the atmosphere per year, over 30 years.	Validation Team Response: The information included in PDD is clear and the information support is enough evidence for ICONTEC. Validation Team Conclusion: CLOSED

ANNEX B

LETTER OF APPROVAL

ANNEX C

TEAM AUDIT EXPERIENCE AND KNOWLEDGE
CV´s of Verification Team

Lead Auditor
Eng. Erika Lucia Urrego Ortiz

Currently a student at the Magister in quality and integral management, 2012

Specialist in Environmental Management Systems. Universidad Externado de Colombia. Bogotá D.C. September 2002.

Zootechnician, Universidad Agraria de Colombia, - UNIAGRARIA Bogotá D.C. August 1997.

ISO 14001 Diploma, ICONTEC, Bogotá D.C. 2002.

Food Harmlessness Management System under ISO 22000 standard Course, ICONTEC, Bogotá D.C. March, 2003

Quality Management Systems under ISO 9001:2000 standard Course, ICONTEC, May 2007.

Updating on CDM Course, Ministry of Environment, Housing and Territorial Development, Bogotá D.C 2006

OHSAS 18001 Diploma, ICONTEC, Bogotá D.C. July 2005.

WORK EXPERIENCE:

2006 – Actual ICONTEC

To prepare and perform the certification services assigned as per her Career Plan qualification, according to the procedures. To provide guidance to the certification costumers about the technical aspects of the assigned services provision. To participate in changing or designing Certification services, by changing or creating the respective procedures.

2003 – 2006
ASOCIACION COLOMBIANA DE PORCICULTORES-FNP

To coordinate the activities to be performed by the Environmental Window Program in the various country areas. To allocate and execute resources engaged under the Cleaner Production agreements signed by pork producers with several environmental authorities. To lead the CDM project, focused on reducing methane (CH4) emissions issued by animal waste.

To be aware of the Ecuadorian and Chilean methodologies already approved by the CDM Executive Board for Hog Breeding Sector to elaborate a proposal for the hog breeding sector together with the Ministry of Environment, Housing and Territorial Development in order to join farms to CDM projects.

2001 – 2002
FICHTNER GmbH & Co. KG

To prepare, design and apply surveys focused on the identification of power consumption in the sector of slaughter, processed meat and food concentrate for animals.

1998 – 2001
Regional Environmental Authority (CAR Sumapaz)

To support the environmental management units on technical concepts of processes, permissions, sanctions, control, monitoring and assessment in the proper and timely management of the Sumapaz area's natural resources.

Experience in CDM activities:
2009 - 2010
- Validation of Biogas and energy efficiency measures at La Calera, Peru

- Validation of project ECC methane capture and combustion from AWMS at dairy farms in Mexico I.
- Validation of project Macano Small Hydro Power Plant.
- Validation of the Project Montenegro Landfill Gas Recovery and Flaring.
- Validation of the Project Montería Landfill Gas Recovery and Flaring.
- Validation of the Project Pirgua Landfill Gas Recovery and Flaring
- Verification of the Doña Juana Landfill Gas to Energy Project
- Validation La Vegona hydro power plant
- Validation Chamelecon hydropower plant
- Validation Tunjita diversion hidro power plant

Sectoral Specialist
Eng. Fernando Gómez Gómez

Electrical Engineer. Universidad Nacional of Colombia (1967)
Master of Power Systems - Instituto Tecnológico de Monterrey (Mexico) (1970)
EAFIT Financial Specialist (Colombia) (1984)

ECONOMETRÍA S.S. - Technical Advisory
Technical Advisory to Unidad de Planeación Minero Energética to incorporate international electrical interconnections into the Colombian electrical planning carried by UPME, October 2002 - March 2003 (including use of SUPEROLADE, MPODE, NEPLAN and REAL models).

ECOENERGIA S.S. ESP - Founding Member and Manager
Management of private projects of generation, distribution and commercialization of power.

Unidad de Planeación Minero Energética - UPME-: Elaboration of Catalog of Generation Projects for National Energy Plan, October 1996 - October 1997.

AUDITORES ENERGÉTICOS - AENE LTDA
Advisory to the company in the application of the new regulatory scheme of Colombian electrical sector to private and public entrepreneurial management through the following studies:

Development of competent rate models, October 1994 - March 1995

CORELCA: Determination of marginal costs and development of innovative rate structures for power generation companies and big industrial customers, October 1994 - March 1995.

CORELCA: Development and application of rate models to prepare proposal on power sale in the wholesale market, July 1995 - September 1995.

EMPRESA DE ENERGIA DE BOGOTÁ - EEB

Positions:

Chief of the Department of generation planning, interconnection and sub-transmission, 1978 - 1979.
Chief of Electric Planning Division, 1979 - 1986.
Assistant for Technical Sub-management, 1986 - 1987
Chief of Special Projects Division, 1987
Chief of expansion and Development Division, 1987 - 1994
Management Advisor, 1994

INTERCONEXIÓN ELÉCTRICA S.A - ISA
1976 - 1978
Engineer Specialist in electric planning Research and development of models for planning and operation of electric systems.

National Coordinator of Colombian electric system planning in the project " Study of Electric Power Sector (Estudio del Sector de Energía Eléctrica), ESEE" winner of the National Award of Engineering.

Experience in CDM activities:

2006 – 2010

Participation as an Energy expert in:

- Verification of three verification periods of Santa Ana Hydroelectric plant project
- Verification of two verification periods of Agua Fresca Multipurpose and Environmental Services Project
- Verification of two verification of La Vuelta and la Herradura Hydroelectric Project
- Verification of one verification period of La Venta II project
- Verification of Rio Amazon Woods residues power plant
- Verification of Cristalino small hydroelectric power plant project
- Verification of Faxinal small hydro project in Faxinal dos Guedes
- Validation of El Bote small hydroelectric plant project
- Validation of Cueva Maria Hydroelectric Project
- Validation of Installation of a high-pressure/high-efficiency bagasse boiler to cogenerate heat and power
- Validation of La Calera Biodigesters Project