



VALIDATION REPORT ELECTRO GENERADORA DEL AUSTRO S.A. (ELECAUSTRO)

VALIDATION OF THE OCAÑA HYDROPOWER PROJECT

REPORT No. CHILE-VAL/00518/2011

REVISION No. 02

BUREAU VERITAS CERTIFICATION

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VALIDATION REPORT

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Summary:
Bureau Veritas Certification has made the validation of the Ocaña Hydropower Project of Electro Generadora del Austro S.A. (ELECAUSTRO) located in Cañar Province, Ecuador on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM rules and modalities and the subsequent decisions by the CDM Executive Board, as well as the host country criteria.

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final validation report and opinion. The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The first output of the validation process is a list of Clarification and Corrective Actions Requests (CL and CAR), presented in Appendix A. Taking into account this output, the project proponent revised its project design document.

In summary, it is Bureau Veritas Certification's opinion that the project correctly applies the baseline and monitoring methodology ACM0002 version 12.3.0 and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria.

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Report No.: CHILE-val/00518/2011	Subject Group: CDM
Project title: Ocaña Hydropower Project	
Work carried out by: Diego Serrano (Team Leader) Marco Prauchner (Team Member) Flavia Resende (Team Member)	
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Flavio Gomes
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Table of Contents	Page
1 INTRODUCTION	1
1.1 Objective	4
1.2 Scope	4
1.3 Validation team	4
2 METHODOLOGY	5
2.1 Review of Documents	5
2.2 Follow-up Interviews	5
2.3 Resolution of Clarification and Corrective Action Requests	6
2.4 Internal Technical Review	7
3 VALIDATION CONCLUSIONS	7
3.1 Approval (49-50)	8
3.2 Participation (54)	8
3.3 Project design document (57)	9
3.4 Changes in the Project Activity	9
3.5 Project description (64)	9
3.6 Baseline and monitoring methodology	10
3.6.1 General requirement (76-77)	10
3.6.2 Project boundary (80)	13
3.6.3 Baseline identification (87-88)	13
3.6.4 Algorithms and/or formulae used to determine emission reductions (92-93)	14
3.7 Additionally of a project activity (97)	19
3.7.1 Prior consideration of the clean development mechanism (104)	19
3.7.1.1 Historical information on project timeline	20
3.7.2 Identification of alternatives (107)	22
3.7.3 Investment analysis (114)	22
3.7.4 Barrier analysis (118)	22
3.7.5 Common practice analysis (121)	24
3.8 Monitoring plan (124)	26
3.9 Sustainable development (127)	27
3.10 Local stakeholder consultation (130)	27
3.11 Environmental impacts (133)	28
4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS	29
5 VALIDATION OPINION	29



6	REFERENCES	30
7	CURRICULA VITAE OF THE DOE'S VALIDATION TEAM MEMBERS	34
	APPENDIX A: COMPANY CDM PROJECT VALIDATION PROTOCOL.....	35



1 INTRODUCTION

Electro Generadora del Austro S.A. (ELECAUSTRO) has commissioned Bureau Veritas Certification to validate its CDM project Ocaña Hydropower Project (hereafter called “the project”) at Cañar Province, Ecuador.

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

1.1 Objective

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

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

1.2 Scope

The validation scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

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

1.3 Validation team

The validation team consists of the following personnel:

FUNCTION	NAME	CODE HOLDER*	TASK PERFORMED
Lead Verifier	Diego Serrano	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> DR <input checked="" type="checkbox"/> SV <input checked="" type="checkbox"/> RI
Verifier	Flavia Resende	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> DR <input type="checkbox"/> SV <input checked="" type="checkbox"/> RI
Verifier	Marco Prauchner	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> DR <input type="checkbox"/> SV <input type="checkbox"/> RI
Internal	Guilherme Lefèvre	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input checked="" type="checkbox"/> DR <input type="checkbox"/> SV <input type="checkbox"/> RI



Technical Reviewer (ITR)			
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*DR = Document Review; SV = Site Visit; RI = Report issuance

2 METHODOLOGY

The overall validation, from Contract Review to Validation Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

In order to ensure transparency, a validation protocol was customized for the project, according to the version 01.2 of the Clean Development Mechanism Validation and Verification Manual, issued by the Executive Board at its 55th meeting on 30/07/2010. The protocol shows, in a transparent manner, criteria (requirements), means of validation and the results from validating the identified criteria. The validation protocol serves the following purposes:

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

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

2.1 Review of Documents

The Project Design Document (PDD) submitted by Electro Generadora del Austro S.A. (ELECAUSTRO) and additional background documents related to the project design and baseline, i.e. country Law, Guidelines for Completing the Project Design Document (CDM-PDD), Approved methodology, Kyoto Protocol, Clarifications on Validation Requirements to be Checked by a Designated Operational Entity were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests, Electro Generadora del Austro S.A. (ELECAUSTRO) revised the PDD and resubmitted it on 11/2012.

The validation findings presented in this report relate to the project as described in the PDD version 01.4.

2.2 Follow-up Interviews

On 04 and 05/01/2012 Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Electro Generadora del Austro S.A. (ELECAUSTRO) were interviewed (see

References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
ELECTRO GENERADORA DEL AUSTRO S.A. (ELECAUSTRO)	<ul style="list-style-type: none"> ➤ Project background information and CDM consideration ➤ Project technology, operation and maintenance ➤ Project approval and implementation status ➤ Project management and monitoring plan ➤ Stakeholder consultation process ➤ Common practice in the area ➤ Government policies related to the project activity
LESSCARBON (consultant)	<ul style="list-style-type: none"> ➤ Applicability of selected methodology ➤ Baseline determination ➤ Emission reductions calculation ➤ Emission reduction monitoring plan ➤ Project background in details ➤ Stakeholder comments ➤ Social and environmental impact of the project

2.3 Resolution of Clarification and Corrective Action Requests

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

Corrective Action Requests (CAR) is issued, where:

- (a) The project participants have made mistakes that will influence the ability of the project activity to achieve real, measurable additional emission reductions;
- (b) The CDM requirements have not been met;
- (c) There is a risk that emission reductions cannot be monitored or calculated.

The validation team may also use the term Clarification Request (CL), if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met.

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



2.4 Internal Technical Review

The validation report underwent an Internal Technical Review (ITR) before requesting registration of the project activity.

The ITR is an independent process performed to examine thoroughly that the process of validation has been carried out in conformance with the requirements of the validation scheme as well as internal Bureau Veritas Certification procedures.

The Lead Verifier provides a copy of the validation report to the reviewer, including any necessary validation documentation. The reviewer reviews the submitted documentation for conformance with the validation scheme. This will be a comprehensive review of all documentation generated during the validation process.

When performing an Internal Technical Review, the reviewer ensures that:

The validation activity has been performed by the team by exercising utmost diligence and complete adherence to the CDM rules and requirements.

The review encompasses all aspects related to the project which includes project design, baseline, additionally, monitoring plans and emission reduction calculations, internal quality assurance systems of the project participant as well as the project activity, review of the stakeholder comments and responses, closure of CARs, CLs and FARs during the validation exercise, review of sample documents.

The reviewer compiles clarification questions for the Lead Verifier and Validation Team and discusses these matters with Lead Verifier.

After the agreement of the responses on the 'Clarification Request' from the Lead Verifier as well as the PP(s) the finalized validation report is accepted for further processing such as uploading on the UNFCCC webpage.

3 VALIDATION CONCLUSIONS

In the following sections, the conclusions of the validation are stated.

The findings from the desk review of the original project design documents and the findings from interviews during the follow up visit are described in the Validation Protocol in Appendix A.

The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Validation Protocol in Appendix A. The validation of the Project resulted,



in 13 Corrective Action Requests (CARs) and 5 Clarification Requests (CLs) and 1 Forward Action Request (FARs).

The CARs and CLs were closed based on adequate responses from the Project Participant(s) which meet the applicable requirements. They have been reassessed before their formal acceptance and closure.

The number between brackets at the end of each section correspond to the VVM paragraph

3.1 Approval (49-50)

The Ecuadorian letter of approval /20/ and the Netherlands letter of approval /51/ have been received, as well as the following support documentation:

- Extension of the Ecuadorian Letter of Approval of the Ocaña Hydropower Project: No. MAE-D-2012-0697 as of August 30, 2012 (Ref /21/).

Bureau Veritas Certification received these letters from the project participants and does not doubt its authenticity.

The title and contents of the letter of approval refer to the precise proposed CDM project activity title in the PDD being submitted for registration.

Bureau Veritas Certification considers the letters are in accordance with paragraphs 45 - 48 of the VVM.

3.2 Participation (54)

The participation for each project participant has been approved by the Ecuador and Netherland.

The DOE hereby confirms that both, Ecuador and Netherland have approved the participation of Ocaña project participants, as it is stated in the respectively LoAs and related documents: Ref /20/, /51/ and /21/.

The approval of Vattenfall Energy Trading Netherlands N.V. is clearly stated in the Netherlands LoA /51/, while the approval of Electro Generadora del Austro ELECAUSTRO S. A. is clearly stated in the Extension of the Ecuadorian Letter of Approval /21/.

Bureau Veritas Certification received this letter from the project participants and has no reason to doubt of its authenticity.



3.3 Project design document (57)

The validation team hereby confirms that the PDD complies with the latest forms of the guidance documents for completion of PDD.

3.4 Changes in the Project Activity

During the site visit, no physical changes pertaining to the project design was observed as compared to details mentioned in the webhosted PDD.

All changes that have been made to the different versions of the PDD during the Validation Process, from the webhosted PDD Version 01 /4/ to the final PDD Version 1.4 /58/, have been supported by CARs and CLs opened by the DOE and have already been discussed in the Validation Protocol.

3.5 Project description (64)

The project activity consists of the hydropower unit with 26 MW of installed capacity that will supply the Ecuadorian Electrical Grid (in Spanish, SNI – Sistema Nacional Interconectado), displacing electricity based on fossil fuels, such as diesel, fuel oil, oil residues, naphtha and natural gas. Ocaña is a run-of-river plant that will use water from the Cañar river. The project is located on the Caña river 150 meters downriver from where it is joined by the Corazón River joins and 25 km from the village of Conchacay in the Province of Cañar, in the southwestern region of Ecuador. Project geographical coordinates are: for the water catchment 2° 29' 22" S, 79° 10' 50" W; and the discharge: 2° 29' 50" S, 79° 14' 39" W. The project uses two Pelton vertical axis turbines with nominal capacities of 13,000 kW each, rotation speed 600 rpm, with 4 injectors and a spherical valve of 0.8 meters. Each turbine couples with a 13 MW synchronous generator, giving the plant a total power of 26 MW, at 13.8 kV. The transmission line consists of double 69 kV three-phase line, 41 km long to reach Cañar substation of the Central South Region Electric Company.

The process undertaken to validate the accuracy and completeness of the project description through:

- The analysis of documents related to the project activity, and their respective crosscheck with the PDD information: Ref - /1/, /3/, /6/, /22/, /23/, /24/, /25/, /26/, /27/, /28/ and /29/).
- A site visit and interviews with PP and consultant held on 04 and 05/01/2012.

The DOE hereby confirms that the project description in PDD v 1.4 Ref - /58/ is accurate and complete in all respects and that there are no



changes to the project activity/design or boundary as compared to the webhosted PDD.

3.6 Baseline and monitoring methodology

3.6.1 General requirement (76-77)

The steps taken to assess the relevant information contained in the PDD against each applicability condition are described below.

Applicability conditions: as per ACM0002 version 12.3.0. This methodology is applicable to grid-connected renewable power generation project activities that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plant); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s)."

The project activity applies option (a) above, since this is a greenfield project. The DOE confirmed such information through the references presented under Refs- /3/, /6/, /22/, /23/, /24/, /25/, /26/, /27/, /28/ and /29/

In addition, the methodology indicates:

"The methodology is applicable under the following conditions:

- 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;

The project activity consists of the installation of a new run-of-river hydroelectric plant, what was confirmed through the site visit held on 04 and 05/01/2012 and document review: Ref. /3/, /6/, /22/, /23/, /24/, /25/, /26/, /27/, /28/ and /29/.

- In the case of capacity additions, retrofits or replacements (except for capacity addition projects for which the electricity generation of the existing power plant(s) or unit(s) is not affected): the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity addition or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity"



Not applicable, once the project activity refers to the installation of a new run-of-river hydroelectric plant.

According to the methodology, in case of hydro power plants, "At least one of the following conditions must apply:

- The project activity is implemented in an existing single or multiple reservoirs, with no change in the volume of any of the reservoirs; or
- The project activity is implemented in an existing single or multiple reservoirs, where the volume of any of reservoirs is increased and the power density of each reservoir, as per the definitions given in the Project Emissions section, is greater than 4 W/m^2 after the implementation of the project activity; or
- The project activity results in new single or multiple reservoirs and the power density of each reservoir, as per the definitions given in the Project Emissions section, is greater than 4 W/m^2 after the implementation of the project activity."

In case of hydro power plants using multiple reservoirs where the power density of any of the reservoirs is lower than 4 W/m^2 after the implementation of the project activity all of the following conditions must apply:

- The power density calculated for the entire project activity using equation 5 is greater than 4 W/m^2 ;
- All reservoirs and hydropower plants are located at the same river and were designed together to function as an integrated project that collectively constitutes the generation capacity of the combined power plant;
- The water flow between the multiple reservoirs is not used by any other hydropower unit which is not a part of the project activity;
- The total installed capacity of the power units, which are driven using water from the reservoirs with a power density lower than 4 W/m^2 , is lower than 15 MW;
- The total installed capacity of the power units, which are driven using water from reservoirs with a power density lower than 4 W/m^2 , is less than 10% of the total installed capacity of the project activity from multiple reservoirs."

Ocaña power plant has a small regulation reservoir, which has a power density of $2,364 \text{ W/m}^2$ (greater than 4 W/m^2). It was confirmed through the site visit held on 04 and 05/01/2012 and document review: Ref. /3/, /6/, /22/, /23/, /24/, /25/, /26/, /27/, /28/ and /29/.



Also the methodology is not applicable to the following:

- Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity, since in this case the baseline may be the continued use of fossil fuels at the site;
- Biomass fired power plants;
- A hydro power plant that results in the creation of a new single reservoir or in the increase in an existing single reservoir where the power density of the reservoir is less than 4 W/m^2 .

None of the three above mentioned non-applicability conditions are applicable to the project activity, once this project does not involve i) switching from fossil fuels, ii) biomass fired power plants, neither iii) power density of the reservoir less than 4 W/m^2 , as confirmed during the site visit and document review: Ref. /3/, /6/, /22/, /23/, /24/, /25/, /26/, /27/, /28/ and /29/.

In the case of retrofits, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is the continuation of the current situation, i.e. to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance."

As mentioned above, the project activity refers to a Greenfield hydro power plant and not to a retrofit, replacement or capacity addition.

Applicability conditions of the Tool to calculate the emission factor for an electricity system version 02.2.1.

This tool may be applied to estimate the OM, BM and/or CM when calculating baseline emissions for a project activity that substitutes grid electricity, i.e. where a project activity supplies electricity to a grid or a project activity that results in savings of electricity that would have been provided by the grid (e.g. demand-side energy efficiency projects).

Still under the EF tool v. 02.2.1:

In case of CDM projects the EF tool v. 02.2.1 is not applicable if the project electricity system is located partially or totally in an Annex I country.

The project activity will not be conducted in an Annex I country, and then this tool does apply to the Ecuadorian electricity system (SNI).



In summary, the project activity complies all the applicability conditions (that apply to the project) of the methodology ACM0002 version 12.3.0 and the tools of the same methodology

The DOE hereby confirms that the selected baseline and monitoring methodology (ACM0002 v. 12.3.0), tools (Tool to calculate the emission factor for an electricity system - ver. 02.2.1; Tool for the demonstration and assessment of additionality - ver. 06.0.0; are previously approved by the CDM Executive Board, and are applicable to the project activity, which, complies with all the applicability conditions therein.

The DOE hereby confirms that, as a result of the implementation of the proposed CDM project activity, there are no greenhouse gas emissions occurring within the proposed CDM project activity boundary, which are expected to contribute more than 1% of the overall expected average annual emissions reductions, which are not addressed by the applied methodology.

3.6.2 Project boundary (80)

Project boundary includes all the power units that are part of the SNI, which consists of the interconnected grid and the Ocaña hydro power plant. The PDD presented an official map showing the transmission and sub-transmission lines that are part of the Ecuadorian interconnected system.

a) The DOE was able to validate that the delineation of the project boundary is correct and meets the requirements of the selected baseline methodology, based on the following documents: Ref - /3/, /6/, /7/, /13/, /16/, /22/, /23/, /24/, /25/, /26/, /27/, /28/ and /29/.

b) Also, during the site visit, that took place on 04 and 05/01/2012, the DOE was able to validate that the project boundary is in accordance with the relevant methodology, by observing the Project's site and by interviewing the representatives of the Project Participant and Consultants.

Based on the above assessment, the DOE hereby confirms that the identified boundary and the selected sources and gases are justified for the project activity.

3.6.3 Baseline identification (87-88)

The steps taken to assess the requirement given in paragraph 81 and 82 of the VVM are described below:



According to ACM0002, “if the project activity is the installation of a new grid-connected renewable power plant/unit, the baseline scenario is the following:

“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”.”

The baseline scenario for this project activity consists of electricity generated by predominantly fossil fuels, which are the sources of the national grid in Ecuador. Mainly, sources such as diesel, fuel oil and oil. (Ref /7/).

Based on the above assessment, the DOE hereby confirms that:

- (a) All the assumptions and data used by the project participants are listed in the PDD, including their references and sources;
- (b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the PDD;
- (c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence and can be deemed reasonable;
- (d) Relevant national and/or sectoral policies and circumstances are considered and listed in the PDD;
- (e) The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.

3.6.4 Algorithms and/or formulae used to determine emission reductions (92-93)

The steps taken to assess the requirement outlined in paragraph 89 the VVM are described below:

As per the PDD:

1) Project emissions:

Considering that the project reservoir has a surface area of $11,000 \text{ m}^2$ and an installed capacity of 26MW, the Power density is $2,364 \text{ W/m}^2$, that is greater than 10 W/m^2 , thus the $PE_{HP,y} = 0$.

This information was crosschecked by the site visit and official documents Ref: /22/, /23/, /28/ and /29/.



2) Baseline emissions:

- a. According to the PDD, baseline emissions are calculated through the formula: $BE_y = EG_{PJ,y} * EF_{grid,CM,y}$,
- b. Where BE_y = baseline emissions for year y (tCO_2)
- c. $EG_{PJ,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of implementing the CDM Project Activity in the year y (MWh)
- d. $EF_{grid,CM,y}$ = Combined margin CO_2 emission factor for grid connected power generation in year y calculated using the latest version of the "Tool to calculate the emission factor for an electricity system".

The average energy of the Project 203,099 MWh/y was calculated according to the multi-year historical average flows in the water intake zone of the Ocaña project. This data was obtained by the company CAMINOSCA in the hydrological report as part of Feasibility and Definitive Studies, Ref: /22/.

In order to estimate the average annual net Energy produced by the Ocaña Project, the following procedure was used:

1. CAMINOSCA, a third part Company, during the feasibility and final design study, obtained the average monthly water flow at the intake zone, from 1965 up to 1996 (30 years of information), Ref: /29/, /30/, /31/ and /32/.
2. The electric power produced by the Ocaña Project was calculated considering:
 - a. $P \text{ (kW)} = 9.81 n_1 n_2 Q H$, where, n_1 is the estimated combined efficiency of the turbine and generator (0.866); n_2 is the estimated efficiency, which accounts for the electric energy consumed by different equipment of the project, as well as the transmission losses (0.98); Q is the average monthly water flow at the intake limited to $8.2 \text{ m}^3/\text{s}$, which is the design water flow; H is the net average height (375.18 m).
 - b. By using the formulae mentioned previously, the energy produced each month was calculated, as shown in the excel file (simulacion produccion Ocaña.xls), Ref: /32/.
 - c. In order to have 50 years of production simulation, the first 20 years was repeated after year 30.

The 203,099 MWh/year, as an average annual production, was obtained by summing the average monthly net energy over 50 years of simulating production.



It is worth noting that average annual electricity production (203,099 MWh/year) was defined by a third part consult (CAMINOSCA), in accordance with the paragraph 3.b of EB 48, Annex 11. Ref 56 indicates the Plant Load Factor (PLF) of 0.9, which is calculated as follow: $203,099 / (26 \times 8,760 \text{ hours/year})$. Since the average annual electricity production of (203,099 MWh/year) was calculated by a third party engineering company contracted by PPs, BVC accepts the PLF of 0.9, as provided in Ref 56.

The above mentioned information, data and procedures were analyzed, crosschecked and found correct and reliable by the DOE.

For the calculation of the emission factor, which will yield the total equivalent CO₂ emission reduction for this first crediting period, a Combined Margin (CM) was used, in accordance with the six steps of the "Tool to calculate the emission factor for an electricity system", version 2.2.1 /c/.

Step 1 - Identify the relevant electricity systems

The Equatorian Ministry of Environment, DNA of Equator has published a delineation of the National Interconnected System (SNI) in the report named as "Factor de emisión de CO₂ del Sistema Nacional Interconectado del Ecuador al Año 2011, Informe 2011, Ministerio de Electricidad y Energía Renovable (MEER), Ministerio del Ambiente (MAE), Concejo Nacional de Electricidad (CONELEC) y Centro Nacional de Control de Energía (Corporación CENACE), 2011"

BVC was able to verify this by crosschecking the above mentioned resolution online at: <http://www.cenace.org.ec/> (accessed on 30/10/2012).

Step 2 - Choose whether to include off-grid power plants in the project electricity system (optional)

Option I: Only grid power plants are included in the calculation.

Step 3 - Select a method to determine the operating margin (OM)

For the calculation of the OM emission factor, the Equatorian DNA made available the operating margin emission factor calculated using option (b) Simple adjusted OM.

This is justified by a government analysis on low-cost/no low-cost energy generation in the (SNI), from 2006 to 2010.

Detailed information on the methods and data applied can be obtained in the DNA's report CO₂ Emission Factor of the Equatorian Interconnected National System – Year 2011.

The project activity correctly adopts this method, in an ex-ante

calculation.

Step 4 - Calculate the operating margin emission factor according to the selected method

The simple adjusted OM emission factor is a variation of the simple OM method, where the power plants / units (including imports) are separated in low-cost/must-run power sources (k) and other power sources (m). The simple adjusted OM can be calculated, based on data on fuel consumption and net electricity generation of each power plant / unit and an emission factor for each plant / unit.

It shall be calculated according to the formulae below:

$$EF_{\text{grid,OM-adj},y} = (1 - \lambda_y) \cdot \frac{\sum_m EG_{m,y} \times EF_{EL,m,y}}{\sum_m EG_{m,y}} + \lambda_y \cdot \frac{\sum_k EG_{k,y} \times EF_{EL,k,y}}{\sum_k EG_{k,y}}$$

Where:

$EF_{\text{grid,OM-adj},y}$ = Simple adjusted operating margin CO₂ emission factor in year y (tCO₂/MWh)

λ_y = Factor expressing the percentage of time when low-cost/must-run power units are on the margin in year y

$EG_{m,y}$ = Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh)

$EG_{k,y}$ = Net quantity of electricity generated and delivered to the grid by power unit k in year y (MWh)

The PP adopted in the PDD the latest figures available in the Equatorian report DNA, related to the years 2008, 2009 and 2010.

Step 5 - Calculate the build margin (BM) emission factor

In terms of vintage, the PP adopted the option 1 of the Tool, with the BM ex-ante calculation.

The build margin emissions factor is the generation-weighted average emission factor (tCO₂/MWh) of all power units m during the most recent

year y for which electricity generation data is available, calculated as follows:

$$EF_{grid, BM, y} = \frac{\sum_m EG_{m, y} \times EF_{EL, m, y}}{\sum_m EG_{m, y}}$$

Where:

$EF_{grid, BM, y}$ = Build margin CO₂ emission factor in year y (tCO₂/MWh);

$EG_{m, y}$ = Net quantity of electricity generated and delivered to the grid by power unit m in year y (MWh);

$EF_{EL, m, y}$ = CO₂ emission factor of power unit m in year y (tCO₂/MWh);

m = Power units included in the build margin;

y = Most recent historical year for which electricity generation data is available.

The report “*Factor de emisión de CO₂ del Sistema Nacional Interconectado del Ecuador al Año 2011, Informe 2011*” indicates that, due to operative characteristics of the SNI, the SET_{≥20%} is selected for the calculation.

Step 6. Calculate the combined margin emission factor

The PP correctly adopted the method (a) *Weighted average CM*, provided by the Tool, following their Weighted default values for hydropower: $w_{OM} = 0.5$ and $w_{BM} = 0.5$.

The combined margin is correctly calculated according to the formulae:

$$EF_{grid, CM, y} = EF_{grid, OM, y} \cdot w_{OM} + EF_{grid, BM, y} \cdot w_{BM},$$

where:

$EF_{grid, BM, y}$ = Build margin CO₂ emission factor in year y (tCO₂/MWh);

$EF_{grid, OM, y}$ = Operating margin CO₂ emission factor in year y (tCO₂/MWh);

w_{OM} = Weighting of operating margin emissions factor (%);

w_{BM} = Weighting of build margin emissions factor (%).



Applying the official DNA figures and the weighted default values results in:

$$EF_{\text{grid,CM,y}} = 0.7311 \text{ tCO}_2/\text{MWh} \times 0.5 + 0.3751 \text{ tCO}_2/\text{MWh} \times 0.5$$

$$EF_{\text{grid,CM,y}} = 0.5531 \text{ tCO}_2/\text{MWh}$$

Based on the above assessment, the DOE hereby confirms that:

- (a) All assumptions and data used by the project participants are listed in the PDD, including their references and sources;
- (b) All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the PDD;
- (c) All values used in the PDD are considered reasonable in the context of the proposed CDM project activity;
- (d) The baseline methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions;
- (e) All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.

The DOE confirms that data and parameters used in the equations are reliable and were supported by documented evidences, as official documentation and national database. All the applicable references: /3/, /7/, /13/, /18/, /19/, /22/, /23/, /28/, /29/, /30/, /31/, /32/ and /33/, were assessed and validated by the DOE.

3.7 Additionally of a project activity (97)

The steps taken and sources of information used, to cross-check the information contained in the PDD on this matter are described below:

In order to demonstrate additionally, PPs had applied the “Tool for the demonstration and assessment of additionally” (version 6.0.0)

3.7.1 Prior consideration of the clean development mechanism (104)

The DOE validated the project activity start date provided in the PDD by analysing the signed contract for the construction, equipment and commissioning of the Ocaña Hydropower Project between Electro Generadora del Austro S.A. (ELECAUSTRO) and Hidalgo e Hidalgo S.A. y Asociados on **April 03, 2008**. (Ref /8/)

The PP has presented several evidences of CDM prior consideration since 2003, also several internal communication and documents were presented to support that continuing and real actions that were taken to secure CDM status (please refer to table presented in section 3.7.1.1). However, not all of them are needed to meet the requirements stated in the Guidelines on the Demonstration and Assessment of Prior Consideration of the CDM



(EB 62 annex 13). Based on this, the following DOE analysis was focused only in the main documents and events needed to meet the EB 62 annex 13 requirement:

- 26/02/2008: ELECAUSTRO'S Executive Board stated that General Manager of tenders to the direct recruitment consultancy shall continue actions to secure CDM status. Board declares CDM for the Ocaña Hydropower Project as a strategic priority /34/.
- 03/04/2008: ELECAUSTRO signed the contract for the construction, equipment and commissioning/construction started /8/ (**project starting date**).
- 04/04/2008: Construction started /52/.
- 28/04/2008: PIN updated to that date and consultant communication /35/
- 03/10/2008: Board meeting resolution n°161-0789 Stating to continue with the CDM preparation, procedures and payments. /54/.
- 01/04/2010: Minutes of tenders for the direct recruitment consultancy n° CDC-EEGA-004-2010 for "Management in CDM project cycle for HPP Ocana project, Phase I" /36/
- 16/06/2010: A PDD consultant was hired /53/
- 10/03/2011: the first LoA was issued by the DNA (Ministry for the Environment of Ecuador) /37/.
- 27/10/2011: PDD is published at UNFCCC website for the Global Stakeholder Consultation Process for the first time.
- 25/04/2012: after local stakeholder consultation adjustments, the PDD is published at UNFCCC website for the Global Stakeholder Consultation Process /15/ for the second time¹.

Based on the above assessment, the DOE hereby confirms that the signature of the contract for the construction, equipment and commissioning/construction, from **April 03, 2008**, stated as the project starting date, is in accordance with the definition of "start date" as provided in the Glossary of CDM Terms version 07.

Also the DOE confirm the CDM prior consideration and that continuing and real actions were taken to secure CDM status between the project starting date 03/04/2008, and the PDD publication at UNFCCC website for the Global Stakeholder Consultation Process at 25/04/2012² (Ref /15/).

¹ The first PDD submission has happened in 27/10/2011 due to a problem identified by the DOE in the process of the first local stakeholders consultation, because of that the LSC had to be remade and PDD resubmitted in 25/04/2012 (validation restarting).

² The first PDD submission has happened in 27/10/2011 due to a problem identified by the DOE in the process of the first local stakeholders consultation, because of that the LSC had to be remade and PDD resubmitted in 25/04/2012 (validation restarting).



Based on the above assessment, the DOE hereby confirms that the proposed CDM project activity complies with the requirements of the latest version of the Guidance on prior consideration of CDM.

3.7.1.1 Historical information on project timeline

As previously shown above, the timeline below was presented by the PDD by PPs and describes all the events involved with the project activity.

Date	Event/Milestone	Reference/Document
04/07/2003	ELECAUSTRO attended to the event “Ecuador frente al Mercado de Carbono” (Ecuador facing the Carbon Market) that is organized by the Ministry of the Environment/The National CDM Promotion Office (CORDELIM).	Invitation sent by CORDELIM via email. (Ref-59)
09/07/2003	A draft PIN was submitted to the Prototype Carbon Fund (PCF) of the World Bank.	Communications via email. (Ref-60)
22/07/2003	A draft of PIN was submitted to the Latin America Carbon Program (PLAC) of the Andean Development Bank (CAF).	Communications via email. (Ref-60)
17/09/2003	The Prototype Carbon Fund (PCF) of the World Bank request to ELECAUSTRO the Project Concept Note (PCN) of the OCAÑA Project Activity.	Communications via email. (Ref-60)
06/2004	The Project Activity was included in the Indicative CDM Project Portfolio that was supported/promoted by CORDELIM in the Carbon Expo 2004.	Call sent by CORDELIM via email to project developers. (Ref-61)
15/09/2005	ELECAUSTRO asked to CORDELIM to support in order to update PIN.	Communications via email. (Ref-60)
11/2005	PIN updated to that date.	PIN updated in English.
26/12/2005	An internal memo to the General Manager concluded that carbon finance is a key issue within the financial structure of the Ocaña Project Activity.	Memorando Referencia DIPLAM 2005 No. 0162.
25/09/2007	ELECAUSTRO updated the PIN. Internet communications were maintained with PLAC/CAF.	Communications via email. (Ref-60) PIN updated in English.
31/10/2007	ELECAUSTRO had contacts with Carbon Asset Management AB (Sweden) who proposed a terms sheet to sale and purchase CERs.	Terms and conditions for the forward Sale and Purchase of Certified Emission Reductions (Ref-62)
25/02/2008	ELECAUSTRO'S General Manager reported to the Executive Board that the benefits of the CDM are decisive in the decision to proceed with the Project. This Memorandum stated that carbon finance is a key element to implement the Project Activity.	Memorando GG-2008 0071 (25 February de 2008). (Ref-14)



26/02/2008	ELECAUSTRO'S Executive Board stated that General Manager shall continue actions to secure CDM status. Board declares CDM for the Ocaña Hydropower Project as a strategic priority.	Resumen de Resoluciones de la Sesión de Directorio No. 154 (26 February 2008). (Ref-34)
03/04/2008	ELECAUSTRO signed the contract for the construction, equipment and commissioning/construction started.	Contrato para la Construcción, Equipamiento y Puesta en Operación del Proyecto Hidroeléctrico Ocaña de 26 MW (03/04/2008). (Ref-8)
04/04/2008	Construction started.	Report "ELECAUSTRO Gestión 2000 – 2008". (Ref-52)
28/04/2008	PIN updated to that date.	Communications via email. (Ref-35)
09/2009	Preliminary actions to hire a national PDD consultant.	Communications via email. (Ref-60)
16/06/2010	A PDD consultant was hired.	Consultancy Contract No. 2010 – 0030. (Ref 53)
10/03/2011	First Ecuador LoA was issued by the DNA (Ministry for the Environment)	LoA issued. (Ref-37)
27/10/2011	PDD is published at UNFCCC website for the Global Stakeholder Consultation Process.	See UNFCCC/CDM website (Ref-15)

The DOE accessed documents above and checked their authenticity.

3.7.2 Identification of alternatives (107)

Project participants identified two alternatives for the project activity.

Alternative 1: Status quo – SNI supplies the required Power

This alternative implies that the current situation continues and the proposed CDM Project Activity is not implemented and electricity is therefore supplied by the SNI. (Refs-/7/ and /16/).

Alternative 2: Implement the OCAÑA Hydropower Project without registering it under the CDM

This alternative implies to carry out the OCAÑA Hydropower Project (26 MW) without taking into account the additional incentives offered by the CDM. This Project Activity has however faced barriers in terms of access to financing, which resulted in early actions being taken to enable the project to benefit from the incentives provided by the CDM.



The DOE hereby confirm that the listed alternatives mentioned above are credible and complete.

3.7.3 Investment analysis (114)

Project participants did not use investment analysis for the demonstration and assessment of additionally. This section is not applicable.

3.7.4 Barrier analysis (118)

As per the PPD, only the investment barrier was identified, described below:

Investment Barrier: according to the PDD, early action regarding Ocaña Hydropower Project started in 2003. Delays were mainly caused by investment difficulties. However, investment seeking for this project activity started even earlier: in 2001, the Shareholder's Board authorized the General Manager to execute the necessary steps to obtain financing. PPs listed several actions taken from 2001 to 2005 in order to seek for financial investment for this project activity (Table 4b from the PDD). Table 4b presents actions from Elecaustro including contacts made with the IADB – Inter-American Development Bank; OLADE – Latin American Energy Organization; Alstom Brazil; BNDES – Brazilian Development Bank; BEDE – Ecuadorian State Bank; INTERVED (from Canada). With the exception of BEDE, communication with the other entities didn't progress towards serious financing for the project. However, in November 2002, Elecaustro S.A. signed with CONELEC – Consejo Nacional de Electricidad (from the Spanish, National Council for Electricity) the construction and operation permission contract for the Ocaña hydropower project, with a 50 year term. On this same date, letter of intention was signed with BEDE to provide guarantee for project financing. After several negotiations that didn't go forward, with different entities, the Executive Board of Elecaustro, as of December 2004, decided to move forward with BEDE to obtain financing for this project activity. However, until 2006, no serious commitment has been made with any financial entity to obtain financing.

In October 2006 by the National Congress, of the Organic Law to create the Ecuadorian Investment Fund for the Energy and Hydrocarbon Sectors (FEISEH) and its Regulations (April/2007), made it possible for ELECAUSTRO to make progress in obtaining financing.

After the request to the FEISEH, presented in May 2007, the Project Activity finally was granted financing by the FEISEH in August/September 2007, which involved an initial capital contribution of USD 14 million and a loan of USD 22.7 million. ELECAUSTRO contributed USD 7.5 million of financing by reinvesting profits; the Shareholders approved this



investment. The availability of the funds from FIMFEISEH (capital and loan) allowed ELECAUSTRO to launch a call for bids for the "Construction, Equipment and Commissioning" of the OCAÑA Project Activity in May 2007.

To proceed with the disbursement of the capital and credit funds from FIMFEISEH (at that date managed by the National Central Bank – BCE), ELECAUSTRO formed an Administration and Guarantee Business Trust /38/, which has the role of administering the funds for carrying out the Project Activity and paying the financial commitments made by ELECAUSTRO with the National Central Bank.

In this document (Administration and Guarantee Business Trust /38/) it is stated that futures revenues is part of the lender guarantee to fulfill ELECAUSTRO's financial obligations, as follow:

"Content right or set of contents rights which are tradable on the national and international stock exchanges, including among others; shares, bonds, warrants, investment funds, futures contracts, or term contracts..."

"...The Trust is comprised of public and private capital that may be contains tangible and no-tangible assets that the Constituent (Elecaustro) transfer, as well as other assets and rights that being integrated as a result of developing and complying of this Contract..."

Based on this, the PP justify that the term "bonds", mentioned in the Trust document /38/, encompass the carbon credits once this are economic rights that are negotiable in the international market, thus makes part of the lender's guarantee to fulfill ELECAUSTRO's financial obligations, what is supposed to prove that the carbon finance were a decisive factor to secure additional capital contribution, as well as the lending guarantee.

In order to meet the Guideline 6 of the EB 50 annex 13³ and support that *"the financing of the project was assured only due to the benefit of the CDM" and that "the loan approval (or other significant financing decision(s)) by the lender takes explicitly the CDM registration into account"*, the PP has provided the document "ACTA DE LA JUNTA DE FIDEICOMISO No. 21" of 11th September, 2012 /39/, signed by the PP and the lender representatives, where it is stated that term "bonds", mentioned in general terms in the Trust document /38/, has considered the carbon credits that will be used to pay the financial commitments.

³ Guidelines for Objective Demonstration and Assessment of Barriers



In addition, the PP explains that by the time when the decision to proceed with the Project Activity was made (September 2007), the lender was not able to explicit the CDM benefits into the Trust due to internal policies, which are currently in effect.

Finally in February 2008, Elecaustro's Executive Board issued the "Elecaustro's Executive Board Resolution no. 154-0753:4" /40/, which demonstrates prior consideration of the CDM. This board document was based in the internal memorandum GG-2008 0071 from 25th February 2008 /14/, that clear states the importance of the CDM benefits to co-finance the project and/or to support the payments of financial commitments made by ELECAUSTRO (PP).

The DOE hereby confirms that the barrier analysis performed is credible.

3.7.5 Common practice analysis (121)

Considering that the project activity can be included under the description presented in item b) of paragraph 6 of the additionally tool, version 6.0.0: "Switch of technology with or without change of energy source (including energy efficiency improvement as well as use of renewable energies), common practice analysis was done by following the paragraph 47 of the referred tool, as follow:

The geographical scope for common practice analysis, defined in the PDD v.1.4 is the entire host country, Ecuador, as recommended by the ACM0002 v.12.3.0.

Guideline Step 1: Calculate applicable output range as +/- 50% of the design out or capacity of the proposed Project Activity

PDD v.1.4: To identify similar activities, the output range of +/- 50% of the design output or capacity of the Project Activity is taken into account. According to the design nominal capacity of the project (26 MW), the applicable range is from 13 MW to 39 MW for hydropower plants within the SNI.

Guideline Step 2: Identify all plants that deliver the same output or capacity, within the applicable output range calculated in Step 1 (exclude registered CDM projects and projects activities undergoing validation)

PDD v.1.4: The table below shows the plants that fall within the applicable output range calculated in Step 1 (from 13 MW to 39 MW). Following the Tool, this table did not include registered CDM and projects activities undergoing validation:

Plant	Technology	Year (Start Commercial)	Nominal Capacity (MW)
Recuperadora	Hydropower Run of River	1990	14.50
Saucay	Hydropower Run of River	1978	24.00
Nayón	Hydropower Run of River	1974	29.70
Saymirín	Hydropower Run of River	1957	14.43
Guangopolo	Hydropower Run of River	1937	20.92

Source: Statistical Report on the Ecuadorian Electricity Sector 2009, CONELEC.

Therefore,

$$N_{all} = 5$$

Guideline Step 3: Within plants identified in Step 2, identify those that apply technologies different that the technology applied in the proposed project activity. Note their number N_{diff}

PDD v.1.4: Para. 44 of the “Tool for demonstration and assessment of Additionality – Version 06.0.0” states that:

*“...Projects are considered similar if they are in the same country/region and/or rely on a broadly similar technology, are of the similar scale, and take place in a **comparable environment with respect to regulatory framework, investment climate**, access to technology, access to financing, etc....”*

In 1996, the Electrification Law /41/ was modified to liberalize the electricity market in order to promote/spread out private investment in the electric sector; particularly, in the generation side of the business. Hence, all the projects implemented before 1996 had a very different investment scenario, which cannot be considered a comparable environment with respect to the regulatory framework followed by the proposed Project Activity.

Therefore, the projects listed in Table above are not similar to the Project Activity.

As consequence:



$$N_{\text{diff}} = 5$$

Guideline Step 4: Calculate factor $F = 1 - N_{\text{diff}} / N_{\text{all}}$ representing the share of plants using technology similar to the technology used in the proposed project activity in all plants that deliver the same output or capacity as the proposed project activity

Thus, according to the paragraph 47 of “Tool for the demonstration and assessment of additionality” ver. 06.0.0, *“The proposed project activity is a common practice within a sector in the applicable geographical area if both the following conditions are fulfilled:*

- (a) the factor F is greater than 0.2, and*
- (b) $N_{\text{all}} - N_{\text{diff}}$ is greater than 3.*

Once the F factor is 0, the project activity is not a common practice.

The assessment of the existence of similar projects was done through a deep research through the web, and relevant documentation, in order to crosscheck the information and assumptions presented in the section B.5 of PDD version 1.4, against different and independent sources as CONELEC, CENACE and UNFCCC, as well as the documentation: /13/, /16/, /18/, /19/ and /41/.

The DOE hereby confirms that the proposed CDM project activity is not common practice.

3.8 Monitoring plan (124)

The DOE hereby confirms that the monitoring plan complies with the requirements of the methodology.

The steps taken to assess whether the monitoring arrangements described in the monitoring plan are feasible within the project design are described below.

According to the “Tool to calculate the emission factor for an electricity system” (Version 02.2.1), if the emission factor is calculated using the *ex ante* option: “the emission factor is determined once at the validation stage, thus no monitoring and recalculation of the emissions factor during the crediting period is required.” (Ref-c) Since this is the case for this project activity, the only parameter being monitored here is the EGy – Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (Ref-a).



In order to install the commercial measurement equipment (energy meters, communication system and TPL), project participants had followed the official Regulation CONELEC 005/06 /17/. In order to supervise and control data on electrical and load dispatch parameters, the industrial control system known as SCADA (supervisory control and data acquisition) will be used. Once data is acquired, it is later uploaded to the Commercial Measurement System for the Electricity Market (SMEC) managed by CENACE – Centro Nacional de Control de Energia (National Energy Control Center). Validated data by CENACE is then available at the SIMEM's website. SIMEM stands for Sistema de Información del Mercado Eléctrico Mayorista which can be translated as Information System of the Electricity Market /19/.

A total of 4 meters are installed to measure the electricity generation. Two are being indicated as the main meters whereas two are indicated as back-up. Meters are calibrated according to the manufacturer's instructions and as well with CONELEC 005/06 requirements /17/.

Additional the receipts for electricity sales will be kept for cross check.

Data will be archived and kept at least for two years, in accordance to ACM0002.

The DOE has assessed the feasibility of the monitoring plan by comparing the monitoring arrangements against the methodology ACM0002 12.3.0, the CONELEC⁴ and CENACE⁵ requirements. The documents used for this assessment are: ACM0002 Version 12.3.0, /17/ and /19/.

The DOE hereby confirms that the project participants are able to implement the monitoring plan.

3.9 Sustainable development (127)

The host Party's DNA confirmed the contribution of the project to the sustainable development of the host Party. Refer to item 3.1 of this report.

3.10 Local stakeholder consultation (130)

The steps taken to assess the adequacy of the local stakeholder consultation are described below.

At the local and national levels, project participants identified as relevant stakeholders the following:

⁴ http://www.conelec.gob.ec/normativa_detalle.php?cd_norm=186

⁵ http://www.cenace.org.ec/index.php?option=com_content&view=article&id=79&Itemid=56



National level:

- Ministry of Energy and Mines (now the Ministry of Electricity and Renewable Energy);
- Ministry of Finance;
- National Secretariat of Planning and Development (SENPLADES);
- Bank of the State (Banco del Estado, BEDE);
- National Financial Corporation (CFN).

According to the PDD, all the entities indicated above had supported financing the project.

Regarding the local stakeholders, since 2008, project participants have been distributing a newsletter detailing the project's aspects regarding its technical features, financing and physical construction. Areas of influence of the project include: rural parishes of Ducur and San Antonio de Pahuancay; communities of Ocaña, Javín, Las Delicias, San Marcos y Las Copas. In order to collect comments from stakeholders, PPs realized interviews, surveys, bibliographical reviews and public presentations. Regarding the CDM project, direct invitations for stakeholder were sent

Comments addressed positive aspects, such as the creation of jobs surrounding the area of the project, better condition of existing roads and enhancement of the power stability in that area.

Regarding negative impacts, the comments received are summarized below:

- Despite the fact that the project claims creation of new jobs, those are not targeting local residents, since expertise is specific for the project activity;
- Local residents claim that, total of hours being demanded are longer than expected;

The PDD presents a list of comments done by stakeholders. For each one of those comments, PPs had provided answers and, when possible solutions for the requests.

In total, 20 persons contributed with their comments to the project activity. The PDD has a list of those stakeholders and its position or responsibilities, when applicable.

The DOE has assessed the procedures for local stakeholder consultation by interviewing the local population (please refer to "person interviewed" ref: /9/, /10/, /11/, /12/, /13/, /14/ and /15/ in section 6 of this report) and by the analysis of following documents: /42/, /43/, /44/, /45/, /46/, /47/, /48/, /49/ and /50/.



The DOE hereby confirms that the process of local stakeholder consultation is observed to be adequate.

3.11 Environmental impacts (133)

The project participants have undertaken an analysis of environmental impacts through the development of the Definitive Environmental Impact Study (DEIS) and the Environmental Management Plan (EMP). According to the Official Registry no. 210 issued on November 13, 2007, the Government of Ecuador gave the environmental license for the construction and operation of the 26 MW Hydroelectric unit (Ref-1). Based on this decision, the Government of Ecuador issued the Environmental License no. 005/07 for the Ocaña Hidroelectric Plant.

As per the PDD, the construction and operation permission contract for the Ocaña Hydropower Project was signed between Elecaustro and Conelec (the electricity sector regulator and the only entity authorized to grant construction and/or concession permits) on November 3, 2002 (Ref /2/).

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

The PDD using methodology ACM0002 was webhosted on the UNFCCC for global stakeholders comments as per CDM requirements. The project was webhosted from 25/04/2012 to 24/05/2011⁶.

No comments were received during the UNFCCC's public comment period.

5 VALIDATION OPINION

Bureau Veritas Certification has performed a validation of the Ocaña Hydropower Project in Ecuador. The validation was performed on the basis of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

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

Project participant/s used the latest tool for demonstration of the additionality. In line with this tool, the PDD provides analysis of barriers and common practices to determine that the project activity itself is not the baseline scenario.

⁶ The first PDD submission has happened in 27/10/2011, but due to a problem identified by the DOE in the process of the local stakeholders consultation, the LSC had to be remade and PDD resubmitted in 25/04/2012 (validation restarting)



By the installation of a new hydropower plant project of installed capacity of 26MW with a plant load factor of 90%, an expected annual output of 203,099 MWh, and minimum lifetime of 50 years, the project is likely to result in reductions of GHG emissions partially. An analysis of the barrier demonstrates that the proposed project activity 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. Given that the project is implemented and maintained as designed, the DOE hereby confirms that the estimated amount of **786,338 tCO₂e** emission reductions, during the 1st crediting period, is correct, or 112,334 tCO₂e/year, during 7 years.

The review of the project design documentation (version 1.4) and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project correctly applies and meets the relevant UNFCCC requirements for the CDM and the relevant host country criteria. Bureau Veritas Certification thus requests registration of 'Ocaña Hydropower Project' as CDM project activity.

6 REFERENCES

Category 1 Documents:

Documents provided by Electro Generadora del Austro S.A. (ELECAUSTRO) that relate directly to the GHG components of the project.

- /1/ Organo del Gobierno del Ecuador – Registro Oficial, no. 210, issued on November 13, 2007.
- /2/ Contract for the construction, installation and operation of the electricity generation unit Ocaña
- /3/ Ministerio de Electricidad y Energia Renovable. Proyecto Hidroeléctrico Ocaña. No date.
- /4/ PDD version 01, from June 29, 2011
- /5/ PDD version 01.2, from April 09, 2012
- /6/ Elecaustro S.A. Bolletin Informativo no. 2011 -07. Proyecto Hidroeléctrico Ocaña
- /7/ Government of the Republic of Ecuador. Ministry of Electricity and Renewable Energy. Ministry of Environment: Designated National Authority. Emission Factor of the National Interconnected System of Ecuador 2009. December 07, 2010.
- /8/ Contrato para La Construcion, Equipamento y Puesta em Operación del Proyecto Hidroelectrico Ocaña de 26 MW, signed on April 03, 2008. (contract for the construction, equipment and commissioning/construction)
- /9/ Potencial RE OCAÑA.xls
- /10/ Factor Emisión_CO2_SNI_2011vf_3(1).xls
- /11/ PDD version 01.3, from September 04, 2012



- /12/ Excel spreadsheet: 28. Factor Emisión _CO2_SNI_2011
- /13/ CONELEC, Statistical Report on the Ecuadorian Electricity Sector, 2009.
- /14/ Elecaustro, Internal Memorandum GG-2008, no. 0071, issued on February 25, 2008.
- /15/ UNFCCC CDM website. Ocaña Hydropower Project date of publication. Available at <http://cdm.unfccc.int/Projects/Validation/DB/X4XNCFSNZ4NZZWRV6FAHF1ZU1MTPHQ/view.html>, accessed on October 22, 2012.
- /16/ CONELEC. Plan Maestro de Electrificación 2009-2010. Available at <http://www.conelec.gob.ec/documentos.php?cd=4171&l=1>, accessed on October 22, 2012.
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- /18/ CENACE – Centro Nacional de Control de Energia. <http://www.cenace.org.ec/>, accessed on October 22, 2012.
- /19/ CENACE/SIMEM – Centro Nacional de Control de Energia. http://www.cenace.org.ec/index.php?option=com_content&view=article&id=79&Itemid=56, accessed on October 22, 2012.
- /20/ Ministerio del Ambiente - Ecuador, Letter of Approval, issued on March 13, 2012 (Oficio Nro. MAE-D-2012-0210)
- /21/ Extension of the Letter of Approval of the Ocaña Hydropower Project (No. MAE-D-2012-0697) as of August 30, 2012
- /22/ EIAD LT OCAÑA - Feasibility Studies And Final Designs Ocaña Hydroelectric Project
- /23/ Ocaña EIAD approval - Oficio CONELEC-DE-2011-1816-OF, of November 30th 2011.
- /24/ Technical Details of equipment design (perfil senplades 2010).pdf
- /25/ Technical Details of equipment and CONELEC Contract (Contrato Modificatorio CONELEC 2010-06-30).pdf
- /26/ Schedule of project implementation (Boletín informativo).pdf
- /27/ Major steps of the work schedule (Informe Estado Avance Construcción Ocana).pdf
- /28/ Official Register Environmental License No. HPP 00507_Ocaña
- /29/ Ocaña Final Inspection Report.pdf, of March 2012
- /30/ Hydrology Report Caminosca.doc
- /31/ Spreadsheet calculation of Monthly Flow Available On Site Of Achievement
- /32/ Ocaña production simulation Spreadsheet
- /33/ Validation report CO₂ emission factor of the national grid of Ecuador for 2011 - v.1 - Aenor 2012/110/CDM/09
- /34/ Summary of Resolutions of Board Meeting No. 154 (Febrero 26 de 2008).- Resumen Resoluciones 154.pdf
- /35/ PIN ABRIL 2008.PDF - PIN updated and consultant/PP communication.
- /36/ Minutes of tenders for the direct recruitment consultancy n° CDC-EEGA-004-2010 for "Management in CDM project cycle for HPP Ocana project, Phase I" of 01/04/2010.
- /37/ First Letter of Approval Oficio MAE (EN).pdf



- /38/ Administration and Guarantee Business Trust (Fideicomiso OCAÑA)
- /39/ ACTA DE LA JUNTA DE FIDEICOMISO No. 21 of 11/09/2012
- /40/ Elecaustro's Executive Board Resolution no. 154-0753:4
- /41/ Electricity Sector Regime Act - official registry nº43, 10th October 1996
- /42/ stakeholders contact evidence (PART A)_8 pictures
- /43/ stakeholders contact evidence (PART B) 7 pictures
- /44/ Report of the meeting held on Wednesday 11 April 2012 School Of Delicia for Information About The Project And Comment CDM Hydroelectric Ocaña
- /45/ 6 Invitation letters (Scan 001.pdf, GG-2012-0400.pdf, GG-2012-0401.pdf, GG-2012-0402.pdf, GG-2012-0403.pdf, GG-2012-0404.pdf)
- /46/ Stakeholders Consultation OCAÑA CDM Project Presentation.ppt
- /47/ Newspaper call for the Stakeholders Consultation - 7abril2012
- /48/ stakeholders list actors.xlsx
- /49/ meeting attendance signatures.pdf
- /50/ Radio call for the Stakeholders Consultation (3x/day from 5th to 10th April 2012)
- /51/ Netherlands letter of approval
- /52/ Elecaustro Gestión 2000-2008
- /53/ PDD Consulting Contract 2010-030
- /54/ Board meeting resolution nº161-0789, with the resolution to continue with the CDM preparation, procedures and payments.
- /55/ PDD version 01.3, from September 04, 2012
- /56/ Potencial RE OCAÑA.english.xls
- /57/ Factor Emisión_CO2_SNI_2011vf_3(1).xls
- /58/ PDD version 01.4, from November 14, 2012
- /59/ Invitation sent by CORDELIM via email in 04/07/2003 to the event "Ecuador frente al Mercado de Carbono" (Ecuador facing the Carbon Market), organized by the Ministry of the Environment/The National CDM Promotion Office (CORDELIM).
- /60/ Document containing e-mail communication regarding the following subjects: i) draft PIN submitted to the Prototype Carbon Fund (PCF) and the Latin America Carbon Program (PLAC) of the Andean Development Bank (CAF), ii) World Bank request to ELECAUSTRO the Project Concept Note (PCN) of the OCAÑA Project Activity, iii) ELECAUSTRO asking CORDELIM to support the PIN update, iv) Preliminary actions to hire a national PDD consultant
- /61/ Call sent by CORDELIM via email to project developers regarding Carbon Expo 2004.
- /62/ Terms and conditions for the forward Sale and Purchase of Certified Emission Reductions between ELECAUSTRO and Carbon Asset Management AB (Sweden)

Category 2 Documents:

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

- a. ACM0002 – Consolidated baseline methodology for grid-connected electricity generation from renewable sources (Version 12.3.0)
- b. Tool for the demonstration and assessment of additionally (Version 06.0.0)



- c. Tool to calculate the emission factor for an electricity system (Version 02.2.1)

**Persons interviewed:**

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

- /1/ Antonio Borrero Vega - Gerente General - Elecaustro S.A
- /2/ Raúl León Piedra - Director de Planificación y Mercadeo - Elecaustro S.A
- /3/ Jaime Saánchez Valdiviezo - Director de la Unidad de Supervisión de Ocaña- Elecaustro S.A
- /4/ Silvia Salina Torres - Ingeniera de Planificación y Mercado - Elecaustro S.A
- /5/ Martha Aguilar Ugalde - Ingeniera Ambiental - Elecaustro S.A
- /6/ Julio Enrique Baílón Picón -Director Asesoría Jurídica y secretaria General - Elecaustro S.A
- /7/ Marco Miranda - Senior Analista - Lesscarbon
- /8/ Eng. Alberto Zambrano - Director of control - Caminosca

STAKEHOLDERS:

- /9/ Mr. Luis Alfonso Morocho - Community leader
- /10/ Mr. Julio Gutierrez - Local community
- /11/ Mr. Carlos Iván Palacios - Local community
- /12/ Ms. María transit Loja - Local community
- /13/ Ms. Maria Rosa Zamora - Local community
- /14/ Ms. María Loja - Local community
- /15/ Mr. Gonzalez - Person from the community working in project

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7 CURRICULA VITAE OF THE DOE'S VALIDATION TEAM MEMBERS

Diego Serrano, Team Leader

He is a forest engineer graduated by the ESALQ / USP Superior School of Agriculture "Luiz de Queiroz." University of São Paulo, Diego has master degree in Energetic System Planning with forest residues in the State University of Campinas (UNICAMP). His abilities include coordination and elaboration of PDD's in the scopes 1, 4, 13 and 14. Diego is trained as a lead auditor in the fields of environment (ISO 14001) and GHG – Greenhouse Gases.

Marco F. Prauchner, Team Member

He is graduated in Mechanical Engineering with experience in Quality and Environmental management in mechanical, plastic and chemical industries. He is ISO 9001:2008 and ISO 14001:2004 Lead Auditor and has also experience in the implementation of Environmental Management Systems. Marco is qualified as Lead Verifier GHG – Green House Gases.

Flávia Resende, Team Member

Mrs. Resende has been working with CDM projects since 2002. Mrs. Resende has graduated as Master's in Urban and Environmental Policy and Planning from Tufts University (Boston, MA, US) and MBA in Environmental Management by UFRJ (Rio de Janeiro, RJ, Brazil). Currently, holds a GHG verifier position at Bureau Veritas Brazil. Mrs. Resende also holds a certificate for ISO 14001.

Guilherme Lefevre, Technical Reviewer,

Mr. Lefevre has graduated from Law with experience in GHG Programs, both compulsory and voluntary. Guilherme has vast experience in the development and analysis of CDM, VCS, Social Carbon and CCBS projects. Guilherme has an MSc degree in Environmental Science (São Paulo University). Guilherme is trained as a lead auditor in the fields of environment (ISO 14001) and GHG – Greenhouse Gases.

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VALIDATION REPORT

APPENDIX A: ELECTRO GENERADORA DEL AUSTRO S.A. (ELECAUSTRO) CDM PROJECT VALIDATION PROTOCOL

Table 1 Validation requirements based on the Clean Development Mechanism Validation and Verification Manual (Version 01.2) and methodology ACM0002 (Version 12) – “Consolidated baseline methodology for grid-connected electricity generation from renewable sources”

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
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VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS		Draft Concl	Final Concl
1. Approval			COUNTRY A (Ecuador)	COUNTRY B (Netherlands)		
a. Have all Parties involved approved the project activity?	VVM	44	Yes, Ecuador has issued the letter of approval	Under approval		OK
b. Has the DNA of each Party indicated as being involved in the proposed CDM project activity in section A.3 of the PDD provided a written letter of approval? (If yes, provide the reference of the letter of approval, any supporting documentation, and specify if the letter was received from the project participant or directly from the DNA)	VVM	45	Yes.	Under approval		OK
c. Does the letter of approval from DNA of each Party involved:	VVM	45	-	-	-	-
i. confirm that the Party is a Party of the Kyoto Protocol?	VVM	45.a	Yes.	Under approval		OK
ii. confirm that participation is voluntary?	VVM	45.b	Yes.	Under approval		OK
iii. confirm that, in the case of the host Party, the proposed CDM project activity contributes to the sustainable development of the country?	VVM	45.c	Yes.	Under approval		OK
iv. Refers to the precise proposed CDM project activity title in the PDD being submitted for registration?	VVM	45.d	Yes.	Under approval		OK
d. Is(are) the letter(s) of approval unconditional with respect to (i) to (iv) above?	VVM	46		Under approval		OK
e. Has(ve) the letter(s) of approval been issued by the respective Party's designated national	VVM	47	Yes.	Under approval		OK


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VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
authority (DNA) and is valid for the CDM project activity under validation?					
f. Is there doubt with respect to the authenticity of the letter of approval?	VVM	48	No.	Under approval	OK
g. If yes, was verified with the DNA that the letter of approval is authentic?	VVM	48	NA.		OK
2. Participation			PP1 (Electro Generadora del Austro ELECAUSTRO S. A..)		
a. Have all project participants been listed in a consistent manner in the project documentation?	VVM	51	Yes.	Yes	OK
b. Has the participation of the project participants in the project activity been approved by a Party to the Kyoto Protocol?	VVM	51	CAR 01 The approval of project participants by a Party to the Kyoto Protocol was not stated in the Ecuador LoA, neither any other documentation issued by the Party.	CAR 01	OK
c. Are the project participants listed in tabular form in section A.3 of the PDD?	VVM	52	Yes.	Yes	OK
d. Is the information in section A.3 consistent with the contact details provided in annex 1 of the PDD?	VVM	52	Yes	Yes	OK
e. Has the participation of each of the project participants been approved by at least one Party	VVM	52	Please refer to CAR 01 , above	CAR 01	OK


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VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
involved, either in a letter of approval or in a separate letter specifically to approve participation? (Provide reference of the approval document for each of the project participants)					
f. Are any entities other than those approved as project participants included in these sections of the PDD?	VVM	52	Please refer to CAR 01 , above	CAR 01	OK
g. Has the approval of participation issued from the relevant DNA?	VVM	53	Please refer to CAR 01 , above	CAR 01	OK
h. Is there doubt with respect to (g) above?	VVM	53	Please refer to CAR 01 , above	CAR 01	OK
i. If yes, was verified with the DNA that the approval of participation is valid for the proposed CDM project participant?	VVM	53	Please refer to CAR 01 , above	CAR 01	OK
3. Project design document					
a. Is the PDD used as a basis for validation prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website?	VVM	55	Yes. Project Design Document Form (CDM-PDD) Version 03 - in effect as of: 28 July 2006.		OK
b. Is the PDD in accordance with the applicable CDM requirements for completing the PDD?	VVM	56	Please refer to CAR 02 to CAR 06, CL 01 and CAR EF 01 below.	CAR 03 to CAR 06, CL 01 and CAR EF 01	OK
c. In CDM-PDD section A.1 are the following provided?	EB 41	Ann 12	-	-	-
i. Title of project	EB	Ann	Yes. "OCANA Hydropower Project".		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
	41	12			



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VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
ii. Current version number and date of document	EB 41	Ann 12	Yes. Version 01.2, April 09, 2012		OK
d. In CDM-PDD section A.2 are following provided (max. one page)?	EB 41	Ann 12	-	-	-
i. A brief description of the project activity covering purpose which includes the scenario existing prior to the start or project, present scenario and baseline scenario	EB 41	Ann 12	<p>Yes, as follow:</p> <p><i>" The purpose of the OCAÑA Hydropower Project is to generate zero-emission power and deliver it to the Ecuadorian grid. This proposed CDM Project Activity is being developed by the power generation company called Electro Generadora del Austro S.A. (ELECAUSTRO) (ELECAUSTRO), which generates the equivalent of 203.10 GWh of energy per year. Electricity generated by this Project Activity will be supplied to the Ecuadorian Electrical Grid (SNI for its initials in Spanish, Sistema Nacional Interconectado) and will displace the electricity generated by fossil fuels (the majority produced using diesel, fuel oil and oil residue and to a lesser extent naphtha and natural gas) and electricity imports, mainly from Colombia...</i></p> <p><i>In order to define the scenario, which existed before implementation of the OCAÑA Project Activity, it is important to cite the 2009-2020 Electrification Master Plan, which refers to the fact that during the 1997- 2008, the proportion of effective power being generated from hydropower</i></p>		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			<p><i>plants had decreased with respect to the total electricity supply. In 1997, hydropower sources accounted for 54.82% of the supply to the SNI, a figure that had decreased to 48.13% by December 2008. In view of these figures, without the OCAÑA Project Activity, electricity supplied to the grid would be come from hydropower (over 100MW) and fossil fuel sources; as indicated by the trend, the increased proportion of power generation by fossil fuel sources would continue in order to cover the ever increasing demand.</i></p> <p><i>The scenario with the Project Activity includes the construction and operation of the OCAÑA Hydropower Plant with an installed capacity of 26MW. OCAÑA is a run-of-river plant that will use water from the Cañar River to drive two 13MW Pelton type vertical turbines. Other important components of the plant include: (i) water collection and grit chamber works, (ii) sand traps (iii) headrace tunnel, (iv) regulation reservoir, (v) surge tank, (vi) high pressure pipes, (vii) power house, (viii) elevated substation and (ix) transmission line.</i></p> <p><i>The baseline scenario is the same as that which existed at the start of the implementation of the OCAÑA Project Activity."</i></p>		



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
ii. Explanation on how the GHG emission reductions are effected	EB 41	Ann 12	Yes, as follow: <i>"The Project Activity will achieve Greenhouse Gas (GHG) emission reductions by avoiding CO2 emissions generated by grid-connected fossil fuel-fired power plants that have a meaningful share in the SN"</i>		OK
iii. The PP's vies on the contribution of project activity to sustainable development	EB 41	Ann 12	Yes, according to the PDD v.1.2: <ul style="list-style-type: none"><i>"Provide renewable energy to the SNI, which will displace thermal electricity generation which is mainly primarily produced using fossil fuels (diesel, fuel oil and waste crude). As consequence, the OCAÑA Hydropower Project will achieve CO2 emission reductions in the Ecuadorian Electrical Grid.</i><i>Increase electricity supply using cheaper alternatives and diversifying the SNI's electricity sources.</i><i>Reduce the generation of SOx and NOx emissions which contaminate the air and damage health.</i><i>Reduce the need to import diesel used for power generation. It is important to note with respect to this issue that even though Ecuador is an exporter of crude oil, currently its refinement capacity is not sufficient to meet demand for refined oil. To demonstrate this issue, according to the Ecuadorian Central Bank, the volume of sales of petroleum derived</i>		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			<p><i>goods increased by 37% during the first 10 months of 2010.</i></p> <ul style="list-style-type: none"><i>• Generate jobs, particularly during the construction and operation phases."</i>		



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
iv. Are there any changes/modifications compared to the webhosted PDD?	EB 41	Ann 12	CAR 02: During the site visit it was observed differences between the PDD v.1.2 and the project technical documentation for the Transmission line (ACRA 500 in the PDD and 477 in the project), Please also provide the reference for the information presented in section A.4.3 of the PDD v1.2	CAR 02	OK
e. In CDM-PDD section A.3 are following provided in the tabular format?	EB 41	Ann 12	-	-	-
i. List of project participants and parties	EB 41	Ann 12	Yes.		OK
ii. Identification of Host Party	EB 41	Ann 12	Yes.		OK
iii. Indication whether the Party wishes to be considered as project participant	EB 41	Ann 12	Yes. None of the Parties listed in section A.3 are project participants		OK
f. In CDM-PDD section A.4.1 are following provided?	EB 41	Ann 12	-	-	-
i. Technical description, location, host party(ies) and address as required	EB 41	Ann 12	Yes, as follow: <i>"Republic of Ecuador... Cañar Province... Ducur Parish/Javín Precinct"</i>		OK
ii. Detailed physical location with unique identification of the project activity (eg. Longitude/latitude) – not to exceed one page	EB 41	Ann 12	Yes, through geographic coordinates.		OK
iii. Are there any changes/modifications compared to the webhosted PDD?	EB 41	Ann 12	No.		OK
g. In CDM-PDD section A.4.2 is the list of categories of project activities provided?	EB 41	Ann 12	Yes, as follow: <i>" Sectorial Scope No. 1: Energy Industries (renewable- / non-renewable sources)"</i>		OK
h. In CDM-PDD section A.4.3 are following	EB	Ann	-	-	-



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VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
provided?	41	12			
i. A description of how environmentally safe and sound technology, and know-how, is transferred to the Host Party(ies)	EB 41	Ann 12	CAR 03: In the section A.4.3 of the PDD v.1.2, the PP did not address information regarding environmentally safety, as required by EB 41, annex 12.	CAR 03	OK
ii. Explanation of purpose of project activity with scenario existing prior to the start of project, scope or present activities and the baseline scenario	EB 41	Ann 12	Yes, as follow: <i>"The scenario that existed before implementation of the OCAÑA Project Activity began shows that some 730 MW of new power generation was incorporated into the SNI during 2006, 2007 and 2008... 35 % of the new electricity generated uses fuel oil which is not in line with a sustainable energy policy... Implementing the OCAÑA Project Activity will reduce emissions generated by the SNI as it will result in a reduction in the need for electricity generated by thermal power plants which use fossil fuels..."</i>		OK
iii. List and arrangement of the main manufacturing/production technologies, systems and equipments involved	EB 41	Ann 12	Yes, as follow: <i>"1. Closure: Located in the Cañar River where a concrete weir will be built 5m over the riverbed, with a 37.20 m. long crown plus a radial gate with a maximum evacuation capacity of 476 m3/s.</i> <i>2. Intake: Design flow of 8.2 m3/s through a grid of 2 separate modules, each module 6.3mx 3.00 m, plus one radial 4m x 4m purge gate, to evacuate water in the event of extraordinary rises over the design flow.</i> <i>3. Sand trap: Two chambers, 50m long, 8.4m wide</i>		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			<p>and 2.65m average height.</p> <p>4. Pressure tank: structure measuring 18.60m width x 15.05m height x 10.6m length (where the free flow becomes pressurized flow).</p> <p>5. Regulation reservoir: To guarantee the design flow for three hours, a reservoir with a capacity of 42,370 m³ will be installed; whose water mirror has a surface area of 11,000 m² approximately (Power density = 2,364 W/m²).</p> <p>6. Conduction: 8.2 m³/s will be conducted from the water intake to the reservoir, then from there via a tunnel and then through a steel pipe of 1.9 m in diameter (internal). Interconnection of the catchment works with the portal of the trunk tunnel (right bank) of 6.39 km long.</p> <p>7. Surge tank: Underground structure with a restricted opening, made of structural concrete, 3.8 m diameter, 75 meters long and total height, 44.58 m.</p> <p>8. Penstock: On the surface, with a length of 1,085 km to the splitter. The interior diameter varies from 1.9 m to 1.6 m to conduct 8.2 m³/s.</p> <p>9. Powerhouse and recovery channel: This is built on the surface and has three levels: the valve</p>		



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			<p>floor, the main floor and the command and control floor, with an area of 600 m². It houses two turbine-generator groups. Dimensions: 26.75 m long (main floor) x 24.6 m wide long (main floor) x 20.8 m tall (from lowest level to highest roof level).</p> <p>10. Mechanical equipment: Two Pelton vertical axis turbines with a nominal power of 13,000 kW. Rotation speed 600 rpm, with 4 injectors and a spherical valve of 0.80 m.</p> <p>11. Electrical equipment: Each turbine couples with a 13 MW synchronous generator, giving the plant a total power of 26 MW, at 13.8 kV.</p> <p>12. Transmission line: Double 69 kV three-phase line, ACAR 500 MCM conductor, 41 km long to reach the Cañar substation of the Central South Regional Electric Company, located in the city of Cañar.</p> <p>13. Control and Telecommunications System: SCADA supervision, control and data acquisition system on hydraulic, electromechanical, electrical and load dispatch parameters, with two operational levels, one manual, and the other automatic, with both local and remote control.</p> <p>The following table shows the estimated energy production of the Project Activity:</p>		



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			<i>Max. Energy (MWh/year) 224,373</i> <i>Average Energy (MWh/year) 203,099</i> <i>Minimum Energy (MWh/year) 176,773</i> <i>Firm Energy (MWh/year) 181,609</i> <i>Plant Factor 90 %"</i>		



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
iv. The emissions sources and GHGs involved	EB 41	Ann 12	Yes, as follow: <i>"Implementing the OCAÑA Project Activity will reduce emissions generated by the SNI as it will result in a reduction in the need for electricity generated by thermal power plants which use fossil fuels"</i>		OK
v. Are there any changes/modifications compared to the webhosted PDD?	EB 41	Ann 12	Please refer to CAR 02, above	CAR 02	OK
i. In CDM-PDD section A.4.4 is the estimation of emission reductions provided as requested in a tabular format?	EB 41	Ann 12	Yes.		OK
j. In CDM-PDD section A.4.5 is Information regarding Public funding provided?	EB 41	Ann 12	Yes, as follow: <i>"There are no plans to use funds declared as Official Development Assistance (ODA) from the countries in Annex I."</i>		OK
k. In CDM-PDD section B.1 are following provided?	EB 41	Ann 12	-	-	-
i. The approved methodology and version number	EB 41	Ann 12	CAR 04: The name of the methodology ACM0002 v. 12.3.0, presented in section B.1 of PDD v.1.2, is incomplete, it is missing the term "baseline".	CAR 04	OK
ii. Any methodologies or tools which the above approved methodology draws upon and their version number	EB 41	Ann 12	Yes, <i>"Methodological tool "Tool to calculate the emission factor for an electricity system" (Version 02.2.1). 3. Methodological tool "Tool for the demonstration and assessment of Additionally" (Version 06.0.0)."</i>		OK
l. In CDM-PDD section B.2 are following provided?	EB 41	Ann 12	-	-	-
i. Justification of the choice of methodology that the project activity meets each of the	EB 41	Ann 12	Yes, as follow: <i>"• OCAÑA will be implemented in an area where there</i>		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
applicability conditions			<p><i>are no other renewable Energy projects which means it is thus considered as a new or “greenfield” project.</i></p> <ul style="list-style-type: none"> <i>• OCAÑA is a run-of-the-river hydropower energy plant which utilizes two 13MW generation units.</i> <p><i>The geographical limits of the Ecuadorian Grid, within which the Project Activity is located, are clearly identified and this information is available from the institutions that regulate the Electricity Sector in Ecuador.</i></p> <p><i>Considering the specific case of hydropower projects:</i></p> <ul style="list-style-type: none"> <i>• OCAÑA has a small regulation reservoir, which has a power density of 2,364 W/m2 (greater than 4 W/m2).</i> <p><i>The Project Activity does not fulfill any of the conditions that make the methodology non-applicable:</i></p> <ul style="list-style-type: none"> <i>• OCAÑA does not involve a switch from using fossil fuel to renewable energy at the Project Activity site.</i> <i>• OCAÑA is not a biomass-burning power generation plant.</i> <i>• OCAÑA does not have a reservoir with a power density lower than 4 W/m2.</i> 		



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			<i>Given the indicated conditions, the OCANA Project Activity meets the applicability conditions of the methodology ACM0002 Version 12.3.0.</i>		



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
ii. Documentations with references that had been used. This can be provided in Annex 3 instead	EB 41	Ann 12	N/A		OK
m. In CDM-PDD section B.3 are following provided?	EB 41	Ann 12	-	-	-
i. Description of all sources and gases included in the project boundary in the table	EB 41	Ann 12	Yes.		OK
ii. A flow diagram of the project boundary physically delineating the project activity	EB 41	Ann 12	CAR 05: The flow diagram of the project boundary presented in the section B.3 of the PDD v.1.2 is incomplete. There is no information regarding the location of the four meters as mentioned in section B.7.2. neither the flows of energy	CAR 05	OK
iii. The flow diagram with all equipments, systems and flows of mass and energy etc.	EB 41	Ann 12	Please refer to CAR 05, above.	CAR 05	OK
n. In CDM-PDD section B.4 are following provided?	EB 41	Ann 12	-	-	-
i. Explanation how the most plausible baseline scenario is identified in accordance with the selected baseline methodology	EB 41	Ann 12	Yes, as follow: <i>"The baseline scenario is identified through the procedure detailed in ACM0002, Version 12.3.0 which states that if the Project Activity involves installing a new renewable energy plant connected to a grid, then the baseline scenario is the following:</i> <i>"The electricity supplied to the grid by the Project that would otherwise have 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 explained in the 'Tool to calculate the emission factor for an electricity</i>		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			system''.		



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
ii. Justification of key assumptions and rationales	EB 41	Ann 12	Yes.		OK
iii. Transparent illustration of all data used to determine the baseline scenario (variables, parameters, data sources, etc.)	EB 41	Ann 12	N/A once the baseline scenario is stated by the methodology, please refer to item 3.n.i, above		OK
iv. A transparent and detailed description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed project activity	EB 41	Ann 12	N/A once the baseline scenario is stated by the methodology, please refer to item 3.n.i, above		OK
v. Are there any changes/modifications compared to the webhosted PDD?	EB 41	Ann 12	No.		OK
o. In CDM-PDD section B.5 are following provided?	EB 41	Ann 12	-	-	-
i. Explanation of how and why this project activity is additional and therefore not the baseline scenario in accordance with the selected baseline methodology	EB 41	Ann 12	Yes, through the Barrier analysis of the additionally tool, as follow: <i>"...the additional capital contribution of USD 15.5 million was approved based on the actions undertaken by ELECAUSTRO to get CDM status of the Project Activity. In other words, carbon finance were a decisive factor to secure additional capital contribution to cover the financial gap raised by increasing of costs and terms due to an increased demand of electromechanical equipment and perceived country risks and uncertainties. Given the fact that the additional income from</i>		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			<i>carbon credits are economic rights that are negotiable in the international market, those futures revenues were considered by the lender as a guarantee to fulfill ELECAUSTRO's financial obligations for executing the proposed CDM Project Activity".</i>		



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
ii. Justification of key assumptions and rationales	EB 41	Ann 12	Please refer to section 6, below		OK
iii. Transparent illustration of all data used to determine the baseline scenario (variables, parameters, data sources etc.)	EB 41	Ann 12	N/A once the baseline scenario is stated by the methodology, please refer to item 3.n.i, above		OK
iv. Evidence that the incentive from the CDM was seriously considered in the decision to proceed with the project activity, if the starting date of the project activity is before the date of validation	EB 41	Ann 12	Please refer to CAR 08 and CL 02 , below	CAR 08 and CL 02	OK
p. In CDM-PDD section B.6.1 are following provided?	EB 41	Ann 12	-	-	-
i. Explanation as to how the procedures, in the approved methodology to calculate project emissions, baseline emissions, leakage emissions and emission reductions are applied to the proposed project activity	EB 41	Ann 12	<p>Yes, as follow: <i>" Project emissions</i> <i>Given the Power Density of the OCAÑA Hydropower Project is 2,364 W/m2, CH4 emissions from the reservoir shall not be accounted whereby PEy is zero.</i></p> <p><i>Baseline emissions</i> <i>The baseline emissions include the CO2 emissions produced to generate electricity in the plants that use fossil fuels, as their power source and that would be displaced because of the electricity generated by the OCAÑA Project Activity. The emissions for the baseline are calculated using the following formula</i></p> $BE_y = EG_{PJ,y} \cdot EF_{grid,CM,y}$ <p>...</p>		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			<p><i>Leakage</i></p> <p><i>According to ACM0002/V. 12.3.0, one should not consider leakages for emission reductions calculation....</i></p> <p><i>Emission reductions (ER_y)</i></p> <p><i>emission reductions are calculated using the following formula:</i></p> $ER_y = BE_y - PE_y "$		


**BUREAU
VERITAS**

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
ii. Equations used in calculating emission reductions	EB 41	Ann 12	<p>CAR EF 01: The PDD version 01.2 followed, as described in the Section B.1., the Tool to calculate the emission factor for an electricity system, Version 02.2.1. However:</p> <ul style="list-style-type: none"> - In Section B.6.1. it still refers to 7 steps; - Not all the necessary equations are described in the Section. What equation is used: (2),(3)or (4) from the Tool? - The title of some steps are not in accordance with the Tool; - Not all the necessary assumptions are described as e.g.: "If the DNA of the host country has published a delineation of the project electricity system and connected electricity systems, these delineations should be used. If this information is not available, project participants should define the project electricity system and any connected electricity system, and justify and document their assumptions in the CDM-PDD." <p>The PDD shall clearly follow all the steps of the Tool to calculate the emission factor for an electricity system, in order to permit the DOE to validate the EF.</p> <p>CL EF 01: Provide the complete Official references used to calculate the EF CM, with a detailed explanation regarding the origin of the data, in order to permit the DOE validate the EF calculations.</p>	CAR EF 01 CL EF 01	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
iii. Explanation and justification for all relevant methodological choices, including different scenarios or cases, options and default values	EB 41	Ann 12	Yes, in the case of hydropower plants the ACM0002 does not provide methodological choices, however the PP justified the choices made under the ACM0002 applicable tools. (eg.: step 2, 3 and 5 of the tool for EF calculation v.2.2.1)		OK
q. In CDM-PDD section B.6.2 are following provided?	EB 41	Ann 12	-	-	-
i. A compilation of information on the data and parameters that are not monitored throughout the crediting period but that are determined only once and thus remains fixed throughout the crediting period AND that are available when validation is undertaken	EB 41	Ann 12	<p>Yes, the parameter that are not monitored and are available at the validation are:</p> <p>EF_{grid,CM,y} (Combined marginal CO2 emission factor for power generation, connected to the grid in the year y.</p> <p>GWP_{CH4} (Global Warming Potential of the CH4)</p> <p>FCi,m,y (Quantity of fossil fuel consumed by each generation unit / plant)</p> <p>EF_{CO2,,i,y} (Emission Factor for each fossil fuel.)</p> <p>EGm,y and EGk,y (Net electricity generated by each unit of m, k in the year y.)</p> <p>NCVi,y (Net calorific value (energy content) for each fossil fuel).</p> <p>Di,y (Density of each fossil fuel).</p>		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
ii. The actual value period	EB 41	Ann 12	Yes.		OK
iii. Explanation and justification for the choice of the source of data	EB 41	Ann 12	Yes.		OK
iv. Clear and transparent references or additional documentation in Annex 3	EB 41	Ann 12	Yes.		OK
v. Where values have been measured, a description of the measurement methods and procedures (e.g. which standards have been used), indicated the responsible person/entity having undertaken the measurement, the date of measurement(s) and the measurement results	EB 41	Ann 12	Yes.		OK
r. In CDM-PDD section B.6.3 are following provided?	EB 41	Ann 12	-	-	-
i. A transparent <i>ex ante</i> calculation of project emissions, baseline emissions (or, where applicable, direct calculation of emission reductions) and leakage emissions expected during the crediting period, applying all relevant equations provided in the approved methodology	EB 41	Ann 12	CAR 06: the section B.6.3 of the PDD v.1.2 does not make reference to the calculation of the parameters $EF_{grid,OM,y}$ and $EF_{grid,BM,2010}$ were obtained.	CAR 06	OK
ii. Documentation how each equation is applied, in a manner that enables the reader to reproduce the calculation	EB 41	Ann 12	Please refer to CAR 06, above	CAR 06	OK
iii. Additional background information and or data in Annex 3, including relevant electronic files (i.e. spreadsheets)	EB 41	Ann 12	Yes. Additional information is presented in annex 3.		OK
s. In CDM-PDD section B.6.4 are the results of the	EB	Ann	Yes.		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
<i>ex ante</i> estimation of emission reductions for all years of the crediting period, provided in a tabular format?	41	12			
t. In CDM-PDD section B.7.1 are following provided?	EB 41	Ann 12	-	-	-
i. Specific information on how the data and parameters that need to be monitored would actually be collected during monitoring for the project activity	EB 41	Ann 12	Yes, the (EGy) Net quantity of electricity generated by the project in the year y		OK
ii. For each parameter the following below information, using the table provided:	EB 41	Ann 12	-	-	-
a. The source(s) of data that will be actually used for the proposed project activity (e.g. which exact national statistics). Where several sources may be used, explain and justify which data sources should be preferred.	EB 41	Ann 12	Yes, "This parameter will be measured by the Commercial Measurement Equipment, which includes energy meters, communication system and the software namely Terminal Portátil de Lectura or TPL. Measurement procedure will follow the "Commercial Measurement System of the Electric Whole Market – MEM" established in the Regulation CONELEC 005/066."		OK
b. Where data or parameters are supposed to be measured, specify the measurement methods and procedures, including a specification which accepted industry standards or national or international standards will be applied, which measurement equipment is used, how the measurement is undertaken, which calibration procedures are applied, what is the accuracy of the measurement method,	EB 41	Ann 12	Yes: "This parameter will be measured by the Commercial Measurement Equipment, which includes energy meters, communication system and the software namely Terminal Portátil de Lectura or TPL. Measurement procedure will follow the "Commercial Measurement System of the Electric Whole Market – MEM" established in the Regulation CONELEC 005/066... Four energy meters will be installed at project site		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
who is the responsible person/entity that should undertake the measurements and what is the measurement interval; (i) A description of the QA/QC procedures (if any) that should be applied; (ii) Where relevant: any further comment. Provide any relevant further background documentation in Annex 4.			<i>(two operative/two backup). These meters will be calibrated following manufacturer's directives, however, ELECAUSTRO, on a daily basis; will check measurement records in order to detect potential failures in the equipment. The electricity generation from the plant will be monitored and recorded at the central control room. The SCADA's project operator is responsible for recording such data. Receipts for electricity sales will be kept for cross check, when necessary".</i>		
u. In CDM-PDD section B.7.2 are following provided?	EB 41	Ann 12	-	-	-
i. A detailed description of the monitoring plan	EB 41	Ann 12	Yes, and according to the PDD v.1.2 this will be done as follow: <i>"The Monitoring Plan includes the procedures for collecting the data identified in Section B.7.1. and is intended to determine and verify the emission reductions achieved by the OCANA Hydropower Project. For this purpose, ELECAUSTRO, following the Regulation CONELEC 005/06, installed the Commercial Measurement Equipment (energy meters, communication system, and TPL). On a daily basis, the SCADA operator will download information from the energy meters by means of the TPL software of CENACE; later, this information will be uploaded to the Commercial</i>		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			<p><i>Measurement System for the Electricity Market (SMEC) managed by CENACE. Once CENACE validates the daily measured net energy, this information will be presented through the website of the Information System of the Electricity Market (SIMEM) in accordance to the Annex 5 of the Regulation 005/06.</i></p> <p><i>In order to crosscheck information, an official of the Planning and Trading Direction of ELECAUSTRO will verify the information published by CENACE. In case of differences on data were found, ELECAUSTRO will request to CENACE corresponding adjustments; revised and agreed information will be published as monthly net energy.</i></p> <p><i>As required by the ACM0002/V.12.3.0 methodology, the net quantity of electricity generated by the project data will be filed electronically and will be available for at least 2 years after the end of the final crediting period. It should be noted that these data will be monitored continuously and all of the measuring equipment (power meters) will be properly calibrated following the directives of the Regulation 005/06.</i></p> <p><i>The net quantity of electricity generated by the Project Activity, EGy, will be monitored continuously, which will make it possible to estimate the emissions reduction".</i></p>		



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
ii. The operational and management structure that the project operator will implement in order to monitor emission reductions and any leakage effects generated by the project activity	EB 41	Ann 12	Yes, an operational and management structure is presented in section B.7.2 and annex 4 of the PDD v.1.2		OK
iii. The responsibilities for and institutional arrangements for data collection and archiving	EB 41	Ann 12	Yes, please refer to item 3.u.ii, above		OK
iv. Indication that the monitoring plan reflect good monitoring practice appropriate to the type of project activity	EB 41	Ann 12	Yes. Please refer to section 3.u.i, above.		OK
v. Relevant further background information in Annex 4	EB 41	Ann 12	Yes.		OK
v. In CDM-PDD section B.8 are following provided?	EB 41	Ann 12	-	-	-
i. Date of completion of the application of the methodology to the project activity study in DD/MM/YYYY	EB 41	Ann 12	Yes: " <i>Date of completion of baseline study and monitoring methodology: 15/12/2010</i> ".		OK
ii. Contact information of the person(s)/entity(ies) responsible for the application of the baseline and monitoring methodology to the project activity	EB 41	Ann 12	Yes. "Mr. Jaime Sánchez <i>Electro Generadora del Austro ELECAUSTRO S.A.</i> <i>Address: Av. 12 de Abril y José Peralta, Edificio Paseo del Puente, Cuenca</i> <i>Phone: +593 7 4103073 x 207</i> <i>Mobile: +593 9 9590875</i> <i>E-mail: jsanchez@elecaustro.com.ec</i> <i>www: elecaustro.com.ec</i> "		OK
iii. Indication if the person/entity is also a project participant listed in Annex 1	EB 41	Ann 12	Yes "ELECAUSTRO is a Project Participant".		OK
w. In CDM-PDD section C.1.1 are following	EB	Ann	-	-	-


**BUREAU
VERITAS**

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
provided?	41	12			
i. The starting date of a CDM project activity, which is the earliest of the date(s) on which the implementation or construction or real action of a project activity begins/has begun (EB33, Para 76/CDM Glossary of terms/EB41, Para 67)	EB 41	Ann 12	Yes: <i>"April 3, 2008"</i>		OK
ii. A description of how this start date has been determined, and a description of the evidence available to support this start date	EB 41	Ann 12	Yes, as follow: <i>"Signing of the contract for construction, equipment and commissioning of the proposed CDM Project Activity".</i>		OK
iii. If this starting date is earlier than the date of publication of the CDM-PDD for global stakeholder consultation by a DOE, description in Section B.5 contain a of how the benefits of the CDM were seriously considered prior to the starting date (EB41, Para 68).	EB 41	Ann 12	Yes. Please refer to table 3 of the PDD v1.2		OK
x. In CDM-PDD section C.1.2 is the expected operational lifetime of the project activity in years and months provided?	EB 41	Ann 12	Yes <i>"50 years 0 months"</i>		OK
y. In CDM-PDD section C.2 is it stated whether the project activity will use a renewable or a fixed crediting period and is C.2.1 or C.2.2 completed accordingly?	EB 41	Ann 12	Yes. <i>"The Ocaña Hydropower Project will use a renewable crediting period"</i>		OK
z. In CDM-PDD section C.2.1 is it indicated that each crediting period shall be at most 7 years and may be renewed at most two times, provided that, for each renewal, a designated operational entity determines and informs the Executive Board that the original project baseline is still	EB 41	Ann 12	Yes. <i>"The Ocaña Hydropower Project will use a renewable crediting period"</i>		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
valid or has been updated taking account of new data where applicable?					
aa. In CDM-PDD section C.2.1.1 are dates in the following format: (DD/MM/YYYY) provided?	EB 41	Ann 12	Yes: "01/01/2013"		OK
bb. In CDM-PDD section C.2.1.2 is the length of the first crediting period in years and months provided?	EB 41	Ann 12	Yes "7 years 0 months"		OK
cc. In CDM-PDD section C.2.2 is the fixed crediting period at most ten (10) years provided?	EB 41	Ann 12	N/A.		OK
dd. In CDM-PDD section C.2.2.1 are the dates provided in the following format: (DD/MM/YYYY)?	EB 41	Ann 12	N/A.		OK
ee. In CDM-PDD section C.2.2.2 is the length of the crediting period in years and months Provided?	EB 41	Ann 12	N/A.		OK
ff. In CDM-PDD section D.2 are the conclusions and all references to support documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the Host Party, if environmental impacts are considered significant by the project participants or the Host, provided?	EB 41	Ann 12	According o the PDD v.1.2, section D.2: <i>"As indicated in the Final Environmental Impact Study (2003), the OCAÑA Hydropower Project generates some significant impacts, but the overall effect does not affect greatly the Project's area. In any case, mitigation measures and actions designed and laid out in the approved Environmental Management Plan (EMP) will reduce identified significant environmental impacts. The main characteristics of these actions are presented in Table No. 7..."</i>		OK
gg. In CDM-PDD section E.1 are the following provided?	EB 41	Ann 12	-	-	-
i. The process by which comments by local stakeholders have been invited and compiled. An invitation for comments by local	EB 41	Ann 12	Yes, through several direct interviews, surveys, meetings and public hearings held between 2002 and 2012.		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
stakeholders shall be made in an open and transparent manner, in a way that facilitates comments to be received from local stakeholders and allows for a reasonable time for comments to be submitted.					
ii. The project activity is described in a manner, which allows the local stakeholders to understand the project activity, taking into account confidentiality provisions of the CDM modalities and procedures.	EB 41	Ann 12	CL 01: it is not clear whether and how the theme CDM was addressed during the public hearings held in 11 th March 2012, once no pictures of the meeting, neither the material presented to the stakeholders were made available to the DOE.	CL 01	OK
iii. The local stakeholder process has been completed before submitting the proposed project activity to the DOE for validation.	EB 41	Ann 12	Yes.		OK
hh. In CDM-PDD section E.2 are following provided?	EB 41	Ann 12	-	-	-
i. Identification of local stakeholders that have made comments	EB 41	Ann 12	Yes, as presented in tables 9.1 and 9.2, of the PDD v1.2		OK
ii. A summary of this comments.	EB 41	Ann 12	Yes.		OK
ii. In CDM-PDD section E.3 is the explanation of how due account have been taken of comments received from local stakeholders provided?	EB 41	Ann 12	Yes, through table 10 of the PDD v1.2		OK
jj. In CDM-PDD Annex 1 are the following provided?	EB 41	Ann 12	-	-	-
i. Contact information of project participants	EB 41	Ann 12	Yes.		OK
ii. For each organisation listed in section A.3 the following mandatory fields: Organization, Name of contact person, Street, City, Postfix/ZIP,	EB 41	Ann 12	Yes.		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
Country, Telephone and Fax or e-mail					
kk. In CDM-PDD Annex 2 is information from Parties included in Annex I on sources of public funding for the project activity which shall provide an affirmation that such funding does not result in a diversion of official development assistance and is separate from and is not counted towards the financial obligations of those Parties provided?	EB 41	Ann 12	N/A, according to the PDD v.1.2: <i>"For the financing of the OCAÑA Project Activity, there are no plans to use funds declared to be Official Development Assistance (ODA) from the countries listed in Annex I"</i>		OK
ll. In CDM-PDD Annex 3 is the background information used in the application of the baseline methodology provided?	EB 41	Ann 12	Yes		OK
mm. In CDM-PDD Annex 4 is the background information used in the application of the monitoring methodology provided?	EB 41	Ann 12	Yes.		OK
4. Project description					
a. Does the PDD contain 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?	VVM	58	Please refer to item 3.d.i, above.		OK
b. Is the description of the proposed CDM project activity as contained in the PDD:	VVM	59	-	-	-
i. sufficiently covering all relevant elements?	VVM	59	Please refer to item 3.d.i, above.		OK
ii. accurate?	VVM	59	Please refer to item 3.d.i, above.		OK
iii. providing the reader with a clear understanding of the nature of the proposed CDM project activity?	VVM	59	Please refer to item 3.d.i, above.		OK
iv. Are there any changes/modifications compared to the webhosted PDD?	VVM	59	Please refer to CAR 03, above	CAR 03	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
c. Is the proposed CDM project activity in existing facilities or utilizing existing equipments?	VVM	60	No, it is a greenfield power plant		OK
d. Is the CDM project activity one of the following types:	VVM	60	-	-	-
i. Large scale?	VVM	60	Yes, it is a large scale CDM project		OK
ii. Non-bundled small scale projects with emission reductions exceeding 15,000 tonnes per year?	VVM	60	No. please refer to item 4.d.i, above		OK
iii. Bundled small scale projects, each with emission reductions not exceeding 15,000 tonnes?	VVM	60	No. please refer to item 4.d.i, above		OK
e. If yes to (c) and (d) above, was a physical site inspection conducted to confirm that the description in the PDD reflects the proposed CDM project activity, unless other means are specified in the methodology?	VVM	60	Yes.		OK
f. If yes to (d.iii) above, was the number of physical site visits base on sampling?	VVM	60	N/A		OK
g. If yes is the sampling size appropriately justified through statistical analysis?	VVM	60	N/A		OK
h. For other individual proposed small scale CDM project activities with emission reductions not exceeding 15,000 tonnes per year, was a physical site inspection conducted?	VVM	61	No. please refer to item 4.d.i, above		OK
i. For all other proposed CDM project activities not referred to in paragraphs 59 – 61, was a physical site inspection conducted?	VVM	62	N/A		OK
j. If no, was it appropriately justified?	VVM	62	N/A		OK
k. Does the proposed CDM project activity involve the alteration of an existing installation or	VVM	63	No, it is a Greenfield power plant		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
process?					
I. If yes, does the project description clearly state the differences resulting from the project activity compared to the pre-project situation?	VVM	63	N/A		OK
5. Baseline and monitoring methodology					
a. General requirement					
a. Do the baseline and monitoring methodologies selected by the project participants comply with the methodologies previously approved by the CDM Executive Board?	VVM	65	Yes. The ACM0002 v.12.3.0 was used to develop the PDD. The referred methodology is applicable to the proposed project activity.		OK
b. Is the selected methodology applicable to the project activity?	VVM	66	Refer to (5.b.a) below	-	-
c. Had the PP correctly applied the selected methodology?	VVM	66	Refer to (5.b.d) below	-	-
d. Had the selected methodology been correctly applied with respect to project boundary?	VVM	67	Refer to (5.c) below	-	-
e. Had the selected methodology been correctly applied with respect to baseline identification?	VVM	67	Refer to (5.d) below	-	-
f. Had the selected methodology been correctly applied with respect to Algorithms and/or formulae used to determine emission reductions?	VVM	67	Refer to (5.e) below	-	-
g. Had the selected methodology been correctly applied with respect to additionally?	VVM	67	Yes. As stated in the PDD v.1.2: <i>"in order to demonstrate and assess the Additionally of the Project Activity, the Project Participants will apply the most recent versions of the following documents:</i> 1. <i>"Tool for demonstration and assessment of Additionally – Version 06.0.0".</i>		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			2. "Guidelines for objective demonstration and assessment of barriers – Version 01".		



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
i. Has the additionally of the project activity been demonstrated and assessed using the latest version of the "Tool for the demonstration and assessment of additionally" agreed by the Board, which is available on the UNFCCC website?	ACM	0002	Yes, please refer to item 5.a.g, above		OK
h. Had the selected methodology been correctly applied with respect to monitoring methodology?	VVM	67	Refer to (7.g), (7.h), (7.i), (7.j) and (7.k) below		OK
b. Applicability of the selected methodology to the project activity					
a. Is the selected baseline and monitoring methodology, previously approved by the CDM Executive Board, applicable to the project activity? Is the used version valid?	VVM	68	Yes. The ACM0002 v.12.3.0 was used to develop the PDD. The referred methodology is applicable to the proposed project activity. Also, the v. 12.3.0 is valid until 11th January 2013.		OK
i. This methodology is applicable to grid-connected renewable power generation project activities that (a) install a new power plant at a site where no renewable power plant was operated prior to the implementation of the project activity (greenfield plants); (b) involve a capacity addition; (c) involve a retrofit of (an) existing plant(s); or (d) involve a replacement of (an) existing plant(s).	ACM	0002	The "OCANA Hydropower Project." fits in item "a" (greenfield plant).		OK
b. Has the DOE applied specific guidance provided by the CDM Executive Board in respect to the applicable approved methodology?	VVM	69	The only guidance used by the DOE is the guidelines for completing the project design document - EB 41, annex 12		OK
c. Is the methodology correctly quoted?	VVM	70	Please refer to CAR 05, above	CAR 05	OK
d. Are the applicability conditions of the	VVM	71	Yes. Please refer to the item 3.l.i, above		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
methodology met?					
i. 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	ACM	0002	Yes, the project is a Greenfield Hydro power plant with a run-of-river reservoir		OK
ii. In the case of capacity additions, retrofits or replacements (except for wind, solar, wave or tidal power capacity addition projects which use Option 2: on page 10 to calculate the parameter $EG_{PJ,y}$): the existing plant started commercial operation prior to the start of a minimum historical reference period of five years, used for the calculation of baseline emissions and defined in the baseline emission section, and no capacity expansion or retrofit of the plant has been undertaken between the start of this minimum historical reference period and the implementation of the project activity.	ACM	0002	N/A, please refer to item 5.b.d.i, above		OK
iii. In case of hydro power plants, one of the following conditions must 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	ACM	0002	Yes, 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/m ² .		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
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/m ² ; 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/m ² .					
iv. The methodology is not applicable to the following conditions. Please confirm - Project activities that involve switching from fossil fuels to renewable energy sources at the site of the project activity - Biomass fired power plants; - Hydro power plants that result in new reservoirs or in the increase in existing reservoirs where the power density of the power plant is less than 4 W/m ² .	ACM	0002	N/A, please refer to item 5.b.d.i, above		OK
v. In the case of retrofits, replacements, or capacity additions, this methodology is only applicable if the most plausible baseline scenario, as a result of the identification of baseline scenario, is "the continuation of the current situation, i.e. to use the power generation equipment that was already in use prior to the implementation of the project activity and undertaking business as usual maintenance".	ACM	0002	N/A, please refer to item 5.b.d.i, above		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
e. Is the project activity expected to result in emissions other than those allowed by the methodology?	VVM	71	No		OK
f. Is the choice of the methodology justified?	VVM	71	Yes. Please refer to the item 3.l.i, above		OK
g. Have the project participants shown that the project activity meets each of the applicability conditions or the approved methodology?	VVM	71	Refer to (5.b.d) above	-	-
h. Have the project participants shown that the project activity meets each of the applicability conditions of any tool or other methodology component referred to the methodology?	VVM	71	There is no applicability conditions listed in the tools referred by ACM0002 v.12.3.0, so that the only applicability conditions applicable to the project are those listed in the own methodology; please refer to item 5.b.d, above.		OK
i. Are each of the applicability conditions of the "Tool to calculate the emission factor for an electricity system" met?	EB 50	Ann 40	N/A, please refer to item 5.b.h, above		OK
ii. Are each of the applicability conditions of the "Tool for the demonstration and assessment of additionally" met?	EB 39	Ann 10	N/A, please refer to item 5.b.h, above		OK
iii. Are each of the applicability conditions of the "Combined tool to identify the baseline scenario and demonstrate additionally" met?	EB 28	Ann 14	N/A, please refer to item 5.b.h, above		OK
iv. Are each of the applicability conditions of the "Tool to calculate project or leakage CO ₂ emissions from fossil fuel combustion" met?	EB 41	Ann 11	N/A, please refer to item 5.b.h, above		OK
i. Is the DOE, based on local and sectoral knowledge, aware that comparable information is available from sources other than that used in the PDD?	VVM	71	Yes.		OK
j. If yes, was the PDD cross checked against the	VVM	71	Some of the sources used to cross check against		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
other sources to confirm that the project activity meets the applicability conditions of the methodology? (provide the reference to these choices)			the PDD to confirm that the project activity meets the applicability conditions were: UNFCCC website, The UNFCCC site information were: Methodology ACM0002, version 12.3.0, Tool for the Demonstration and Assessment of additionally, version 6, Annex 12 of EB 35 - Tool to calculate the emission factor for an electricity system, version 2, Guidelines for completing the Project Design Document Form (CDM PDD), version 07.		
k. Can a determination regarding the applicability of the selected methodology to the proposed CDM project activity be made?	VVM	72	Yes. The project activity is applicable under the selected methodology.		OK
l. If no, clarification of the methodology was requested, in accordance with the guidance provided by the CDM Executive Board?	VVM	72	N/A		OK
m. If answer to (5.b.d) above is "no", revision or deviation from the methodology was requested, in accordance with the guidance provided by the CDM Executive Board?	VVM	73	N/A		OK
n. If yes to (5.b.l) and (5.b.m) above, a request for registration was submitted before the CDM Executive Board has approved the proposed deviation or revision?	VVM	74	N/A		OK
c. Project boundary					
a. Does the PDD correctly describe the project boundary, including the physical delineation of the proposed CDM project activity included within the project boundary for the purpose of	VVM	78	Please refer to CAR 05, above	CAR 05	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
calculating project and baseline emissions for the proposed CDM project activity?					
i. Does the extent of the project boundary, as described in the PDD, includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to?	ACM	0002	Yes, as presented in section B.3 of the PDD v.1.2: <i>"The scope of the Project Activity includes the OCAÑA Hydropower Project and all the power plants that are connected to the SNI grid (Hydropower, Thermal)."</i>		OK
ii. Are the greenhouse gases and emission sources that are included in or excluded from the project boundary shown in a table format as per applicable methodology?	ACM	0002	Yes, it was presented in section B.3 of the PDD v.1.2		OK
b. Is the delineation in the PDD of the project boundary correct and include identification of all locations, processes and equipment including secondary equipment and associated processes such as logistics etc.?	VVM	79	Please refer to CAR 05, above	CAR 05	OK
c. Does the delineation in the PDD of the project boundary meet the requirements of the selected baseline?	VVM	79	Yes, the PDD v.1.2 has considered <i>" The scope of the Project Activity includes the OCAÑA Hydropower Project and all the power plants that are connected to the SNI grid (hydropower, thermal)"</i> , as defined by ACM0002 v.12.3.0.		OK
d. Have changes been made to the project boundary in comparison to the webhosted PDD. If yes please comment on the reason for the changes.	VVM	79	No.		OK
e. Have all sources and GHGs required by the methodology been included within the project boundary?	VVM	79	Yes, please refer to item 5.c.a.ii, above		OK
f. Does the methodology allow project participant to	VVM	79	No, the ACM0002 v.12.3.0 states which sources		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
choose whether a source or gas is to be included within the project boundary			and GHGs must be included in each situation based in the type of the project.		
g. If yes, have the project participants justified that choice?	VVM	79	N/A		OK
h. If yes, is the justification provided reasonable? (provide reference to the supporting documented evidence provided by the project participants)	VVM	79	N/A		OK
d. Baseline identification					
a. Does 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?	VVM	81	Yes, please refer to section 3.n.i, above.		OK
b. Has any procedure contained in the methodology to identify the most reasonable baseline scenario, been correctly applied?	VVM	82	Yes.		OK
i. If the project activity is the install a new grid-connected renewable power plant/unit (greenfield plant), is the baseline scenario identified appropriately in accordance with the ACM0002 ver.12.1.0?	ACM	0002	Yes, the project is a Greenfield power plant and the baseline scenario was defined in accordance to the ACM0002 v.12.3.0. Please refer to section 3.n.i, above.		OK
ii. If the project activity is a capacity addition to existing grid-connected renewable power plant/unit, is the baseline scenario identified appropriately in accordance with the ACM0002 ver. 11? And is the point of time at which the generation facility would likely be replaced or retrofitted (DATE Baseline Retrofit) reasonably	ACM	0002	N/A		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
defined?					
iii. If the project activity is the retrofit or replacement of existing grid-connected renewable power plant/unit, is the baseline scenario identified following the step-wise procedure in accordance with the ACM0002 ver.11?	ACM	0002	N/A		OK
iv. Are the realistic and credible alternative baseline scenarios for power generation appropriately identified following the Step 1 of the "Combined tool to identify the baseline scenario and demonstrate additionally"? (Step 1)	ACM	0002	<p>This project is a greenfield plant and not a "retrofit or replacement of existing grid-connected renewable power plant/unit(s) at the project site" so than the "Combined tool to identify the baseline scenario and demonstrate additionally" does not apply, as stated in the ACM 0002 v.12.3.0. In the case of Greenfield plants (project case), the methodology states the baseline scenario as follow:</p> <p><i>"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".</i></p>		OK
v. Are the realistic and credible alternative baseline scenarios i.e. P1, P2 and P3 appropriately applied Barrier analysis following the Step 2 of the "Combined tool to identify the baseline scenario and demonstrate additionally"? (Step 2)	ACM	0002	N/A, please refer to item 5.d.b.iv, above		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
vi. If more than one alternative is remaining after Step 2, is Investment analysis appropriately applied (apply an Investment Comparison as per step 3 of the “Combined tool to identify the baseline scenario and demonstrate additionally” or a Benchmark Analysis as per step 2b of the “Tool for the demonstration and assessment of additionally”)? (Step 3)	ACM	0002	N/A, please refer to item 5.d.b.iv, above		OK
c. Does the selected methodology require use of tools (such as the “Tool for the demonstration and assessment of additionally” and the “Combined tool to identify the baseline scenario and demonstrate additionally”) to establish the baseline scenario?	VVM	82	Yes, however please refer to item 5.d.b.iv, above.		OK
d. If yes, was the methodology consulted on the application of these tools? (In such cases, the guidance in the methodology shall supersede the tool.)	VVM	82	N/A, please refer to item 5.d.b.iv, above		OK
e. Does the methodology require several alternative scenarios to be considered in the identification of the most reasonable baseline scenario?	VVM	83	Not in the case of this project (greenfield plant).		OK
f. If yes, are all scenarios that are considered by the project participants and are supplementary to those required by the methodology reasonable in the context of the proposed CDM project activity?	VVM	83	N/A		OK
g. Has any reasonable alternative scenario been excluded?	VVM	83	N/A, please refer to item 5.d.b.iv, above.		OK
h. Is the baseline scenario identified reasonably supported by:	VVM	84	please refer to item 5.d.b.iv, above.		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
i. Assumptions?	VVM	84	The baseline scenario is defined by the methodology and the baseline emission factor (grid emission factor) was defined ex-ante.		OK
ii. Calculations?	VVM	84	Please refer to CAR EF 01 and CL EF 01 , above.	CAR EF 01, CL EF 01.	OK
iii. Rationales?	VVM	84	Please refer to CAR EF 01 and CL EF 01 , above.	CAR EF 01, CL EF 01.	OK
i. Are the documents and sources referred to in the PDD correctly quoted and interpreted?	VVM	84	Please refer to CAR 04 , above.	CAR 04	OK
j. Was the information provided in the PDD cross checked with other verifiable and credible sources, such as local expert opinion, if available? (identify the sources)	VVM	84	The information crosschecking was not necessary in the case of the baseline scenario identification, once, according to the ACM0002 v.12.3.0 the baseline scenario for greenfield power plants (project case) is already defined, as follow: <i>"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".</i>		OK
k. Have all applicable CDM requirements been taken into account in the identification of the baseline scenario for the proposed CDM project	VVM	85	Yes. Please refer to item 5.d.b.iv, above.		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
activity?					
l. Have all relevant policies and circumstances been identified and correctly considered in the PDD, in accordance with the guidance by the CDM Executive Board?	VVM	85	The ACM0002 v.12.3.0 already provides the baseline scenario description for this kind of project activity. So that the EB22 annex 3 does not apply.		OK
m. Does the PDD provide a verifiable description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity?	VVM	86	Yes, please refer to item 5.d.j, above		OK
<i>e. Algorithms and/or formulae used to determine emission reductions</i>					
a. Do the steps taken and equations applied to calculate project emissions, baseline emissions, leakage and emission reductions comply with the requirements of the selected baseline and monitoring?	VVM	89	Please refer to CAR 06, CAR EF 01, and CL EF 01 , above	CAR 06, CAR EF 01, and CL EF 01.	OK
b. Have the equations and parameters in the PDD been correctly applied with respect those in the select approved methodology?	VVM	90	Please refer to CAR 06 CAR EF 01 and CL EF 01 , above	CAR 06, CAR EF 01, and CL EF 01.	OK
i. Are the Project emissions appropriately calculated?	ACM	0002	Yes.		OK
ii. Are the Baseline emissions appropriately	ACM	0002	Please refer to CAR 06, CAR EF 01, and CL EF	CAR	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
calculated specifically for (a) greenfield plants or (b) retrofit and replacements or (c) capacity additions?			01 , above	06, CAR EF 01, and CL EF 01.	
iii. Are the Leakage appropriately calculated?	ACM	0002	Yes, however, as explained in section B.6.1 of PDD v.1.2: <i>"According to ACM0002/V. 12.3.0, one should not consider leakages for emission reductions calculation."</i>		OK
iv. Are the Emission reductions appropriately calculated?	ACM	0002	Please refer to CAR 06, CAR EF 01, and CL EF 01 , above	CAR 06, CAR EF 01, and CL EF 01.	OK
c. Have project participants prepared as part of the CDM-PDD an estimate of likely emission reductions for the proposed crediting period? This estimate should, in principle, employ the same methodology as selected for the calculation of emission reductions. Where the grid emission factor (EFCM,grid,y) is determined ex post during monitoring, project participants may use models or other tools to estimate the emission reductions prior to validation.	ACM	0002	Yes. The PP has opted to calculate emission reduction by using the ex-ante grid emission factor, thus both, ex-ante and ex post calculation follow the same structure.		OK
d. Does the methodology provide for selection between different options for equations or	VVM	90	No options are provided for Greenfield renewable energy power plants. It is pre defined in the		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
parameters?			ACM0002 v.12.3.0		
e. If yes, has adequate justification been provided (based on the choice of the baseline scenario, context of the proposed CDM project activity and other evidence provided)?	VVM	90	N/A		OK
f. If yes, have correct equations and parameters been used, in accordance with the methodology selected?	VVM	90	Refer to (5.e.b) above	-	-
g. Will data and parameters be monitored throughout the crediting period of the proposed CDM project activity?	VVM	91	Only EGy - Net quantity of electricity generated by the project in the year y		OK
h. If no, and these data and parameters will remain fixed throughout the crediting period, are all data sources and assumptions:	VVM	91	<p>Yes, the parameter that are not monitored and are available at the validation and its sources are the following:</p> <p>EF_{grid,CM,y} (Consolidated Information from CONELEC and CENACE)</p> <p>GWPCH4 (IPCC)</p> <p>FC_{i,m,y} (Ministry for Electricity and Renewable Energy / consolidated information from CONELEC and CENACE)</p> <p>EF_{CO2,,i,y} (2006 IPCC guidelines for National Greenhouse Gas Inventories, Chapter 1, Table 1.4)</p> <p>EG_{m,y} and EG_{k,y} (Ministry for Electricity and</p>		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			<p>Renewable Energy / information compiled by CONELEC and CENACE.)</p> <p>NCVi,y (2006 IPCC guidelines for National Greenhouse Gas Inventories, Chapter 1, Table 1.2).</p> <p>Di,y (The World Bank, Working Paper Series, "Greenhouse Gas Assessment Handbook – A practical guidance document for the assessment of project-level greenhouse gas emissions", Annex 5.).</p>		



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
i. Appropriate and correct?	VVM	91	Please refer to CAR EF 01 and CL EF 01 .	CAR EF 01, CL EF 01.	OK
ii. Applicable to the proposed CDM project activity?	VVM	91	Please refer to CAR EF 01 and CL EF 01 .	CAR EF 01, CL EF 01.	OK
iii. Resulting in a conservative estimate of the emission reductions?	VVM	91	Please refer to CAR EF 01 and CL EF 01 .	CAR EF 01, CL EF 01.	OK
i. Will data and parameters be monitored on implementation and hence become available only after validation of the project activity?	VVM	91	Please refer to 5.e.g, above		OK
j. If yes, are the estimates provided in the PDD for these data and parameters reasonable?	VVM	91	CL 02: The PDD v.1.2 does not provide references for the EGy value (203,099MWh/year), used in the ex ante calculation.	CL 02	OK
6. Additionally of a project activity					
a. Does the PDD describe how a proposed CDM project activity is additional?	VVM	94	Yes, please refer to item 3.o.i, above		OK
b. Does the CDM-PDD state the latest version of the additionally tool being used?	ACM	0002	Yes. The "Tool for demonstration and assessment of Additionally – Version 06.0.0".		OK
c. Were the following steps of the tool to assess additionally used:	EB 39	Ann 10	-	-	-
i. Identification of alternatives to the project activity?	EB 39	Ann 10	Yes, as follow: <i>" Alternative 1: Status quo – SNI supplies the required power</i>		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			<i>Alternative 2: Implement the OCAÑA Hydropower Project without registering it under the CDM"</i>		


**BUREAU
VERITAS**

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
ii. Investment analysis to determine that the proposed project activity is either: 1) not the most economically or financially attractive, or 2) not economically or financially feasible?	EB 39	Ann 10	No. the PP has opted for the barrier analysis.		OK
iii. Barriers analysis?	EB 39	Ann 10	Yes.		OK
iv. Common practice analysis?	EB 39	Ann 10	Yes.		OK
d. In step 1 (i) have all the sub-steps as below been followed?	EB 39	Ann 10	-	-	-
i. Sub-step 1a: Define alternatives to the project activity	EB 39	Ann 10	Yes, please refer to item 6.c.i, above		OK
ii. Sub-step 1b: Consistency with mandatory laws and regulations	EB 39	Ann 10	As stated in the PDD v.1.2: <i>"The alternatives presented in Sub-step 1a are consistent with and comply with the laws and regulations established for the electricity sector in Ecuador. Therefore there is no restriction that could prevent the status quo (Alternative 1) or construction/operation of the OCAÑA Hydropower Project without consider carbon finance (Alternative 2)"</i>		OK
e. Have the following alternatives been included while defining alternatives as per sub-step 1a?	EB 39	Ann 10	-	-	-
i. (a) The proposed project activity undertaken without being registered as a CDM project activity;	EB 39	Ann 10	Yes, please refer to item 6.c.i, above		OK
ii. (b) Other realistic and credible alternative scenario(s) to the proposed CDM project activity scenario that deliver outputs services or	EB 39	Ann 10	No, however in the section B.5 of PDD v1.2, the PP states the following:		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
services with comparable quality, properties and application areas, taking into account, where relevant, examples of scenarios identified in the underlying methodology;			<p><i>"... other alternatives were not considered like: (i) the implementation of a thermal power plant or (ii) the development of renewable wind, solar or biomass energy projects; with power generation from non-renewable or renewable energy sources that would be equivalent to that produced by the Project Activity. The thermal power plant is not a realistic option given that ELECAUSTRO seeks to reduce its fossil fuel power generation and diversify generation mainly using renewable sources. The Executive Board of ELECAUSTRO by the resolution No. 155-0767 dated March 31 2008 decided to suspend permanently commercial operations of the Monay Thermal Power Plant from April 1 2008. This action was taken in accordance with the company's objectives of replacing fossil fuels with renewable energy sources and reducing the company's dependence on fossil fuels, especially those derived from crude oil, which are imported and used to produce power.</i></p> <p><i>Likewise the second option is also not a realistic alternative for ELECAUSTRO because the company does not have built capacity to develop and operate wind farms, solar photovoltaic systems, thermal generation plants using biomass or geothermal generation plants with a capacity equivalent to the OCAÑA Project".</i></p>		



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
iii. (c) If applicable, continuation of the current situation (no project activity or other alternatives undertaken).	EB 39	Ann 10	Yes, please refer to item 6.c.i, above		OK
f. Has the project participant included the technologies or practices that provide outputs or services with comparable quality, properties and application areas as the proposed CDM project activity and that have been implemented previously or are currently being introduced in the relevant country/region?	EB 39	Ann 10	Please refer to item 6.e.ii, above		OK
g. Has the outcome of Step 1a: Identified realistic and credible alternative scenario(s) to the project activity done correctly? Please briefly mention the outcome.	EB 39	Ann 10	Please refer to item 6.e.ii, above		OK
h. Is the alternative(s) in compliance with all mandatory applicable legal and regulatory requirements, even if these laws and regulations have objectives other than GHG reductions, e.g. to mitigate local air pollution.?	EB 39	Ann 10	Please refer to item 6.d.ii, above		OK
i. If an alternative does not comply with all mandatory applicable legislation and regulations, has it been shown that, based on an examination of current practice in the country or region in which the law or regulation applies, those applicable legal or regulatory requirements are systematically not enforced and that noncompliance with those requirements is widespread in the country?	EB 39	Ann 10	N/A.		OK
j. Has the outcome of Step 1b: Identified realistic	EB	Ann	Please refer to item 6.d.ii, above		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
and credible alternative scenario(s) to the project activity that are in compliance with mandatory legislation and regulations taking into account the enforcement in the region or country and EB decisions on national and/or sectoral policies and regulations done correctly? Please state the outcome.	39	10			
k. Has PP selected Step 2 (Investment analysis) or Step 3 (Barrier analysis) or both Steps 2 and 3?	EB 39	Ann 10	The PP has selected the Step 3 (Barrier analysis)		OK
l. In step 2, have all the sub-steps as below been followed?	EB 39	Ann 10	-	-	-
i. Sub-step 2a: Determine appropriate analysis method;	EB 39	Ann 10	N/A		OK
ii. Sub-step 2b: Option I. Apply simple cost analysis;	EB 39	Ann 10	N/A		OK
iii. Sub-step 2b: Option II. Apply investment comparison analysis;	EB 39	Ann 10	N/A		OK
iv. Sub-step 2b: Option III. Apply benchmark analysis;	EB 39	Ann 10	N/A		OK
v. Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III);	EB 39	Ann 10	N/A		OK
vi. Sub-step 2d: Sensitivity analysis (only applicable to Options II and III).	EB 39	Ann 10	N/A		OK
m. In sub-step 2a has the determination of appropriate method of analysis done as per the guidance as below?	EB 39	Ann 10	-	-	-
i. Simple cost analysis if the CDM project activity and the alternatives identified in Step 1	EB 39	Ann 10	N/A		OK


**BUREAU
VERITAS**

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
generate no financial or economic benefits other than CDM related income (Option I).					
ii. Otherwise, use the investment comparison analysis (Option II) or the benchmark analysis (Option III). Specify option used with justification.	EB 39	Ann 10	N/A		OK
n. Has the below guideline followed for sub-step 2b Option I. Apply simple cost analysis? Document the costs associated with the CDM project activity and the alternatives identified in Step1 and demonstrate that there is at least one alternative which is less costly than the project activity.	EB 39	Ann 10	N/A		OK
o. Has the below guideline followed for sub-step 2b Option II. Apply investment comparison analysis? Identify the financial indicator, such as IRR, NPV, cost benefit ratio, or unit cost of service most suitable for the project type and decision-making context. Please specify	EB 39	Ann 10	N/A		OK
p. Has the below guideline followed for Sub-step 2b: Option III. Apply benchmark analysis?	EB 39	Ann 10	-	-	-
i. Identify the financial/economic indicator, such as IRR, most suitable for the project type and decision context.	EB 39	Ann 10	N/A		OK
ii. When applying Option II or Option III, the financial/economic analysis shall be based on parameters that are standard in the market, considering the specific characteristics of the project type, but not linked to the subjective profitability expectation or risk profile of a	EB 39	Ann 10	N/A		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
particular project developer. Only in the particular case where the project activity can be implemented by the project participant, the specific financial/economic situation of the company undertaking the project activity can be considered.					
iii. Discount rates and benchmarks shall be derived from: (a) Government bond rates, increased by a suitable risk premium to reflect private investment and/or the project type, as substantiated by an independent (financial) expert or documented by official publicly available financial data; (b) Estimates of the cost of financing and required return on capital (e.g. commercial lending rates and guarantees required for the country and the type of project activity concerned), based on bankers views and private equity investors/funds' required return on comparable projects; (c) A company internal benchmark (weighted average capital cost of the company), only in the particular case referred to above in 2. The project developers shall demonstrate that this benchmark has been consistently used in the past, i.e. that project activities under similar conditions developed by the same company used the same benchmark; (d) Government/official approved benchmark where such benchmarks are used for investment decisions; (e) Any	EB 39	Ann 10	N/A		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
other indicators, if the project participants can demonstrate that the above Options are not applicable and their indicator is appropriately justified. Please specify benchmark and justify.					
q. Has the below guideline followed for Sub-step 2c: Calculation and comparison of financial indicators (only applicable to Options II and III)?	EB 39	Ann 10	-	-	-
i. Calculate the suitable financial indicator for the proposed CDM project activity and, in the case of Option II above, for the other alternatives. Include all relevant costs (including, for example, the investment cost, the operations and maintenance costs), and revenues (excluding CER revenues, but possibly including inter alia subsidies/fiscal incentives, ODA, etc., where applicable), and, as appropriate, non-market cost and benefits in the case of public investors if this is standard practice for the selection of public investments in the host country.	EB 39	Ann 10	N/A		OK
ii. Present the investment analysis in a transparent manner and provide all the relevant assumptions, preferably in the CDM-PDD, or in separate annexes to the CDM-PDD.	EB 39	Ann 10	N/A		OK
iii. Justify and/or cite assumptions.	EB 39	Ann 10	N/A		OK
iv. In calculating the financial/economic indicator, the project's risks can be included through the cash flow pattern, subject to project-specific	EB 39	Ann 10	N/A		OK



BUREAU
VERITAS

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
expectations and assumptions.					
v. Assumptions and input data for the investment analysis shall not differ across the project activity and its alternatives, unless differences can be well substantiated.	EB 39	Ann 10	N/A		OK
vi. Present in the CDM-PDD a clear comparison of the financial indicator for the proposed CDM activity. Please specify details for above.	EB 39	Ann 10	N/A		OK
r. Has the below guideline followed for Sub-step 2d: Sensitivity analysis (only applicable to Options II and III)? Include a sensitivity analysis that shows whether the conclusion regarding the financial/economic attractiveness is robust to reasonable variations in the critical assumptions.	EB 39	Ann 10	N/A		OK
s. Has the outcome of Step 2 clearly mentioned with justification?	EB 39	Ann 10	N/A		OK
t. In step 3: Barrier analysis have all the sub-steps as below been followed?	EB 39	Ann 10	-	-	-
i. Sub-step 3a: Identify barriers that would prevent the implementation of the proposed CDM project activity;	EB 39	Ann 10	Yes: Investment Barrier		OK
ii. Sub-step 3 b: Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity).	EB 39	Ann 10	Yes: <i>"The aforementioned barrier is specific to the OCAÑA Hydropower Project (Alternative No. 2) which means they do not affect Alternative No. 1 (Status quo – Power supply from existing sources to the SNI) because this option does not represents additional investment by ELECAUSTRO."</i>		OK



**BUREAU
VERITAS**

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
u. Has the below guideline followed for Sub-step 3a: Identify barriers that would prevent the implementation of the proposed CDM project?	EB 39	Ann 10	-	-	-
i. (a) Investment barriers: For alternatives undertaken and operated by private entities: Similar activities have only been implemented with grants or other non-commercial finance terms. No private capital is available from domestic or international capital markets due to real or perceived risks associated with investment in the country where the proposed CDM project activity is to be implemented, as demonstrated by the credit rating of the country or other country investments reports of reputed origin.	EB 39	Ann 10	<p>CAR 07: according to the "Guidelines for Objective Demonstration and Assessment of Barriers" - Guideline 1: <i>"While demonstrating barriers related to the lack of access to capital (project case), information should include nature of company, organization and its ownership and, financial information"</i>. These information were not provided in the PDD v.1.2, to support the investment barrier.</p> <p>CAR 08: According to the Guideline 6 of the Guidelines for Objective Demonstration and Assessment of Barriers: <i>"In case the PPs make the claim for investment barriers, they should demonstrate in the PDD that the financing of the project was assured only due to the benefit of the CDM. Therefore, it should be demonstrated that the loan approval (or other significant financing decision(s)) by the lender takes <u>explicitly</u> the CDM registration into account"</i>. However the two paragraphs of the Trust presented in the section B.5 of the PDD v1.2, does not refer, <i>"explicitly"</i>, to the CDM registration.</p>	CAR 07, CAR 08 and CL 03	OK
ii. (b) Technological barriers: Skilled and/or properly trained labour to operate and maintain the technology is not available in the relevant	EB 39	Ann 10	Technological barrier was not applied.		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
country/region, which leads to an unacceptably high risk of equipment disrepair and malfunctioning or other underperformance; Lack of infrastructure for implementation and logistics for maintenance of the technology, Risk of technological failure: the process/technology failure risk in the local circumstances is significantly greater than for other technologies that provide services or outputs comparable to those of the proposed CDM project activity, as demonstrated by relevant scientific literature or technology manufacturer information, The particular technology used in the proposed project activity is not available in the relevant region.					
iii. (c) Barriers due to prevailing practice: The project activity is the "first of its kind".	EB 39	Ann 10	Barrier due to prevailing practice was not applied.		OK
iv. (d) Other barriers, preferably specified in the underlying methodology as examples.	EB 39	Ann 10	The PP has used only the Investment barriers:		OK
v. Has the outcome from Step 3a clearly mentioned in PDD?	EB 39	Ann 10	CAR 9: the outcome from Step 3a is not clearly mentioned in PDD v1.2	CAR 9	OK
w. Has the below guideline followed for Sub-step 3 b: Show that the identified barriers would not prevent the implementation of at least one of the alternatives (except the proposed project activity)?	EB 39	Ann 10	Yes as follow: <i>"The aforementioned barriers are specific to the OCAÑA Hydropower Project (Alternative No. 2) which means they do not affect Alternative No. 1 (Status quo – Power supply from existing sources to the SNI) because this option does not represents additional investment by ELECAUSTRO".</i>		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
i. If the identified barriers also affect other alternatives, explain how they are affected less strongly than they affect the proposed CDM project activity. In other words, demonstrate that the identified barriers do not prevent the implementation of at least one of the alternatives. Any alternative that would be prevented by the barriers identified in Sub-step 3a is not a viable alternative, and shall be eliminated from consideration.	EB 39	Ann 10	N/A, please refer to item 6.w.i, above.		OK
ii. Provide transparent and documented evidence, and offer conservative interpretations of this documented evidence, as to how it demonstrates the existence and significance of the identified barriers and whether alternatives are prevented by these barriers.	EB 39	Ann 10	Please refer to CAR 07 and 08 , above	CAR 07and 08	OK
iii. The type of evidence to be provided should include at least one of the following: (a) Relevant legislation, regulatory information or industry norms; (b) Relevant (sectoral) studies or surveys (e.g. market surveys, technology studies, etc.) undertaken by universities, research institutions, industry associations, companies, bilateral/multilateral institutions, etc.; (c) Relevant statistical data from national or international statistics; (d) Documentation of relevant market data (e.g. market prices, tariffs, rules); (e) Written documentation of independent expert judgments from industry,	EB 39	Ann 10	Please refer to CAR 07 and 08 , above	CAR 07 and 08	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
educational institutions (e.g. universities, technical schools, training centres), industry associations and others. Please specify.					
x. Has the outcome from Step 3 clearly mentioned in PDD?	EB 39	Ann 10	CAR 10: the outcome from Step 3 is not clearly mentioned in PDD v1.2	CAR 10	OK
y. In step 4: Common practice analysis have all the sub-steps as below followed?	EB 39	Ann 10		-	-
i. Sub-step 4a: Analyze other activities similar to the proposed project activity;	EB 39	Ann 10	Yes. As follow: <i>"CONELEC has categorized hydropower projects according to their installed power capacity: 1. 0 - 1 MW 2. 1 – 10 MW 3. 10 – 100 MW 4. > 100 MW Given the fact that the OCAÑA Project Activity has an installed capacity of 26 MW, this plant comes under category No. 3, thus, common practice analysis must be focused on the run-of-the-river hydropower projects with installed power between 10 and 100 MW. Therefore, within this category all of the projects similar to the Proposed Project Activity are projects registered under the CDM i.e. Abanico, Calope and Sibimbe hydropower plants."</i>		OK
ii. Sub-step 4b: Discuss any similar Options that are occurring.	EB 39	Ann 10	Yes, please refer to item 6.y.i, above		OK
z. Has the below guideline followed for Sub-step 4a: Analyze other activities similar to the proposed project activity? Provide an analysis of any other	EB 39	Ann 10	CAR 11: Considering that the project activity can be included under the description presented in item b) of paragraph 6 of the additionally tool	CAR 11 and CAR	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
activities that are operational and that are similar to the proposed project activity. Other CDM project activities are not to be included in this analysis. Provide documented evidence and, where relevant, quantitative information. On the basis of that analysis, describe whether and to which extent similar activities have already diffused in the relevant region.			<p>v.6: "Switch of technology with or without change of energy source (including energy efficiency improvement as well as use of renewable energies);" the common practices analysis should be done by following the paragraph 47 of the referred tool.</p> <p>CAR 12: the document referred in table 5 of the PDD v1.2 "The 2009 – 2020 Electrification Master Plan, CONELEC" was not provided to the DOE.</p>	12	
aa. Has the below guideline followed for Sub-step 4b: Discuss any similar Options that are occurring? If similar activities are identified, then it is necessary to demonstrate why the existence of these activities does not contradict the claim that the proposed project activity is financially/economically unattractive or subject to barriers. This can be done by comparing the proposed project activity to the other similar activities, and pointing out and explaining essential distinctions between them that explain why the similar activities enjoyed certain benefits that rendered it financially/economically attractive (e.g., subsidies or other financial flows) and which the proposed project activity cannot use or did not face the barriers to which the proposed project activity is subject. In case similar projects are not accessible, the PDD should include justification about non-accessibility of	EB 39	Ann 10	Yes, please refer to item 6.y.i, above		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
data/information.					
bb. Has the outcome from Step 4 clearly mentioned in PDD?	EB 39	Ann 10	Please refer to CAR 11 and CAR 12	CAR 11 and CAR 12	OK
cc. Has it been proved that the project is additional?	EB 39	Ann 10	Please refer to CAR 07 until CAR 12 , above.	CAR 07 until CAR 12	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
a. Prior consideration of the clean development mechanism					
a. Is the project activity start date prior to the date of publication of the PDD for stakeholder comments?	VVM	98	Yes. On April 3, 2008.		OK
b. If yes, were the CDM benefits considered necessary in the decision to undertake the project as a proposed CDM project activity?	VVM	98	Please refer to CAR 07 and 08 , above	CAR 07 and 08	OK
c. Is the start date of the project activity, reported in the PDD, in accordance with the "Glossary of CDM terms", which states that "The starting date of a CDM project activity is the earliest date at which either the implementation or construction or real action of a project activity begins."?	VVM	99	Yes. As presented in section C.1.1 of PDD v.1.2: <i>"Signing of the contract for construction, equipment and commissioning of the proposed CDM Project Activity."</i>		OK
d. Does the project activity require construction, retrofit or other modifications?	VVM	99	Construction, it is a Greenfield project		OK
e. If yes, is it ensured that the date of commissioning cannot be considered as the project activity start date?	VVM	99	N/A. Please refer to item 6.a.e, above.		OK
f. Is it a new project activity (a project activity with a start date on or after 02 August 2008) or an existing project activity (a project activity with a start date before 02 August 2008)?	VVM	100	It is an existing project activity with a start date before 02 August 2008.		OK
g. For a new project, for which PDD has not been published for global stakeholder consultation or a new methodology proposed to the CDM Executive Board before the project activity start	VVM	101	N/A.		OK


**BUREAU
VERITAS**

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
date, had PPs informed the host Party DNA and the UNFCCC secretariat in writing of the commencement of the project activity and of their intention to seek CDM status? (Provide reference to such confirmation from host Party DNA and UNFCCC secretariat).					
h. For an existing project activity, for which the start date is prior to the date of publication of the PDD for global stakeholder consultation, are the following evidences provided:	VVM	102	-	-	-
ii. evidence that must indicate that awareness of the CDM prior to the project activity start date, and that the benefits of the CDM were a decisive factor in the decision to proceed with the project, including, inter alia:	VVM	102	-	-	-
a. minutes and/or notes related to the consideration of the decision by the Board of Directors, or equivalent, of the project participant, to undertake the project as a proposed CDM project activity?	VVM	102	CL 03: The document "ELECAUSTRO's executive Board resolution No. 154-0753:4" clear indicate awareness of the CDM prior to the project activity start date and state the CDM as a strategic procedure within its environmental policy, however the document does not indicate that the benefits of the CDM were a <u>decisive factor in the decision to proceed with the project</u> ", as required by VVM102.	CL 03	OK
iii. reliable evidence from project participants that must indicate that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation, including, inter alia:	VVM	102	Yes, as presented in the table 3 of the PDD v 1.2		OK


**BUREAU
VERITAS**

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
a. contract with consultants for CDM/PDD/methodology services?	VVM	102	Please refer to item 6.a.h.iii, above		OK
b. Emission Reduction Purchase Agreements or other documentation related to the sale of the potential CERs (including correspondence with multilateral financial institutions or carbon funds)?	VVM	102	Please refer to item 6.a.h.iii, above		OK
c. evidence of agreements or negotiations with a DOE for validation services?	VVM	102	Please refer to item 6.a.h.iii, above		OK
d. submission of a new methodology to the CDM Executive Board?	VVM	102	Please refer to item 6.a.h.iii, above		OK
e. publication in newspaper?	VVM	102	Please refer to item 6.a.h.iii, above		OK
f. interviews with DNA?	VVM	102	Please refer to item 6.a.h.iii, above		OK
g. earlier correspondence on the project with the DNA or the UNFCCC secretariat?	VVM	102	Please refer to item 6.a.h.iii, above		OK
h. Has the chronology of events including time lines been appropriately captured and explained/detailed in the PDD?	VVM	102	Yes, please refer to item 6.a.h.iii, above		OK
b. Identification of alternatives					
a. Does the approved methodology that is selected by the proposed CDM project activity prescribe the baseline scenario and hence no further analysis is required?	VVM	105	Yes, this is the case. Please refer to item 6.n.i		OK
b. If no, does the PDD identify credible alternatives to the project activity in order to determine the	VVM	105	N/A		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
most realistic baseline scenario?					
c. Does the list of alternatives given in the PDD ensure that:	VVM	106	-	-	-
i. the list of alternatives includes as one of the options that the project activity is undertaken without being registered as a proposed CDM project activity?	VVM	106	Yes, please refer to item 6.c.i, above		OK
ii. the list contains all plausible alternatives that the DOE, on the basis of its local and sectoral knowledge, considers to be viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity?	VVM	106	No, please refer to item 6.c.ii, above		OK
iii. the alternatives comply with all applicable and enforced legislation?	VVM	106	Yes, please refer to item 6.d.ii, above		OK
c. Investment analysis					
a. Has investment analysis been used to demonstrate the additionally of the proposed CDM project activity?	VVM	108	No.		OK
b. If yes, does the PDD provide evidence that the proposed CDM project activity would not be:	VVM	108	N/A.		OK
i. the most economically or financially attractive alternative?	VVM	108	N/A.		OK
ii. economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs)?	VVM	108	N/A.		OK
c. Was this shown by one of the following approaches?	VVM	109	N/A.		OK
i. The proposed CDM project activity would	VVM	109	N/A.		OK


**BUREAU
VERITAS**

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
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.					
ii. The proposed CDM project activity is less economically or financially attractive than at least one other credible and realistic alternative.	VVM	109	N/A.		OK
iii. The financial returns of the proposed CDM project activity would be insufficient to justify the required investment.	VVM	109	N/A.		OK
d. Is the period of assessment limited to the proposed crediting period of the CDM project activity?	EB 61	Ann 13	N/A.		OK
e. Does the project IRR and equity IRR calculations reflect the period of expected operation of the underlying project activity (technical lifetime), or - if a shorter period is chosen - include the fair value of the project activity assets at the end of the assessment period?	EB 61	Ann 13	N/A.		OK
f. Does the IRR calculation include the cost of major maintenance and/or rehabilitation if these are expected to be incurred during the period of assessment?	EB 61	Ann 13	N/A.		OK
g. Do the project participants justify the appropriateness of the period of assessment in	EB 61	Ann 13	N/A.		OK


**BUREAU
VERITAS**

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
the context of the underlying project activity, without reference to the proposed CDM crediting period?					
h. Does the cash flow in the final year include a fair value of the project activity assets at the end of the assessment period?	EB 61	Ann 13	N/A.		OK
i. Has the fair value been calculated in accordance with local accounting regulations where available, or international best practice?	EB 61	Ann 13	N/A.		OK
j. Does the fair value calculations include both the book value of the asset and the reasonable expectation of the potential profit or loss on the realization of the assets?	EB 61	Ann 13	N/A.		OK
k. Was depreciation, and other non-cash items related to the project activity, which have been deducted in estimating gross profits on which tax is calculated, added back to net profits for the purpose of calculating the financial indicator (e.g. IRR, NPV)?	EB 61	Ann 13	N/A.		OK
l. Has taxation been included as an expense in the IRR/NPV calculation in cases where the benchmark or other financial indicator is intended for post-tax comparisons?	EB 61	Ann 13	N/A.		OK
m. Are the input values used in all investment analysis valid and applicable at the time of the investment decision taken by the project participant?	EB 61	Ann 13	N/A.		OK
n. Is the timing of the investment decision consistent and appropriate with the input values?	EB 61	Ann 13	N/A.		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
o. Are all the listed input values been consistently applied in all calculations?	EB 61	Ann 13	N/A.		OK
p. Does the investment analysis reflect the economic decision making context at point of the decision to recommence the project in the case of project activities for which implementation ceases after the commencement and where implementation is recommenced due to consideration of the CDM?	EB 61	Ann 13	N/A.		OK
q. Have project participants supplied the spreadsheet versions of all investment analysis?	EB 61	Ann 13	N/A.		OK
r. Are all formulas used in this analysis readable and all relevant cells be viewable and unprotected?	EB 61	Ann 13	N/A.		OK
s. In cases where the project participant does not wish to make such a spreadsheet available to the public has the PP provided an exact read-only or PDF copy for general publication?	EB 61	Ann 13	N/A.		OK
t. In case the PP wishes to black-out certain elements of the publicly available version, is it justifiable?	EB 61	Ann 13	N/A.		OK
u. Was the cost of financing expenditures (i.e. loan repayments and interest) included in the calculation of project IRR?	EB 61	Ann 13	N/A.		OK
v. In the calculation of equity IRR, has only the portion of investment costs which is financed by equity been considered as the net cash outflow?	EB 61	Ann 13	N/A.		OK
w. Has the portion of the investment costs which is financed by debt been considered a cash outflow	EB 61	Ann 13	N/A.		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
in the calculation of equity IRR? (this is not allowed)					
x. Was a pre-tax benchmark be applied?	EB 61	Ann 13	N/A.		OK
y. In cases where a post-tax benchmark is applied, is actual interest payable taken into account in the calculation of income tax?	EB 61	Ann 13	N/A.		OK
z. In such situations, was interest calculated according to the prevailing commercial interest rates in the region, preferably by assessing the cost of other debt recently acquired by the project developer and by applying a debt-equity ratio used by the project developer for investments taken in the previous three years?	EB 61	Ann 13	N/A.		OK
aa. In cases where a benchmark approach is used is the applied benchmark appropriate to the type of IRR calculated?	EB 61	Ann 13	N/A.		OK
bb. Has local commercial lending rates or weighted average costs of capital (WACC) selected as appropriate benchmarks for a project IRR?	EB 61	Ann 13	N/A.		OK
cc. Has required/expected returns on equity selected as appropriate benchmark for an equity IRR?	EB 61	Ann 13	N/A.		OK
dd. In case benchmarks supplied by relevant national authorities selected is it applicable to the project activity and the type of IRR calculation presented?	EB 61	Ann 13	N/A.		OK
ee. In the cases of projects which could be developed by an entity other than the project participant is the benchmark applied based on	EB 61	Ann 13	N/A.		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
parameters that are standard in the market?					
ff. Whether a company-specific benchmark or a benchmark based on parameters that are standard in the market is suitable in the context of the underlying project activity?	EB 61	Ann 13	N/A.		OK
gg. Have internal company benchmarks/expected returns (including those used as the expected return on equity in the calculation of a weighted average cost of capital - WACC) been applied in cases where there is only one possible project developer?	EB 61	Ann 13	N/A.		OK
hh. In such cases, have these values been used for similar projects with similar risks, developed by the same company or, if the company is brand new, would have been used for similar projects in the same sector in the country/region?	EB 61	Ann 13	N/A.		OK
ii. Has a minimum clear evidence of the resolution by the company's Board and/or shareholders been provided to the effect as above?	EB 61	Ann 13	N/A.		OK
jj. Has a thorough assessment of the financial statements of the project developer - including the proposed WACC - to assess the past financial behavior of the entity during at least the last 3 years in relation to similar projects been conducted?	EB 61	Ann 13	N/A.		OK
kk. If the benchmark is based on parameters that are standard in the market, is the cost of equity determined either by: (a) selecting the values provided in Appendix A; or by (b) calculating the	EB 61	Ann 13	N/A.		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
cost of equity using best financial practices, based on data sources which can be clearly validated by the DOE, while properly justifying all underlying factors?					
ll. If a company internal benchmark is used, are the values in the table in Appendix A used, as a simple default option?	EB 61	Ann 13	N/A.		OK
mm. If a company's internal benchmark is used for the expected return on equity, is the cost of debt based on the weighted average cost of debt financing of the legal entity owning the CDM project activity?	EB 61	Ann 13	N/A.		OK
nn. For loans, is the weighted average cost of outstanding long-term debt used?	EB 61	Ann 13	N/A.		OK
oo. For bonds, is the weighted average yield of the bonds during the last three months prior to the submission of the CDM-PDD for validation or prior to the investment decision, whichever is earlier, used? The use of bonds to determine the cost of debt is only appropriate for corporate bonds issued in the host country of the CDM project.	EB 61	Ann 13	N/A.		OK
pp. In cases where the debt finance structure of the project is not yet available (e.g. a letter of intent for debt funding is not available), the cost of debt can be assumed as the commercial lending rate in the country or the yield of a 10 year bond issued by the government of the host country or, if this is not available, the bond with the maturity	EB 61	Ann 13	N/A.		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
which is closest to 10 years. Was the following documented in the CDM-PDD?					
i. for bonds: the key parameters of the bond including the time of maturity, yield, registration issuance in the financial system and set-up in the market;	EB 61	Ann 13	N/A.		OK
ii. for loans from a financial institution: the contract of lending between the financial institution and the legal entity owning the assets of the project activity, or, in absence of the contract, a letter from the bank stating its intention to award the loan and the key terms for the loan;	EB 61	Ann 13	N/A.		OK
iii. for debt financing from a parent company: the transfer of capital to the legal entity, documented with the contract of lending between the parent company and the legal entity owning the assets of the project activity and/or the parameters of the corporate bonds as mentioned above. (This latter option is only valid for corporate bonds issued in the host country of the CDM project activity)	EB 61	Ann 13	N/A.		OK
qq. If the benchmark is based on parameters that are standard in the market, is the cost of debt calculated as the cost of financing in the capital markets (e.g. commercial lending rates and guarantees required for the country and the type of project activity concerned), based on	EB 61	Ann 13	N/A.		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
documented evidence from financial institutions with regard to the cost of debt financing of comparable projects?					
rr. In cases where this data is not available, is the commercial lending rate in the host country used to calculate the cost of debt?	EB 61	Ann 13	N/A.		OK
ss. If a company's internal benchmark is used for the expected return on equity, is the percentage of debt financing and equity financing reflect the long-term debt/equity finance structure of the legal entity owning the assets of the project activity?	EB 61	Ann 13	N/A.		OK
tt. If: (a) the legal entity owning the assets of the project activity has balance sheets audited by a third party within two years prior to the submission of the CDM-PDD for validation; and (b) the accounting books of the legal entity reflect at least the total value of all the assets needed for the project activity. Is the percentage determined based on the latest balance sheet provided under local fiscal/accounting standards and rules?	EB 61	Ann 13	N/A.		OK
uu. If the debt/equity finance structure is not yet available, was 50% debt and 50% equity financing assumed as a default?	EB 61	Ann 13	N/A.		OK
vv. Is the benchmark based on parameters that are standard in the market?	EB 61	Ann 13	N/A.		OK
ww. If yes, is the typical debt/equity finance structure observed in the sector of the country	EB 61	Ann 13	N/A.		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
used?					
xx. If such information is not readily available, was 50% debt and 50% equity financing assumed as a default?	EB 61	Ann 13	N/A.		OK
yy. Has an investment comparison analysis and not a benchmark analysis used when the proposed baseline scenario leaves the project participant no other choice than to make an investment to supply the same (or substitute) products or services?	EB 61	Ann 13	N/A.		OK
zz. Have variables, including the initial investment cost, that constitute more than 20% of either total project costs or total project revenues been subjected to reasonable variation (positive and negative) and the results of this variation been presented in the PDD and be reproducible in the associated spreadsheets?	EB 61	Ann 13	N/A.		OK
aaa. Have a corrective action been raised for a variable to be included in the sensitivity analysis which constitute less than 20% and have a material impact on the analysis ?	EB 61	Ann 13	N/A.		OK
bbb. Is the range of variations selected is reasonable in the project context?	EB 61	Ann 13	N/A.		OK
ccc. Dos the variations in the sensitivity analysis at least cover a range of +10% and - 10%, unless this is not deemed appropriate in the context of the specific project circumstances?	EB 61	Ann 13	N/A.		OK
ddd. In cases where a scenario will result in the project activity passing the benchmark or	EB 51	Ann 58	N/A.		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
becoming the most financially attractive alternative, is an assessment done of the probability of the occurrence of this scenario in comparison to the likelihood of the assumptions in the presented investment analysis, taking into consideration correlations between the variables as well as the specific socio-economic and policy context of the project activity?					
eee. Was the plant load factor defined ex-ante in the CDM-PDD according to one of the following options:	EB 48	Ann 11	N/A.		OK
i. The plant load factor provided to banks and/or equity financiers while applying the project activity for project financing, or to the government while applying the project activity for implementation approval?	EB 48	Ann 11	N/A.		OK
ii. The plant load factor determined by a third party contracted by the project participants (e.g. an engineering company)?	EB 48	Ann 11	N/A.		OK
fff. Was a thorough assessment of all parameters and assumptions used in calculating the relevant financial indicator, and determine the accuracy and suitability of these parameters using the available evidence and expertise in relevant accounting practices conducted?	VVM	111	N/A.		OK
ggg. Were the parameters cross-checked against third-party or publicly available sources, such as invoices or price indices?	VVM	111	N/A.		OK
hhh. Were feasibility reports, public	VVM	111	N/A.		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
announcements and annual financial reports related to the proposed CDM project activity and the project participants reviewed?					
iii. Was the correctness of computations carried out and documented by the project participants assessed?	VVM	111	N/A.		OK
jjj. Was the sensitivity analysis by the project participants to determine under what conditions variations in the result would occur, and the likelihood of these conditions assessed?	VVM	111	N/A.		OK
kkk. Is the type of benchmark applied is suitable for the type of financial indicator presented?	VVM	112	N/A.		OK
III. Do any risk premiums applied determining the benchmark reflect the risks associated with the project type or activity?	VVM	112	N/A.		OK
mmm. To determine this, was it assessed whether it is reasonable to assume that no investment would be made at a rate of return lower than the benchmark by:	VVM	112	N/A.		OK
i. assessing previous investment decisions by the project participants involved?	VVM	112	N/A.		OK
ii. determining whether the same benchmark has been applied?	VVM	112	N/A.		OK
iii. determining if there are verifiable circumstances that have led to a change in the benchmark?	VVM	112	N/A.		OK
nnn. Did the project participants rely on values from Feasibility Study Reports (FSR) that are	VVM	113	N/A.		OK


**BUREAU
VERITAS**

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
approved by national authorities for proposed CDM project activities?					
ooo. If yes:	VVM	113	N/A.		OK
i. has the FSR been the basis of the decision to proceed with the investment in the project, i.e. that the period of time between the finalization of the FSR and the investment decision is sufficiently short for the DOE to confirm that it is unlikely in the context of the underlying project activity that the input values would have materially changed?	VVM	113	N/A.		OK
ii. Are the values used in the PDD and associated annexes fully consistent with the FSR?	VVM	113	N/A.		OK
iii. If not, was the appropriateness of the values validated?	VVM	113	N/A.		OK
iv. On the basis of its specific local and sectoral expertise, is confirmation provided, by cross-checking or other appropriate manner, that the input values from the FSR are valid and applicable at the time of the investment decision?	VVM	113	N/A.		OK
d. Barrier analysis					
a. Has barrier analysis been used to demonstrated the additionally of the proposed CDM project activity?	VVM	115	Yes.		OK
b. If yes, does the PDD demonstrate that the proposed CDM project activity faces barriers that:	VVM	115	-	-	-



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
i. prevent the implementation of this type of proposed CMD project activity?	VVM	115	Please refer to CAR 08 and 09	CAR 07 and 08	
ii. do not prevent the implementation of at least one of the alternatives?	VVM	115	Yes, as follow: <i>"The aforementioned barrier is specific to the OCAÑA Hydropower Project (Alternative No. 2) which means they do not affect Alternative No. 1 (Status quo – Power supply from existing sources to the SNI) because this option does not represents additional investment by ELECAUSTRO".</i>		OK
c. Are there any issues that have a clear direct impact on the financial returns of the project activity, other than: risk related barriers, for example risk of technical failure, that could have negative effects on the financial performance; or barriers related to the unavailability of sources of finance for the project activity? {If yes, these issues cannot be considered barriers and shall be assessed by investment analysis. [Refer to (6.c) above]}	VVM	116	No.		OK
d. Were the barriers determined as real by:	VVM	117	-	-	-
i. assessing the available evidence and/or undertaking interviews with relevant individuals (including members of industry associations, government officials or local experts if necessary) to determine whether the barriers listed in the PDD exist?	VVM	117	Please refer to CAR 07 and 08	CAR 07 and 08	OK
ii. ensuring that existence of barriers is substantiated by independent sources of	VVM	117	Please refer to CAR 07 and 08	CAR 08 and 09	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
data such as relevant national legislation, surveys of local conditions and national or international statistics?					
iii. Is existence of a barrier substantiated only by the opinions of the project participants? (If yes, this barrier cannot be considered as adequately substantiated)	VVM	117	Please refer to CAR 07 and 08	CAR 07 and 08	OK
e. Were the barriers determined as preventing the implementation of the project activity but not the implementation of at least one of the possible alternatives by applying local and sectoral expertise to judge whether a barrier or set of barriers would prevent the implementation of the proposed CDM project activity and would not equally prevent implementation of <i>at least one of</i> the possible alternatives, in particular the identified baseline scenario?	VVM	117	Yes, please refer to item 6.d.b.ii, above		OK
e. Common practice analysis					
a. Is this a proposed large-scale, or first-of-its kind small-scale project activity?	VVM	119	It is a large-scale project activity.		OK
b. If yes, was common practice analysis carried out as a credibility check of the other available evidence used by the project participants to demonstrate additionally?	VVM	119	Yes, please refer to item 6.y.i, above		OK
c. Was it assessed whether the geographical scope (e.g. defined region) of the common practice analysis is appropriate for the assessment of common practice related to the project activity's technology or industry type? (For certain	VVM	120	The entire host country was used.		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
technologies the relevant region for assessment will be local and for others it may be transnational/global.					
d. Was a region other than the entire host country chosen?	VVM	120	No, please refer to item 6.e.c, above		OK
e. If yes, was the explanation why this region is more appropriate assessed?	VVM	120	N/A, please refer to item 6.e.c, above		OK
f. Using official sources and local and industry expertise, was it determined to what extent similar and operational projects (e.g., using similar technology or practice), other than CDM project activities, have been undertaken in the defined region?	VVM	120	Please refer to CAR 11 and 12 , above	CAR 11 and 12	OK
g. Are similar and operational projects, other than CDM project activities, already "widely observed and commonly carried out" in the defined region?	VVM	120	No, please refer to item 6.y.i, above		OK
h. If yes, was it assessed whether there are essential distinctions between the proposed CDM project activity and the other similar activities?	VVM	120	Yes, please refer to item 6.y.i, above		OK
7. Monitoring plan					
a. Does the PDD include a monitoring plan?	VVM	122	Yes.		OK
b. Is this monitoring plan based on the approved monitoring methodology applied to the proposed CDM project activity?	VVM	122	Yes. ACM0002 v.12.3.0		OK
c. Were the list of parameters required by the selected methodology identified?	VVM	123	Please refer to 3.t.i, above		OK
d. Does the monitoring plan contains all necessary parameters?	VVM	123	Please refer to 3.t.i, above		OK
e. Are the parameters clearly described?	VVM	123	Please refer to 3.t.i, above		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
f. Does the means of monitoring described in the plan comply with the requirements of the methodology?	VVM	123	Please refer to 3.t.ii.b and 3.u.i, above		OK
g. Are all data and parameters monitored as per monitoring methodology?	ACM	0002	Please refer to 3.t.i, above		OK
h. Are all data collected as part of monitoring archived electronically and kept at least for 2 years after the end of the last crediting period?	ACM	0002	Yes.		OK
i. Are 100% of the data monitored, if not indicated otherwise?	ACM	0002	Please refer to item 3.q.i, above		OK
j. Are measurements conducted with calibrated measurement equipment according to relevant industry standards?	ACM	0002	Please refer to 3.t.ii.b, above		OK
k. Are the monitoring provisions in the tools referred to in the methodology correctly applied?	ACM	0002	N/A.		OK
l. Are the monitoring arrangements described in the monitoring plan feasible within the project design?	VVM	123	Yes, the monitoring arrangements were presented in section B.7.2 and annex 4 of the PDD v.1.2, and are feasible within the project design.		OK
m. Are the following means of implementation of the monitoring plan sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified:	VVM	123	-	-	-
i. data management procedures?	VVM	123	Yes, as presented in the "operative structure" (figure 3) in section B.7.2, of PDD v.1.2		OK
ii. quality assurance procedures?	VVM	123	Yes, as presented in the section B.7.2 and annex 4 of PDD v.1.2		OK
iii. quality control procedures?	VVM	123	Yes, as presented in the section B.7.2 and annex		OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
			4 of PDD v.1.2		


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VERITAS**

VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
8. Sustainable development					
a. Does the CDM project activity assists Parties not included in Annex I to the Convention in achieving sustainable development?	VVM	125	Yes, please refer to the item 3.d.iii, above.		OK
b. Does the letter of approval by the DNA of the host Party confirm the contribution of the proposed CDM project activity to the sustainable development of the host Party?	VVM	126	Yes.		OK
9. Local stakeholder consultation					
a. Were local stakeholders (public, including individuals, groups or communities affected, of likely to be affected, by the proposed CDM project activity or actions leading to the implementation of such an activity) invited by the PPs to comment on the proposed CDM project activity prior to the publication of the PDD on the UNFCCC website?	VVM	128	Please refer to CL 01 , above	CL 01	OK
b. Have comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity been invited?	VVM	129	Please refer to CL 01 , above	CL 01	OK
c. Is the summary of the comments received as provided in the PDD complete?	VVM	129	Please refer to CL 01 , above	CL 01	OK
d. Have the project participants taken due account of any comments received and described this process in the PDD?	VVM	129	Yes, as presented in section E.3 of the PDD v.1.2		OK
10. Environmental impacts					
a. Have the project participants submitted documentation on the analysis of the	VVM	131	CL 04: Clarify why there is a lack of 60 per cent in the accomplishment of the	CL 04	OK



VALIDATION REPORT

CHECKLIST QUESTION	Ref.	§	COMMENTS	Draft Concl	Final Concl
environmental impacts of the project activity?			requirements according to the audit carried out in 2011, in contrast to policies, goals and conditions of environmental management plan and license, and whether this can impact the renewal of the environmental license.		
b. Have the project participants undertaken an analysis of environmental impacts?	VVM	132	Yes. Through the Environmental Impact Study in order to obtain the Environmental license that was published in Official Registry nr. 210 of November 13, 2007.		OK
c. Does the host Party require an environmental impact assessment?	VVM	132	Yes, according to the Article 3 of the Electricity Sector Regime Law (LRSE), electricity projects, before the execution stage, must comply with environmental law, and to do this they will conduct Environmental Impact Studies (EIS)		OK
d. If yes, have the project participants undertaken an environmental impact assessment?	VVM	132	Yes, however: FAR 01: Verify the implementation of environmental audit of completion of the construction and check if this has closed down breach detected in the environmental auditing 2011. Also verify the implementation of annual environmental audit in 2012.	FAR 01	

**Table 2 Resolution of Corrective Action and Clarification Requests**

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion
CAR 01: No letter of approval from Netherlands were presented to the DOE.	VVM 44	The document is being processed.	<p>This issue will be maintained until the Letter of Approval for the Netherlands is presented by PPs.</p> <p><u>Second DOE analysis</u></p> <p>the Netherlands letter of approval was presented to the DOE.</p> <p>CAR 01 is closed</p>
CAR 02: The approval of project participants by a Party to the Kyoto Protocol was not stated in the Ecuador LoA, neither any other documentation issued by the Party.	VVM 51	An extension of the Letter of Approval of the Ocaña Hydropower Project has been issued with letter No. MAE-D-2012-0697 as of August 30, 2012 (reference No. 1),	PPs provided the evidence no. MAE-D-2012-0697 as of August 30, 2012, however, the quality of the image is not adequate (official



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion
		<p>where it states that ELECAUSTRO is the project participant of the Ocaña Hydropower Project.</p> <p>The document is attached with Reference N°1. The quality of the image has been improved.</p> <p>Ecuadorian laws permit and state the use of an electronic signature when documents are issued or sent electronically. - see Reference N° 1A.</p> <p>However, we have received a signed letter that we are attaching as Reference N°1B.</p>	<p>symbol on the left is impossible to identify). In addition, there is an indication of "Document signed electronically", while a signature should be provided.</p> <p><u>Second DOE analysis</u></p> <p>Ok, a signed version of the referred document was provided and accepted</p> <p>CAR 02 is closed</p>



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion
<p>CAR 03: During the site visit it was observed differences between the PDD v.1.2 and the project technical documentation for the Transmission line (ACRA 500 in the PDD and 477 in the project), please also provide the reference for the information presented in section A.4.3 of the PDD v1.2</p>	<p>EB 41 Annex 12</p>	<p>The Initial design of the transmission line considered the use of ACSR 477 MCM power cable. , However, during the construction of the project, COINTEC S.A. (the company in charge of the construction of the civil works, supply and assembly) suggested to change to the ACAR 500 MCM power cable (not ACRA), which has similar specifications and cost compared with the ACSR 477 but is lighter, this being the main reasons why ELECAUSTRO accepted this change.</p> <p>Letter Caminosca-02-09 from COINTEC of April 20, 2009 (reference No. 2) is attached.</p> <p>The PDD has been updated and revised accordingly. References for the 13 bullets listed in section A.4.3 have been included.</p> <p>Footnote N°1 has been included, referring to the document “ Informe Final de Fiscalización” attached as documents References N°2A, 2B and 2C.</p>	<p>The DOE accepts the clarification regarding the discrepancies and confirms that the evidence presented justifies the change.</p> <p>However no references were presented for the 13 bullets listed in section A.4.3</p> <p><u>Second DOE analysis</u></p> <p>Ok, the missing references of section A.4.3 were included in PDD v.1.4</p> <p>CAR 03 is closed</p>
			129



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion
<p>CAR 04: In the section A.4.3 of the PDD v.1.2, the PP did not address information regarding environmentally safety, as required by EB 41, annex 12.</p>	<p>EB 41 Annex 12</p>	<p>The PDD has been revised accordingly.</p>	<p>PPs correctly added the required information on the PDD.</p> <p>CAR 04 is closed.</p>
			130



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion
CAR 05: The name of the methodology ACM0002 v. 12.3.0, presented in section B.1 of PDD v.1.2, is incomplete, it is missing the term "baseline".	EB 41 Annex 12	The PDD has been revised accordingly.	PPs correctly modified the PDD. CAR 05 is closed.
CAR 06: The flow diagram of the project boundary presented in the section B.3 of the PDD v.1.2 is incomplete. There is no information regarding the location of the four meters as mentioned in section B.7.2. neither the flows of energy	EB 41 Annex 12	The flow diagram has been modified on the PDD, where it shows the location of the commercial measurement equipment which consists of two main meters and two backup meters. In addition, arrows indicate the energy flow from the project to the National Interconnected System Grid. The PDD has been revised accordingly. The typo in the diagram has been corrected.	There is a typo in the diagram (the word "bounday" - the correct is boundary). <u>Second DOE analysis</u> The typo was corrected in PDD v1.4 CAR 06 is closed
CAR 07: the section B.6.3 of the PDD v.1.2 does not make reference to the calculation of the parameters EFgrid,OM,y and EFgrid,BM,2010 were obtained..	EB 41 Annex 12	The PDD has been updated. References to the calculations of the parameters EFgrid,OM,y and	No answer has been provided by the PPs during the first round of answers (as of October 26, 2012).



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion
		EFgrid,BM,2010 have been included at the beginning of section B.6.3	<p><u>Second DOE analysis</u></p> <p>The PDD v1.4 was adjusted and response provided as required.</p> <p>CAR 07 is closed</p>
<p>CAR 08: according to the "Guidelines for Objective Demonstration and Assessment of Barriers" - Guideline 1: <i>"While demonstrating barriers related to the lack of access to capital, information should include nature of company, organization and its ownership and, financial information".</i>These information were not provided in the PDD v.1.2, to support the investment barrier.</p>	<p>EB 50 Annex 13</p>	<p>The PDD has been revised accordingly.</p> <p>Document INFORME DE GESTIÓN AÑO 2007 is attached (reference No. 9)</p>	<p>PPs correctly added the required information on the PDD.</p> <p>CAR 08 is closed.</p>
<p>CAR 09: According to the Guideline 6 of the Guidelines for Objective Demonstration and Assessment of Barriers: <i>"In case the PPs make the claim for investment barriers, they should demonstrate in the PDD that the financing of the project was assured only due to the benefit of the</i></p>	<p>EB 50 Annex 13</p>	<p>Ocaña's Trust board on meeting as of September 11, 2012 clarified and ratified that the term "bonds" stated on third clause of the Trust Contract includes carbon credits and the revenue from the credits will be used to repay the loan.</p>	<p>PPs has presented additional documentation to support that the term "bonos" (bonds/credits in spanish), stated on third clause of the Trust Contract of 20 December 2007, contemplates, among others, the "bonos de carbon" (carbon</p>



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion
CDM. Therefore, it should be demonstrated that the loan approval (or other significant financing decision(s)) by the lender takes <u>explicitly</u> the CDM registration into account". However the two paragraphs of the Trust presented in the section B.5 of the PDD v1.2, does not refer, "explicitly", to the CDM registration.		Document ACTA DE LA JUNTA DE FIDEICOMISO No. 21 is attached. (reference No. 8)	credits). CAR 09 is closed.
CAR 10: the outcome from Step 3a is not clearly mentioned in PDD v1.2	EB 65 Annex 21	The PDD has been revised accordingly.	PPs correctly modified the PDD. CAR 10 is closed.
CAR 11: the outcome from Step 3 is not clearly mentioned in PDD v1.2	EB 65 Annex 21	The PDD has been revised accordingly.	PPs correctly modified the PDD. CAR 11 is closed.
CAR 12: Considering that the project activity can be included under the description presented in item b) of paragraph 6 of the additionality tool v.6: "Switch of technology with or without change of energy source (including energy efficiency improvement as well as use of renewable energies);" the common practices analysis should be done by following the paragraph 47 of the referred tool.	EB 65 Annex 21	The PDD has been amended accordingly and updated. The content of sub-steps 4a and 4b have been erased because "they are not necessary for this analysis".	The PDD still indicates Sub-steps 4a and 4b. Steps 4a and 4b are not necessary for this analysis. References provided for common practice are not sufficiently detailed in order to allow the DOE to validate data presented. The "Electrification Law" modified in 1996 and the "Statistical Report on



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion
		<p>References N°3A "Electrification Law" and N°3B "Statistical Report on the Ecuadorian Electricity Sector 2009" are attached.</p> <p>It is worth mentioning that in page 26 of the PDD, the source of table 5 "Statistical Report on the Ecuadorian Electricity Sector 2009 (CONELEC)" the year has been changed from 2008 to 2009 due to a reference error.</p>	<p><i>the Ecuadorian Electricity Sector 2008, CONELEC</i> was not presented to the DOE.</p> <p><u>Second DOE analysis</u></p> <p>Ok, despite of the DOE has identified some additional HPPs within the applicable range (13-39MW), these HPPs have started their operation after the new Electricity Sector Regime Act (Sibimbi/16MW/Ago 2006; Calope/17.16MW/Dec 2006 and Hidroabanico-37.5MW/Dec 2005), what is considered by the DOE a different regulatory framework environment.</p> <p>CAR 12 is closed.</p>
CAR 13: the document referred in table 5 of the PDD v1.2 " <i>The 2009 – 2020 Electrification Master Plan, CONELEC</i> " was not provided to	EB 65 Annex 21	This document is now attached with Reference N°4 part 1 and part 2.	Reference no. 3 was not provided for the DOE.



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion
the DOE.			<p><u>Second DOE analysis</u></p> <p>The referred document was provided to the DOE.</p> <p>CAR 13 is closed</p>
<p>CAR 14: The sentence “Although, the Tool for the demonstration and assessment of Additionality – Version 06.0.0 does not require explicitly applying Para. 47 for hydropower projects (renewable energy), this additional analysis will be included in this PDD” is incorrect. The tool explicitly says: “47. For measures that are listed in paragraph 6:” and then presents the four steps to use in order to demonstrate common practice analysis. It is worth mentioning that paragraph 6 includes “use of renewable energies” in its option b.</p>	EB 65 Annex 21	<p>The PDD has been amended, the sentence “<i>Although, the Tool for the demonstration and assessment of Additionality – Version 06.0.0 does not require explicitly applying Para. 47 for hydropower projects (renewable energy), this additional analysis will be included in this PDD</i>” has been erased from the PDD as it was incorrect.</p>	<p>Ok, the referred sentence was removed from the PDD v1.4</p> <p>CAR 14 is closed</p>
<p>CAR 15: The PDD version 01.3 presents typos throughout the PDD’s text.</p>	-	<p>The typos throughout the PDD’s text have been amended.</p>	<p>OK, The typos throughout PDD have been amended in its v1.4</p>



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion
			CAR 15 is closed
<p>CAR EF 01: The PDD version 01.2 followed, as described in the Section B.1., the Tool to calculate the emission factor for an electricity system, Version 02.2.1. However:</p> <ul style="list-style-type: none"> - In Section B.6.1. it still refers to 7 steps; - Not all the necessary equations are described in the Section. What equation is used: (2),(3)or (4) from the Tool? - The title of some steps are not in accordance with the Tool; - Not all the necessary assumptions are described as e.g.: "If the DNA of the host country has published a delineation of the project electricity system and connected electricity systems, these delineations should be used. If this information is not available, project participants should define the project electricity system and any connected electricity system, and justify and document their assumptions in the CDM-PDD." <p>The PDD shall clearly follow all the steps of the Tool to calculate the emission factor for an</p>	EB 41 Annex 12	<p>Changes and corrections cannot be made to the excel sheets owing to the fact that they have been prepared by a third party i.e. the Ecuadorian Government. The emission factor in Ecuador is calculated by The "Ministry of The Environment", "Ministry of Electricity and Renewable Energies" and "Consejo Nacional de Electricidad (CONELEC)" and validated by the Spanish company AENOR.</p> <p>The following documents are attached :</p> <p>"Excel sheets – Factor emission CO2-SNI-2011", "Informe Factor Emisión", "Certificado de Validación", "Informe de validación – ingles" and "Informe de validación – español" are attached as References N5A, 5B, 5C, 5D and 5E respectively.</p>	<p>OK, the required adjustments were done according and additional documentation was provided.</p> <p>CAR EF 01 is closed</p>



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion
electricity system, in order to permit the DOE to validate the EF.		<p>The EF_{grid} values provided on the PDD are according to the values provided in the “Excel sheets – Factor emission CO₂-SNI-2011”,</p> <p>EF_{grid,OM,y} = 0.7311 tCO₂/ MWh EF_{grid,BM,2010} = 0.3751 tCO₂/ MWh EF_{grid,CM, 2010} = 0.5531 tCO₂/MWh</p> <p>Footnote 5, (now number 6; page 29) of the PDD has been erased since “it is not relevant to this project activity”; therefore the PDD has been amended.</p>	
CL 01: it is not clear whether and how the theme CDM was addressed during the public hearings held in 11th March 2012, once no pictures of the meeting, neither the material presented to the stakeholders were made available to the DOE.	EB 41 Annex 12	Photos, the list of participants, public invitations, publications and the presentation are reattached with reference No. 4.	PPs provided adequate evidence regarding the stakeholders consultation and how the theme CDM was addressed during the meetings CL01 is closed.



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion
<p>CL 02: The PDD v.1.2 does not provide references for the EGy value (203,099MWh/year), used in the ex-ante calculation.</p>	VVM 91	<p>The average energy of the Project 203,099 MWh/y has been calculated according to the multi-year historical average flows in the water intake zone of the Ocaña project. This data was obtained by the company CAMINOSCA in the hydrological report as part of Feasibility and Definitive Studies. (reference No. 5, chart No. 16).</p> <p>Calculations of energy are contained in the documents attached to the request for funding from FEISEH, May 2007 (reference No. 6).</p> <p>In order to estimate the average annual net Energy produced by the Ocaña Project, the following procedure was used:</p> <p>3. CAMINOSCA, during the feasibility and final design study,</p>	<p>The value of 203,099 MWh is indicated by Ref 6. However, it cannot be tracked back based on files presented under Ref 5 (excel and word files). In addition, the text “The energy scenarios indicated: maximum, medium and minimum were calculated based on the monthly average flow rates obtained in the intake site of the hydroelectric project Ocaña. These water flows are in the hydrology report which is part of the Feasibility Studies and Definitive Designs developed by Caminosca Company. The estimation of the electric energy is present in the documents accompanying the request for funding from FEISEH” is not complete enough to explain how the value of 203,099 MWh is obtained.</p> <p><u>Second DOE analysis:</u></p>



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion
		<p>obtained the average monthly water flow at the intake zone, from 1965 up to 1996 (30 years of information). These values are shown in reference No. 5, chart No. 16, mentioned by the DOE.</p> <p>4. The electric power produced by the Ocaña Project was calculated considering:</p> <p>a. $P \text{ (kW)} = 9,81 \cdot n_1 \cdot n_2 \cdot Q \cdot H$, where, n_1 is the estimated combined efficiency of the turbine and generator (0,866); n_2 is the estimated efficiency which accounts for the electric energy consumed by different equipment of the project, as well as the transmission losses (0,98); Q is the average monthly water flow at the intake limited to $8,2 \text{ m}^3/\text{s}$</p>	<p>Ok, the memory of calculus for the EGY value (203,099MWh/year), was provided and accepted by the DOE. Also the referred value is stated in the request for funding documentation.</p> <p>CL 02 is closed.</p>



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion
		<p>which is the design water flow; H is the net average height (375,18 m).</p> <p>b. By using the formulae mentioned previously, the energy produced each month was calculated, as shown in the excel file (simulacion produccion Ocaña. xls). Attached as Reference N°6.</p> <p>c. In order to have 50 years of production simulation, the first 20 years was repeated after year 30.</p> <p>d. The 203.099 MWh/year, as an average annual production, was obtained by summing the average monthly net energy over 50 years of simulating production.</p>	



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion
CL 03: The document " <i>ELECAUSTRO's executive Board resolution No. 154-0753:4</i> " clear indicate awareness of the CDM prior to the project activity start date and state the CDM as a strategic procedure within its environmental policy, however the document does not indicate that the benefits of the CDM were a <u>decisive factor in the decision to proceed with the project</u> ", as required by VVM102.	VVM 102	<p>In document Memorando-GG-2008-0071 as of February 25, 2008, sent to all Executive Board Members for their awareness prior ELECAUSTRO'S Executive Board No.154, paragraph fifth quote: "<i>The CDM, could be considered as a new funding source that will contribute to rise Ocaña's Project, internal return rate and will help to pay the credits acquired, allowing ELECAUSTRO to obtain positive cash flows for the following years related to the Ocaña Project</i>".</p> <p>This document is attached as (reference No. 10).</p> <p>Reference is also the Executive Board No.195-0972 (reference No. 11), where CDM indicated was an element that allowed the execution of Ocaña.</p>	<p>The PP has provided additional documentation (Executive Board No.195-0972 and Memorando-GG-2008-0071 as of February 25, 2008 as well as the Trust Contract of 20 December 2007 and ACTA DE LA JUNTA DE FIDEICOMISO No. 21) that support the relevance of the CDM in the decision to proceed with the project, mainly because the importance of the CER's for the payment of the project loans.</p> <p>CL 03 is closed.</p>
CL 04: Clarify why there is a lack of 60 per cent in the accomplishment of the	VVM 131	<p>The environmental audit was carried out in 2011 and the Ocaña project received its</p>	<p>No reference was presented to support the statement: "<i>A number</i>"</p>



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion
<p>requirements according to the audit carried out in 2011, in contrast to policies, goals and conditions of environmental management plan and license, and whether this can impact the renewal of the environmental licence.</p>		<p>environmental license. A number of issues were raised in the report which, in the final report, were considered as not applicable by the auditors. A new audit will take place in 2012 and the project participants expect the environmental license to be renewed.</p> <p>The following supporting documents are provided:</p> <p>References N°7A, "AAI CH OCAÑA 2011", chapter 10, section 10.1, paragraph 4: states that <i>in the final report issues are considered as not applicable by the auditors</i>.</p> <p>Reference N°7B, "AAI CH OCAÑA 2011" chapter 11, section 11.2, chart 11.1: states that almost all prior non conformities or issues <i>in this final report are considered as not applicable by the</i></p>	<p><i>of issues were raised in the report which, in the final report, <u>were considered as not applicable by the auditors</u></i>". Also, please provide the 2012 report if available.</p> <p><u>Second DOE analysis</u></p> <p>Support documentation was provided, however considering that 70% of the measurements of the Environmental Management Plan of the Construction phase were classified as non compliance, this subject must be revisited during the first verification. Please refer to FAR 01.</p> <p>CL 04 is closed</p>



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion
		<p><i>auditors.</i></p> <p>The 2012 report is not available yet.</p>	
<p>CL EF 01: Provide the complete Official references used to calculate the EF CM, with a detailed explanation regarding the origin of the data, in order to permit the DOE validate the EF calculations.</p>	<p>EB 41 Annex 12</p>	<p>The complete Official references used to calculate the EF CM are detailed on the official calculation presented in the report <i>“Factor de emisión de CO2 del Sistema Nacional Interconectado del Ecuador al Año 2011, Informe 2011”</i>. This Official Report includes a spreadsheet with all the data, as well as its origin, used to get the EF CM of the National Interconnected System (SNI) in Ecuador.</p> <p>The calculations were prepared by CENACE (the national technical entity in charge of managing the Wholesale Electric Market National Dispatch) with the support of the Ministry of the Environment, the Ecuadorian DNA, the Ministry of Electricity and Renewable Energy and the CONELEC (the regulatory entity for the electric sector).</p>	<p>PPs correctly modified the PDD and provided all evidences for the emission factor calculation. It is worth noting that such evidence were added on the PDD as requested.</p> <p>CL EF 01 is closed.</p>



VALIDATION REPORT

Draft report clarifications and corrective action requests by validation team	Ref. to checklist question in table 1 and 2	Summary of project owner response	Validation team conclusion
		In June 2012, this Official Report (calculations) was updated following the corrective actions and clarifications requested by AENOR who validated these calculations. The Report and spreadsheet are attached to the PDD. (reference No. 7).	
FAR 01: Verify the implementation of environmental audit of completion of the construction and check if this has closed down breach detected in the environmental auditing 2011. Also verify the implementation of annual environmental audit in 2012.	VVM 132	See the response to CL04 above.	FAR 01 will be verified in the first verification for this project activity.