

**VALIDATION OF THE PROJECT:
BONYIC HYDROELECTRIC PROJECT**

**Hidroecológica del Teribe, S.A.
(PANAMA)**

REPORT No. CDMVAL-031-07

SEPTEMBER, 2013

VALIDATION REPORT



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Client:	Hidroecológica del Teribe S.A. Magna Cort, Mezanine, Piso 1 Panama City	Client ref.:	CDMVAL-031

Summary:

ICONTEC performed the validation of the Bonyic Hydroelectric Project in Panama on the basis of the UNFCCC criteria for the CDM, as well as provided for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and the subsequent decisions by the CDM Executive Board. This validation report summarizes the findings of the validation.

The proposed project activity under validation is based on methodology ACM0002: Consolidated baseline methodology for grid-connected electricity generation from renewable sources Version 12.3.0. The project consists of a run of river hydroelectric plant with an installed capacity of 32.64 MW that uses the water from Quebrada Bonyic (Bonyic Ravine), Teribe river sub-basin, which discharges into the Changuinola River, which ultimately flows to the Atlantic Ocean. This hydroelectric power plant will be connected to a Panamanian electric grid.

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

In summary, it is ICONTEC's opinion that the Bonyic Hydroelectric Project, as described in version 05 of the project design document, meets all relevant UNFCCC requirements for the CDM and relevant host country criteria and correctly applies the baseline and monitoring methodology ACM0002 version 12.3.0. Hence, ICONTEC requests the registration of the project as a CDM project activity.

Report No:	CDMVAL-031-07	Subject Group:	1.2	Indexing terms:
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This report should not be read without reference to the annexed Validation Protocol.

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Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CERs	Certified emission reductions
CL	Clarification Request
CO ₂	Carbon Dioxide
CO _{2e}	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
DR	Document Review
GHG	Greenhouse Gases
I	Interview
ICONTEC	Colombian Institute of technical standards and certification (Instituto Colombiano de Normas Técnicas y Certificación)
IPCC	Intergovernmental Panel on Climate Change
MoV	Means of verification
MP	Monitoring Plan
PDD	Project Design Document
UNFCCC	United Nations Framework Convention for Climate Change
HET	Hidroecológica del Teribe S.A.
DINEORA	National Management for environmental assessment and disposition (Dirección Nacional de Evaluación y Ordenamiento Ambiental)
EIA	Environmental Impact Assessment (Estudios de Impactos Ambientales)
ANAM	Environmental National Authority – Panamá's DNA (Autoridad Nacional de Ambiente)
IDB	Inter-American Development Bank
CABEI	Central American Bank for Economic Integration (Banco Centroamericano de Integración Económica)
CIFI	Inter-American Infrastructure Finance Corporation (Corporación Interamericana para el Financiamiento de Infraestructura)
EPM	Public Enterprises from Medellín (Empresas Públicas de Medellín)
INRENARE	National Institute of Renewable Natural Resources (Instituto Nacional de Recursos Naturales Renovables)

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CND	NationalDispatch Centre (Centro Nacional de Despacho)
ETESA	Electric TransmissionCompany (Empresa de Transmisión Eléctrica S.A.)

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1. INTRODUCTION

Hidroecologica del Teribe S.A. (HET) has commissioned ICONTEC to perform the Validation of Bonyic Hydroelectric Project (hereafter called BHP).

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

According to the documentation of the project activity, consists of the installation of a new hydroelectric power plant with a capacity of 32.64 MW, located on the Bonyic River, in the Northwest corner of Panama, which purpose is to provide renewable energy to the Panamanian Interconnected Electricity System

1.1 OBJECTIVE

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

1.2 SCOPE

The validation scope involves an independent and objective revision to determine that the project design meets the following criteria:

- UNFCCC criteria: The Kyoto Protocol Article 12 criteria, modalities and procedures for CDM (Marrakech Accords) and the relevant decisions by the CDM Executive Board, and
- Host Party criteria: National CDM requirements, including sustainable development priorities, and potential specific requirements contained in, for example, the preliminary approval by Designated National Authority or project agreements between involved parties.

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

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

1.3 GHG Project Description

ICONTEC had the opportunity to verify the following description in the on-site visit to the project:

Project Parties: Hidroecológica del Teribe, S.A.
Magna Cort, Mezanine, Piso 1
Panama City, Panama

Title of project activity: Bonyic Hydroelectric Project

Project Entity: Hidroecológica del Teribe, S.A.
Magna Cort, Mezanine, Piso 1
Panama City, Panama

Location of the project activity: Bonyic Hydroelectric Project will be located in the Quebrada de Bonyic, 16 km from Changuinola, the largest city in the province of Bocas del Toro, Panama

Coordinates:

The project activity is located at the following coordinates:

Geographic	UTM (Ellipsoid method: WGS84)
Longitude: 82°36' W	X: 333140.3
Latitude: 9°21' N	Y: 1012555.87
	UTM zone: 17N

Decimal
82.6 W
9.35 N

Methodology : ACM0002, Consolidated baseline methodology for grid-connected electricity generation from renewable sources, version 12.3.0./53/

This methodology is used in combination with the “Tool to calculate the emission factor for an electricity system” ver. 02.2.1/56/ and “Tool for the demonstration and assessment of additionality” ver. 06./55/

Project's crediting period: 7 years, renewable.

Estimated amount of emission reductions over the chosen crediting period : 619,710 tonnes CO_{2e}

The proposed project activity consists of the installation of a new hydroelectric power plant with a capacity of 32.64 MW, and expected annual generation of 156,000 MWh/year

located on the Bonyic River. It is expected that 619,710 tonnes CO_{2e} emitted to the atmosphere will be avoided over a period of 7 years starting on January 1st 2013 or project registration date, whichever is later. Therefore the project activity is classified as a large scale project.

The Project will operate as a run-of-river facility and is comprised of diversion dam which directs the water into the feeder canal using the existing flow without water regulation reservoir, a powerhouse with 3x10.88 MW Francis turbines, a transmission line of 115kV between Bonyic and Changuinola, and a substation plant for interconnection of the project with a step-up transformer to step up the voltage from 13.8 kV to 115 kV.

HET was formed to build, own and operate the hydroelectric power plant, and it is owned by Empresas Públicas de Medellín of Colombia, Administradora Serviagro and Consultores Asociados de Ingeniería, S.A. of Panama and MacEnergy (Cayman) Limited.

The considered GHG project can be classified as a CDM project in the sector 1, Energy industries (renewable/non-renewable sources), according to List of Sectoral Scopes of the UNFCCC.

ICONTEC confirms that PDD version 05 depicted in an accurate and complete way the project description, and it complies with the relevant form and guidance¹

2. METHODOLOGY

Guide text:

The validation consists of the following three phases:

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

As mentioned in clause 1.2 of this report ICONTEC, based on its ethics code and internal procedures, carries out validation, verification and certification audits of CDM project activities (which, in turn, are based on the validation and verification manual) focused on the identification of significant risks for CER generation, and verification of the contribution to climate change mitigation.

These internal procedures define the validation protocol which consists of three tables. The different columns in these tables are described in Annex 1 “Validation protocol tables”.

The validation protocol resulting from the Validation of Bonyic Hydroelectric Project is enclosed in Annex A of this report.

Findings established during the validation can be seen as:

- A non-fulfillment of validation protocol criteria, or

¹F-CDM-PDD - Project Design Document form, version 03.0

- An identified risk to the fulfillment of the project objectives

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

Corrective action requests (CAR) are issued, where:

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

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

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

2.1 REVIEW OF DOCUMENTS

PDD submitted by Hidroecológica del Teribe, S.A. and the additional background documents related to the project design and baseline were assessed during the validation.

Main documents reviewed are

- PDD, version 01 (12062010), version 02 (1211 2010), version 03 (1206 2011), version 04 (12 07 2012), and version 05 (12/12/2012)
- Project Description /15/, /34/, /35/, /36/, /37/
- Barrier Analysis (Additionality assessment)/2/, /3/, /4/, /5/, /8/, /12/, /14/, /16/, /24/, /30/, /32/, /33/, /40/, /41/, /42/
- Baseline determination /31/, /38/
- Monitoring plan /23/, /27/, /28/, /29/
- Records on the early identification and considerations of the project as a CDM activity/1/, /6/, /8/, /11/, /13/, /25/
- Emission reductions calculations /20/
- Analysis of the related environmental impacts (Environmental Impact Assessment)/7/, /10/, /18/, /20/, /21/, /22/, //
- Letter approving the project issued by the Panamanian Designated National Authority (1805 2012) /43/, /44/
- Contribution of the project to sustainable development /39/
- Records of the local stakeholders consultation process about the project activity/19/, /26/, /45/, /46/
- Common practice evidences

A complete list of references is presented at the end of this report.

2.2 FOLLOWUP INTERVIEWS

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

Table 1. Follow up Interview

DATE	PLACE	INTERVIEW DELEGATE	ORGANIZATION	INTERVIEW TOPICS
21-09-2010	HIDROLOGICA DEL TERIBE'S OFFICE (PANAMÁ CITY)	CAMILO GARIZABAL PROJECT PROFESSIONAL	EPM	PDD BASELINE ADDITIONALITY CDM PROCEDURES BHP OPERATION
21-09-2010	HIDROLOGICA DEL TERIBE'S OFFICE (PANAMÁ CITY)	ROBERTO PÉREZ DIRECTOR OF SOCIAL AND ENVIRONMENTAL MANAGEMENT	HIDROECOLOGICA DEL TERIBE	PDD LOCAL STAKEHOLDERS CONSULTATION ENVIRONMENTAL IMPACTS ADDITIONALITY CDM PROCEDURES
21-09-2010	HIDROLOGICA DEL TERIBE'S OFFICE (PANAMÁ CITY)	CARLOS TAM PROJECT VICE-PRESIDENT	HIDROECOLOGICA DEL TERIBE	PDD BASELINE ADDITIONALITY CDM PROCEDURES BHP OPERATION MONITORING PLAN
21-09-2010	HIDROLOGICA DEL TERIBE'S OFFICE (PANAMÁ CITY)	ROCÍO RODRIGUEZ SENIOR TECHNICAL ANALYST - PROJECT MANAGER	MGM INTERNATIONAL	PDD BASELINE ADDITIONALITY PROCEDURES CDM BHP OPERATION MONITORING PLAN LOCAL STAKEHOLDERS CONSULTATION ENVIRONMENTAL IMPACTS
21-09-2010	HIDROLOGICA DEL TERIBE'S OFFICE (PANAMÁ CITY)	CARLOS VELEZ RESEARCH AND DEVELOPMENT PROFESSIONAL – CLIMATE CHANGE GROUP	EPM	PDD BASELINE ADDITIONALITY CDM PROCEDURES LOCAL STAKEHOLDERS CONSULTATION
21-09-2010	HIDROLOGICA DEL TERIBE'S OFFICE (PANAMÁ CITY)	JOSÉ MACRE ADMINISTRATIVE AND FINANCE VICE-PRESIDENT	HIDROECOLOGICA DEL TERIBE	PDD BASELINE ADDITIONALITY CDM PROCEDURES
22-09-2010	HIDROLOGICA DEL TERIBE'S OFFICE (CHANGUINOLA CITY)	TITO SANTANA VARGAS NASO KING	NASO PEOPLE	LOCAL STAKEHOLDER CONSULTATION ENVIRONMENTAL IMPACTS ADDITIONALITY
22-09-2010	HIDROLOGICA DEL TERIBE'S OFFICE (CHANGUINOLA CITY)	SIMEON SANTANA AGUILAR	NASO PEOPLE	LOCAL STAKEHOLDER CONSULTATION ENVIRONMENTAL IMPACTS ADDITIONALITY
22-09-2010	HIDROLOGICA DEL TERIBE'S OFFICE	ERASMO OTERO	NASO PEOPLE	LOCAL STAKEHOLDER CONSULTATION

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	(CHANGUINOLA CITY)	COMMISSIONER		ENVIRONMENTAL IMPACTS ADDITIONALITY
22-09-2010	HIDROLOGICA DEL TERIBE'S OFFICE (CHANGUINOLA CITY)	GUIRNALDO SALINAS PRESIDENT COMMISSIONER	NASO PEOPLE	LOCAL STAKEHOLDER CONSULTATION ENVIRONMENTAL IMPACTS ADDITIONALITY
22-09-2010	HIDROLOGICA DEL TERIBE'S OFFICE (CHANGUINOLA CITY)	CANDIDO RAYO COMMISSIONER	NASO PEOPLE	LOCAL STAKEHOLDER CONSULTATION ENVIRONMENTAL IMPACTS ADDITIONALITY
22-09-2010	ANAM'S OFFICE	CYNTHIA DEVILLE CLIMATE CHANGE ANALYST	ANAM	PDD BASELINE ADDITIONALITY CDM PROCEDURES ENVIRONMENTAL IMPACTS APPROVAL AND PARTICIPATION
22-09-2010	ANAM'S OFFICE	JORGE MORALES LEGAL ADVISOR	ANAM	PDD BASELINE ADDITIONALITY PROCEDURES CDM ENVIRONMENTAL IMPACTS APPROVAL AND PARTICIPATION
22-09-2010	ANAM'S OFFICE	ISRAEL TORRES CLIMATE CHANGE AND DESERTIFICATION DIRECTOR	ANAM	PDD BASELINE ADDITIONALITY CDM PROCEDURES ENVIRONMENTAL IMPACTS APPROVAL AND PARTICIPATION
22-09-2010	ANAM'S OFFICE	CARLOS LEGNAR CASTILLO LEGAL ADVISOR	HIDROECOLOGICA DEL TERIBE	PDD BASELINE ADDITIONALITY CDM PROCEDURES ENVIRONMENTAL IMPACTS APPROVAL AND PARTICIPATION

2.3 RESOLUTION OF CLARIFICATION AND CORRECTIVE ACTION REQUESTS

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

Since modifications to the project design document were necessary to resolve ICONTEC's concerns, the client decided to review the PDD and re-submit corrected versions of the PDD. After the period of public consultation (07-08-2010 to 05-09-2010) and after reviewing the last version of the PDD (version 05), ICONTEC issued this validation report and opinion.

2.4 INTERNAL QUALITY CONTROL

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

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

2.5 VALIDATION TEAM

The validation team consists of the following personnel:

Table 2. Validation team

ROLE/QUALIFICATION	LAST NAME	FIRST NAME	COUNTRY
Lead Auditor	Urrego	Erika	Colombia
Auditor	Ramirez	Francy	Colombia
Sectoral Technical expert	Gomez	Fernando	Colombia

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

3 VALIDATION FINDINGS

3.1 OVERVIEW

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

3.2 PARTICIPATION REQUIREMENTS

The project participant of the project is Hidroecologica del Teribe S.A.

The participation of Hidroecologica del Teribe S.A. has been approved by the DNA of Panama by letter of approval dated on 18/05/2012./43/

The host country ratified the Kyoto Protocol on September 22th/2002 and therefore meets requirements for participating in the CDM; and the Designated National Authority of the host country has approved the project with the letter of approval described as follows:

Table 3. Approval letter

Date of issue:	May 18 th /2012
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Description:	It provides confirmation that the project contributes to the country in the search of sustainable development		
Supporting documentation (if it is applicable)	Annex B		
Date of ICONTEC reception			
Entity that sent the letter to ICONTEC	Project participants	Directly from the DNA	
	✓		
Means of validation employed to assess the authenticity	By means of phone call and email with Mrs. Lucía Chandeck, Environmental National Authority – Panamá's DNA. June 20 th /2012. Besides that, the Panamanian DNA issued a letter on August 20 th /2010 with a confirmation about the truthfulness of this Letter of Approval for BHP, this letter was signed by Mr. Silvano Vergara as acting General Administrator of ANAM/44/		
Additional specification (if it is applicable)		YES	NO
	PDD		version number ²
			03
ICONTEC Conclusion	<p>All parties involved have approved the project activity. The letters is authentic and valid for the proposed CDM project activity under validation. It confirms and it is unconditional with respect to:</p> <ul style="list-style-type: none"> (a) The Party is a Party to the Kyoto Protocol; (b) Participation is voluntary; (c) In the case of the host Party, the proposed CDM project activity contributes to the sustainable development of the country; (d) It refers to the precise proposed CDM project activity title in the PDD being submitted for registration. 		

3.3 PROJECT DESIGN

The project activity has been developed using the methodology ACM0002, version 12.3.0: "Consolidated baseline methodology for grid-connected electricity generation from renewable sources"/53/.

According to this methodology, the spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system to which the project activity power plant is connected, the Panamanian electrical interconnected system.

The project boundary has been determined by means of: documental review of the contract for the electric generation concession signed between National Authority for Public Services and HET/23/ showing the commitment of HET to the construction not only of the power plant but also the substation and the connection of the BHP to the Panamanian Grid by means of a transmission line. Accordingly, ICONTEC is able to

²This version is the same submitted for registration

confirm that the identified boundary and the selected sources and gases are justified for the project activity.

The project complies with the applicability criteria of the methodology as verified by ICONTEC and as follows:

Table 4. Methodology for applicability conditions analysis

Applicability condition	Means of validation
The project activity consists of the installation, capacity addition, retrofitting 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	Bonyic Hydroelectric Project is the installation of a hydro power plant. ICONTEC verified this statement by means of: - On-site visit - Documental Review of : • Contract for the electric generation concession signed between National Authority for Public Services and HET, signed February 19th/2010. /23/
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.	Bonyic Hydroelectric Projects a run-of-river power plant, implemented in a new single reservoir and with a power density of 173.88 W/m ² (hence is greater than 4 W/m ²) after the implementation of the project activity. ICONTEC verified this statement by means of: - On-site visit - Documental Review of : • Calibration curves of the dam, spillway, diversion canal, and bottom discharge, issued June 2008./37/ • Rainfall and flow data, issued June 2008. /35/
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 .	These descriptions are not applicable to the project activity, as explained above.

In accordance with the project activity and the selected methodology, the emission sources are properly described in the PDD version 05, Section B.4. The greenhouse gas emissions occurring within the project boundary as a result of its implementation are all addressed by the applied methodology, and therefore there are no greenhouse gas emissions within the project boundary caused by the implementation of the project activity which contribute to more than 1% of the expected annual emission reductions and which are not addressed by the applied methodology. This was verified by ICONTEC by means of the on-site visit, observing the progress of the works and its nature.

ICONTEC concluded that the project description, as included in the PDD – version 05 is sufficiently complete and accurate to meet CDM requirements.

3.4 BASELINE DETERMINATION

The baseline scenario is described as the electricity delivered by the project activity to the Panamanian interconnected grid that would have otherwise been generated by the operation of the grid-connected power plants and by the addition of new generation sources.

As stated in the approved consolidated baseline methodology ACM0002 version 12.3.0, the baseline emissions are the product of the baseline emission factor times the electricity supplied by the project activity to the grid.

The baseline emission factor ($EF_{grid, CM, y}$) was calculated by the Panamanian Energy Secretary using the Tool to calculate the emission factor for an electricity system Version 01.1.0 as a combined margin (CM). This calculation was validated by AENOR in 2009³ and consists of the combination of the operating margin (OM) and build margin (BM) factors, according to the following steps:

In step, 1 it was necessary to identify the relevant electricity system. For the BHP case, the PP used the national transmission system as the project electricity system, which is owned and maintained by ETESA. ICONTEC agreed with the decision, as the BHP will be connected to this system, as illustrated in Figure 3 of the PDD and indicated in Contract for the electric generation concession signed between National Authority for Public Services and HET

In step 2, it was decided not to include off-grid power plants, which is acceptable as to be conservative.

In step 3, the simple adjusted OM method was chosen to calculate the operating margin emission factor, in the ex-ante option. Taking into account that in the Panamanian electric system, the low-cost/must-run resources constitute more than 50% of total grid generation, as shown in table 14 of the PDD and verified by ICONTEC in the data source indicated in footnote 7, ICONTEC deemed that this is a valid choice.

Calculations of the OM emission factor (step 4) were made as illustrated in the PDD, which is according to the tool specifications. Plant emission factors $EF_{EL,m,y}$ and $EF_{EL,k,y}$, were calculated under option A1 because the data on fuel consumption and electricity

³http://www.energia.gob.pa/admin/gal/95/files/Informe%20Validacion%20Linea%20Base%20Panama_Jun09.pdf

generation are available as was confirmed by AENOR in its validation report for the Panamanian grid emission factor³

In order to calculate the BM emission factor (step 5), option 1 (ex-ante) was adopted, with the sample group of power units selected as explained in the PDD, and illustrated in Table 15 and Table 16, where it can be seen that the last plants built represent 20% of total system generation and the generation of the last five plants built excluding CDM, respectively. This information has been taken from CND⁴.

For this project activity, the set of power capacity additions in the electricity system that comprises 20% of the system generation (in MWh) and that has been built most recently has been selected, since it comprised the largest annual generation, as required by the methodology.

Finally, combined margin was correctly calculated by weighted average method, as explained in the PDD (step 6).

For emissions reductions calculations, the baseline emission factor ($EF_{\text{grid, CM y}}$) is 0.5675 tonnes of CO₂ equivalent per MWh of energy displaced, which was calculated for the electricity grid of Panama. This value is considered fixed during the first crediting period.

According to the previous description ICONTEC found that the project participant has correctly applied the selected methodology with respect to the Baseline determination. All estimates of the baseline emissions can be replicated using the data and parameter values provided in the PDD.

ICONTEC verified the “Data and parameters that are available at validation”, presented in the PDD section B.6.2, by consulting directly the source of the data⁵.

To estimate the baseline emissions prior to validation, the PP employed the grid emission factor just described (0.5675t CO₂/MWh), and the electrical energy baseline EG_{BL} validly estimated at 156,000 MWh/year, as presented in the project description. Thus, the estimated baseline emissions are 88,530 t CO₂/year.

According to this information the total emissions in absence of the project would be 619,710 tonnes of CO₂e over the first 7-years crediting period.

ICONTEC assessed all information, assumptions and data used in the identification of the baseline scenario and concluded that all are relevant, justified appropriately, correctly quoted and interpreted, supported by evidence and can be deemed reasonable.

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

⁴<http://www.cnd.com.pa/informes.php?idioma=ing&cat=5>

⁵http://www.energia.gob.pa/Factor_Emission_2008.html

The greenhouse gas emissions occurring within the project boundary as a result of its implementation are all addressed by the applied methodology, so there are no greenhouse gas emissions within the project boundary caused by the implementation of the project activity which contributes to more than 1% of the expected annual emissions reductions ER/year and which are not addressed by the applied methodology.

3.5 ADDITIONALITY

3.5.1 *Prior consideration of the CDM*

The start date of the project activity was identified as 28/08/2007, when an agreement was signed with Jera Company for the construction of the access road to the power station/9/. According to this date, the project is considered as an existing project (project activity with a start day on or before 02 August 2008).

In order to demonstrate that the incentive from the CDM was seriously considered in the decision to proceed with the project activity, HET has provided an implementation timeline of the proposed CDM project activity (PDD Annex 5).

The CDM was seriously considered prior to the project activity start date. Evidence to support this awareness of the CDM is based mainly on the following events:

- The Letter of Endorsement, where the Republic of Panama endorsed the further development of the Bonyic hydroelectric project and committed to render and facilitate assistance in the future, for the purposes of the Kyoto Protocol of greenhouse gases emissions reduction generated by the project (23 January 2002). /1/
- The Compensation and Benefits Agreement signed with the local indigenous Naso Teribe tribe for the construction of the Bonyic hydroelectric project/4/, dated on December 18th/2004, whereby it was agreed that the CDM benefits would be shared with this community (Clause 5 A on page 4).
- Letter sent to the Panamanian DNA in order to express conformity to include Bonyic hydroelectric Project in emissions reductions negotiation program/6/. Issued September 22nd, 2005
- The Letter of Complacency issued by the Panamanian DNA regarding the participation of the Bonyic project in the carbon market through the Clean Development Mechanism (20 March 2007)./47/

In addition, ICONTEC assessed the following evidence in order to validate that continuous and real actions were taken to secure CDM status for the project in parallel with its implementation:

- Contract signature between MGM and HET, signed March 10th, 2008, with the purpose of developing BHP as a CDM project and the sale and purchase of the resulting CERs /13/
- Minute 1490 from the EPM Executive Board meeting carried out on August 4th, 2008, which contains the EPM decision to finance the BHP by themselves,

- taking into account *inter alia* the previous contract signed with MGM for the sale and purchase of the resulting CERs /32/
- Contract signed between MGM Innova Consulting and HET, signed on November 16th/2009, with the purpose of support the developing of BHP as a CDM project/48/
 - Local Stakeholder consultation carried out on March 11th,2010 /45/and /46/
 - PDD Version 01 (12/06/2010) was publicly available on the UNFCCC Website⁶ from August 7th,2010 to September 5th,2010

Due to the evidence described above, there is less than 2 years of a gap between the documented evidence; hence ICONTEC concluded that continuing and real actions were taken to secure CDM status for the project activity.

Hence, and in accordance with the VVM /54/ Clause 102 and relevant guidelines established by the CDM Executive Board /57/, the project activity complies with the requirements of the latest version of the Guidance on prior consideration of CDM.

3.5.2 Additionality analysis

The additionality was justified in accordance with the requirements derived from the applied approved CDM methodology /53/ and the applied methodological tools /55/⁷/58/

a) Analysis of Alternatives

Two alternatives to the project activity were considered:

Table 5. Analysis of alternatives

Alternatives ⁸	Assessment	Means of Validation of Alternatives	Conclusion
1. Undertake the BHP as an hydroelectric power generation without being registered as a CDM project activity	In accordance with VVM, version 01.2 Clause 106 (a)	All the alternatives comply with all applicable and enforced Panamanian legislation. In addition, ICONTEC confirmed by means of documental review ⁹ of the Panamanian Expansion Plan that alternatives 1 and 2 are credible and realistic in the Panamanian scenario, since both of them are considered as potential expansions to the system	<ul style="list-style-type: none"> • The Identification of alternatives is realistic and credible. • The alternatives are consistent with mandatory laws and regulations • The list of alternatives was considered by ICONTEC as complete.
2. Continuation of the current situation (no project activity and/or other alternatives undertaken)	The installation of a new thermal power plant in the system was considered as the most likely project expansion given the current market conditions and regulations governing		

⁶<http://cdm.unfccc.int/Projects/Validation/DB/SAAUQ879IMULYV8RLTJE2BPFOVYEI/view.html>

⁷In accordance with the *Procedure for the submission and consideration of requests for the revision of AMs and tools for large scale CDM project activities (version 01)* Clause 36: DOEs may upload for registration the PDDs of project activities in which the previous version of an AM or an AT has been applied no later than the calendar day (2400 hours GMT) eight months from the publication date of the report of the Board meeting at which the revised AM or AT was approved. The last version of the "Tool for the demonstration and assessment of additionality" (version 06.1.0), was approved on September 13th/2012

⁸Due to the PP, Hidroecológica del Teribe, S.A., has been created with the aim to develop, construct and operated the BHP, for the alternative decision to develop another power plant that delivers electricity with comparable quality and properties is not feasible.

⁹http://www.etsa.com.pa/plan_expansion.php

b) Barrier Analysis

Barrier analysis carried out by the PP covers the following type of barriers:

- (a) Barrier due to project location
- (b) Investment barrier

Barrier due to project location

ICONTEC applied a two-step process to assessing the barrier analysis performed, as follows: The PP invoked the project location in a socially and biophysically sensitive environment /18/ as a significant barrier for project implementation, which has led to major obstacles in obtaining project financing, and consequently, serious delays in project construction and implementation, ICONTEC confirmed that the project location is a biophysically sensitive environment by means of documental review carried out in the ANAM's Website¹⁰ and the Concession awarded from ANAM to HET for the administration of an area within the Bosque Protector de Palo Seco/18/.

The project had duly obtained the water concession /22/ and the Panamanian Environmental Authority's construction and operation permission, which was verified by ICONTEC, and, an environmental assessment /7/ based on best practices was carried out (a stakeholder information/consultation/consensus process with the indigenous community, in compliance with the Panamanian legislation). However special local circumstances became major obstacles in project development, which affected the process of obtaining financing for the project and proceeding with its implementation. In fact, the DOE verified, through the review of meetings minutes /30/ /33/ and performing direct interviews with Naso Teribe community members (including a meeting with the Naso King, Tito Santana), that at the time of the consultation process, the indigenous people living in the surrounding areas, belonging to the Naso Teribe community, were in the midst of a prolonged leadership crisis, caused by historical and political factors, as well as by family feuds and personal interests. This resulted in problems and delays in carrying out the stakeholder process and in reaching an agreement between the project participant and the Naso Teribe people with respect to the project-derived benefits that would be acceptable to the community in exchange for the BHP's development. As from this review, it was clear to the DOE that maximum attention was paid to ensure respect for the indigenous community and the ecosystem, to which effect support was sought and received from the Environmental National Authority (ANAM) as well as from DobboYala Foundation, a NGO working in favour of the rights of indigenous populations. ICONTEC had the opportunity to review two reports (/41/ and /42/) of the DobboYala Foundation that confirms this point. To sum up, it is necessary to grant the Naso people authorization to carry out this project activity. With the information described above ICONTEC confirmed that the project is developed in a socially sensitive environment

¹⁰ http://www.anam.gob.pa/index.php?option=com_content&view=article&id=330&Itemid=322&lang=es

Based on the description above and on ICONTEC's local and sectoral expertise, ICONTEC confirmed that the barrier due to project location is real, preventing not only the project's implementation but also the alternative scenario undertaken by the BHP as an hydroelectric power generation without being registered as a CDM project activity. Likewise, the identified barrier would not prevent the alternative scenario, i.e from the continuation of the current situation (no project activity and/or other alternatives undertaken).

Thus, as from the analysed documents and the direct interviews mentioned above, it is clear to the DOE that the community appreciates the environmental and CDM derived benefits the project would entail, and that these became a key factor in the mitigation of the barriers arising from project location. This was consolidated in the Compensation and benefit agreement between the HET and the Naso people for the construction of Bonyic hydroelectric project /4/, which in Section 5 states: *"HET is committed to transfer 25% of the profits it will receive in cash regarding the transfer or sale of CERs HET will keep the authorities of the Naso people informed in writing of any sale or transfer of CERs"*. It should be noted that potential CDM revenues cannot be translated into financial terms, since the Agreement /4/ signed with the Naso people was not a goal itself, but rather a mean to develop the BHP¹¹.

In order to assess how this barrier due to project location would prevent the implementation of BHP even if the project activity was not registered as a CDM activity, ICONTEC reviewed the reports issued by Dobbo Yala Foundation /41/ /42/ and the letter sent by IDB to HET /24/; all these documents confirmed the existence of a leadership crisis in the Naso Teribe Community. Notwithstanding this, IDB recognized that BHP is indeed eligible under Bank's financial policies. However, in view of their leadership crisis, the Bank decided to withdraw its offer to finance the project. In this context, the agreement signed between Naso Teribe Community and HET/4/ becomes relevant and important since it encourages the indigenous community to overcome its internal crisis so as to benefit from the CDM. Based on these documental evidences, ICONTEC concluded that CDM status alleviates the barrier due to project location.

Investment Barrier

As explained in the PDD, the investment barrier is partly a consequence of the project location barrier:

On August 27, 2004, a Letter of Mandate was signed with the Inter-American Development Bank for the purpose of structuring project financing. Following the signature of this Letter of Mandate, the Bank began to gather information on the Project and was informed of the concerns surrounding the legitimacy of King Tito Santana (the "King"), leader of the Naso people, which were also expressed by local and international non-governmental organizations (NGOs), these concerns are related with a leadership crisis inside the Naso

¹¹ In accordance with the VVM, version 01.2 paragraph 108 (b) the intention of the investment analysis is to provide evidence that the proposed CDM project activity would not be economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs).

Teribe people¹². In view of the above, the Bank, together with HET, started drafting a strategy to carry out a social analysis of the situation with the Nasos and the project development. In early 2005, the Bank and HET contracted a social welfare consultant with extensive experience in matters related to indigenous populations to carry out an independent assessment of the implications that the Project would have on the Naso community, taking into special account the internal problems within the Naso community. In mid-March, the bank received the social welfare consultant's report, in which he informed of an internal crisis within the Naso community. The Bank expressed its reluctance to proceed with the environmental due diligence until the conflict between the feuding parties was resolved and a socio-political climate that would enable the fieldwork related to the Project to proceed appropriately was achieved /5/. The Bank's stand on this issue should not be interpreted as being opposed to the Project; its aim, rather, was to avoid jeopardizing the Project by intervening at an inappropriate moment, a move that could lead to a problem that exceeded the limits of the Project. They therefore did not consider that they were sending a negative message to potential developers of hydroelectric projects in the area.

In 2006, as a result of a public tender conducted by Santander Bank, supported by HET, the Banco Centroamericano de Integración Económica (CABEI –Central American Bank of Economic Integration) as a lender of record, together with Corporación Interamericana para el Financiamiento de Infraestructura (CIFI –Inter American Corporation for Infrastructure Financing), with Santander Bank as lead arranger, were selected as project financing entities. Nevertheless, in November 2008, EPM (Empresas Públicas de Medellín), as principal shareholder of the HET society, was unable to provide the guarantee required by the banks due to EPM statutory limitations regarding the guarantees it can furnish. These limitations constituted a significant obstacle in negotiations with potential lenders. In order to assess the compliance of the Guideline 1 (EB 50 Annex 3, paragraph 4) of the guideline /58/ regarding to this statutory limitation of EPM, ICONTEC reviewed the Colombian regulations /49//50/, as well as EPM's Code of good governance /51/ and financial balance for 2008/52/ with the aim of verifying the lack of access to capital. ICONTEC verified that, given the nature of the company, *an industrial and commercial enterprise of the Colombian state*, as EPM, cannot provide a guaranty for the total amount of the loan as requested by CIFI-CABEI on November 2008. Based on the above description, and on ICONTEC's local and sectoral expertise, ICONTEC confirmed that the investment barrier is real, preventing not only the project's implementation but also the alternative scenario undertaken by the BHP as a hydroelectric power plant without being registered as a CDM project activity. Likewise, the identified barrier would not prevent the alternative scenario i.e.; the continuation of the current situation (no project activity and/or other alternatives undertaken).

This investment barrier is project specific since the guaranty asked by the Bank to the HET's principal shareholder could not be provided due to the nature of the organization (industrial and commercial enterprise of the Colombian state); the investment barrier was only overcome when EPM decided to grant the loan to HET taking into account that BHP is a project that reduces the GHG emissions.

¹² Icontec reviewed newspaper publications as: <http://www.panamaamerica.com.pa/notas/445021-rey-naso-teribe-dice-que-no-fue-destituido> in order to verify the veracity of the information provided by the PP

- In view of the major difficulties confronted in trying to secure external financing for the project, and taking into account that the delay caused by this search severely handicapped project development, EPM decided to provide the initial funding, awarding a loan to HET by itself, as stated in Minute 1490 of EPM's Executive Board meeting /32/, on pages 9 and 10. To award this loan EPM's Executive Board took into account that since its inception BHP has been considered as a CDM project /1/,/5/; had this not been the case, EPM would not have even considered being part of the shareholders of HET, since there would have been no added value. It should be noted that one of EPM's branches of business is power generation, so EPM could invest in other power plants but its organizational environmental management addresses all its efforts to promote mitigation actions and climate change adaptation¹³, as it was stated in the PDD, EPM is known for its strong commitment to Corporate Social and Environmental Responsibility, and has played a relevant role in promoting climate change awareness and CDM projects in Latin America.

ICONTEC verified these statements as follows:

- EPM's environmental management system includes a *Declaration on Climate Change*¹⁴, this declaration states: "EPM and its subsidiaries undertake, on a voluntary and transparent basis, comprehensive actions to address the causes and effects of climate change"
- ICONTEC reviewed the power plants with renewable energy (hydroelectric and wind power plants) under EPM's management in Colombia¹⁵, and verified that for those renewable energy power plants that, comply with the UNFCCC criteria to qualify as a CDM project (by its entry into operation year or its installed capacity), their validation process has been performed¹⁶.

In addition, ICONTEC reviewed the following independent data sources with the aim to validate the argument presented by the PP that EPM's decision to provide the initial funding through a loan to HET was based in large measure on EPM's strong corporate commitment to promote climate change mitigation and adaptation actions:

- On February 15th, 2012, the Embassy of the Federal Republic of Germany, the Colombian Congress and the Colombian Society of Press and Media awarded EPM the Baron Alexander von Humboldt Environmental Merit Order for its specific actions regarding rational and efficient use of water and energy, biodiversity, waste management, control of emissions and climate change, communication and environmental awareness, social management, research and development.
- Since June 14th/2006, EPM has participated in the United Nations Global Pact. The UN Global Compact is a strategic policy initiative for businesses that are committed to

¹³ <http://www.epm.com.co/site/comunidadymedioambiente/Comunidadymedioambiente/Medioambiente/Cambioclimático.aspx>

¹⁴ <http://www.epm.com.co/site/comunidadymedioambiente/Comunidadymedioambiente/Medioambiente/Cambioclimático/Declaratoria.aspx>

¹⁵ <http://www.epm.com.co/site/Home/Institucional/Nuestrasplantas/Energ%C3%ADa/Centraleshidroel%C3%A9ctricas.aspx>

¹⁶ La Vuelta and La Herradura Hydroelectric Project
<http://cdm.unfccc.int/Projects/Validation/DB/XEHTPX5LUKUET3U4KMYO1VJNE9I5QP/view.html>
 Jepirachi Wind Power Project
<http://cdm.unfccc.int/Projects/Validation/DB/L2SO5VSUK44AZTFLZO924L3NTNC0Q9/view.html>

aligning their operations and strategies with ten universally accepted principles in the areas of human rights, labour, *environment* and anti-corruption¹⁷

Since the alternative of developing BHP is undertaken and operated by HET (a private entity in Panama), ICONTEC reviewed similar hydroelectric power plants, between 16.32 MW to 48.96 MW ($\pm 50\%$ of the BHP installed capacity) developed in Panama and connected to the Panamanian electrical grid (the information publicly available in the CND Website¹⁸) and found that there are only 7 hydropower plants operating in Panama; all 7 differ from the proposed project activity. Taking into account that the Bonyic hydroelectric plant has an installed capacity of 32.64 MW, and will be developed and implemented after the privatization of the electricity sector in Panama (that took place in 1997-1998) there is no plant with similar characteristics in Panama. The only two plants that could be considered to some extent similar are the Mendre hydroelectric project (19.76 MW) and Pedregalito I (20 MW), both registered as CDM project activities. However, those plants were not developed in a comparable environment in terms of project location. As mentioned above, BHP is developed in a sensitive social and biophysical environment which makes the project unique in terms of the environment in which it is developed.

Based on the above argumentation, ICONTEC confirmed that the financing of the project was assured *only* due to the benefit of CDM as stated in Clause 9 of the Guidelines for objective demonstration and assessment of barriers/58/, since the financing of the BHP by the lender (EPM) *explicitly* takes the CDM registration into account.

d) Common practices analysis

The project participant carried out the common practices analysis according to the latest version of the Tool for the demonstration and assessment of additionality¹⁹. For this project activity the geographical area is Panama and the output is 32.64 MW, so the output range to assess common practices rose from 16.32 MW to 48.96 MW.

In order to assess the reliability of the information provided by the PP in the PDD, ICONTEC reviewed the information publicly available in the CND Website.²⁰ This page provided the power plant name, its technology, its capacity (in MW) and the initial year of commercial operations. With the aim of following the provisions in the *Guidelines on common practice* (EB 69 Annex 8), there are only two hydroelectric plants in Panama (same energy source (water) and same Applicable geographical area) similar to BHP: Mendre (19.76 MW) and Pedregalito I (20 MW). However, Pedregalito I started commercial operations in 2011, after the project design document (CDM-PDD) was published for global stakeholder consultation (August 2010). In addition, Mendre Hydroelectric Power Plant Project is currently undergoing its validation process as a CDM project.²¹ For N_{all} calculation, the number of plants that deliver the same output or capacity within the applicable output range defined above, and have started commercial operation before the start date of the project is $N_{all}=0$,

¹⁷ See <http://unglobalcompact.org/AboutTheGC/index.html> and <http://unglobalcompact.org/participant/3319-Empresas-Publicas-de-Medellin>

¹⁸ <http://www.cnd.com.pa/informes.php?cat=5>

¹⁹ Which includes the Guidelines on Common practice Version 01.0

²⁰ <http://www.cnd.com.pa/informes.php?cat=5>

²¹ See <http://cdm.unfccc.int/Projects/Validation/DB/CX7UAQ9T6P6Z2CGDSEB6SMI7QBTY7K/view.html>

Within similar projects identified in N_{all} calculations, it is necessary to identify those that apply technologies that are different to the technology applied in the proposed project activity. Since $N_{all}=0$, hence $N_{diff} = 0$.

Since $F = 1 - N_{all}/N_{diff}$ is an indeterminate mathematical expression, ICONTEC assumed $F = 0$ inasmuch as the factor F represents the share of similar projects (penetration rate of the measure/technology) using a measure/technology similar to the measure/technology used in the proposed project activity that delivers the same output or capacity as the BHP. Based on the explanations provided in the previous paragraph, this assumption ($F = 0$) is fairly stated.

On the other hand, because $N_{all} - N_{diff} = 0$ the BHP is not a common practice project ($F > 0.2$ and $N_{all} - N_{diff} < 3$)

e) Additionality conclusion

In conclusion, it was verified that the project is not the most likely baseline scenario. Hence, the emissions reductions occurring from the project are deemed additional to those that would have occurred in the absence of the project activity, based on the argumentation provided by the PP in the PDD for the barrier due to project location.

3.6 MONITORING PLAN

Bonyic hydroelectric power plant will be connected to the national interconnected grid by means of a 12 km, 115 kV transmission line that connects the power plant substation with the ETESA Changuinola substation. To measure the energy that is provided to the interconnected grid, two redundantly set-up energy meters, with 0.2 S accuracy class and prepared for remote reading, as established in the commercial measuring system regulations, will be installed in the ETESA Changuinola substation, defined as the project commercial boundary substation.

Additionally, in the Bonyic power plant there will be measurement and protection equipment with similar characteristics to the equipment installed in the Changuinola commercial Boundary substation, both for internal control and for monitoring by the National Dispatch Center (CND in Spanish).

Currently, there is no contractual relationship with ETESA. The relationship, electricity monitoring and equipment calibration, are regulated by Operation and Transmission Regulations²² and Law 6²³.

In this context, measurement equipment calibration must be performed by the responsible entity in Panama (ETESA) by means of the corresponding laboratories; as evidence that this calibration has been done, ETESA will place the corresponding stamps on the equipment.

²²http://www.etsa.com.pa/documentos/jd_5216.pdf Quality Standards about Technical Service for Transmission Networks.

²³<http://www.etsa.com.pa/documentos/levno6.pdf> Regulatory and Institutional Framework for the Provision of Public Service of energy

The project participant will assign a qualified person to compile the necessary data according to the approved methodology to accurately calculate emission reductions. The data will be compiled in a manner amenable to a third party audit and deliverable to the DOE for certification purposes.

This monitoring plan complies with the requirements of the methodology. The major parameters to be monitored were discussed with the PPs. More specifically, the parameters' features that were included are the following: the location of meters, data management, quality assurance and quality control procedures to be implemented in the context of the project.

ICONTEC assessed and concluded that the PP's will be able to implement the monitoring plan and the achieved emissions reductions can be reported ex-post and verified.

With the interviews, desk reviews /23/, /27/, /28/ and /29/ and an on-site visit, the DOE validated that the project participants have the ability to implement the monitoring plan.

3.7 CALCULATION OF GHG EMISSIONS

In accordance with the methodology ACM0002 version 12.3.0, emissions reductions are to be calculated as:

$$ER_y = BE_y - PE_y$$

Where:

ER_y = Emission reductions in year y (t CO₂e/yr)

BE_y = Baseline emissions in year y (t CO₂e/yr)

PE_y = Project emissions in year y (t CO₂e/yr)

Baseline emissions are to be calculated as validated by the DOE in the section 3.4 of this report.

Project emissions accounted by this activity project are to be calculated by using the following equation:

$$PE_y = PE_{HP,y}$$

Where

$PE_{HP,y}$ = Project emissions from water reservoirs of hydro power plants in year y (tCO₂e/yr).

As demonstrated in the PDD, and validated by ICONTEC from the documents "Calibration curves of the dam, spillway, diversion canal, and bottom discharge, issued June 2008." /37/, the power density of the BHP is 173.88 W/m². Therefore, according to the methodology,

$$PE_y = PE_{HP,y} = 0,$$

so that

$$ER_y = BE_y.$$

The respective formulation, as presented in the PDD, is deemed adequate by ICONTEC.

Accordingly, the total GHG emissions avoided by the project activity for the first 7-year crediting period are 88,530 tons of CO₂e/year.

ICONTEC verified by means of the review of the file “Emissions Reductions Bonyic 26 Dec 2012.xls” that the project activity reduces annual emissions by an average of 88,530 tCO₂e over the crediting period (7 years). The values were confirmed by following assumptions that are considered appropriate and reproducing calculations.

3.8 ENVIRONMENTAL IMPACTS

In order to get an environmental permit, HET has performed an Environmental Impact Assessment in accordance with the Regulation Process for Environmental Impact Assessment demanded by the Panamanian Government for this type of project /21/. A summary of this Assessment is described in the PDD Version 5 (Pages 42-56).

There is an Environmental Impact Assessment made by HET and approved by ANAM /7/. This document describes all analyses of the environmental impacts of the project activity made by HET, it also includes the mitigation measures for every environmental impact described in this Environmental Impact Assessment.

ICONTEC reviewed this EIA and the Environmental Management Plan and by means of interviews with ANAM's personnel confirmed that the project participants had undertaken an analysis of environmental impacts in accordance with the requirements requested by Panamanian Government/21/.

3.9 COMMENTS BY LOCAL STAKEHOLDERS

The stakeholders' consultation process was conducted in two stages. In the first stage, in order to obtain the environmental license, a Public Forum with local stakeholders was carried out. The second took place in March 2010 during the International Exhibition and Symposium of Cleaner Production in Panama. The objective of these consultations was to provide information on the project objectives such as general information as well as advantages and opportunities provided by the project. These activities included a session for questions and comments from local stakeholders. The DOE verified the execution of this meeting by the attendance list and the meeting minutes/33/ for the first stakeholder consultation and the presentation made by HET/45/, with the filled polls by stakeholders /46/, for the second one.

ICONTEC, by means of document review, is able to confirm that local stakeholders considered relevant for BHP activity were invited; likewise, HET has taken due account of comments received and has described this process in the PDD.

In general, ICONTEC determined that the community knows the project and agrees to its being carried out.

4. GLOBAL STAKEHOLDERS CONSULTATION

The PDD version 01 submitted by HET, was made publicly available on the UNFCCC website during a 30 day period from 07-08-2010 to 05-09-2010.

Parties, stakeholders and NGOs were invited to provide comments through the website. The following submitters sent comments:

- FERN
- Conservation Strategy Fund
- Alianza para la Conservación y el Desarrollo (ACD)
- Asociacion Ambientalista de Chiriquion behalf of Asociacion Ambientalista de Chiriqui (ASAMCHI)
- Oscar Reyes
- International Rivers

Next, there is a summary of comments received by submitters that have points in common between them:

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Comment	Action taken by the audit team to take due account on the comment
<p>Submitted by FERN</p> <p>FERN supports the comments submitted by Alianza para la Conservación y el Desarrollo (ACD) and requests that the Bonyic hydroelectric project be rejected as a CDM project for the reasons outlined in detail in the ACD submission.</p> <p>In particular, FERN would like to emphasis the controversial nature of the hydro project itself, which led to the Inter-American Development Bank (IADB) having refused to participate in this hydro power project in 2005 (see letter submitted with ACD submission to the CDM). According to the Project Design Document (PDD p. 17-18), Corporacion Interamericana para el Financiamiento de Infraestructura (CIFI) and Banco Centroamericano de Integracion Economica (BCIE) also declined participation in the Project due to financial considerations.</p> <p>Registration of the project would further set a worrisome precedent with regards to the priority attributed to funding being available for resettlement BEFORE a project is started. The Project proponents, Columbian company EPM has undertaken direct financing of the Project after other potential financiers pulled out of the project. The company explains in the PDD that the money raised from sale of CDM credits would among others be used to compensate communities who stand to lose their land as a result of the hydro project. What if the project proponents fail to sell credits? Will the communities not receive compensation? This argument alone ought to have precluded the project from even reaching validation stage.</p> <p>Environmental Considerations</p> <p>The reservoir is located within the Palo Seco Protected Forest and very near to the boundary of the La Amistad International Park, a UNESCO World Heritage Site shared with the Republic of Costa Rica. We understand that an earlier environmental impact assessment approved in 1998 was considered insufficient by the promoting company, EPM. A new, yet still deficient, environmental</p>	<p>ICONTEC's reviewed the letter mentioned by FERN in its comment (IDB letter) /5/ and it is worth to clarify, in this letter IDB specified the reasons for the reluctance to proceed with the environmental due diligence, this reason was based on the conflict between the feuding parties, which disturbs socio-political climate of the project, the reasons are not related with the project but the social-political scenario.</p> <p>In addition, the CIFI and CABEL (BCIE) approved the project's financing /12/, however, they declined their participation in the Project due to CIFI-CABEL asked EPM (Empresas Públicas de Medellín), as principal shareholder of the HET society, to provide a real guaranty for the total amount of the loan. EPM was unable to provide this guaranty, since as a public sector entity in Colombia, it has strict statutory limitations regarding the guaranties it can furnish. These limitations constituted a significant obstacle in negotiations with potential lenders. Hence the CIFI-CABEL did not decline the financing by the project per se.</p> <p>By means of the review of Social and Environmental Management Plan/39/and interview carried out with Naso-Teribe community, ICONTEC confirmed that HET has a social commitment with the community²⁴, In the same way, an Agreement was signed with the Naso Teribe community, which states that 25% of CDM-derived income would be transferred to the indigenous community.</p> <p>Regarding the environmental considerations argued by FERN in its</p>

²⁴ The audit team verified in the onsite visit that schools has been built, health campaigns has been developed, roads has been built with HET financial resources

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impact review was conducted in 2005, and based on its approval, a land concession of 1,250 Ha of the Palo Seco Protect Forest was granted to HET by the National Environmental Authority of Panama (ANAM) last year. The Project will affect pristine forest areas, which are currently the habitat of Harpy Eagles, Tapirs and Jaguars, among many other rare and endangered species. An appropriate biological survey of the areas affected by the dam has never been conducted, and long-term environmental impacts have never been seriously considered neither above nor below the dam site.

In response to this situation, the UNESCO World Heritage Committee has recently expressed “utmost concern” for the lack of adequate mitigation measures to prevent the extirpation of up to 16 species of migratory fish and shrimp in the La Amistad World Heritage Site as a result of the construction of Bonyic and several other hydroelectric projects in the buffer zone of this protected area. Based on these considerations, the La Amistad International Park may be declared a World Heritage Site in Danger in 2011.

Social Concerns

We further question the veracity of claims made in the PDD regarding the positive contribution of HET on the Naso way of life! We have been informed about the hydro company having contributed to increasing strife within the community through its methods of rewarding those in favour of the project. We understand that the promise of direct revenues from carbon credits (25%) has constituted a main incentive for the division of the traditional Naso leadership. We believe it is crucial that compensation obligations not be linked to support for a project – as it appears from the PDD of Bonyic.

In this context we would also note that the Naso peoples have recently presented a petition to the Inter-American Human Rights Commission (IAHRC) in relation to outstanding land right and title issues, in which the construction of the Bonyic Hydroelectric Project is explicitly considered as one of the main threats to Naso cultural survival.

Numbering around 3,500 people, the Naso are in serious danger of disappearing as a living culture. The arrival of the hydroelectric project, the division of the traditional leadership and the Government refusal to grant land rights have greatly demoralized the population and created a time bomb for a social explosion. Community compensation through carbon credits and the few

comment, and as it was stated above in this validation report, ICONTEC had the opportunity to review the EIA approved by ANAM /7/, /10/, the Concession awarded from ANAM to HET for the administration of an area within the Bosque Protector de Palo Seco /18/, the Social and Environmental Management Plan issued by HET/39/, which describes the Environmental measures to mitigate the project impact. It is worth drawing attention to the fact that during the on-site visit carried out at the project site, the audit team has the opportunity to observe one of the periodic visits performed by ANAM personnel in order to assess the compliance of the commitments stated in the EIA. By means of interviews and documental review, ICONTEC confirmed that HET has demonstrated a concern with complying with the Panamanian environmental regulatory framework.

About social concerns expressed by FERN in its comment, ICONTEC performed interviews with the Naso people and Panamanian Environmental Authorities in order to assess the information described, and the Naso King (Tito Santana) refused the appreciations described in the FERN's comment, in addition, in the interview carried out with ANAM personnel and by the documental review performed by ICONTEC/7/,/10/, /18/ y /39/, it was clear that HET has demonstrated a not only the complying with the Panamanian environmental regulatory framework but its social commitment with the Naso-Teribe community.

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temporary jobs created by the construction work will not solve the core issues affecting the Naso people, and instead may lead to further political division and cultural erosion (as recognized in the PDD p. 38 and 43-44).

Free, Prior and Informed Consent

The PDD misleadingly refers to two critical moments of community consultation in 2005 and 2010. We understand that the 2005 consultations leading to the approval of the Environmental Impact Assessment were forced upon the Naso population as documented in the document The Tiger and the Turbine. These consultations do not even approximate to the standards of the UN Declaration on Indigenous Peoples or the World Commission on Dams.

We further understand that the claims about a second consultation period are plainly false. As expressed in the PDD (p. 48), this “consultation” occurred at an exhibition on clean production in Panama City without the participation of any of the affected individuals, not even those in favor of the Project. How could such an event be considered ‘consultation’?

Economic Considerations (including the question of additionality)

Contrary to what is expressed in the PDD, the construction of the Bonyic hydroelectric project does not constitute any innovation, but instead represents common business practice in Panama. There are currently 17 hydroelectric projects under construction in Western Panama, most of which have a low installed capacity of less than 20 MW. Although many of these projects are currently requesting carbon credits, construction has continued unabated in most of these projects despite delays in validation for several of these projects.

In the case of Bonyic, the continued investment of EPM during the last three years in spite of the lack of external funding and the continuous confrontation with the Naso population suggest that the Project is sufficiently profitable to justify direct investment by the Company even assuming such high risk levels. In a cost-benefit analysis developed in 2005 by the Conservation Strategy Fund (CSF), it was found that hydroelectric projects in the Teribe-Changuinola watershed enjoyed a positive net present value that justified appropriate community compensation even without considering any revenues from carbon credits.

Thus, in conclusion, the project not only fails to make a credible case regarding

Regarding the local stakeholder consultation on 2005 while the EIA was developing, the ANAM validated this exercise by means of its EIA authorization, and for the local stakeholder consultation performed by HET in 2010, ICONTEC validated this process (see section 3.9 on this report).

For economic considerations described by FERN in its comment, these considerations were assessed by ICONTEC in section 3.5 on this report (Additionality)

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the additionality of emissions savings claimed; it also has already and will continue to cause significant negative social, environmental and cultural impacts. The Bonyic hydro project therefore must not be registered as CDM project.

Submitted by Conservation Strategy Fund

This letter contains my comments on the subject of Clean Development Mechanism credits for the Bonyic Hydroelectric project in the Teribe watershed of Panama.

This project does not meet the CDM's requirement of financial additionality. A study conducted by Conservation Strategy Fund and partners in 2006 found that the Bonyic project was financially feasible without carbon credits. The study analyzed the Bonyic project along with three planned at the time on the Changuinola River, finding that the collection of projects would generate an after-tax net present value of \$87 million on an investment of \$523 million. Though ours was not a stand-alone assessment of the Bonyic project, we have no reason to suspect that it was unprofitable as an independent project. In fact, since it is being pursued independently with no other project on the same watercourse, we can only conclude that the project is an attractive stand-alone business proposition. Our study is available at <http://conservation-strategy.org/en/publication/an%C3%A1lisis-de-costos-beneficio-de-cuatro-proyectos-hidroel%C3%A9ctricos-en-la-cuenca-changuinola>.

It has been suggested that carbon credits are needed to offset the cost of efforts to mitigate, compensate and offset environmental and social costs of the Bonyic project. This concept threatens to take the "Clean" out of the Clean Development Mechanism. That is because carbon credits will put projects with high non-climate environmental and social impacts on an equal financial footing with low-impact projects. The latter, if equally profitable before considering environmental issues, would not have access to CDM payments. In effect, the carbon credits become a subsidy for less-clean development. If all impacts could be fully mitigated, the environmental spending could be characterized as just one more cost, like any other, that CDM funding was overcoming to install clean energy. But, having visited the area in question, I cannot see how the CDM payments will heal the divisions wrought by the project in the Naso Community, nor maintain the ecological integrity of the Teribe basin, one of the better preserved in Western Panama.

Regarding the financial analysis carried out by Conservation Strategy Found, it was not taken into account for additionality assessment since the PP has argued the project's additionality by investments barrier and barrier due to project location.

Regarding the carbon credit utilization, the argue of Conservation Strategy Found is based on a own suggestion in accordance with the PDD reading, in addition ICONTEC had the opportunity to review the EIA approved by ANAM /7/, /10/, the Concession awarded from ANAM to HET for the administration of an area within the Bosque Protector de Palo Seco /18/, the Social and Environmental Management Plan issued by HET/39/, which describes the Environmental and social measures to mitigate the project impact. By means documental review, ICONTEC confirmed that HET has demonstrated a concern with complying with the Panamanian environmental regulatory framework.

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Submitted by Asociacion Ambientalista de Chiriqui (ASAMCHI)

Our Environmentalist Association cannot remain silent and indifferent before the construction of unjustified projects taking place in the province of Bocas del Toro (Caribbean basin) or Chiriquí (Pacific basin) or in the Indigenous Regions or within natural protected areas or in no other province of Panama, without the proper consultations and popular participation and true social scientific analysis; and with greater reason if we deal with native indigenous people and natural and world heritage sites: The Palo Seco Protective Forest (BPPS) and the International Friendship Park (Parque Internacional La Amistad), as it is the case of the Naso that have been their stewards during centuries. Besides violently bursting into the lives and territories of the Naso people, the fact is it will place them in virtual state of un-viability and disappearance as a people and as a native culture.

Also in the natural and ecological plane this series of projects in the river basin of the Changuinola, as in the Teribe even within the protective Palo Seco Forest Reserve (BPPS) which must indeed serve as a buffer zone for the International Friendship Park and declared Natural world Heritage and Reserve of the Biosphere, and soon to be declared Endangered World- Heritage Site by UNESCO by the constant encroachment and degradation of man mainly by way of its hydroelectric power projects. (1)

Although the set of 4 CHAN hydro projects sponsored by the North American company AES in the Rio Changuinola and also very near to the PILA, but in this case we will refer particularly to the construction of the hydroelectric project Bonyic of the Hidroecológica of Teribe (HET) of 31 MW (in fact many already consider mega projects those which exceed 30 MWs) located in the Bonyic affluent that flows into the Rio Teribe that as well flows into the Rio Changuinola around El Silencio population next to Changuinola. [2]

The Bonyic Project is located in the Bonyic affluent within the protected area of the Palo Seco Protective Forest and buffer zone to the International Friendship Park (PILA), at the moment in virtual danger as World- Natural Heritage Site by UNESCO due to the continuous degradation by the hydroelectric projects in its river basins of Rio Changuinola and Rio Teribe in these protected areas. The effect on the fauna and flora has not ceased to be felt with massive deaths of fish, shrimps and other aquatic fauna by the serious contamination, with oils,

When ASAMCHI affirmed “*the construction of unjustified projects taking place... without the proper consultations and popular participation and true social scientific analysis*”, the public consultation carried out on 2005 while the EIA was developing, it was validated by ANAM by means of its EIA authorization, and for the local stakeholder consultation performed by HET in 2010, ICONTEC validated this process (see section 3.9 on this report).

Regarding the environmental considerations argued by ASAMCHI in its comment, and as it was stated above in this validation report, ICONTEC had the opportunity to review the EIA approved by ANAM /7/, /10/, the Concession awarded from ANAM to HET for the administration of an area within the Bosque Protector de Palo Seco /18/, the Social and Environmental Management Plan issued by HET/39/, which describes the Environmental measures to mitigate the project impact. It is worth drawing attention to the fact that during the on-site visit carried out at the project site, the audit team has the opportunity to observe one of the periodic visits performed by ANAM personnel in order to assess the compliance of the commitments stated in the EIA. By means of interviews and documental review, ICONTEC confirmed that HET has demonstrated a concern with complying with the Panamanian environmental regulatory framework /21/.

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diesel engine and also components of the concrete roller dams, called fly ash (employed to lend consistency to the concrete and believed to contain elevated amounts of toxic components such as lead, cadmium and mercury from the leftovers of burnt coal), as also elevated sedimentation levels that indeed lodge in the res gills and respiratory systems of these delicate species. [3] [4]

"As this document indicates the project tries to exclusively generate electrical energy for exportation. Although the PDD indicates that the outlet of such project will be connected to national network, the national network is as well connected to the SIEPAC network at Mesoamerican level and soon will include Colombia. It is not possible then to say that this energy is to satisfy the "increasing national demand".

We also disagree with the deceptive approach that HET uses to justify their project of which the number of thermo electrical projects is greater that hydroelectric ones. Perhaps the most important data that they left without mentioning was that at the moment the percentage of generation originating from the thermo only reaches hardly 40% whereas the hydro exceeds 60%. Also they excluded the fact that the national needs will be satisfied with the present facilities during the next 15 years and that at the moment Panama produces more than 150% of its power consumption. That is it enjoys a power surplus of more of 50%. [5]

Another fact that the HET ceased to mention in its PDD was that the Bonyic project was designed exclusively to export its production to Costa Rica and the Central American Market. Since during the period in which it was designed the integration of Bocas del Toro with the national grid did not yet exist. It was not until recently, in the Torrijos administration when the national government assumed the interconnection with Costa Rica to alleviate mostly the local energy demand of the area of Changuinola and Admiral in Bocas del Toro and the constant blackouts and rationing by the Chiquita Brands. (The areas of the Island Colon and the area of Chiriquí Grande already are supplied by Union Fenosa and are integrated to the national energy grid. Chiquita Brands operated a thermo electrical plant powered by diesel engine to supply the local market plus its own facilities for processing of banana. Even at the present this HET objective for export remains in effect due to the situation of surplus in national energy production.

Regarding to the concerns expressed by ACC about with the deceptive approach that HET uses to justify their project of which the number of thermo electrical projects is greater that hydroelectric ones, this issue was validated by ICONTEC in accordance with the common practice analysis stated by UNFCCC in its tools/55/ and guidelines.

The BHP complies not only with the applied baseline and monitoring methodology/53/ but also is align with the Panamanian electrical regulatory framework /38/, /29/, /28/, /27/, /23/

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Perhaps during these accomplishments, consultations with the Naso ethnic group were not truly taken into account perhaps the only ethnic group in the country that lacks clearly defined territory by means of a region (or comarca). [6] In this case the company has preferred to deal directly with the ousted Naso king Tito Santana, disavowed by the Naso nation but still recognized by national government. We believe that the government of Panama is not prepared by means of its legislation either to respect the indigenous rights particularly of the Naso for the simple reason of having denied continuously through different administrations to recognize article 169 of the International Labor Convention. [7]

The objections to this project are placed more on social, environmental, ecological and economic aspects. We will not discuss the technical aspects of generation since these details belong to the civil engineers, despite the fact, which they could also have their own deficiencies and inconsistencies; but rather the human and social aspects which at heart ensure the success or failure of all work or project. If the Human and Social component we exclude from our analysis we will have failure and a project that does not respond to the real needs of the community and more if they are indigenous communities that have not been taken into account, their identity and will, nor their dignity, with this we are violating all the agreements on Human Rights and the Conventions on the Rights of Indigenous People [8].

In our analysis on the PDD we have detected numerous deficiencies and inconsistencies that we will detail in the following:

“page 2

The project activity reduces greenhouse gas emissions that would have occurred in the absence of the project by avoiding electricity generation by fossil fuel sources. The primary objective of the project is to help meet Panama's rising demand for energy due to economic growth and to improve the supply of electricity, while contributing to social and economic sustainability by creating new jobs, enhancing the infrastructure and increasing the share of renewable energy in the total electricity supply in Panama. P2

The participants of the project recognize that this project activity is helping Panama to fulfill its goals of promoting sustainable

As ICONTEC verified in the onsite visit by means of interviews, the Naso community has internal leadership problems since long ago, however the Panamanian Government recognize the Naso King Tito Santana as the leader of his community, based on that, ICONTEC carried out the interview not only with the King Tito Santana but other Naso community members, and the concerns argued by ASAMCHI in its comment was shared by ICONTEC with the interviewees. The interviewees said the consultation with the community was carried out in a proper way, in addition they recognized a permanent communication channel between HET and Naso Community.

About the environmental, social, ecological and economic concerns expressed by ASAMCHI in its comment, ICONTEC performed interviews with the Naso people and Panamanian Environmental Authorities in order to assess the information described, and the Naso King (Tito Santana) refused the appreciations described in the ACC's comment, in addition, in the interview carried out with ANAM personnel and by the documental review performed by ICONTEC/7/,/10/, /18/ y /39/, it was clear that HET has demonstrated not only the complying with the Panamanian environmental regulatory framework but also its social commitment with the Naso-Teribe community.

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development. Specifically, the project is in line with host-country specific CDM requirements due to the following reasons:

- It contributes to local environmental sustainability, since it decreases the dependence on fossil fuels, thus improving air quality.”

[But we ask at what social and environmental costs? Mostly large tracts of Bosque Protector Palo Seco forest which by itself have an incredible capacity of CO2 intake have been removed to make way for this project which will disrupt the natural corridor numerous aquatic life forms which we will not detail specifically due to their great number and brevity of this comment form but will refer to the abundant biological works by various experts in the field. [9] Regarding employment to the Naso: Technical Employment and skilled labor is reserved exclusively for the foreigners or national workers from other areas of the country and not from within the indigenous area, perhaps the lowest order of employment is destined to a few non skilled Naso laborers which when the project is terminated they will also be terminated and left without sustenance.]

“page 3

- It contributes towards better working conditions and increases employment opportunities in the area where the project is located.”

[So far the conditions of the native indigenous Naso inhabitants have turned to the worst. Conditions have deteriorated. The Naso community which has objected from the very beginning to this project has been object of harassment, evictions, violence and intimidation from the government forces as well and even from so called armed *paramilitary* units at service of the company. Complaints of these incidents to the authorities have been met with indifference and even the Naso complainants themselves have become the subject of government investigation. See [10]]

“page 3

- It contributes towards better revenue distribution since it contributes to regional/local economic development.”

[We certainly wonder what kind of better distribution such project can have on

As ICONTEC described below, this point was assessed by means of documental review of the EIA approved by ANAM /7/, /10/, the Concession awarded from ANAM to HET for the administration of an area within the Bosque Protector de Palo Seco /18/, the Social and Environmental Management Plan issued by HET/39/, which describes the Environmental measures to mitigate the project impact.

In the interviews carried out by ICONTEC with the Naso community, they refused the comment expressed by ASAMCHI in its comment and highlight the relevance that exists a permanent communication channel in the relationship between Naso community and HET

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the Naso people themselves where much of their livelihood and access to their sacred and ceremonial sites, their villages, their cultivation plots, their medicinal plants and tourist areas have been impeded by the armed project personnel backed up by the government forces. They live in a virtual state of siege.]

“- It contributes to regional integration and connection with other sectors. The project facilitates the increase of small hydroelectricity as a generating source in the region and therefore may encourage other similar companies that want to replicate this experience.”

[In our appreciation there is certainly nothing “small” in these projects. With current prices in the electrical “spot” market the kw/hr generated by hydroelectric means may command prices slightly lower than those generated by thermal electric plants; with the exception that their “fuel supply” is free. If we wish to break down the costs and revenues in water power we shall proceed to the following example:

“As an example; we in Panama at the moment at present the generation of kw/h produced by water is paid as if it took place with a diesel engine, or another fossil fuel derivative. For example, (1 MW produces, 1,000kw/h, by 24 hours to the day would be 24.000 kw/h, for 365 days year 8.760.000 kw/h, an average value of 0.12 cents per kw/h, \$1.051.200 for each MW produced); we are speaking of a million dollar business per year, and that indifferently of the high costs that could represent the installation of their projects, this rate of return of the investment, would be obtained in a short term. And they will be in the business for an indefinite time generating wealth at the expense of the sacrifice of the rivers and the permanent impacts at the social and environmental levels for the present and future generations”] [11]

“P8
A.4.5. Public funding of the project activity:
No funds from public national or international sources are involved in any aspect of the proposed CDM project activity.”*

*[Its seems difficult to believe that Empresas Publicas de Medellin EEPPM does

ICONTEC considered that the assessment carried out by the Panamanian DNA (ANAM) regarding the sustainable development of the project is dependable.

The BHP complies not only with the applied baseline and monitoring methodology/53/ but also is align with the Panamanian electrical regulatory framework /38/, /29/, /28/, /27/, /23/

It is worth to drawn attention that HET, the project's PP, is a non-publi

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not count with public funding being in itself a Colombian public entity and institution of public works on the national and international scale of which Hidroecológica del Teribe is its subsidiary]

P13

“Prior consideration of the CDM

According to the guideline for completing the PDD, if the starting date of the project activity is before the date of validation, it is necessary to provide evidence that the incentive from the CDM was seriously considered in the decision to proceed with the project activity. In such cases project proponents shall provide an implementation timeline of the proposed CDM project activity.

Since the starting date of Bonyic hydroelectric project was before project validation, the following paragraph describes the implementation timeline and the evidence that the incentive for the CDM was seriously considered in the decision to proceed with the project activity.

As per CDM rules, the starting date of the proposed project activity is 28th August 2007, corresponding to the date on which an agreement was signed with Jera for the construction of the access road to the power station.

Notwithstanding the aforementioned, a number of problems arose subsequent to the signing of this agreement with Jera, leading to its termination a year later.”

[It is quite evident that PH Bonyic was planned well before validation date as the original Environmental Impact Assessment study EIA indicates dated back in 1998 and was revalidated by PLANETA Panamá Consultores, S.A. in 2007 (which still is considered deficient by the specialists, but that is another case). This prior date is far behind the date that the contracting company Jera had to make the road perhaps by almost a decade. Therefore such argument lacks further validity. Precisely since it was such a good business “as usual” venture was this project initiated in the first place. Once the option for Carbon Credits or CERs as they are called today became an option the company rushed in to cash in this additional bonus and has used it as a bargaining chip with the Naso people, such as the modern “trinkets to gold” scheme.] [12]

organization in Panama (the project’s host party), and Empresas Publicas de Medellin EEPPM is the principal shareholder of the HET society. Empresas Publicas de Medellin EEPPM is a public entity in Colombia, Colombia is not a party in the project

The CDM prior consideration was assessed by ICONTEC in accordance with the UNFCCC’s standards/54/ and guidelines /57/, as it was stated in clause 3.5.1 on this report.

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“Following a series of attempts to obtain financing, Empresas Publicas de Medellin (EEPPM) decided to finance the project themselves, taking into consideration primarily CDM benefits. This decision, together with the removal of several other barriers, allowed project development to continue.”

[This simply demonstrates that the mother company Empresas Publicas de Medellin which owns most of HET's stocks has ample liquidity since it is a Colombian public governmental entity which has a number of major works within Colombia and elsewhere, as their own document attests.]

“page 14

- The compensation and benefit agreement signed with the local indigenous Naso Teribe tribe for the construction of the Bonyic hydroelectric project, whereby it was agreed that the CDM benefits would be shared with this community (December 2004).”

[This only proves our point further that the company preferred to negotiate directly with the ousted Tito Santana King and took an active role in creating a rift between sectors of the Naso community, thereby creating social unrest, rather than trying to achieve a true consensus with all parts.] [13]

“page 15

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

Sub-step 1a. Define alternatives to the project activity:
The realistic and credible alternatives identified, available to the project participants that provide outputs comparable with the proposed CDM project activity, are the following:

Alternative 1: The proposed project activity not undertaken as a CDM project activity.

Alternative 2: Continuation of the current trends of the Panamanian interconnected grid

This ASAMCHI argument is beyond this validation scope

As ICONTEC verify by means of documental review of Compensation and benefit agreement between Hidroecologica del Teribe company and Naso people for the construction of Bonyic hydroelectricpower plant /4/, it was signed by HET CEO and King Tito Santata as the recognized Naso Leader by the Panamanian Government.

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Alternative 1: involves a 30 MW hydro power plant not undertaken as a CDM project. As explained below, this alternative faces a prohibitive barrier that prevents its implementation.”

[It seems difficult to believe that EEPMP had CER's in mind all along. We would have to surmount to the 1990's when there was preparations for such a project. It certainly remains hard to assess that EEPMP had envisioned CER's during this period prior to the Carbon Credit Market. Therefore it should be safe to assume that the promoter had assessed the economic viability of the project.]

“Alternative 2: The Panamanian interconnected electricity system needs to increase its power generation capacity to respond to increasing demand. Given current market conditions and regulations governing the electricity system, it is both easier and faster to install a thermal power plant than a hydro power plant in Panama. Therefore, Alternative 2 would primarily contemplate the installation of new thermal power plants in the Panamanian electricity system in order to supply the country's ever-increasing electricity demand (this fact is already contemplated in the approximate estimation given by the build margin calculation of baseline emissions). The alternative for the project participant would be to look for more attractive investment opportunities elsewhere and not invest in the proposed project.”

[This statement can be further removed from the truth since the main objective of the construction of this project was not to provide a single kw. to the local national grid (since such was nonexistent in the area in last decade) but to export its entire production directly to the Costa Rican market. Even with the recent interconnection with the Costa Rican grid through Guabito and the announced proposed interconnection with the national grid, the energy balance in this country (Panama) remains favorable with a 50% plus superavit. Therefore this purpose to export this energy seems to remain the same.]

“page 16

Sub-step 3a. Identify barriers that would prevent the implementation

As it was stated above, The CDM prior consideration was assessed by ICONTEC in accordance with the UNFCCC's standards/54/ and guidelines /57/, as it was stated in clause 3.5.1 on this report.

The BHP complies not only with the applied baseline and monitoring methodology/53/ but also is align with the Panamanian electrical regulatory framework /38/, /29/, /28/, /27/, /23/

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of the proposed project activity:

The main barriers identified for the implementation of the “Bonyic Hydroelectric Project” are:

Barrier due to project location

A significant barrier for project implementation has been the project location in a sensitive social and biophysical environment, which has led to major obstacles in obtaining project financing and, consequently serious delays in project construction and implementation.”

[The same underlying reasons of social instability within the Naso community created precisely by the promoting company to obtain the approval from the ousted Naso leadership were why the IADB withdrew its financing offer in 2004. These same reasons persist to this present day. In fact they have become more acute. Thus these same reasons are why the CDM should not consider granting of the CER's.] [14] [15]

“The project had duly obtained the water concession and the Panamanian Environmental Authority's construction and operation permission. The specific location of the project does not include areas apt for human settlement, and therefore does not negatively affect existing activities within its direct area of influence nor cause any population displacements.”

[The fact that the projects location has involved encroachment on ancestral and ceremonial Naso land in itself contradicts the fact that it does not include areas apt for human settlement. The fact that the Naso people (with the exception of a few deposed Naso leaders the rest have vigorously opposed this project. Therefore these opponents who are not in favor of this project have been systematically harassed, mistreated, abused, displaced by company officials and authorities and jailed. The Naso are living in a virtual “state of siege” within their homeland.]

“An environmental information/consultation/consensus process with

As ICONTEC verified by mean of interviews carried out with Naso community, the Naso community has internal leadership problems since long ago, HET has established its relationship with Naso Community through the recognized leader of the Naso Community by the Panamanian Government, the king Tito Santana.

ICONTEC's reviewed the letter sent by IDB /5/ and it is worth to clarify, in this letter IDB precised the reasons for the reluctance to proceed with the environmental due diligence, this reason was based on the conflict between the feuding parties, which disturbs socio-political climate of the project, the reasons are not related with the project but the social-political scenario.

ICONTEC performed interviews with the Naso people and Panamanian Environmental Authorities in order to assess the information described, and the Naso King (Toto Santana) refused the appreciations described in the ASAMCHI's comment, in addition, in the interview carried out with ANAM personnel and by the documental review performed by ICONTEC/7/,/10/, /18/ y /39/, it was clear that HET has demonstrated not only the complying with the Panamanian environmental regulatory framework but also its social commitment with the Naso-Teribe community.

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the indigenous community, in compliance with the Panamanian legislation. Maximum attention was paid throughout to ensure respect for the indigenous community and the ecosystem, to which effect support was sought and received from the Environmental National Authority (ANAM) as well as from Fundación Dobbo Yala, a prestigious ONG working in favour of the rights of indigenous populations.

However, at the time of the consultation process the indigenous people living in the surrounding areas, belonging to the Naso Teribe community, were in the midst of a prolonged leadership crisis, caused by historical and political factors, as well as by family feuds and personal interests. This resulted in problems and delays in carrying out the stakeholder process, and in reaching an agreement between the project participant and the Naso Teribe people with respect to the project-derived benefits that would be acceptable to the community. This became a major obstacle in project development, since it inevitably affected the process of obtaining financing for the project and proceeding with its implementation. After extensive negotiations, an agreement was reached with Nasos, a key clause of which was that 25% of CDM-derived income shall be transferred to the indigenous community. In addition, HDT would

page 17
provide funds for local community training and employment opportunities, as well as academic scholarships.”

[What HET forgets to mention is their own hand in these events. Instead of negotiating between the parts trying to achieve a consensus, they have become the participants in the process. They tend to exclude the fact that the “the indigenous people living in the surrounding areas, belonging to the Naso Teribe community, were in the midst of a prolonged leadership crisis”, but they were in a prolonged leadership crisis promoted by HET in an attempt to influence the leadership to their favor and by trying to buy off their leadership with the traditional “trinkets for gold” tactic in this case the offer of 25% of the CER proceeds. It remains to be seen how the ousted leadership will make use of such resources]

The internal leadership problems inside the Naso Community is not related with the project development, since these problems came from long time ago, ICONTEC verified this statement by means of the interviews carried out in the onsite visit and by mean of a documental review of Suspension of the Letter of mandate with the IDB/5/.

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"In addition, the special requirements of the Bosque Protector Palo Seco (BPPS) Protected Area (where the project is located), constituted a further barrier to project implantation. Thus, as per DINEORA's resolution IA-100-2005 (November 2005), before project construction could start Hidroecológica del Teribe had to sign a land management concession agreement with ANAM, which included the obligation

to pay ANAM a yearly canon throughout the duration of the concession. CDM-derived income will serve to reduce the impact of this barrier.

Thus, implementation of the proposed CDM project activity best provides for the needs of local development and, at the same time, generates the appropriate resources for the management of the protected area. At the same time, CDM revenues will contribute to overcome the barriers raised by the project's sensitive location."

[We ask money for environment degradation? We also ask why hasn't this company looked upon other more feasible locations within this same country which happen to be many as the great number of 90 hydroelectric projects (perhaps excessive is the proper word for it) underway in this country evidence. Then why have EPM and HET chosen this particular niche in the mountains of Bocas del Toro, in the heartland of the Naso nation and in the midst of an Endangered World Natural Heritage Site? Perhaps it is because of their near proximity to their prime client the Costa Rican Energy Market? Perhaps is it in fact "business as usual"?]

Investment barrier

A further significant barrier that the project developer had to overcome was access to long-term debt. This process was strongly affected by the aforementioned difficulties. In 2004 the Inter-American Development Bank (IDB) signed a mandate letter, with a view to initiating actions leading to project finance structuring. Prior to proceeding with the environmental impact due diligence, the IDB required further information on the Naso community leadership crisis.

This ASAMCHI argument is beyond this validation scope

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To this effect, an independent consultant was hired by IDB and HDT to investigate and analyze this issue. In his report, the consultant described the historical and political factors, as well as by family feuds and personal interests that gave rise to the crisis. In addition, he pointed out that until and unless the underlying leadership conflict were solved, social and political conditions might not be conducive to the normal development of the project. On the basis of this report, and taking into account the potential complications these types of social issues might have on a multilateral financing institution such as the IDB, the IDB decided that it would have to withdraw its offer to provide financing for the project, and proceeded to cancel its mandate letter.

[The same political, and social unrest motives within the Naso indigenous community that forced IADB to withdraw their initial offer for financing of the project are the same identical reasons why CDM should not even consider the granting of CERS since the underlying problems still exist and have not been resolved and have even become more acute due to the present ei: the govt's total disrespect of indigenous rights and racist attitudes see the latest bloody events in July 2010 in Bocas del Toro province, where the govt. has considered the Indian population as "drunk and ignorant" see indigenous rights and HREV report.] [16]

In 2006 Santander Bank won the public tender to provide support in analyzing the different financing sources available in the market and contacting these sources. Following extensive research, it was decided that the best offer was that presented by Banco Centroamericano de Integración Económica

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(CABEI –Central American Bank of Economic Integration) as a lender of record, together with Corporación Interamericana para el Financiamiento de Infraestructura (CIFI –Inter American Corporation for Infrastructure Financing) and Santander Bank as lead arrangers. In December 2007 CIFI approved the financing, which was followed by CABEI's approval in March 2008. In November 2008 CIFI-CABEI Banks asked EEPPM (Empresas Públicas de Medellín), as principal shareholder of the HDT society, to provide a real guaranty for the

ICONTEC's reviewed the Suspension of the Letter of mandate with the IDB /5/ and it is worth to clarify, in this letter IDB precised the reasons for the reluctance to proceed with the environmental due diligence and the project financing, these reasons were based on the conflict between the feuding parties, which disturbs socio-political climate of the project, the reasons are not related with the project but the social-political scenario.

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total amount of the loan. EEPM was unable to provide this guaranty, since as a public sector entity, it has strict statutory limitations regarding the guaranties it can furnish. These limitations constituted a significant obstacle in negotiations with potential lenders. In view of the major difficulties confronted in trying to secure external financing for the project, and taking into account that the delays this search was entailing were severely handicapping project development, EEPPM decided to provide themselves the initial funding.

[This only corroborates the fact that EEPPM through its subsidiary HET is in fact a governmental public sector entity and not a private player]

EEPPM is known for its strong commitment to Corporate Social and Environmental Responsibility, and has played a pioneering role in promoting climate change awareness and CDM projects in Latin America.

In this regard, it has a long history in CDM project activities, including its active role in Jepirachi Wind Power Project (registered in April 2006), and La Vuelta and La Herradura Project (registered in January 2007). In addition, EEPPM has established a Climate Change work group whose specific tasks include the identification of potential CDM projects, CDM project development and implementation and CDM project portfolio management, as well as supporting entities related with the National Strategy on Climate Change, and carrying out research in regards to climate change mitigation, adaptation, technology and financing.

CDM considerations played an important part in EEPPM's decision to finance the Bonyic project

[The fact that EEPPM is actively involved in the alternate energy sources sector such as wind or eolic generation confirms that within the company's resources there exist other additional less controversial options it could choose from. In Panama there has been promotion of the wind generating option, of which there are several wind generating plants such as the Santa Fe in Veraguas province which may apply (if they have not already) for the granting of CER's]

As ICONTEC mentioned above, HET, the project's PP, is a non-public organization in Panama (the project's host party), and Empresas Publicas de Medellin EEPPM is the principal shareholder of the HET society. Empresas Publicas de Medellin EEPPM is a public entity in Colombia, Colombia is not a party in the project

This ASAMCHI argument is beyond this validation scope

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Foremost among these considerations were that: (1) the project was participating in the Panamanian CDM portfolio and (2) the sharing of the proceeds of the sale of the CERs with the indigenous community potentiated the benefits the indigenous population would derive from the CDM project, in line with the stated corporate mission.

[We tend to disagree with the last #2 statement for all the the history of turmoil and identity crisis bestowed on the Naso people by the company in complicity with governing official and all the reasons previously described in this paper]

In conclusion, the Bonyic power plant cannot be considered common practice since there is no hydroelectric power plant with similar conditions in Panama. The common practice is the installation and the operation of large power plants, such as thermal power plants and large hydroelectric plants, and refurbishment or upgrading of existing power plants; and therefore Bonyic does not fit in the business-as usual scenario. It should be noted that since the 1970s the only two new hydropower plants installed in Panama pursued the CDM route as from 2002, highlighting the importance of CDM in establishing their viability.

Considering all the statements made above, it can be concluded that the project activity is not a common practice.

Conclusions

Summarizing, Bonyic Hydroelectric Project cannot be considered as a common practice, is not a business-as-usual type scenario and faces several barriers that prevent its implementation. Therefore, it is clear that, in the absence of the incentive created by the CDM; this project would not be the most attractive scenario.

The registration of the proposed project activity will prove beneficial to the indigenous community, and may have a strong impact in paving the way for similar projects to be implemented in Panama. Considering all the above assessments, it is clear that the proposed project activity satisfies all the additionality requirements and therefore, the proposed project activity is additional.

OUR CONCLUSIONS

As ICONTEC verify by means of documental review of Compensation and benefit agreement between Hidroecologica del Teribe company and Naso people for the construction of Bonyic hydroelectricpower plant /4/, it was signed by HET CEO and King Tito Santata as the recognized Naso Leader by the Panamanian Government.

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[It is not to be redundant but we cannot consider the Bonyic power PLANT a “one of its kind” project since there are a majority (approximately 90 projects) of these similarly built “run of river” hydroelectric type plants, under construction or proposed (and not that we are in favor of these either) but the fact that EEPMP has chosen so long ago, aside of all supposedly more favorable places or locations only serves to confirm that this was the ideal location or “niche in the mountains’ for its plant and business prospects with close proximity to the Costa Rican border and its most lucrative energy market and for conducting its “business as usual” activities and cannot be considered as an additional activity.

The common practice analysis was assessed by ICONTEC in accordance with the UNFCCC’s standards/54/ and tools /55/, as it was stated in clause 3.5.2 d) on this report.

In addition as it was stated above, BHP complies not only with the applied baseline and monitoring methodology/53/ but also is align with the Panamanian electrical regulatory framework /38/, /29/, /28/, /27/, /23/

Submitted by Oscar Reyes

The Bonyic hydroelectric project is non-additional and has raised a number of major environmental and social concerns. Bonyic should not be validated as a CDM project.

The project is presented as additional on the grounds that it is not a “continuation of the current trends of the Panamanian interconnected grid” (p.15, PDD) - specifically, that a thermal power plant would be a more likely alternative given current conditions. In reality, hydropower has long supplied the majority of Panama’s electricity, contributing over half of installed capacity (56% based on 2004 figures). The Autoridad Nacional de los Servicios Públicos (Asep) has predicted that 31 hydroelectric projects (totalling 1,047 MW) will be added by 2013. 17 of these projects are already under construction, with the remainder at the final design stage. Hydropower development is the norm, and Bonyic is non-additional.

However, the Bonyic project claims that “A significant barrier for project implementation has been the project location in a sensitive social and biophysical environment, which has led to major obstacles in obtaining project financing and, consequently, serious delays in project construction and implementation.” (p.16). By this twisted logic, the risk of environmental damage is advanced as a reason for granting CDM project approval.

The reservoir is located within the Palo Seco Protected Forest, close to the border of La Amistad International Park, a UNESCO World Heritage Site. The

The common practice analysis was assessed by ICONTEC in accordance with the UNFCCC’s standards/54/ and tools /55/, as it was stated in clause 3.5.2 d) on this report. Besides that, ICONTEC reviewed the Expansion Plan for Panamanian Electrical Grid /38/, this document explained the state of art of the grid.

In addition as it was stated above, BHP complies not only with the applied baseline and monitoring methodology/53/ but also is align with the Panamanian electrical regulatory framework /38/, /29/, /28/, /27/, /23/

As it was stated above in this validation report, ICONTEC had the opportunity to review the EIA approved by ANAM /7/, /10/, the

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project will affect a wide array of bird life (including the Harpy eagle), jaguars and many other rare species. The World Heritage Committee of UNESCO has recently expressed “extreme concern” about the lack of appropriate measures of mitigation to prevent the possible extirpation of up to 16 species of migratory fish and shrimp in the heritage site, in the event that the dam is built. To claim these environmental concerns as a barrier to the building of the dam makes a mockery of any claims that the project offers a form of “clean development.”

Despite the claims made in the PDD, there are serious social concerns too. The activities of Hidroecológica del Teribe, S.A. (HET), the holding company established to carry out the project, have been directly responsible for the collapse of the structure of government locally – rewarding Naso leaders favorable to the company, and sewing divisions between them and those opposed to the project. In other words, the promise of a proportion of the credits (25%) has been devised as a divide and rule tactic.

This approach on the part of the project developers exploits the vulnerability of Naso's population, with the government of Panama not recognising the Naso as an autonomous territory. Although the presence of Naso in the area has been documented for centuries, there is currently no legal title to acknowledge the Naso's property rights on their territory, including the watershed encompassed by the project. For this reason, the people of Naso have recently presented a petition to the Inter-American Commission on Human Rights, in which the construction of Bonyic was explicitly mentioned as threatening the cultural survival of the Naso. It has also been documented that the “information/consultation/consensus process with the indigenous community” (PDD; p.16) fell a long way short of the standard of free, prior and informed consent.

Submitted by International Rivers

Concession awarded from ANAM to HET for the administration of an area within the Bosque Protector de Palo Seco /18/, the Social and Environmental Management Plan issued by HET/39/, which describes the Environmental measures to mitigate the project impact. It is worth drawing attention to the fact that during the on-site visit carried out at the project site, the audit team has the opportunity to observe one of the periodic visits performed by ANAM personnel in order to assess the compliance of the commitments stated in the EIA. By means of interviews and documental review, ICONTEC confirmed that HET has demonstrated a concern with complying with the Panamanian environmental regulatory framework /21/.

As ICONTEC verify by means of documental review of Compensation and benefit agreement between Hidroecologica del Teribe company and Naso people for the construction of Bonyic hydroelectric power plant /4/, it was signed by HET CEO and King Tito Santata as the recognized Naso Leader by the Panamanian Government.

The internal leadership problems inside the Naso Community is not related with the project development, since these problems came from long time ago, ICONTEC verified this statement by means of the interviews carried out in the onsite visit and by mean of a documental review of Suspension of the Letter of mandate with the IDB/5/.

ICONTEC performed interviews with the Naso people and Panamanian Environmental Authorities in order to assess the information described, and the Naso King (Tito Santana) refused the appreciations described in Mr. Oscar Reyes' comment, in addition, in the interview carried out with ANAM personnel and by the documental review performed by ICONTEC/7/,/10/, /18/ y /39/, it was clear that HET has demonstrated a not only the complying with the Panamanian environmental regulatory framework but also its social commitment with the Naso-Teribe community.

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The Bonyic Hydroelectric Project should not be eligible to receive CDM credits because the project is non-additional, has numerous adverse environmental and social impacts, and did not properly inform project-affected people.

Construction already began in October 2007, prior to the proposed project validation date, so it cannot be considered additional. If the project really depended on the sale of carbon credits to be viable, then the project would not be able to start until validation of the project by the CDM Executive Board.

The PDD also falsely states that small hydropower is not common practice in Panama. There are 17 small hydropower plants, the majority of them having an installed capacity of less than 20 MW (see <http://burica.wordpress.com/2010/05/25/63-proyectos-hidroelectricos-en-la-provinciade-chiriqui/>).

The project site is located within the Palo Seco protected forest reserve. The PDD identifies this as a “project barrier”. This is laughable – a protected forest reserve should be void of a largescale project such as a hydropower plant. The project site borders on the La Amistad International Park, a UNESCO World Heritage Site. The PDD also incorrectly states that the project is in area that is unfit for human habitation – the Naso indigenous people live within the reserve and will be adversely affected.

In fact, in 2003, the President of the Naso Council, the highest order for Naso peoples, refused to sign the “Agreement in Principles” proposed by the project developer. Instead the project developer had the King sign, who doesn't have authority. Local opposition prevented the initial construction of an access road.

The Naso organized a special council to discuss the project. The King, who signed the agreement with the project developer, HET was deposed. During the vote by the Naso people about the project, the project developer interfered by ferrying hundreds of non-Naso people to participate in the vote and oversaw registration. This resulted in the approval of the project. The fact that the project developer engaged in illegal activity to gain approval by the indigenous community should be enough reason to not grant the project CDM approval.

A new EIA by the Panamanian environmental authority in November 2005

The CDM prior consideration was assessed by ICONTEC in accordance with the UNFCCC's standards/54/ and guidelines /57/, as it was stated in clause 3.5.1 on this report.

The common practice analysis was assessed by ICONTEC in accordance with the UNFCCC's standards/54/ and tools /55/, as it was stated in clause 3.5.2 d) on this report.

ICONTEC performed interviews with the Naso people and Panamanian Environmental Authorities in order to assess the information described, and the Naso King (Tito Santana) refused the appreciations described in the International Rivers' comment, in addition, in the interview carried out with ANAM personnel and by the documental review performed by ICONTEC/7/,/10/, /18/ y /39/, it was clear that HET has demonstrated not only the complying with the Panamanian environmental regulatory framework but also its social commitment with the Naso-Teribe community.

As ICONTEC verify by means of documental review of Compensation and benefit agreement between Hidroecologica del Teribe company and Naso people for the construction of Bonyic hydroelectricpower plant /4/, it was signed by HET CEO and King Tito Santata as the recognized Naso Leader by the Panamanian Government.

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(Planeta Panama Consultores, S.A. 2005. “Actualizacion del Estudio de Impacto Ambiental – Proyecto Hidroelectric de Bonyic,” p. V-177) acknowledged that the Naso people had not received adequate information to make an informed decision about the hydropower plant. It went on to state that

“[W]e can say without fear of being wrong, that until now the information available about the project has been insufficient and unclear. There are many distortions concerning the impacts the project will have on the environment and natural resources; the restrictions that the project will or will not imply; ways and means to protect Naso culture and traditions; the levels of participation in decision-making and other advantages that would accompany the proposed investments in social services and projects.”

Based on the EIA, the Inter-American Development Bank decided to pull out of the project. The PDD lists this as a barrier to the project. In fact, this should be a red flag that the project should not go forward. If a development bank withdraws funding from a project, it is clear that the project is problematic.

Since construction began in October 2007, there have been a number of human rights violations of the Naso people. This includes the detainment of 14 Naso peoples, local police officers working as armed security guards for the project developer during their off-hours, sexual assaults of Naso women and a minor, and the environmental ministry granting the project developer the right to administer land that belongs to the Naso people.

Furthermore, the project developer began construction along the river in February 2009 illegally. Only in March 2010 did the project developer receive clearance from the Panamanian government to begin construction.

In response to the numerous problems with this project, the Naso people submitted a petition to the Inter-American Commission on Human Rights to protest the Bonyic Hydroelectric Project and the trampling of their rights by the Panamanian government and the project developer.

The public consultation carried out on 2005 while the EIA was under development, it was validated by ANAM by means of its EIA authorization, and for the local stakeholder consultation performed by HET in 2010, ICONTEC validated this process (see section 3.9 on this report).

ICONTEC's reviewed the letter sent by IDB /5/ and it is worth to clarify, in this letter IDB precised the reasons for the reluctance to proceed with the environmental due diligence, this reason was based on the conflict between the feuding parties, which disturbs socio-political climate of the project, the reasons are not related with the project but the social-political scenario.

ICONTEC considered that the assessment carried out by the Panamanian DNA (ANAM) regarding the sustainable development of the project is dependable.

In order to assess this comment, ICONTEC review the Contract for water concession /22/ and the Agreement of principles signed between HET and Naso people /23/, ICONTEC deemed that HET has executed the project inside the Panamanian legal framework.

In the interviews carried out by ICONTEC with the Naso community, they commented that the petition to the Inter-American Commission does not

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<p>Does the CDM really want to be associated with a project that results in the displacement of indigenous people, is located within a nature reserve and is non-additional?</p>	<p>count with the support of the majority of Naso Community, in fact, this is a prove of the leadership internal problems in the Naso Community, the interviewees highlighted the relevance of the permanent communication channel existing in the relationship between Naso community and HET.</p>
<p>Submitted by Asociación Ambientalista de Chiriquí (ASAMCHI)</p> <p>Location: Bonyic River, which is tributary of the Tjer-Di (Teribe River), homeland of the Naso Indigenous People in La Amistad Biosphere Reserve in the Province of Bocas del Toro, Panama. According to Naso cosmology, the Grandmother lives in the headwaters of the Tjer-Di, where the Naso ancestors were originally born.</p> <p>Installed Capacity: 31.3 MW.</p> <p>Dam Height: 37 m.</p> <p>Dam Length: 165 m.</p> <p>Owner: Hidroecologica del Teribe, S. A., a Panamanian private company, in which the majority of the stock is owned by the Colombian public utility, Empresas Publicas de Medellin (EPM).</p> <p>Financing: EPM has undertaken direct financing of the Project after the Inter-American Development Bank (IADB) refused to participate in this Project in 2005 (see attached letter to NRDC, Environmental Defense and ACD). According to the Project Design Document (PDD p. 17-18), Corporacion Interamericana para el Financiamiento de Infraestructura (CIFI) and Banco Centroamericano de Integracion Economica (BCIE) also declined participation in the Project due to financial considerations.</p> <p>Environmental Considerations</p>	<p>ICONTEC's reviewed the letter mentioned by FERN in its comment (IDB letter) /5/ and it is worth to clarify, in this letter IDB precised the reasons for the reluctance to proceed with the environmental due diligence, this reason was based on the conflict between the feuding parties, which disturbs socio-political climate of the project, the reasons are not related with the project but the social-political scenario.</p> <p>In addition, the CIFI and CABEL (BCIE) approved the project's financing /12/, however, they declined their participation in the Project due to CIFI-CABEL asked EPM (Empresas Públicas de Medellín), as principal shareholder of the HET society, to provide a real guaranty for the total amount of the loan. EPM was unable to provide this guaranty, since as a public sector entity in Colombia, it has strict statutory limitations regarding the guaranties it can furnish. These limitations constituted a significant obstacle in negotiations with potential lenders. Hence the CIFI-CABEL did not decline the financing by the project per se.</p>

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The reservoir is located within the Palo Seco Protected Forest and very near to the boundary of the La Amistad International Park, a UNESCO World Heritage Site shared with the Republic of Costa Rica. An earlier environmental impact assessment approved in 1998 was considered insufficient by the promoting company, EPM. A new, yet still deficient, environmental impact review was conducted in 2005, and based on its approval, a land concession of 1,250 Ha of the Palo Seco Protect Forest was granted to HET by the National Environmental Authority of Panama (ANAM) last year.

The Project will affect pristine forest areas, which are currently the habitat of Harpy Eagles, Tapirs and Jaguars, among many other rare and endangered species. The Darwin Initiative identified a number of endemic species in areas very near to the project site.²⁵ An appropriate biological survey of the areas affected by the dam has never been conducted, and long-term environmental impacts have never been seriously considered neither above nor below the dam site.

In response to this situation, the UNESCO World Heritage Committee has recently expressed “utmost concern” for the lack of adequate mitigation measures to prevent the extirpation of up to 16 species of migratory fish and shrimp in the La Amistad World Heritage Site as a result of the construction of Bonyic and several other hydroelectric projects in the buffer zone of this protected area.²⁶ Based on these considerations, the La Amistad International Park may be declared a World Heritage Site in Danger in 2011.

Unfortunately, no similar analysis has ever been conducted on the cumulative effects of the hydroelectric projects on the San San Wetland Ramsar Site located downstream from the Bonyic Dam.

Social Concerns

As opposed to what is stated in the PDD, HET is directly responsible for the collapse of the Naso governance structure by offering rewards to those leaders favorable to the Company and chastising those who have opposed to the development of the Project. In this regard, the promise of direct revenues from carbon credits (25%) has constituted a main incentive for the division of the traditional Naso leadership.²⁷

Regarding the environmental considerations argued by ASAMCHI in its comment, and as it was stated above in this validation report, ICONTEC had the opportunity to review the EIA approved by ANAM /7/, /10/, the Concession awarded from ANAM to HET for the administration of an area within the Bosque Protector de Palo Seco /18/, the Social and Environmental Management Plan issued by HET/39/, which describes the Environmental measures to mitigate the project impact. It is worth drawing attention to the fact that during the on-site visit carried out at the project site, the audit team has the opportunity to observe one of the periodic visits performed by ANAM personnel in order to assess the compliance of the commitments stated in the EIA. By means of interviews and documental review, ICONTEC confirmed that HET has demonstrated a concern with complying with the Panamanian environmental regulatory framework.

About social concerns expressed by ASAMCHI in its comment, ICONTEC performed interviews with the Naso people and Panamanian Environmental Authorities in order to assess the information described, and the Naso King (Tito Santana) refused the appreciations described in the ASAMCHI's comment, in addition, in the interview carried out with ANAM personnel and by the documental review performed by ICONTEC/7/,/10/, /18/ y /39/, it was clear that HET has demonstrated not

²⁵ <http://news.bbc.co.uk/2/hi/science/nature/7170205.stm>. For the complete Darwin Report see <http://darwin.defra.gov.uk/documents/15027/18436/15-027%20FR%20-%20edited.pdf>.

²⁶ See UNESCO 2010 Report on the State of Conservation of World Heritage Properties inscribed in the World Heritage List p. 87.

²⁷ See PDD p. 16-17.

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The Naso population is particularly vulnerable, because the Government of Panama has never recognized the Naso homeland as an autonomous territory (comarca). Although Naso presence in the area has been properly documented for centuries, **at present there is no legal document recognizing Naso property rights over their historical territory, including the Bonyic watershed.** For this reason, the Naso people have recently presented a petition to the Inter-American Human Rights Commission (IAHRC), in which the construction of the Bonyic Hydroelectric Project is explicitly considered as one of the main threats to Naso cultural survival.²⁸

Numbering around 3,500 people, the Naso are in serious danger of disappearing as a living culture. The arrival of the hydroelectric project, the division of the traditional leadership and the Government refusal to grant land rights have greatly demoralized the population and created a time bomb for a social explosion. Community compensation through carbon credits and the few temporary jobs created by the construction work will not solve the core issues affecting the Naso people, and instead may lead to further political division and cultural erosion (as recognized in the PDD p. 38 and 43-44).

Free, Prior and Informed Consent

The PDD misleadingly refers to two critical moments of community consultation in 2005 and 2010. In reality, the 2005 consultations leading to the approval of the Environmental Impact Assessment were forced upon the Naso population as documented in the document *The Tiger and the Turbine*.²⁹ These consultations do not even approximate to the standards of the UN Declaration on Indigenous Peoples or the World Commission on Dams.

The second consultation period is plainly false. As expressed in the PDD (p. 48), this “consultation” occurred at an exhibition on clean production in Panama City without the participation of any of the affected individuals, not even those in favor of the Project.

In the same manner, the report on stakeholder comments conveniently ignores the blockade organized by Naso protesters between October 2007 and November 2008 that effectively prevented the advance of the Project during many months. During this period, HET enjoyed the backing of the National

only the complying with the Panamanian environmental regulatory framework but also its social commitment with the Naso-Teribe community.

Regarding the local stakeholder consultation on 2005 while the EIA was under development, the ANAM validated this exercise by means of its EIA authorization, and for the local stakeholder consultation performed by HET in 2010, ICONTEC validated this process (see section 3.9 on this report).

²⁸ The other major threat to Naso survival is the ongoing eviction of the Naso communities of San San and San San Durui by the cattle company, Ganadera Bocas. The two fronts represented by the Ganadera Bocas and HET threaten to disintegrate the Naso communities and produce the cultural death of this ethnic group.

²⁹ <http://www.mcgill.ca/files/standd/JPalementPhDFinal.pdf>.

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Police to force the Project upon those Naso who were opposed to the construction of the dam. As a result of this abuse of power, more than ten Naso protesters were arbitrarily incarcerated at different moments between November 2007 and February 2008. Violent clashes also occurred between company employees and Naso protesters between May and September of 2009.

Although there are several judicial investigations about the events happening during this period, Panamanian tribunals have never prosecuted any of the people responsible for these abuses.

Economic Considerations (including the question of additionality)

Contrary to what is expressed in the PDD, the construction of the Bonyic hydroelectric project does not constitute any innovation, but instead represents common business practice in Panama. There are currently 17 hydroelectric projects under construction in Western Panama, most of which have a low installed capacity of less than 20 MW. Although many of these projects are currently requesting carbon credits, construction has continued unabated in most of these projects despite delays in validation for several of these projects. In the case of Bonyic, the continued investment of EPM during the last three years in spite of the lack of external funding and the continuous confrontation with the Naso population suggest that the Project is sufficiently profitable to justify direct investment by the Company even assuming such high risk levels. In a cost-benefit analysis developed in 2005 by the Conservation Strategy Fund (CSF), it was found that hydroelectric projects in the Teribe-Changuinola watershed enjoyed a positive net present value that justified appropriate community compensation even without considering any revenues from carbon credits.

Note to CDM Officials:

The attached document is a Fact Sheet circulated within concerned environmental organizations regarding the Bonyic Hydroelectric Project and the reasons why such project should not be eligible for Certificates of Emission Reductions or CERs. Therefore our environmental organization the **Asociación Ambientalista de Chiriquí** clearly identifies with these facts.

Therefore we wish to forward this document to the UNFCCC – CDM as **Comments on Bonyic Hydroelectric Project.**

For economic considerations described by FERN in its comment, these considerations were assessed by ICONTEC in section 3.5 on this report (Additionality)

5. VALIDATION OPINION

ICONTEC has performed a validation of the Bonyic Hydroelectric project in Panama. The validation was performed on the basis of UNFCCC criteria for the Clean Development Mechanism and host country criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

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

The project activity is being proposed as a unilateral project by Hidroecológica del Teribe, S.A. Panama has provided approval of voluntary participation and confirms that it meets all requirements to participate as CDM. The Panamanian DNA confirmed that the project helps in achieving sustainable development.

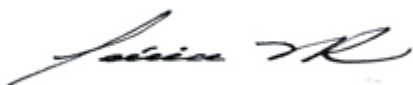
The project correctly applies the methodology: ACM0002 Consolidated baseline methodology for grid-connected electricity generation from renewable sources, version 12.3.0.

The project consists of a run of river hydroelectric plant with an installed capacity of 32.64 MW that uses the water from Quebrada Bonyic (Bonyic Ravine) in Panama. It is demonstrated that the project reduces anthropogenic emissions of GHG that would have occurred in the absence of the project. Emissions reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

Total emissions reductions from the project are estimated to be on average 629,710 tonnesCO₂e over the chosen first crediting period of 7 years. The emission reductions forecast has been checked and it is deemed likely that the stated amount is achieved because the underlying assumptions do not change.

In summary, it is ICONTEC's opinion that the Bonyic Hydroelectric project in Panama, as described in the PDD version 05, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology Consolidated baseline methodology for grid-connected electricity generation from renewable sources, version 12.3.0. ICONTEC thus requests the registration of the project as a CDM project activity.

Bogotá D.C., September 23th, 2013

A handwritten signature in black ink, appearing to read 'Mónica Vivas'.

Mónica Vivas
Conformity Assessment Director
ICONTEC

REFERENCES

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

- /1/ Letter of endorsement for BHP, issued on January 23rd/2002
- /2/ Shareholder agreement where EPM bought a participation in the company, signed November 6th/2003
- /3/ IDB Mandate Letter, issued August 24th/2007
- /4/ Compensation and benefit agreement between Hidroecologica del Teribe company and Naso people for the construction of hydroelectric Bonyic, signed December 18th/2004
- /5/ Suspension of the Letter of mandate with the IDB, issued September 27th/2005
- /6/ Letter sent to the Panamanian DNA in order to express the conformity to include Bonyic hydroelectric Project in emission reduction negotiation program. Issued September 22nd/ 2005
- /7/ DINEORA Resolution IA-100-2005, which approves the Environmental Impact Assessment for BHP, issued November 11th/2005
- /8/ Financing request process, carried out between September 2005 and February 2007
- /9/ Agreement between HET and Jera for the construction of access roads, signed August 28th/2007
- /10/ Environmental impacts analysis for the road access issued September 14th/2007 by ANAM
- /11/ MGM Commercial Proposal, issued October/2007
- /12/ Term sheet signature between CIFI-CABEI and HET, signed November 6th/2007
- /13/ Contract signature between MGM and HET, signed March 10th/2008
- /14/ Contract termination between JERA and HET, signed June 26th/2008
- /15/ Electro mechanical and Hydro mechanical equipments contract signature between September 17th/2008
- /16/ Minute 039 about HET Executive Board meeting carried out October 3rd/2008, which contains the EPM decision to finance the project themselves
- /17/ Contract signature between ConConcretoInternacional, S.A and HET, for the construction of the bridge over Teribe river, access roads and the hydroelectric civil, signed March 5th/2009
- /18/ Concession awarded from ANAM to HET for the administration of an area within the Bosque Protector de Palo Seco, issued June 15th/2009
- /19/ Presentation about HET's Environmental Management, featured in an Environmental Symposium in March/ 2010
- /20/ Spreadsheet with emission Reduction for BHP during 2012 to 2019, delivered to DOE on December 22nd/2010.
- /21/ Regulation Process for Environmental Impact Assessment, issued August 14th/2009.
- /22/ Contract for the water concession signed between INRENARE and HET, signed July 4th/1995
- /23/ Contract for the electric generation concession signed between National Authority for Public Services and HET, signed February 19th/2010
- /24/ Letter from IDB to HET, reporting their position about process of structuring the loan for the development of BHP, after the social consultant concept. Issued June 28th/2005
- /25/ Letter of No Objection for BHP issued by ANAM on November 22nd/2010
- /26/ Summary of surveys carried out in the process of local stakeholders consultation, delivered to ICONTEC on December 22nd/2010
- /27/ Transmission Regulation issued by National Authority for Public Services on April/2009
- /28/ Operation Regulation issued by CND and ETESA
- /29/ Law 6 issued on February 3rd/2007, which contains the regulatory and institutional

- framework for provision of electricity as public service.
- /30/ Minute 001, which contains a report about compliance with the agreement of compensation and benefits to the people Naso, issued June 22nd/2010
 - /31/ Reliability report from CND and ETESA, issued November 18th/2009
 - /32/ Minute 1490 about EPM Executive Board meeting carried out August 4th/2008, which contains the EPM decision to finance the project themselves.
 - /33/ General Assembly of Naso people, celebrated September 19th/2004
 - /34/ Hydrologic studies inside the feasibility studies for BHP carried out by CAI (Consultores asociados de ingeniería³⁰)
 - /34a/ Energy Model for BHP based on /34/
 - /34b/ Description of the energy model based on /34/
 - /35/ Rainfall and flow data, issued June 2008, , issued by Integral Ingenieros Consultores
 - /36/ General plan with location of BHP, issued July 2007, issued by Integral Ingenieros Consultores
 - /37/ Calibration curves of the dam, spillway, diversion canal, and bottom discharge, issued June 2008, , issued by Integral Ingenieros Consultores
 - /38/ Expansion Plan for National Grid 2009-2013
 - /39/ Social and Environmental Management Plan, issued by HET on September/2009
 - /40/ Agreement of principles signed between HET and Naso people on November 1st/2003
 - /41/ Report of DobboYala Foundation about preparatory workshops for information and training, dated on July 15th,2004³¹
 - /42/ Activity Report of DobboYala Foundation about community workshops with Solong, Bonyic, Sodi and santa Rosa communities, carried out on July 3rd -9th, 2004
 - /43/ Letter of Approval issued by ANAM for BHP, dated on May 18th/2012
 - /44/ Confirmation about the truthfulness of this Letter of Approval for BHP, issued by ANAM, dated on August 20th/2012
 - /45/ PowerPoint file with the presentation made on the second Local Stakeholder consultation carried out on March 11th/2010
 - /46/ Filled polls by stakeholders on the Local Stakeholder consultation carried out on March 11th/2010
 - /47/ Letter of consent issued by the Panamanian DNA regarding the participation of the Bonyic project in the carbon market through the clean development mechanism
 - /48/ Contract signed between MGM Innova Consulting and HET, signed on November 16th/2009 with the purpose of support the developing of BHP as a CDM project
 - /49/ Instructions for financial surpluses and profits of industrial and commercial enterprises of the state and mixed economy companies engaged in non-financial activities, issued by the Colombian Planning Department, dated on March 2006 (available at: <https://www.dnp.gov.co/LinkClick.aspx?fileticket=7dNgFzYnXH8%3D&tabid=1214>)
 - /50/ Law 489 issued by Colombian Senate and dated on December 29th/1998, which rules the industrial and commercial enterprise of the Colombian State (available at: http://www.secretariassenado.gov.co/senado/basedoc/ley/1998/ley_0489_1998.html)
 - /51/ Code of good governance of EPM (available at: http://www.epm.com.co/site/Portals/0/centro_de_documentos/centro_de_contacto/relacion_estado/CodigoGobiernoCorporativo.pdf)
 - /52/ EPM Financial balance (available at: <https://www8.epm.com.co/epm/web/inversionistas/documents/EFEPMDic2008.pdf>)

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

³⁰ Engineering Associate Consultants

³¹ This report is part of information and consultation processes with Naso people about Bonyic Hydroelectric Plant

- /53/ Methodology ACM0002 (Version 12.3.0)
- /54/ Validation and Verification Manual, version1.2. UNFCCC.
- /55/ Tool for the demonstration and assessment of additionality, Version 06.0.0.³²
- /56/ Tool to calculate the emission factor for an electricity system, Version 02.2.1
- /57/ Guidelines on the demonstration and assessment of prior consideration of the CDM, Version 04.0
- /58/ Guidelines for objective demonstration and assessment of barriers, Version 01.0

³²See footnote 7 on this validation report

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Note: This format is a guide for developing a validation. However it could change according to type of project

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

REQUIREMENT	Reference	CONCLUSION	Cross Reference / Comment
1. <i>The project shall assist Parties included in Annex I in achieving compliance with part of their emission reduction commitment under Art. 3</i>	<i>Kyoto Protocol Art. 12.2</i>	N.A	<i>The project does not include Project participants from Annex 1 Parties, hence Annex 1 approval is not necessary at this stage.</i>
2. <i>The project shall assist non-Annex I Parties in achieving sustainable development and the project has obtained confirmation by the host country that the project assists in achieving sustainable development</i>	<i>Kyoto Protocol Art. 12.2, Procedures for Small Scale CDM Project Activities §23a</i>	OK	<i>Letter of approval has been issued by the DNA of the non-Annex 1 Party: ANAM, Panama, on 18/05/2012. The letter confirms that the project contributes to the sustainable development of Panama.</i>
3. <i>The project shall assist non-Annex I Parties in contributing to the ultimate objective of the UNFCCC</i>	<i>Kyoto Protocol Art. 12.2.</i>	OK	<i>The project assists non - annex I parties.</i>
4. <i>The project shall have the written approval of voluntary participation from the designated national authorities of each party involved</i> <i>Each letter confirms that:</i> <i>(a) The Party is a Party to the Kyoto Protocol;</i> <i>(b) Participation is voluntary;</i> <i>(c) In the case of the host Party, the proposed CDM project activity contributes to the sustainable development of the country;</i> <i>(d) It refers to the precise proposed CDM project activity title in the PDD being submitted for registration.</i>	<i>Kyoto Protocol Art. 12.5a, Procedures for Small Scale CDM Project Activities §23a</i> <i>V/V Manual art. 44 to 48</i>	OK	<i>The project “Bonyic hydroelectric project” received the Letter of Approval, dated 18/05/2012, from the Panamanian DNA, ANAM, indicating that the project is voluntary and contributes to sustainable development of the country.</i>
5. <i>The emission reductions shall be actual, measurable and give long-term benefits related to the mitigation of climate change</i>	<i>Kyoto Protocol Art. 12.5b</i>	OK	<i>Section A.2 and A.4.4. in PDD</i>

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REQUIREMENT	Reference	CONCLUSION	Cross Reference / Comment
6. Reduction in GHG emissions shall be additional to any that would occur in absence of the project activity, i.e. a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity	Kyoto Protocol Art. 12.5c, Marrakesh Accords, CDM Modalities §43	OK	Section B.5. in PDD
7. In case that public funding from Parties included in Annex I is used for the project activity, these parties shall provide an affirmation that 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 these parties	Decision 17/CP.7, CDM Modalities and Procedures Appendix B, § 2	N.A.	No public funding is involved.
8. Parties participating in the CDM shall designate a national authority for the CDM	CDM Modalities and procedures §29	OK	ANAM, the National Environmental Authority of Panama, is the Designated National Authority for the Clean Development Mechanism by UNFCCC Secretariat.
9. The host party and the participant Annex I Party shall be a party to the Kyoto protocol	CDM Modalities and Procedures § 30, 31b	OK	Panama ratified the Kyoto protocol in March 1999.
10. The participant Annex I Party's assigned amount shall have been calculated and recorded	CDM Modalities and Procedures §31b	N.A.	No Annex 1 party involved.
11. The participating Annex I Party shall have in place a national system for estimating GHG emissions and a national registry in accordance with Kyoto Protocol article 5 and 7	CDM Modalities and Procedures §31b	N.A.	No Annex 1 party involved.
12. The proposed project activity shall meet the eligibility criteria for small scale CDM project activities set out in § 6 (c) of the Marrakesh Accords and shall not be a debundled component of a larger project activity (if applicable)	Simplified Modalities and Procedures for Small Scale CDM Project Activities §12a,c Decision -/CMP.2, paragraph 28,	N.A.	BHP is a large scale project
13. The project design document shall conform with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website	V/V manual art. 55	OK	The PDD conforms with the latest template and guidance from the CDM Executive Board available at the

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REQUIREMENT	Reference	CONCLUSION	Cross Reference / Comment
			website, for the date of the project.
14. The proposed project activity shall conform to one of the project categories defined for small scale CDM project activities and uses the simplified baseline and monitoring methodology for that project category	Simplified Modalities and Procedures for Small Scale CDM Project Activities §22e	N.A.	BHP is a large scale project
15. Comments by local stakeholders are invited, and a summary of these provided	V/V manual art. 129	OK	Section E in PDD.
16. If required by the host country, an analysis of the environmental impacts of the project activity is carried out and documented.	V/V manual art.133	OK	Section D of the PDD
17. Parties, stakeholders and UNFCCC accredited NGOs have been invited to comment on the validation requirements for minimum 30 days, and the project design document and comments have been made publicly available (45 days for A/R projects)	V/V Manual art.174 (c)	OK	<p>The PDD version 01 submitted by HET and MGM International was made publicly available at ICONTEC's climate change website and UNFCCC website and Parties, stakeholders and NGOs were invited to provide comments through the CDM website during a 30 days period from 07/08/2010 to 05/09/2010.</p> <p>Comments were received and have been taken into consideration by ICONTEC. See clause 4 in Validation Report</p>
18. The project participants are listed in tabular form in section A.3 of the PDD and this information is consistent with the contact details provided in annex 1 of the PDD.	V/V Manual art.51	OK	The project participants are listed in section A.3 and this information is consistent with the contact details provided in annex 1 of the PDD.

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TABLE 2 REQUIREMENTS CHECKLIST (ACCORDING VALIDATION AND VERIFICATION MANUAL)

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
General Description of Project Activity The project design is assessed.					
1. Approval					
All Parties involved have approved the project activity.					
A letter of approval has been issued by the respective Party's DNA and include the confirmation of: (a) The Party is a Party to the Kyoto Protocol; (b) Participation is voluntary; (c) In the case of the host Party, the proposed CDM project activity contributes to the sustainable development of the country; (d) It refers to the precise proposed CDM project activity title in the PDD being submitted for registration.	VVM 1.Approva I	I DR	The DNA approval letter was not available at the time the PDD was submitted for validation. Hence a CAR was issued. ANAM (DNA) issued the letter of approval for Bonyic hydroelectric project on 15/05/2012. This letter was sent to ICONTEC 28/05/2012.	CAR 14	OK
2. Participation					
All project participants have been listed in a consistent manner in the project documentation, and their participation in the project activity has been approved by a Party to the Kyoto Protocol.	VVM 3. Participatio n PDD A.3 Annex 1	I DR	Hidroecologica del Teribe, S.A. (HET) is involved in the project activity, and its participation has been approved by ANAM. See Letter of Endorsement issued January 23 rd /2002 /1/ and the Letter of No Objection issued November 22 nd /2010./25/ HET has been listed in a consistent manner in clause A.3 of PDD	OK	OK
The approval of participation has been issued from the relevant DNA	VVM 3. Participatio n	DR	The DNA approval letter was not available at the time the PDD was submitted for validation. The DNA for Panama is ANAM and the approval of participation has been issued by this Entity. DNA confirmed in the UNFCCC website.	OK	OK

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	Letter of approval				
	UNFCCC				
3. Project design document					
3.1 The PDD used as a basis for validation shall be prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website.	PDD	DR	The PDD has been elaborated with the latest template approved by the board	OK	OK
3.2 Does the PDD correctly describe the project boundary, including the physical delineation? (components and facilities used to mitigate GHG's)	PDD B.3 ACM 0002 Version 12.3.0	I DR	Yes, boundary includes the project power plant, the transmission line, the project substation and all power plants connected physically to the electricity system that the CDM project power plant is connected to, in accordance with the Methodology ACM 0002 Version 12.3.0.	OK	OK
3.3. Will the project result in technology transfer to the host country?	PDD A.2	DR I	Yes, since the equipment used in the project implementation is from other countries	OK	OK
3.4 Does the project require extensive initial training and maintenance efforts in order to work as intended during the project period? Does the project make provisions for meeting training and maintenance needs?	PDD B.7.2	I DR	The Project is making provisions for meeting training and maintenance needs	OK	OK
4. Project description					
4.1 The PDD contains a clear description of the project activity that provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation.	PDD A.2 A.4	I DR	Yes, the PDD provides the reader with information necessary to understand clearly the activities to be undertaken by the project. However, before that, some modifications were requested by ICONTEC in order to facilitate the reading of PDD	CLA 3 CLA 4 CLA 5 CLA 7 CAR 1 CAR 2 CAR 3 CAR 13	OK
4.2 Duration of the Project/ Crediting Period	PDD	DR	Yes, the starting date of the first crediting period is	OK	OK

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Are the project's starting date and operational lifetime clearly defined and reasonable?	C.2	I	January 1 st , 2013 or the project registration date, whichever is later.		
4.3 Is the assumed crediting period clearly defined and reasonable (renewable crediting period of seven years with two possible renewals or fixed crediting period of 10 years with no renewal)?	PDD C.2.1.2	DR I	Yes, the renewable crediting period is clearly defined and reasonable: 7 years, with two possible renewals.	OK	OK
5. Baseline and monitoring methodology					
5.1 General requirements The baseline and monitoring methodologies selected by the project participants comply with the methodologies previously approved by the CDM Executive Board.	PDD B.1 ACM0002 Version 12.3.0	DR	Yes, the project applies the large scale methodology ACM0002, version 12.3.0.	OK	OK
5.1.1 Is the selected monitoring methodology in line with the approved methodology and is applicable for this project?	PDD B.7 ACM0002 Version 12.3.0	DR	Yes. The monitoring methodology is the one approved. It is described in Chapter B.7 of PDD. The project is aligned with this methodology	OK	OK
5.2 Applicability of the select methodology to the project activity The methodology is correctly quoted and applied by comparing it with the actual text of the applicable version of the methodology available on the UNFCCC CDM website.	PDD B.2 ACM0002 Version 12.3.0	DR	Section B.2. of the PDD considers each of the applicability condition and adequately justifies the applicability of the methodology ACM0002 Version 12.3.0 to the project activity.	OK	OK
5.3 Project boundary The project boundary, including the physical delineation of the proposed CDM project activity included within the project boundary for the purpose of calculating project and baseline emissions for the proposed CDM project activity.	PDD B.3.	DR	The project boundary includes the project power plant and all power plants connected physically to the electricity system that the CDM project power plant is connected to. This project boundary is correctly described.	OK	OK
5.3.1 Have been all sources and GHGs required by the methodology included within the project boundary?	PDD B.3	DR I	Yes. During the visit to the project the information of Chapter B.3 was validated regarding GHG sources included in the methodology.	OK	OK
5.4 Baseline identification The PDD identify the baseline for the proposed CDM project	PDD B.4	DR	In this project the baseline emission factor has been calculated on the basis of the latest information	CLA 8	OK

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<i>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.</i>			<p><i>provided by Panamanian Energy Secretary</i></p> <p><i>ICONTEC found that all information, assumptions and data used in the identification of the baseline scenario are relevant, appropriately justified, correctly quoted and interpreted, supported by evidence and can be deemed reasonable.</i></p> <p><i>In document review, ICONTEC requested to align the baseline scenario with the Methodology ACM 0002 Version 12.3.0</i></p>		
<i>5.4.1 Is the application of the methodology and the discussion and determination of the chosen baseline transparent and conservative?</i>	<i>PDD B.4</i>	<i>DR</i>	<i>Yes, ICONTEC found that all information, assumptions and data used in the identification of the baseline scenario are transparent and conservative.</i>	<i>OK</i>	<i>OK</i>
<i>5.4.2 Are the assumptions and data used in the identification of the baseline scenario relevant, justified appropriately, correctly quoted and interpreted, supported by evidence and can be deemed reasonable?</i>	<i>PDD B.4</i>	<i>DR</i>	<i>Yes, ICONTEC found that all information, assumptions and data used in the identification of the baseline scenario are relevant, appropriately justified, correctly quoted and interpreted, supported by evidence and can be deemed reasonable.</i>	<i>OK</i>	<i>OK</i>
<i>5.4.3 Are relevant national and/or sectoral policies and circumstances taken into account?</i>	<i>PDD B.4</i>	<i>DR</i>	<i>Yes, relevant national and/or sectoral policies and circumstances are taken into account</i>	<i>OK</i>	<i>OK</i>
<i>5.4.4 Does the selected baseline represent the most likely scenario among other possible and/or discussed scenarios?</i>	<i>PDD B.5</i>	<i>DR I</i>	<p><i>Yes, the PDD presents more than one scenario.</i></p> <p><i>-Alternative A:</i></p> <p><i>Implementation of the project activity without being registered as a CDM project activity. The project activity is connected to the Panamanian National Grid (SIN); hence, displacing 30 MW of electricity of the grid's mix as this project activity has no project GHG emissions. The alternative is consistent with mandatory laws and regulations. Besides that, this alternative is consistent with the Panamanian</i></p>	<i>OK</i>	<i>OK</i>

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			<p><i>Expansion Plan. However, the project without the carbon credit revenue would not be financially appealing to the investors and will face other barriers that would prevent the development of the project activity as the barrier due to sensitive social and biophysical environment.</i></p> <p><i>-Alternative B:</i> <i>Continuation of the current trends of the Panamanian interconnected grid. This alternative would primarily contemplate the installation of new thermal power plants in the Panamanian electricity system in order to supply the country's ever-increasing electricity demand. So, the alternative for the project participant would be to look for more attractive investment opportunities elsewhere and not invest in the proposed project. The alternative is consistent with mandatory laws and regulations. Besides that, this alternative is consistent with the Panamanian Expansion Plan. However, the prevailing business practice in Panama has been the construction of thermal power plants. It is easier to build a thermal power plant, that is less expensive and can be built within a shorter time span than hydro power plant, so, it would be far more likely to be prioritized.</i></p> <p><i>Alternative A is not feasible at this stage and therefore Alternative B is the most likely to take place in the absence of the CDM. Thus, Alternative B will be considered as the baseline scenario for the project</i></p>		
5.4.5 Does the steps taken and equations applied to calculate baseline emissions, comply with the requirements of the selected baseline and monitoring methodology.	PDD B.6 and Annexes	DR	Formulae and equations used for calculating baseline emissions comply with the selected baseline and monitoring methodology.	OK	OK

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<p>5.5 Algorithms and/or formulae used to determine emission reductions</p> <p>The steps taken and equations applied to calculate project emissions, baseline emissions, leakage and emission reductions shall comply with the requirements of the selected baseline and monitoring methodology.</p>	<p>PDD B.6 and Annexes</p>	<p>DR</p>	<p>Formulae and equations used for calculating baseline emissions comply with ACM0002, (version 12.3.0) and the Tool to calculate the emission factor for an electricity system (V.2.2.1).</p> <p>However, before that, some CLAs were requested by ICONTEC, in order to get a deeper explanation in PDD</p>	<p>CLA 9 CLA 10 CLA 11</p>	<p>OK</p>
<p>5.5.1 The equations and parameters in the PDD have been correctly applied by comparing them to those in the selected approved methodology.</p>	<p>PDD B.6 and Annexes</p>	<p>DR</p>	<p>After desk review carried out by ICONTEC, it is found that calculations of grid OM emission factor should be revised in order to get conformity with the "Tool to calculate the emission factor for an electricity system" (Version 2.2.1).</p> <p>Formulae and equations used for calculating baseline emissions comply with ACM0002, version 12.3.0) and the Tool to calculate the emission factor for an electricity system (V.2.2.1)</p>	<p>OK</p>	<p>OK</p>
<p>6 Additionality of a project activity</p>					
<p>6.1 Prior consideration of CDM</p>					
<p>6.1.1 Is the start date of the project in accordance with the "Glossary of CDM terms"?</p>	<p>PDD C.1.1</p>	<p>DR</p>	<p>Yes, the start date of the project complies with the definition in the Glossary of CDM terms.</p> <p>The starting date of the proposed project activity is 28th August 2007, which corresponds to the agreement with Jera, company in charge of the power station access road construction.</p>	<p>OK</p>	<p>OK</p>
<p>6.1.2 If the project start date is prior to the date of publication of the PDD for stakeholder comments, have been demonstrated that the CDM benefits were considered necessary in the decision to undertake the project as a proposed CDM project activity?</p>	<p>PDD C.1.1</p>	<p>DR I</p>	<p>Yes. CDM was seriously considered prior to the project activity start date. Evidence to support this awareness of the CDM is based mainly on the following events:</p> <ul style="list-style-type: none"> The Letter of Endorsement/1/, where the Republic of Panama endorses the further development of the Bonyic hydroelectric project and 	<p>OK</p>	<p>OK</p>

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			<p><i>commits to render and facilitate assistance in the future, for the purposes of the Kyoto Protocol of greenhouse gases emissions reduction generated by the project (2002).</i></p> <ul style="list-style-type: none"> <i>The compensation and benefit agreement signed with the local indigenous NasoTeribe tribe for the construction of the Bonyic hydroelectric project/4/, whereby it was agreed that the CDM benefits would be shared with this community (December 2004).</i> <i>The Letter of Consent issued by the Panamanian DNA regarding the participation of the Bonyic project in the carbon market through the Clean Development Mechanism (March 2007).</i> 		
6.1.3 Has the project been correctly identified as a new or existing project	PDD A.4.2	DR I	Yes, the project has been correctly identified as a new project.	OK	OK
<p>6.1.4. Does the evidence indicates:</p> <p>a) awareness of the CDM project prior to the project activity start and that benefits were a decisive factor to proceed with the project,</p> <p>b) reliable evidence that indicates that continuing and real actions were taken to secure CDM status for the project in parallel with its implementation, and</p> <p>c) Does the CDM project activity comply with the requirements of the latest version of the Guidance on early consideration of CDM?</p>	PDD B.5	DR I	<p>Yes. The DOE was able to verify the awareness of the CDM project prior to the project starts and that benefits were decisive factor to proceed with the project, the continuing and real actions that were taken into account in the CDM project to secure CDM status in parallel with the project implementation, see B.5 of the PDD.</p> <p>The CDM project activity comply with the requirements of the latest version of the Guidance on early consideration of the CDM</p>	OK	OK
6.2 Identification of alternatives					
6.2.1. Is the list of alternatives included as one of the options that the project activity is undertaken without being registered as a proposed CDM project activity?	PDD B.5 Step 1	I DR	Yes. The additionality of the project activity has been assessed on the basis of the "Tool for the demonstration and assessment of additionality", Version 06.0.0. A significant part of the determination of additionality is presented in Section B.4, following indications of the methodology.	OK	OK

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6.2.2 Does the list contains all plausible alternatives that the DOE, on the basis of its local and sectoral knowledge, consider to be viable means of supplying the outputs or services that are to be supplied by the proposed CDM project activity?	PDD B.5 Step 1.	DR	Yes, the project presents all the alternatives that are plausible within the Panamanian context.	OK	OK
6.2.3 Does the alternative comply with all applicable and enforced legislation?	PDD B.5.	DR	Yes, it does. In onsite visit, a CAR was request by ICONTEC	CAR 4	OK
6.2.4. Have credible alternatives been identified to the project activity in order to determine the most realistic baseline scenario (unless the approved methodology that is selected by the proposed CDM project activity prescribes the baseline scenario and no further analysis is required)?	PDD B.5.	DR	Yes. Alternatives identified are credible and can occur in the context of the electric generation plant in Panamá	OK	OK
6.3 Investment analysis (if applicable)					
6.3.1 If investment analysis has been used to demonstrate the additionality of the proposed CDM project activity, Does the PDD provide evidence that the proposed CDM project activity would not be: (a) The most economically or financially attractive alternative; or (b) Economically or financially feasible, without the revenue from the sale of certified emission reductions (CERs)?			N.A		
6.3.2 Which approach has been selected to demonstrate 6.3.1? (a) The proposed CDM project activity would produce no financial or economic benefits other than CDM-related income. Document the costs associated with the proposed CDM project activity and the alternatives identified and demonstrate that there is at least one alternative which is less costly than the proposed CDM project activity; (b) The proposed CDM project activity is less economically or financially attractive than at least one other credible and realistic alternative; (c) The financial returns of the proposed CDM project activity would be insufficient to justify the required investment.			N.A		

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6.3.3 Have the parameters of the financial calculations been correctly used?			N.A		
6.3.4 Is the benchmark suitably applied?			N.A		
6.3.5 Are the assumptions appropriate and the financial calculations correct?			N.A		
6.4 Barrier analysis (if applicable)					
6.4.1 Does the CDM project activity face barriers that prevent the implementation of this type of projects?	PDD B.5	I DR I	Yes, the project participant demonstrated that the project activity would not have occurred anyway due to project location barrier and investment barrier. In order to clarify the argumentation about barriers analysis by PP, some CLAs and CARs were raised and closed (See Annex A Table 4 in this validation report)	CLA 1 CLA 2 CAR 5	OK
6.4.2 Does the CDM project activity face barriers that do not prevent the implementation of at least one of the alternatives?	B.5	DR I	Yes. The CDM project activity face barriers that do not prevent the implementation of at least one of the alternative; alternative 2, that is to say the continuation of the current trends of the Panamanian interconnected grid	OK	OK
6.5 Common practice analysis (For proposed large-scale CDM project activities, unless the proposed project type is first-of-its kind)					
6.5.1 Is the project activity widely observed and commonly carried out in the region?	B.5	DR I	No. The prevailing business practice in Panama has been the construction of thermal power plants. In addition, as per the CND (National Dispatch Center) Report on reliability of the National Interconnected System, although existing generation would be enough to absorb currently-projected energy demand, reserves are insufficient to cover increases in said demand. Within this context, thermal generation, which is both less expensive and can be built within a shorter time span, would be far more likely to be prioritized.	CAR 6	OK

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			<i>In order to clarify the argumentation about prevailing practice barrier analysis by PP, a CAR was raised and closed (See Annex A Table 4 in this validation report)</i>		
6.5.2 If similar and operational projects are already widely observed and commonly carried out in the defined region, are there essential distinctions between the proposed CDM project activity and the other similar activities?	B.5	DR I	BHP is a hydroelectric power plant, and as such is not common practice in Panama: the norm is thermal power generators; the hydro that was constructed over the last 13 years were developed as CDM project	OK	OK
7 Monitoring Plan <i>The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed.</i>					
7.1 Is the selected monitoring plan in line with the approved methodology and are applicable for this project?	PDD B.7 ACM0002 Version 12.3.0	DR I	The monitoring plan complies with the methodology. The simplified baseline and monitoring Methodology ACM0002 Version 12.3.0	OK	OK
7.2 Are the means of implementation of the monitoring plan, including the data management and quality assurance and quality control procedures, sufficient to ensure that the emission reductions achieved by/resulting from the proposed CDM project activity can be reported ex post and verified?	PDD B.7	DR I	<p>Yes, data and control means are sufficient to monitor emissions reduction.</p> <p>A CAR was risen by ICONTEC asking for an explanation about QA/QC process for the electricity supplied by BHP to the grid</p>	CAR 9	OK
7.3 Monitoring of Project Emissions <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
7.3.1 Does the monitoring plan provide for the collection and filing of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	PDD B.6.3	DR I	Yes. The monitoring plan describes the collection and filing of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period	OK	OK

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7.4 Monitoring of Leakage <i>It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.</i>					
			No leakage effects need to be accounted under this methodology. So: $L_y=0$		
7.4.1 Does the monitoring plan provide for the collection and filing of all relevant data necessary for determining leakage?			N.A		
7.4.2 Are the choices of leakage indicators reasonable?			N.A		
7.4.3 Will it be possible to monitor the specified GHG leakage indicators?			N.A		
7.4.4 Will the indicators give opportunity for real measurement of leakage effects?			N.A		
7.5 Monitoring of Baseline Emissions <i>It is established whether the monitoring plan provides for reliable and complete project emission data over time.</i>					
7.5.1 Does the monitoring plan provide for the collection and filing of all relevant data necessary for determining baseline emissions during the crediting period?	PDD B.6.3	DR I	Yes, the total emission reductions of the project are calculated on the basis of the equations and parameters presented and explained in section B.6.1 of PDD.	OK	OK
7.5.2 Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	PDD B.6.3	DR I	Yes, the indicators are reasonable.	OK	OK
7.5.3 Will it be possible to monitor the specified baseline indicators?	PDD B.6.3	DR I	Yes, the total emission reductions of the project are calculated on the basis of the equations and parameters presented and explained in section B.6.1 of PDD.	OK	OK
7.5.4 Will the indicators give opportunity for real measurements of baseline emissions?	PDD B.6.3	DR I	Yes, some indicators will be able to be measured in real time.	OK	OK
7.6 Project Management Planning <i>It is checked that project implementation is properly prepared for and that critical arrangements are addressed.</i>					
7.6.1 Is the authority and responsibility of project management clearly described?	PDD B.7.2	DR I	Yes, Chapter B.7.2 describes the authority and responsibility for the personnel of the project. However in on site visit ICONTEC requested an	CAR 8	OK

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			<i>explanation about the contractual relationship with ETESA</i>		
<i>7.6.2 Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?</i>	<i>PDD B.7.2</i>	<i>DR I</i>	<i>Yes, Chapter B.7.2 describes the authority and responsibility for the personnel of the project and ETESA.</i>	<i>OK</i>	<i>OK</i>
<i>7.6.3 Are procedures for training of monitoring personnel identified?</i>	<i>PDD B.7.2</i>	<i>DR I</i>	<i>There is no evidence about a training program for monitoring personnel</i>	<i>FAR 2</i>	
<i>7.6.4 Are procedures for emergency preparedness for cases where emergencies can cause unintended emissions identified?</i>	<i>PDD B.7.2</i>	<i>DR I</i>	<i>There is no evidence about emergency preparedness for cases where emergencies can cause unintended emissions.</i>	<i>OPEN FAR 1</i>	
<i>7.6.5 Are procedures for calibration of monitoring equipment identified?</i>	<i>PDD B.7.2</i>	<i>DR I</i>	<i>Chapter B.7.2 indicates how the equipment calibrations will be done. However, The calibration period should be specified</i>	<i>FAR 1</i>	
<i>7.6.6 Are procedures for maintenance of monitoring equipment and installations identified?</i>	<i>PDD B.7.2</i>	<i>DR I</i>	<i>Yes, Chapter B.7.2 indicates how the equipment calibrations will be done.</i>	<i>OK</i>	<i>OK</i>
<i>7.6.7 Are procedures for monitoring, measurements and reporting identified?</i>	<i>PDD B.7.2</i>	<i>DR I</i>	<i>Yes, Chapter B.7.2 identifies the procedures for measurements, monitoring and reports that will be performed.</i>	<i>OK</i>	<i>OK</i>
<i>7.6.8 Are procedures for day-to-day records handling identified (including what records to keep, storage area of records and how to process performance documentation)?</i>	<i>PDD B.7.2</i>	<i>DR I</i>	<i>No, a description of these procedures is still missing</i>	<i>FAR 1</i>	
<i>7.6.9 Are procedures for dealing with possible monitoring data adjustments and uncertainties identified?</i>	<i>PDD B.7.2</i>	<i>DR I</i>	<i>No, these procedures are still missing</i>	<i>FAR 1</i>	
<i>7.6.10 Are procedures for internal audits of GHG project compliance with operational requirements, where applicable, identified?</i>	<i>PDD B.7.2</i>	<i>DR I</i>	<i>Yes, Chapter B.7.2 indicates the procedure to perform internal audit.</i>	<i>OK</i>	<i>OK</i>
<i>7.6.11 Are procedures for project performance review identified?</i>	<i>PDD B.7.2</i>	<i>DR I</i>	<i>Yes, Chapter B.7.2 indicates the procedure to be followed.</i>	<i>OK</i>	<i>OK</i>
<i>7.6.12 Are procedures for corrective actions identified?</i>	<i>PDD B.7.2</i>	<i>DR I</i>	<i>No, these procedures are still missing</i>	<i>FAR 1</i>	
7.7. Calculation of CDM Emissions by Source					

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It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.

7.7.1 Project GHG Emissions

The validation of ex-ante estimated project GHG emissions focuses on transparency and completeness of calculations.

7.7.1.1 Are all aspects related to direct and indirect GHG emissions captured in the project design?	PDD B.6.3	DR I	Yes, the project design addressed the all aspects related to direct and indirect GHG emissions.	OK	OK
7.7.1.1.2 Have all relevant GHG and sources been evaluated?	PDD B.6.3	DR I	Yes, all relevant GHG and sources were evaluated.	OK	OK
7.7..1.3 Do the methodologies for calculating project emissions comply with existing good practices?	PDD B.6.3	DR I	Yes. $PE_{y\ power} = 0$.	OK	OK
7.7..1.4 Are the calculations documented in a complete manner?	PDD B.6.3	DR I	Yes. Calculations are documented in a complete maner.	OK	OK
7.7..1.5 Have conservative assumptions been used?	PDD B.6.3	DR I	N.A.	OK	OK
7.7..1.6 Are uncertainties in the project emissions estimates properly addressed?	PDD B.6.3	DR	N.A.	OK	OK

7.8 Leakage

It is assessed whether there are leakage effects and they have been properly assessed, i.e. change of an emission which occurs outside the project boundary and which are measurable and attributable to the project.

7.8.1 Are leakage calculation required for the selected project category and if yes, are the relevant leakage effects assessed?	PDD B.6.3	DR I	No leakage effects need to be accounted under this methodology. So: $L_y=0$	OK	OK
7.8.2 Have these leakage effects been properly accounted for in calculations (If applicable)?			N.A		
7.8.3 Are the calculations documented in a complete and transparent manner (If applicable)?			N.A		
7.8.4 Have conservative assumptions been used when calculating leakage (If applicable)?			N.A		

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7.8.5 Are uncertainties in the leakage estimates properly addressed (If applicable)?			N.A		
7.9 Baseline GHG Emissions					
<i>The validation of ex-ante estimated GHG emissions focuses on transparency and completeness of calculations.</i>					
7.9.1 Are the baseline emission boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	PDD B.6.	DR I	Yes. The boundaries of the project are clearly defined and cover sources and sinks for baseline emissions	OK	OK
7.9.2 Are all aspects related to direct and indirect baseline emissions captured in the project design?	PDD B.6.	DR I	Yes, all aspects related to direct and indirect baseline emissions were addressed.	OK	OK
7.9.3 Have all relevant GHG and sources been evaluated?	PDD B.6.	DR I	Yes the project assessed all relevant GHG and sources.	OK	OK
7.9.4 Do the methodologies for calculating baseline emissions comply with existing good practices?	PDD B.6.	DR I	Yes, the project complies with good practices of the methodology ACM002, version 12.3.0, "Grid connected renewable electricity generation".	OK	OK
7.9.5 Are the calculation documented in a complete and transparent manner?	PDD Annex 3	DR I	Yes. Please find background information regarding the calculation in PDD section B.6.3.	OK	OK
7.9.6 Have conservative assumptions been used	PDD B.6.	DR I	Yes, conservative assumptions have been used.	OK	OK
7.9.7 Are uncertainties in the baseline emissions estimates properly addressed?	PDD B.6.	DR I	Uncertainties in the baseline emissions estimates were properly addressed.	OK	OK
7.9.8 Does the steps taken and equations applied to calculate baseline emissions comply with the requirements of the selected baseline and monitoring methodology.	PDD Annex 3	DR I	Yes. Please find background information regarding the calculation in PDD section B.6.3.	OK	OK
7.10 Emission Reductions					
<i>Validation of ex-ante estimated emissions.</i>					
7.10.1 Will the project result in fewer GHG emissions than the baseline scenario?	PDD B.4	DR I	Yes. The baseline scenario is the electricity delivered to the grid by the project activity that otherwise would have been generated by the	OK	OK

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			operation of grid-connected power plants and by the addition of new generation sources.		
7.10.2 Does the steps taken and equations applied to calculate emission reductions comply with the requirements of the selected baseline and monitoring methodology?	PDD Annex 3	DR I	Yes. Please find background information regarding the calculation in PDD section B.6.3. From Version 1 of PDD to Version 2, the estimation of electricity generation and emission reductions were changed, so ICONTEC rose two CARs	CAR 11 CAR 12	OK
8 Sustainable development <i>The project's contribution to sustainable development is assessed.</i>					
8.1 The letter of approval by the DNA of the host Party confirms the contribution of the proposed CDM project activity to the sustainable development of the host Party.	Letter of approval	DR	The letter of approval from the Panamanian DNA states that the "project contributes to national sustainable development".	CAR 14	OK
8.2 Will the project create other environmental or social benefits than GHG emission reductions?	PDD A.2	DR	Yes. The project generates positive impacts like: <ul style="list-style-type: none"> It contributes to local environmental sustainability, since it decreases the dependence on fossil fuels, thus improving air quality. It contributes towards better working conditions and increases employment opportunities in the area where the project is located. It contributes towards better revenue distribution since it contributes to regional/local economic development. It contributes to regional integration and connection with other sectors. The project facilitates the increase of small hydroelectricity as a generating source in the region and therefore may encourage other similar companies that want to replicate this experience. 	CAR 14	OK
8.3 Will the project create any adverse environmental or social	PDD	DR	All the impacts related with the development of BHP,	OK	OK

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effects?	D.1		are described in clause D.1 of PDD		
8.4 Is the project in line with sustainable development policies of the host country?	PDD Section D	DR	Yes, the project is in line with host country policies regarding sustainable development, and contributes towards sustainable development by providing clean energy.	OK	OK
8.5 Is the project in line with relevant legislation and plans in the host country?	PDD Section D	DR	Yes, the project is in line with relevant legislation and plans in Panama	OK	OK
9 Local stakeholders consultation					
9.1 Have relevant stakeholders been consulted?	PDD E.1	DR I	Yes, all relevant stakeholders were consulted.	OK	OK
9.2 Have appropriate media been used to invite comments by local stakeholders?	PDD E.1	DR I	Yes. The notification was done by: radio advertising slots, informative bulletins, environmental magazines.	OK	OK
9.3 If a stakeholder consultation process is required by regulations/laws in the host country, has the stakeholder consultation process been carried out in accordance with such regulations/laws?	PDD E.1	DR I	Yes, The process was carried out jointly with the traditional Naso authorities, pursuant to Decree 59 as of March 16 2000 regulating the procedure for approval of Category III environmental impact assessments. A CLA was raised by ICONTEC in order to get a deeper explanation in PDD	CLA 6	OK
9.4 Is a summary of the stakeholder comments received /provided?	PDD E.2	DR	In section E.2 a summary of stakeholder comments is found. Earlier versions of the PDD did not include a summary of comments	CAR 10	OK

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9.5 Has due account been taken of any stakeholder comments received?	PDD E.3	DR	Due account was taken of stakeholder comments	OK	OK
9.6 Were the stakeholder invited to comment on the proposed CDM project activity prior to the publication of the PDD on the UNFCCC webs?	Validation report Section 4.	DR	Yes. The PDD was published when all the stakeholder consultations session was performed by the PP	OK	OK
10 Environmental impacts					
10.1 Does the host country legislation require analysis of the environmental impacts of the project activity?	PDD D.1.	DR	Yes, ANAM always requires the evaluation of the environmental impacts for this type of project.	OK	OK
10.2 Does the project comply with environmental legislation in the host country?	PDD D.1.	DR	Yes, the project complies with environmental legislation in Panama	OK	OK
10.3 Will the project create any adverse environmental impacts?	PDD D.1.	DR	The project has positive and negative environmental impacts, Nevertheless, HET has developed and environmental management plan in order to mitigate the negative impacts of BHP	OK	OK
10.4 Have environmental impacts been identified and addressed in the PDD?	PDD D.1.	DR	Yes, the environmental impacts have been addressed in PDD. A CAR was risen by ICONTEC in order to get a deeper explanation in PDD about mitigation measures	CAR 7	OK
SPECIFIC VALIDATION ACTIVITIES					
A.1 SMALL SCALE PROJECT ACTIVITY (IF APPLICABLE)					
A.1.1 Does the project qualify as a small scale CDM project activity as defined in paragraph 6 (c) of decision 17/CP.7 on the modalities and procedures for the CDM (Decision-/CMP.2 (Further guidance relating to the clean development mechanism) revises the definitions for small-scale CDM project activities referred to in paragraph 6 (c) of decision 17/CP.7.)?			N.A		
A.1.2 The small scale project activity is not a debundled component of a larger project activity?			N.A		

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A.1.3 Does the proposed project activity conforms to one of the project categories defined for small scale CDM project activities?			N.A		
A.2 AFFORESTATION AND REFORESTATION (A/R) PROJECT ACTIVITIES UNDER THE CDM					
A.2.1 Project Boundary					
A.2.1.1 Does the PDD correctly describe the project boundary, including the physical delineation to the proposed afforestation or reforestation CDM project activity under the control of the project participants?			NA		
A.2.1.2 Does the project participants have for all areas of land planned for A/R CDM project activity, the control over afforestation or reforestation in accordance with the guidance specified in the EB 44 report, annex 16.42?			NA		
A.2.1.3 Does each discrete area of land has a unique identification?			NA		
A.3.1.4 Does the control include at minimum the exclusive right, defined in a way acceptable under the legal system of the host country?			NA		
A.2.2 Selection of carbon pools					
Is the carbon pool selected in accordance with the selected methodology?			NA		
A.2.3 Eligibility of land					
Is the land within the planed project boundary eligible for an A/R CDM project?			NA		
A.2.4 Conservative choice and application of default data					
The application of default data in estimation of the net anthropogenic GHG removals by sinks results is conservative.			NA		
The guidelines on conservative choice and application of default data in the net anthropogenic GHG removals by sinks has been applied correctly in order to prevent any overestimation of reduction in anthropogenic emissions.			NA		

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A.2.5 Approach proposed to address non permanence

Does the PDD describe the approach proposed to address non permanence in accordance with paragraph 38 of the modalities and procedures for afforestation or reforestation CDM projects?			NA		
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A.2.6 Timing of management activities, including harvesting cycles and verifications.

Do the forest management plan and the monitoring plan ensure that a systematic coincidence of verification and peaks in carbon stocks is avoided?			NA		
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A.2.7 Socio-economic and environmental impacts, including impacts on biodiversity and natural ecosystems

The documentation submitted to the DOE contains the analysis of the socio-economic impacts and environmental impacts, including impacts on biodiversity and natural ecosystems, and impacts outside the project boundary of the proposed A/R project activity.			NA		
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A.3 PROJECT DESIGN OF SMALL-SCALE A/R PROJECT ACTIVITIES

A.3.1 The small scale A/R project activities use the A/R requirements describe above.			NA		
A.3.2 The project activity qualifies as a proposed small-scale A/R CDM project activity and complies with the threshold for the proposed small-scale A/R projects.			NA		
A.3.4 The project activity complied with one of the types of small-scale A/R project activities defined in appendix B of the annex to decision 6/CMP. 1.			NA		
A.3.5 The baseline, monitoring methodology and the methodology are applied correctly.			NA		
A.3.6 The proposed CDM project activity is not a part of a debundled large-scale A/R project activity, in accordance with the rules defined in appendix C of the annex to decision 6/CMP. 1.			NA		
A.3.7 The proposed CDM project activity has been developed or implemented by low-income communities and individuals as confirmed by the host Party.			NA		

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A.4 PROGRAM OF ACTIVITIES

*A.4.1 Operational and management arrangements for the PoA.
The operational management arrangements are suitable for the PoA, and the coordination/management has controls of all records and information related to the implementation of individual CPAs.*

NA

*A.4.2 Eligibility criteria for CPAs
The eligibility criteria in the POA-ADD are sufficient and include inter alia the means to demonstrating the additionality of the CPA and the applicability of the applied methodology.*

NA

MoV: Means of verification

DR: Document review

I: interview

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

Report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Validation conclusion
<p>CLA 1:</p> <p><i>The cause of the IDB's decision to resign from participating in the senior debt financing of the project must be clarified in accordance with the Suspension Mandate letter (August 27/2005)</i></p>	<p><i>Table 2 Clause 6.3.2</i></p> <p><i>Tool for the demonstration and assessment of additionality, Sub-step 3a</i></p>	<p><i>Project Owner Response:</i></p> <p><i>The reason why IDB declined participating in the senior debt financing of the project has been clarified in the PDD, according to the suspension mandate letter and the Inter-American Development Bank letter to HET, dated 28th June 2005 (attached), where the bank specifies the causes of its decision.</i></p> <p><i>It was clarified that the bank contracted a social welfare consultant with extensive experience in matters related to indigenous populations to carry out an independent assessment of the implications the Project would have on the Naso community, taking into account especially the internal problems within the Naso community with regards to the legitimacy of their king, the consultant's report informed of an internal crisis within the Naso community. This crisis had been caused by a number of factors (not related with the project), including historical, political, family feuds, personal interests, etc. However, it was evident that the crisis jeopardized to some extent the processes of information, consultation and building of consensus. The consultant pointed out the risk that the minimum socio-political</i></p>	<p><i>Validation Team Response:</i></p> <p><i>The cause of the IDB's decision to resign from participating in the senior debt financing of the project is clarified in PDD.</i></p> <p><i>Validation Team Conclusion:</i></p> <p>CLOSED</p>

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		<p><i>climate required to proceed with the Project would not be reached unless a consensus be achieved between the feuding parties.</i></p> <p><i>The Bank, however, expressed its reluctance to proceed with the environmental due diligence until the conflict between the feuding parties were resolved and a socio-political climate that would enable the fieldwork related to the Project to proceed appropriately was achieved. This decision was based on the recommendations of the social welfare consultant and the Bank's Indigenous Populations Unit (that was providing institutional support to the Project), as well as other communications received by the Bank.</i></p>	
<p>CLA 2:</p> <p><i>Annex 2, INFORMATION REGARDING PUBLIC FUNDING, must be completed. Explanation must be given on funding sources, taking into account that Empresas Públicas de Medellín (EPM), the main investor, is a public organization in Colombia</i></p>	<p>Table 2 Clause 6.3.2</p> <p><i>Tool for the demonstration and assessment of additionality, Sub-step 3a</i></p>	<p>Project Owner Response:</p> <p><i>It was clarified in Annex 2 of the PDD, concerning the information regarding public funding, that no public funding from Parties included in Annex I is available for this project activity.</i></p> <p><i>Empresas Públicas de Medellín (EPPM), major shareholder of Hidroecológica del Teribe S.A. (HET) and project financier, is a Colombian public entity, and Colombia is not a Party included in Annex I.</i></p>	<p>Validation Team Response:</p> <p><i>The information about public funding was included in Annex 2, and the role of EPM was clarified.</i></p> <p>Validation Team Conclusion:</p> <p>CLOSED</p>
<p>CLA 3:</p> <p><i>In Annex 2, Table 18 must be relocated to appropriate site.</i></p>	<p>Guidelines for completing the project design document (CDM-PDD)</p>	<p>Project Owner Response:</p> <p><i>Table 18 has been relocated in Annex 3 of the PDD and renumbered as Table 19.</i></p>	<p>Validation Team Response:</p> <p><i>Table 18 was relocated to Annex 3 of PDD</i></p>

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			<p>Validation Team Conclusion:</p> <p>CLOSED</p>
<p>CLA 4:</p> <p><i>Footnote 2 (The consultation path to the information) of Table 12 must be updated.</i></p>	<p>Table 2 Clause 6.5.2</p>	<p>Project Owner Response:</p> <p><i>Footnote 2, now footnote 4 of the PDD, regarding the power plants installed in Panama and their source of data(National Dispatch Center) has been updated with the last webpage access link: http://www.cnd.com.pa/descargar_archivo.php?tipo_informe=44</i></p>	<p>Validation Team Response:</p> <p><i>The consultation path to the information regarding the power plants installed in Panama has been updated and in Version 2 of PDD is numbered Footnote 4</i></p> <p>Validation Team Conclusion:</p> <p>CLOSED</p>
<p>CLA 5:</p> <p><i>Include in the PDD that HET has a Department of Environmental and social management</i></p>	<p>Table 2 Clause 8</p>	<p>Project Owner Response:</p> <p><i>Information about HET's Department of Environmental and Social Management, in charge of executing the project environmental management plan, has been included in section D of the PDD.</i></p>	<p>Validation Team Response:</p> <p><i>This information has been included in clause D.2 and summarized in Figure 3 of the PDD.</i></p> <p>Validation Team Conclusion:</p> <p>CLOSED</p>
<p>CLA 6:</p> <p><i>Explain how to carry out the consultation process with communities</i></p>	<p>Table 2 Clauses 9.1, 9.2 and 9.3</p> <p>VVM Clause 128</p>	<p>Project Owner Response:</p> <p><i>An explanation of how the consultation process with the communities affected by</i></p>	<p>Validation Team Response:</p> <p><i>This information was updated in the PDD according to the</i></p>

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<p><i>affected by the project, specifically with the Naso Community (PDD, clause E.1). Include a clarification that this consultation fulfilled the Panamanian legal requirement to carry out the public consultation</i></p>		<p><i>the project (especially with the NasoTeribe Community) has been carried out was included in the PDD. A clarification that this consultation fulfilled all the Panamanian legal requirements was also included.</i></p> <p><i>The consultation process, carried out with the NasoTeribe people about the project, fulfilled all the Panamanian legal requirements to carry out a public consultation and was based on national and international regulations on ethnic minorities and environmental and social policies by EEPPM Group, which establish the need to encourage the early and effective participation of the local and regional communities through the different stages of the project, by means of information, consultation and concertation mechanisms.</i></p>	<p><i>interviews carried out by the DOE during the on-site visit</i></p> <p><i>Validation Team Conclusion:</i></p> <p>CLOSED</p>
<p>CLA 7:</p> <p><i>In Annex 4, which describes the monitoring plan, change the wording to future tense.</i></p>	<p><i>Guidelines for completing the project design document (CDM-PDD)</i></p>	<p>Project Owner Response:</p> <p><i>The wording was changed to the future tense in Annex 4.</i></p>	<p>Validation Team Response:</p> <p><i>This specific change in the wording was made</i></p> <p><i>Validation Team Conclusion:</i></p> <p>CLOSED</p>
<p>CLA 8:</p> <p><i>In PDD Clause B.4 the description of the baseline scenario must be aligned</i></p>	<p>ACM0002/Version 12.3.0 Clause II</p>	<p><i>The description of the baseline scenario in the section B.4 of the PDD was reformulated.</i></p>	<p>Validation Team Response:</p> <p><i>After reviewing the wording of Clause 2 of methodology</i></p>

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with the Methodology			<p>ACM0002 Version 12.3.0, the validation team could verify that the baseline scenario is aligned with the methodology mentioned.</p> <p>Validation Team Conclusion:</p> <p>CLOSED</p>
<p>CLA 9: The simple adjusted operating margin method has been selected to determine the operating margin (OM). An explanation about the source is necessary to the consideration of the low-cost/must-run resources that constitute more than 50% of total grid generation</p>	<p>Tool to calculate the emission factor for an electricity system. Version 2.2.1</p>	<p>Explanation about the source to consider that the low-cost/must-run resources constitutes with more than 50% of total grid generation was included in the PDD, to justify the selection of the simple adjusted operation margin method to determine the operating margin emission factor.</p>	<p>Validation Team Response:</p> <p>Table 14 was included in the PDD, showing that the annual share of low cost/must run resources is greater than 50%, which justifies the selection of simple adjusted OM method.</p> <p>Validation Team Conclusion:</p> <p>CLOSED</p>
<p>CLA 10: In the calculation of the operating margin emission factor ($EF_{grid,OM,y}$), Explanations on which option regarding fuel usage data ($EF_{EL,k,y}$) is missing</p>	<p>Tool to calculate the emission factor for an electricity system. Version 2.2.1 VVM Clause 89</p>	<p>Explanation on which option regarding fuel usage data used to determine the emission factor of each power unit, in the calculation of the operating margin emission factor, was included in the PDD.</p>	<p>Validation Team Response:</p> <p>The explanation about the option selected regarding fuel usage data ($EF_{EL,k,y}$) was provided in PDD.</p> <p>Validation Team Conclusion:</p> <p>CLOSED</p>

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<p>CLA 11: <i>In the calculation of the buildmargin emission factor Option 1 has been selected; however, explanations on which option regarding the sample group of power units used ((a) or (b)) is missing.</i></p>	<p><i>Tool to calculate the emission factor for an electricity system. Version 2.2.1 VVM Clause 89</i></p>	<p><i>Explanation regarding sample group of power units used to calculate the build margin emission factor are in section B.6.3, however, more detail was included in section B.6.1 of the PDD</i></p>	<p>Validation Team Response:</p> <p><i>The explanation about the option selected regarding the sample group of power units used was provided in the PDD. In this case, the power capacity additions in the electricity system that comprise 20% of the system generation (in MWh) and that have been built most recently has been selected, since it comprised the larger annual generation (Tables 15 and 16 of PDD)</i></p> <p>Validation Team Conclusion:</p> <p>CLOSED</p>
<p>CAR 1:</p> <p><i>Annual average energy of 156 GWh/year must be demonstrated from plant design and hydrologic studies.</i></p>	<p><i>Table 2 Clause 4.1</i></p>	<p>Project Owner Response:</p> <p><i>The hydroelectric power plant will use a design flow of 27.5 m³/s and a waterfall of 149 meters. The power plant will generate 156 GWh/year annual average energy and 124.9 GWh/yearfirm energy, defined with a 95% statistic level of significance, calculated through the aggregation of the annual results of the operation simulation on a daily basis.</i></p> <p><i>For energy production estimation, hydrological records from 1972 onwards were available.</i></p> <p><i>Plant design and hydrological study are attached.</i></p>	<p>Validation Team Response:</p> <p><i>General plane with location of BHP, issued July 2007; Calibration curves of the dam, spillway, diversion canal, and bottom discharge, issued June 2008; and hydrological studies were delivered to DOE for its analysis. The information regarding Annual average energy has been demonstrated</i></p> <p>Validation Team Conclusion:</p> <p>CLOSED</p>

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<p>CAR 2:</p> <p><i>Surface area at full reservoir level of 180.000 m² must be demonstrated from plant design and topographic studies.</i></p>	<p><i>Table 2 Clause 4.1</i></p>	<p>Project Owner Response:</p> <p><i>The reservoir is located upstream the dam, flooding the areas surrounding the Bonyic creek, with a length of approximately 2,010 m and a maximum width of 260 m near the Conejo creek. It would have a narrow oblong shape, and a flood area of 18 has at its normal maximum level (equivalent to 240 m above sea level).</i></p> <p><i>The reservoir shall have a total volume of 1.38 million m³ of water, 0.4 million of which correspond to the dead reservoir.</i></p> <p><i>Plant design and topographic studies are attached.</i></p>	<p>Validation Team Response:</p> <p><i>The Rainfall and flow data, issued June 2008, and a General plane with location of BHP, issued July 2007, were delivered to DOE for its analysis. The information regarding Surface area at full reservoir level of 180.000 m² has been demonstrated</i></p> <p>Validation Team Conclusion:</p> <p>CLOSED</p>
<p>CAR 3:</p> <p><i>Project description must be complemented with a description of the project connection to the national grid, commercial frontier, and measurement systems of the electricity delivered to the grid.</i></p>	<p><i>Table 2 Clauses 4.1, 7.3.1 and 7.5.1</i></p> <p><i>Consolidated baseline methodology for grid-connected electricity generation for renewable sources , Clause III</i></p>	<p>Project Owner Response:</p> <p><i>Project connection to the national grid, commercial frontier and measurement systems of the electricity delivered to the grid are regulated by Operation and Transmission Regulations (attached) Bonyic hydroelectric power plant will be connected to the national interconnected grid by means of a 12 km long, 115 kV transmission line that connects the power plant substation with the ETESA Changuinola substation. To connect it with the Changuinola substation, a 115 kV field has been installed. It is composed of, among others:</i></p> <ul style="list-style-type: none"> <i>- Three power transformers on the transmission line</i> 	<p>Validation Team Response:</p> <p><i>The description about the project connection to the national grid, commercial frontier, and measurement systems of the electricity delivered to the grid have been enhanced and included in clauses B.3 and B.7.2</i></p> <p>Validation Team Conclusion:</p> <p>CLOSED</p>

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- One three-phase switch on the transmission line
 - Three power transformers on the barrage
 - One control, measurement and protection panel.
 - Auxiliary alternating current and direct current panels.
 The power plant is connected to the terminals of the current 220/115 kV autotransformer of the ETESA substation.
 In order to project the transmission line there are two line protections redundantly set up with the following features:
 - Distance protection (21/21N)
 - Directional phase and earth overcurrent protection (67/67N)
 - Surge protection (59)
 - Synchronization verifier (25 F)
 - Triggering circuit monitoring (74-1,74-2)
 For teleprotection between both substations, the equipment installed in both extremes is communicated by means of standard monomode optical fiber, installed in the OPGW type return cable of the transmission line.
 To control the substation field, there is a programmable controller, which shall be integrated to the existing grid in the ETESA substation by means of a communication network. The ETESA substation shall also serve the purposes of enabling the National Dispatch Center (CND in Spanish) to monitor the equipment, pursuant to current regulations.
 To measure the energy that is provided

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		<p>to the interconnected grid, two redundantly set-up energy meters, with 0.2 S accuracy class and prepared for remote reading, as established in the commercial measuring system regulations, have been installed in the ETESA Changuinola substation, defined as the project commercial boundary substation.</p> <p>Additionally, in the Bonyic power plant, there is measurement and protection equipment with similar characteristics to the equipment installed in the Changuinola commercial Boundary substation, both for internal control and for monitoring by the National Dispatch Center (CND in Spanish) of the equipment that connects the 115 kV substation to the grid and of the generation equipment.</p> <p>Information about project connection to the national grid, commercial frontier, and measurement systems of the electricity delivered to the grid, has been incorporated in the PDD.</p>	
<p>CAR 4:</p> <p><i>Consistency of alternatives identified to assess additionality with Panamanian legal framework (Specific references to National Plan for Electric Expansion) must be demonstrated.</i></p>	<p style="text-align: center;"><i>Table 2 Clause 6.2.3</i></p> <p style="text-align: center;"><i>Tool for the demonstration and assessment of additionality, Sub-step 1b</i></p>	<p>Project Owner Response:</p> <p><i>It was specified in the PDD that the realistic and credible alternatives identified, available to the project participants that provide outputs comparable with the proposed CDM project activity, are in compliance with all applicable legal and regulatory requirements in Panama. This is reflected in the Panamanian Expansion Plan, which considers both alternatives.</i></p>	<p>Validation Team Response:</p> <p><i>The alternatives identified to assess additionality are aligned with the Panamanian legal framework. The reference document titled Expansion Plan for National Grid has been included</i></p>

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		Also, the web link to the Panamanian Expansion Plan was included in the PDD (http://www.etesa.com.pa/plan_expansion.php)	Validation Team Conclusion: CLOSED
<p>CAR 5:</p> <p><i>The existence of social and environmental conflict described in the "Barrier due to project location" must be documented (refer to minutes, news, interviews, IDB consultant concept).</i></p>	<p style="text-align: center;"><i>Table 2 Clause 6.4.1</i></p> <p><i>Tool for the demonstration and assessment of additionality, Sub-step 3a</i></p>	<p>Project Owner Response:</p> <p><i>The existence of a Barrier due to project location in a sensitive social and biophysical environment which has led to major obstacles in obtaining project financing and serious delays in project construction and implementation, is documented in IDB letter, which also includes a third party recommendation (expert consultant) and the minute for the Naso TJER DI general meeting.</i></p> <p><i>Executive Board meeting where project financing, considering CDM's incentive, was approved is also attached.</i></p>	<p>Validation Team Response:</p> <p><i>The project participant delivered to the DOE a copy of the following documents:</i></p> <ul style="list-style-type: none"> <i>General Assembly of Naso people, convened on September 19th, 2004</i> <i>Letter from the IDB to HET, reporting their position about the process of structuring a loan for the development of the BHP after the social consultant concept. Issued on June 28th, 2005</i> <i>Minute 1490 of the EPM Executive Board meeting carried out on August 4th, 2008, which contains the EPM decision to finance the project themselves.</i> <p><i>These documents describe the different hurdles in obtaining project financing and serious delays in project construction and implementation.</i></p> <p><i>Additionally, the description of the barrier due to project location was enhanced in</i></p>

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			<p>clause B.5</p> <p>Validation Team Conclusion:</p> <p>CLOSED</p>
<p>CAR 6:</p> <p><i>In the explanation of the barrier due to prevailing practice, include relevant information from the ETESA reliability report (i.e. to promote the building of thermal power plants).</i></p>	<p><i>Table 2 Clause 6.4.2</i></p> <p><i>Tool for the demonstration and assessment of additionality, Sub-step 3b</i></p>	<p>Project Owner Response:</p> <p><i>Relevant information from the National Dispatch Center Report regarding the reliability of the Interconnected National System was included in the explanation about the barrier due to prevailing business practice in Panama, that is to say, the construction of thermal power plants and also some construction of large hydropower plants and/or refurbishment and upgrading of hydropower plants..</i></p> <p><i>Said report explains that the existing generation could absorb the projected energy demand, but an increasing demand will result in the lack of surplus energy in the current generation system. According to the report, this is due to the current generation system is not large enough to support an increase in the energy demand level. In this context, it is more feasible that less expensive and short time available thermal generation would be prioritized, continuing with the prevailing business practice.</i></p> <p><i>The National Dispatch Center Report regarding the reliability of the Interconnected National System was</i></p>	<p>Validation Team Response:</p> <p><i>The project participant has delivered to the DOE a copy with the reliability report from ETESA. This report explains that generation would be enough to absorb currently-projected energy demand, and reserves are insufficient to cover increases in said demand. Within this context, thermal generation, which is both less expensive and can be built within a shorter time span, would be far more likely to be prioritized.</i></p> <p><i>This information from Reliability report from ETESA was included in PDD in clause B.5</i></p> <p>Validation Team Conclusion:</p> <p>CLOSED</p>

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		<i>provided to the DOE.</i>	
<p>CAR 7:</p> <p><i>Describe further in the PDD the mitigation measures (i.e., ratio 10:1 for tree felling). Currently, there is a brief description of the clauses of the environmental management plan. It will be useful to describe specifically some of the mitigation measures and action plans that HET has carried out in order to demonstrate its commitment to the mitigation of environmental impacts.</i></p>	<p><i>Table 2 Clause 10.3</i></p> <p><i>VVM Clause 133</i></p>	<p>Project Owner Response:</p> <p><i>The mitigation measures considered for the project activity were wider described in the PDD.</i></p> <p><i>The project includes an environmental management program and a series of plans that not only mitigate and neutralize the environmental impacts caused by the project, but also provide local infrastructure and resources to improve community life and development.</i></p> <p><i>The environmental and social management program set forth by Bonyic allows for a good coexistence between conservation of biodiversity and resources of the indigenous community, and energy generation activities (in all cases respecting community dynamics and land use under any form of land ownership).</i></p> <p><i>HET is currently implementing, and will continue to implement during the whole process of project construction and operation, measures aimed to foster the recovery of the vegetation that existed prior to the impact on the area, trying to preserve or emulate the initial ecosystem structure. Environmental management entails the identification of the initial</i></p>	<p>Validation Team Response:</p> <p><i>During an on-site visit ICONTEC had the opportunity to review HET's mitigation plan to manage the impacts of the BHP.</i></p> <p><i>The description in clause D of the PDD was enhanced and is consistent with the information reviewed by the DOE and required by the VVM.</i></p> <p>Validation Team Conclusion:</p> <p>CLOSED</p>

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		<p>vegetation and the characterization of its flora and structure, followed by the design of a re-vegetalization and compensation plan. During the preliminary construction works, seeds and other vegetative parts that can serve as reproductive material shall be collected and tested to determine their germination viability.</p> <p>According to the environmental management plan of the project, HET will carry out programs aimed at environmental recovery and at the compensation of areas such as the access road to the area, an unavoidable impact.</p> <p>Further details regarding mitigation measures are included in the PDD.</p> <p>Information about the Social plan is attached.</p>	
<p>CAR 8:</p> <p><i>Explanation about the contractual relationship to be signed with ETESA (equipment and calibration) must be included in clause B.7.2, "Description of the monitoring plan."</i></p>	<p><i>Table 2 Clause 7.2</i></p> <p><i>VVM Clause 123 (b) (ii)</i></p>	<p>Project Owner Response:</p> <p><i>Currently, there is no contractual relationship with ETESA. The relationship, electricity monitoring and equipment calibration are regulated by Operation and Transmission Regulations and Law 6 (attached.)</i></p> <p><i>In this context, measurement equipment calibration, which must be performed by the responsible entity in Panama (ETESA) by means of the corresponding laboratories, and must be certified by placing the corresponding stamps on the equipment.</i></p>	<p>Validation Team Response:</p> <p><i>The issues regarding the contractual relationship to be signed with ETESA are described in Clause B.7.2</i></p> <p>Validation Team Conclusion:</p> <p>CLOSED</p>

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		<i>Explanation about the contractual relationship to be signed with ETESA, equipment calibration has been included in the description of the monitoring plan in the PDD.</i>	
<p>CAR 9:</p> <p><i>The methodology indicates the necessity to cross-check measurement results with records for sold energy in order to achieve QA/QC; in the PDD it is only mentioned the calibration and uncertainty level of the equipment.</i></p> <p><i>Refine the process of QA / QC of the EG variable according to the methodology (billing).</i></p>	<p style="text-align: center;"><i>Table 2 Clause 7.2</i></p> <p><i>Consolidated baseline methodology for grid-connected electricity generation for renewable sources , Clause III, Data/parameter: EG_{facility,y}</i></p>	<p>Project Owner Response:</p> <p><i>The QA/QC procedures to be applied for the electricity supplied by the project activity to the grid were included in the PDD.Said measures include crosschecking measurement results with records for sold electricity.</i></p>	<p>Validation Team Response:</p> <p><i>The QA/QC procedure for electricity supplied by the BHP was included and is in accordance with the methodology.</i></p> <p>Validation Team Conclusion:</p> <p>CLOSED</p>
<p>CAR 10:</p> <p><i>In clause E.2, add a summary of comments received from stakeholders about project construction.</i></p>	<p style="text-align: center;"><i>Table 2 Clauses 9.4 and 9.5</i></p> <p style="text-align: center;"><i>VVM Clause 129</i></p>	<p>Project Owner Response:</p> <p><i>A table summarizing the comments received from stakeholders about the project construction was included in section E.2 of the PDD. In addition, further information regarding the two stages of the consultation process carried out (the first stage aimed to obtain the environmental license, where a public discussion with local stakeholders was carried out after a process of information, consultation and consertation; and the second one performed in March 2010 during the International Exhibition and Symposium of Cleaner Production in Panama) was</i></p>	<p>Validation Team Response:</p> <p><i>During the local stakeholder consultation there were some comments about the BHP. ICONTEC reviewed these comments during the on-site visit.</i></p> <p><i>The summary about the comments received from stakeholders about the project construction described in the PDD section E.2 is consistent with the information reviewed by the DOE.</i></p>

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		<p><i>incorporated.</i></p> <p><i>The comments received from the stakeholders were shown to the DOE during the validation visit. The documentation is attached.</i></p>	<p><i>Validation Team Conclusion:</i></p> <p>CLOSED</p>
<p>CAR 11:</p> <p><i>An explanation of the modification of the annual estimation of emissions reductions during the first 7-year crediting period from Version 01 to Version 02 of PDD must be provided (from 85,130 tonnes of CO2e to 88,693 tonnes of CO2e)</i></p>	<p><i>VVM clause 7 (a) and 8</i></p>	<p><i>Modification in annual estimation of emission reductions is due to modification in the electricity generation estimations</i></p>	<p><i>Validation Team Response:</i></p> <p><i>The calculation regarding the emissions reductions is consistent with the electricity generation estimations, and this estimation has been calculated and justified (See CAR 12)</i></p> <p><i>Validation Team Conclusion:</i></p> <p>CLOSED</p>
<p>CAR 12³³:</p> <p><i>An explanation about the modification of annual estimation of electricity</i></p>	<p><i>VVM clause 7 (a) and 8</i></p>	<p><i>Modification in annual estimation of electricity generation has been done to be in accordance with the latest technical specifications.</i></p>	<p><i>Validation Team Response:</i></p> <p><i>The latest Technical specifications and the</i></p>

³³ On December 10th, 2012, the UNFCCC Secretariat raised a request regarding the validation of the plant load factor.

This is the response to that request: Considering the hydrological technical studies /34/ the estimation of the average plant generation is 156.000 MWh/year. This is a theoretical value defined with a 95% statistic level of significance and calculated through the aggregation of the annual results of the operation simulation. For energy production estimation, hydrological records from 1972 onwards were available. Plant design /34a/, /34b/ and hydrological study /34/ were reviewed by the DOE during the validation process.

On the other hand, plant load factor calculation considers the estimation of the power plant output compared to the maximum output it could produce. In other words, taking into account that the theoretical estimation of average plant generation was estimated to be 156.000 MWh/year and the maximum generation that could be produced are given by the power plant install capacity of 31,3 MW, and 8760 hours per year, therefore, the plant load factor is 0,568952689. Taking into account this information, the plant load factor was validated by the DOE in line with the "Guidelines for the Reporting and Validation of Plant Load Factors", EB 48 Annex 11.

For project emission calculation only two decimals were considered, and the plant load factor used was 0,57. It approximation produced a difference of 0,2% when equation was applied and this load factor was multiplied for the nominal power capacity and generation hours.

Despite this simplification for baseline emission estimation, plant load factor and estimated annual average generation were reviewed by ICONTEC verifying that it was correctly calculated. However since the onsite visit the technical specifications of the turbine-generator system was modified and the new plant capacity is 32.64, hence the plant load factor has been modified too.

$$plf = \frac{156,000 \text{ MWh/year}}{8760 \text{ h} \times 32.64 \text{ MW}} = 0.5455$$

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generation (EG _y) during the first 7-year crediting period from Version 01 to Version 02 of PDD must be provided (from 150,008 MWh/year to 156,287 tonnes of CO ₂ e)		Technical documentation is attached.	calculations made in order to estimate the electricity generation were reviewed by ICONTEC and are found to be correctly calculated. Validation Team Conclusion: CLOSED
CAR 13 ³⁰ : Plant load factor used to estimate annual plant generation must be demonstrated.		<p>Plant load factor was calculated considering the estimation of the power plant output compared to the maximum output it could produce.</p> <p>In other words, taking into account that the average plant generation was estimated to be 156.000 MWh/year and the maximum generation that could be produced are given by the power plant install capacity of 31,3 MW, and 8760 hours per year, therefore, the plant load factor is calculated as follows.</p> $\text{Plant Load Factor (\%)} = \frac{\text{Average electricity generation}}{\text{Maximum electricity generation}}$ $\text{Plant Load Factor (\%)} = \frac{156.000 \text{ MWh/year}}{31,3 \text{ MW} \times 8760 \text{hs/year}}$ <p>Plant Load Factor (%) = 57%</p>	<p>Validation Team Response:</p> <p>Taking into account that the estimation of the average plant generation (156.000 MWh/year) was suitably explained in the Project Owner Response to CAR 1, the DOE accepts the calculation of the Plant Load Factor (57%).</p> <p>Validation Team Conclusion:</p> <p>CLOSED</p>
CAR 14 The project doesn't have the DNA approval letter.	Kyoto Protocol Art. 12.5a, Procedures for Small Scale CDM Project Activities §23a V/V Manual art.44 to 48		<p>Validation Team Response:</p> <p>National letter of approval issued by ANAM 18/05/2012 was sent to ICONTEC on 25/05/2012 and ICONTEC could verify the authenticity of</p>

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			<p><i>the letter by email, phone call and written communication with ANAM on August 20th, 2012.</i></p> <p><i>Validation Team Conclusion:</i></p> <p>OPEN</p>
<p>FAR 1:</p> <p><i>The management plan must account for all quality issues related to the CDM management, including roles and responsibilities defined within the project.</i></p>	<p>Table 2 Clause 7.6</p>	<p>Project Owner Response:</p> <p><i>According to the approved methodology ACM0002 version 12.3.0, the monitoring plan shall consist in the monitoring of the electricity generated from the proposed project activity, the surface area of the reservoir at full reservoir level, and the installed capacity of the plant after project implementation.</i></p> <p><i>The project participant will assign a qualified person to compile the necessary data according to the approved methodology to accurately calculate emission reductions. The data will be compiled in a manner amenable to third party audit and deliverable to the DOE for certification purposes.</i></p> <p><i>Monitoring of the electricity generation will be carried out by Hidroecológica del Teribe, S.A. through its maintenance and operation team.</i></p> <p><i>The management plant will account for all quality issues related to CDM management, including roles and responsibilities defined within the project.</i></p>	<p>Validation Team Response:</p> <p><i>It will be necessary to identify during the first crediting period: procedures for day-to-day records handling, procedures for dealing with possible monitoring data adjustments, procedures for calibration of monitoring equipment and uncertainties and procedures for corrective actions</i></p> <p><i>Validation Team Conclusion:</i></p> <p>OPEN</p>

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FAR 2:

There is no evidence of a training program for monitoring personnel and emergency preparedness for cases where emergencies can cause unintended emissions.

Vvm Clause 123 (b)(ii)

During project implementation stage will be implemented a training program for monitoring personnel and emergency preparedness for causes where emergencies can cause unintended emissions

Validation Team Response:

It will be necessary to identify during the first crediting period: procedures for the training of monitoring personnel and procedures for emergency preparedness for cases where emergencies can cause unintended emissions.

Validation Team Conclusion:

OPEN

ANNEX B. NATIONAL LETTER OF APPROVAL.

ANNEX C. TEAM AUDIT EXPERIENCE AND KNOWLEDGE

Lead Auditor

Zoo. Erika Urrego

Zootechnician
UNIVERSIDAD AGRARIA DE COLOMBIA
Specialist in Environmental Management System
UNIVERSIDAD EXTERNADO DE COLOMBIA

Work Experience

2006 – Actual

ICONTEC

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

2003 – 2006

ASOCIACION COLOMBIANA DE PORCICULTORES-FNP

To coordinate the activities to be performed by the Environmental Window Program in the various country areas. To allocate and execute resources engaged under the Cleaner Production agreements signed together with several environmental authorities.

To lead the CDM project, focused to reduce methane (CH₄) emissions issued by animal waste. To be aware of the Ecuadorian and Chilean methodologies already approved by the CDM's Executive Board for Hog Breeding Sector to elaborate a proposal for the hog breeding sector together with the Ministry of Environment, Housing and Territorial Development in order to join farms to CDM projects.

2001 – 2002

FICHTNER GmbH & Co.KG

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

1998 – 2001

Regional Environmental Authority (CAR Sumapaz)

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

CDM Experience

2006

Consultancy:

- Presentation of proposals for developing CDM in the farming and animal husbandry industry

2008

CDM Auditor:

- Validation of the La Calera Biodigesters Project
- Validation of the ECC methane capture and combustion from AWMS at dairy farms in Mexico – I
- Validation of the La vegona project
- Validation of Chamelecon project
- Validation of Macano hydroelectric project
- Verification of Doña Juana Landfill gas recovery
- Validation of the Montenegro Landfill gas recovery and flaring
- Validation of the Pirgua Landfill gas recovery and flaring

Auditor

Eng.Francy Ramírez

Electrical Engineer
UNIVERSIDAD DE LOS ANDES
Specialist in Social Assessment of Projects
UNIVERSIDAD DE LOS ANDES

WorkExperience

2005 – Actual

ICONTEC

Standardization Professional. Plan, coordinate, perform and ensure achievement of the national standardization committees' program. These committees address subjects as: electrical facilities, electrical power quality, electrical transformers, appliances for substations and medium and high voltage, electrical devices and fixtures, protection against atmospheric electric discharges and energy management. Elaborate technical standards. Develop and control special assigned projects. Participate in regional and international standardization programs.

2002 – 2005

CODENSA S.A ESP

Supervise work on field and upload results into the central information system, evaluate performed inspections, conciliate with contractors, address the inspections' result to the several areas of the company, charge inspections and electrical works to the company's customers, coordinate and support on field the commercial technicians, provide technical training to the technical personnel, administrative support to the Division of Commercial Processes and Control of Loss, maintain the database for internal management for Inspections. Lead the Project for Improvement of Commercial Process in Cundinamarca Regional Office.

CDM Experience

CDM Auditor:

- Verification of Santa Ana Hydroelectric Plant
- Verification of Agua Fresca Multipurpose and environmental services project
- Validation of the Chamelecón 280 Hydroelectric project
- Validation of the La Vegona Hydroelectric Project
- Validation of Paysandú Clean Energy
- Verification of Bio energy in General Deheza –Electricity generation based on peanut hull and sunflower husk

Sectoral Specialist

Eng. Fernando Gómez Gómez

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

ECONOMETRÍA S.S. - Technical Advisory

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

ECOENERGIA S.S. ESP - Founding Member and Manager

Management of private projects of generation, distribution and commercialization of power.

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

AUDITORES ENERGÉTICOS - AENE LTDA

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

Development of competent rate models, October 1994 - March 1995

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

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

EMPRESA DE ENERGIA DE BOGOTÁ - EEB

Positions:

Chief of the Department of generation planning, interconnection and sub-transmission, 1978 - 1979.

Chief of Electric Planning Division, 1979 - 1986.

Assistant for Technical Sub-management, 1986 - 1987

Chief of Special Projects Division, 1987

Chief of expansion and Development Division, 1987 - 1994

Management Advisor, 1994

INTERCONEXIÓN ELÉCTRICA S.A - ISA

1976 - 1978

Engineer Specialist in electric planning Research and development of models for planning and operation of electric systems.

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

Experience in CDM activities:

2006 – 2010

Participation as an Energy expert in:

- Verification of three verification periods of Santa Ana Hydroelectric plant project
- Verification of first verification period of Agua Fresca Multipurpose and Environmental Services Project
- Verification of two verifications of La Vuelta and la Herradura Hydroelectric Project
- Verification of Rio Amazon Woods residues power plant
- Verification of Cristalino small hydroelectric power plant project
- Verification of Faxinal small hydro project in Faxinal dos Guedes
- Validation of El Bote small hydroelectric plant project