

**VALIDATION REPORT – RENEWAL OF CREDITING PERIOD:
Agua Fresca Multipurpose and environmental services project**

**Aguas de la Cabaña S.A. E.S.P.
(COLOMBIA)**

**Kommunalkredit Public Consulting GmbH
(AUSTRIA)**

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VALIDATION REPORT VVS



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Summary:

ICONTEC has performed the renewal of crediting period of: Agua Fresca Multipurpose and environmental services project in Colombia on the basis of UNFCCC criteria for the CDM, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 12 of the Kyoto Protocol, the CDM modalities and procedures and the subsequent decisions by the CDM Executive Board. This renewal of crediting period report summarizes the findings of this exercise.

The proposed project activity under the renewal process is based on methodology AMS-I.D.: Grid connected renewable electricity generation, version 17.0. The project activity under verification process consists of the small run-of-river hydroelectric plant connected to the Colombian electrical grid with an installed capacity of 7.49 MW is located in the municipality of Jerico (Department of Antioquia - Colombia).

The renewal of crediting period process consisted of the following three phases: i) a desk review of the revised project design documents, ii) follow up interviews with project stakeholders and iii) the resolution of outstanding issues and the issuance of the final renewal of crediting period report and opinion. The first output of the validation process was the list of requests presented in Table 2 of Annex A.

The total emission reductions from the project are estimated to be on average 10,808 tCO₂e per year for second crediting period, renewable.

In summary, it is ICONTEC's opinion that Agua Fresca Multipurpose and environmental services project, as described in the version 3.1 of the revised project design document, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology AMS-I.D., version 17.0. Hence, ICONTEC requests the renewal of crediting period of the project as CDM project activity.

Report No:	CDMRE-12-001-02	Subject Group:	1.2	Indexing terms:
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Number of pages:

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This report should not be read without reference to the annex A, Validation Protocol.

Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
CERs	Certified emission reductions
CL	Clarification Request
CO ₂ e	Carbon dioxide equivalent
DNA	Designated National Authority
DOE	Designated Operational Entity
GHG	Greenhouse Gases
ICONTEC	Colombian Institute of technical standards and certification (Instituto Colombiano de Normas Técnicas y Certificación)
IPCC	Intergovernmental Panel on Climate Change
MoC	Modalities of Communication
PDD	Project Design Document
UNFCCC	United Nations Framework Convention for Climate Change
VVS	CDM Validation and Verification Standard
PS	Project Standard
PCP	Project cycle procedure
UPME	Mining and Energy Planning Unit (Unidad de planeación minero-energética)
EPM	Medellin's enterprises public (Empresas públicas de Medellín)
XM	Market Experts
NEON	NEON is the official information service on the Colombian bulk energy market, managed by XM – Market Experts

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1. INTRODUCTION

Aguas de la Cabaña S.A. E.S.P. has commissioned ICONTEC to perform the renewal of the crediting period of Agua Fresca Multipurpose and environmental services project (hereafter called “the project”).

This report summarizes the findings in the renewal of the crediting period 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.

The project activity under renewal of the crediting period process consists of generate hydroelectricity with a total installed capacity of 7.49 MW and an annual production of 63.3 GWh, the project reuses the water from the discharge of Rio Piedras’ Hydroelectric Plant.

The project displaced other generation sources connected to the local grid that use fossil fuels to produce energy. The project provides clean energy and reduces CO₂ emissions in Colombia.

1.1. OBJECTIVE

The purpose of a renewal of the crediting period is to secure the opinion of an independent third party in order to assess the project’s design: the project's baseline, the monitoring plan, and the project's compliance with relevant UNFCCC.

Renewal of the crediting period is a requirement for 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 review about the updated project design for the renewal of the crediting period to determine that the project design meets the 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

ICONTEC carries out audits according to 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 Standard (VVS). Likewise, ICONTEC focuses on the identification of significant risks for CER generation, and verification of the mitigation during its audits.

The validation of the renewal of the crediting period does not intend 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:	Aguas de la Cabaña S.A. E.S.P. (Colombia)
	Kommunalkredit Public Consulting GmbH (Austria)
Title of project activity:	Agua Fresca Multipurpose and environmental services project
Project Entity:	Aguas de la Cabaña S.A. E.S.P. Carrera 35 N° 7 – 99, Second floor Medellín, Colombia
Location of the project activity:	Agua Fresca Multipurpose and Environmental Services Project is located in the municipality of Jerico, department of Antioquia within the area of influence of the Piedras River basin.
Methodology :	AMS-I.D.: Grid connected renewable electricity generation, Version 17.0/10/ This methodology is used in combination with the “Tool to calculate the emission factor for an electricity system” version 03.0.0 /11/
Project’s crediting period:	7 years, renewable.
Estimated amount of emission reductions over the chosen crediting period :	75,656 tonnes CO ₂ e

The project activity consisted in its first stage in a hydroelectric run-of river power generation project, with an installed capacity of 7.49 MW and an annual production of 63.3 GWh. /1/. The project reuse the water of the Piedras River Hydroelectric plant.

The Agua Fresca Multipurpose and environmental services project is located on the Piedras River basin, in the municipality of Jericó – Antioquia Department, Colombia. The plant will be managed by the Aguas de la Cabaña S.A. E.S.P.

The connection of the Project to the National Electrical Grid is in the Municipality of Fredonia, it was constructed a 44 kV transmission line with a length of 15 km.

The second stage consists in the construction of a regional aqueduct to provide water for human consumption as for irrigation to the lands and settlements located in the Cauca River canyon between La Pintada and Bolombolo, municipalities of Antioquia, Colombia.

The construction of the regional aqueduct is expected to develop according to the area real demand warrants. To date the current conditions in the area have prevented that this second stage be implemented.

The project activity's main purpose is to provide electric power to the National Interconnected System, displacing the thermal generation from fossil fuels present in the system with the generation of renewable energy.

It is expected that more than 75,656 tCO₂e emitted to the atmosphere will be avoided over a second crediting period of 7 years in January 2013 to December 2019. The resulting emission reductions from the project activity are estimated in average 10,808 tCO₂e per year.

The Methodology and tools applicable to the project activity under renewal process are:

AMS.I-D: Grid connected renewable electricity generation - Version 17.0 - (valid from 17 June 2011 onwards)./10/

Tool to calculate the emission factor for an electricity system - Version 03.0.0 - (valid from 23 November 2012 onwards)./11/

Tool Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period – Version 03.0.1 - (valid from 2 March 2012 onwards)./12/

All documents referred above can be obtained at the UNFCCC website.

ICONTEC confirmed through the on site visit and interview that the project complies with the accuracy and completeness of the project description.

2. METHODOLOGY

The renewal of crediting period consists of the following three phases:

- i) A desk review of the revised 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 the verification of the contribution to climate change mitigation.

All documentation review during the renewal process has been including in chapter 5 - references.

The validation protocol resulting from the Validation of Agua Fresca Multipurpose and environmental services project is enclosed in Annex A of this report.

Findings established during the renewal can be seen as:

- A non-fulfillment of validation protocol criteria, or
- An identified risk to the fulfillment of the project objectives

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

Corrective action requests (CAR) are issued where:

- The project participants have made mistakes which directly influence the ability of the project activity to achieve real, measurable and additional emission reductions;*
- The CDM requirements have not been met; or*
- 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 Request is required when information is insufficient or not clear enough to establish whether a requirement has been met.

ICONTEC resolve or “close out” CARs and CLs only if the project participants modify the project design, rectify the PDD or provide additional explanations or evidence that satisfy the ICONTEC’s concerns. VVS (V 03.0) para. 28.

This validation report explains the issues raised, the responses provided by the project participants, the means of validation of such responses and references to any resulting changes in the PDD or supporting annexes. VVS (V 03.0) para. 29

2.1. FOLLOWUP INTERVIEWS

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

Table1: Follow up Interview

DATE	PLACE	INTERVIEW DELEGATE	ORGANIZATION	INTERVIEW TOPICS
21-08-2012 to 22-08-2012	Aguas de La Cabaña’s Measurement Laboratory Facility	Sergio Ortega Manager	Aguas de La Cabaña S.A. ESP	Baseline and monitoring methodology Monitoring plan
		Andrea Botero Project Engineer		

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		Angela Patricia Herrera Administrator		
21-08-2012	EPM's Measurement Laboratory Facility	Juan C. Echeverri Measurement Equipments Coordinator	EPM	Monitoring plan
		Jorge Ivan Ossa QMS Administrator		
		Ivan Dario Estrada Technician of Operation Services and Maintenance		
	XM's Office	David Arenas Hoyos Commercial Management Coordinator	XM	Baseline and monitoring methodology

2.2. RESOLUTION OF CLARIFICATION AND CORRECTIVE ACTION REQUESTS

Corrective action and clarification requests raised by ICONTEC were presented to the project participants and resolved through communication and meetings between Aguas de La Cabaña S.A. E.S.P. and ICONTEC. To guarantee the transparency of the validation process, the concerns raised and the response provided by the project participants were documented in more detail in the validation protocol in Annex A.

Since modifications to the revised project design document were necessary to resolve ICONTEC's concerns, the client decided to review the PDD and re-submit corrected versions of the revised PDD. After of review the last version of the revised PDD (version 3.1), ICONTEC issued this validation report and renewal opinion.

2.3. INTERNAL QUALITY CONTROL

This report includes the validation findings that 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 professional qualification scheme for CDM validation and verification.

2.4. VALIDATION TEAM

The validation team consists of the following personnel:

Table2: Validation Team

ROLE/QUALIFICATION	LAST NAME	FIRST NAME	COUNTRY
Lead Auditor	Ramirez	Francy	Colombia
Technical Expert scope 1	Gomez	Fernando	Colombia
CDM and Technical reviewer	Grisales	Cristian	Colombia

The validation team is qualified in accordance with ICONTEC's 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. GENERAL REQUIREMENTS

3.2.1. APPROVAL AND AUTHORIZATION

The project participant of the project is: Aguas de La Cabaña S.A. E.S.P.

The participation of the project participant has been approved by the Climate Change Division of Environment and Sustainable Development Ministry, DNA of Colombia under letter of approval dated on 24/11/2004. /4/

3.2.2. MODALITIES OF COMMUNICATION

There was no modification in the information about the focal point(s) or in the project participant(s) involved in the project activity

3.3. PROJECT DESIGN

The activity project is divided on two stages, the first stage is a hydroelectric run-of river power generation project and the second stage is the construction of a regional aqueduct to provide water for human consumption as for irrigation to the lands and settlements located in the Cauca River canyon between La Pintada and Bolombolo, municipalities of Antioquia department, Colombia.

The project was developed using the methodology AMS.I-D: Grid connected renewable electricity generation - Version 17.0. See CL 3.

This project activity corresponds to small scale and continuous complying with the General Guidelines to SSC CDM methodologies version 19.0./15/

According to the applied methodology /10/ the project boundary includes the spatial extent of the project boundary and includes the project power plants connected physically to the electricity system. Thus, the project boundary is the spatial extent of the project includes the power plant and all power plants connected physically to the National electric grid. The audit team verified the information about all operational power plants connected to the National Interconnected System (SIN), by means of accessing the XM's service information (named NEON <http://sv04.xm.com.co/neonweb/>). XM is the grid operator and administrator of the SIN. ICONTEC confirmed that Agua Fresca Multipurpose and environmental services project is indeed connected to Colombian electrical grid.

During the validation the audit team issued the CL 2 for clarify the project boundary. This situation was corrected on the last version of the revised PDD (version 3.1) and the description of how each finding was closed it is found in the Table A 2: Resolution of Corrective Action, Forward Action and Clarification Request of Annex A validation protocol.

The emissions sources and GHGs involved are CO₂ emissions from electricity generation in fossil fuel fired power plants in the national interconnected system.

The technology used in the enterprise is the use of hydro energy potential of the Piedras river for electricity generation by the gravitational energy of the water, which is used to move the turbines and trigger generators that enable the generation of electricity. This is a source of clean and renewable energy that presents low impact on the environment.

The capacity installed is 7.49 MW, using a generator and a turbine type Pelton. This hydro power plant has an annual generation of 63.3 GWh/year, with an average flow of 2.7 m³/s.

The Agua Fresca Multipurpose and environmental services project dispatches generated energy to the National Interconnected Grid in the Substation Fredonia of 44 kV, owned by EPM. This information was confirmed through of the onsite visit. EPM is responsible for the operation of this substation.

For the measured of the generated energy were installed two electrical meters (main and back up) on the delivery point to Colombian electrical grid (Fredonia electrical substation), as the audit team could verified by means of the onsite visit.

The second stage consists in the construction of a regional aqueduct to provide water for human consumption as for irrigation to the lands and settlements located in the Cauca River canyon between La Pintada and Bolombolo. Since the project is classified into the sectoral scope 1: Energy industries (renewable - / non-renewable sources), and the applied methodology (AMS-I.D, version 17)/10/, the second stage was not taken into account in order to assess the emission reductions regarding to the construction of the regional aqueduct. The audit team issued the CL 4, for absence of information, which was corrected on the new version of revised PDD/1/.

The project was registered on 7 January 2006 using the small scale methodology AMS-I.D "Renewable electricity generation for a grid" version 5 and the initially registered PDD was completed using version 1 of the PDD template. The relevant sections of the project design document relating to the baseline, estimated emission reductions and the

monitoring plan have been updated in the revised CDM-SSC-PDD (version 3.1 dated 2 July 2013) /1/ using an approved baseline and monitoring methodology as follows:

- Version 04.1 of the CDM-SSC-PDD template has been used./13//14/
- AMS-I.D, version 17 (Grid connected renewable electricity generation) has been adopted for the project activity that is currently applicable and valid /10/.

In line with the CDM-EB “Clean development mechanism project cycle procedure” (Version 04.0) /9/ and the email received from UNFCCC Secretariat /6/ dated 18 June 2012 about the project proponents’ intention to renew the crediting period of the registered CDM project activity (0122) “Agua Fresca Multipurpose and environmental services project” in Colombia. The project proponent, Aguas de la Cabaña S.A. E.S.P., has notified the UNFCCC Secretariat by email message sent on 15 June 2012 /5/, its intentions of getting the renewed crediting period (within nine to six months prior to the date of expiration of the first crediting period).

As per “Clean development mechanism project standard” version 4.0 /8/ the latest approved version of a baseline and monitoring methodology, applied in the original CDM-SSC-PDD of the registered CDM project activity, is used.

The project activity has been registered with the approved methodology, AMS-I.D, version 06. Since version 05 of AMS-I.D is no longer valid, the PDD for the renewal crediting period has been revised in line with the approved methodology AMS-I.D version 17 /10/, which is the latest version of the applied methodology at the time of submitting the revised PDD and is currently valid.

The applicability criteria of the methodology AMS.I-D: Grid connected renewable electricity generation - Version 17.0/10/, was verified by ICONTEC, as follows:

Table3: Methodology Applicability Conditions Analysis

Applicability condition	Means of validation
1. This methodology comprises renewable energy generation units, such as photovoltaic, hydro, tidal/wave, wind, geothermal and renewable biomass: (a) Supplying electricity to a national or a regional grid; or (b) Supplying electricity to an identified consumer facility via national/regional grid through a contractual arrangement such as wheeling.	On site. During the visit to the project was evidenced the use of water as source for power electricity generation.
2. This methodology is applicable to project activities that: a. Install a new power plant at a site where there was no renewable energy power plant operating prior to the implementation of the project activity (Greenfield plant); b. Involve a capacity addition; c. Involve a retrofit of (an) existing	The project activity is a new power plant at a site where there were no renewable energy power plants operating prior to the implementation of the project activity (corresponds to a greenfield plant)

plant(s); or d. Involve a replacement of(an) existing plant(s).	
<p>3. Hydro power plants with reservoirs that satisfy at least one of the following conditions are eligible to apply this methodology:</p> <ul style="list-style-type: none"> - The project activity is implemented in an existing reservoir with no change in the volume of reservoir; - The project activity is implemented in an existing reservoir, where the volume of reservoir is increased and the power density of the project activity, as per definitions given in the Project Emissions section, is greater than 4 W/m²; - The project activity results in new reservoirs and the power density of the power plant, as per definitions given in the Project Emissions section, is greater than 4W/m². 	<p>As ICONTEC verified by means of the onsite visit, this project activity is a run-of-river hydroelectric plant, hence Agua Fresca Multipurpose and environmental services project has no reservoir</p>
4. If the new unit has both renewable and nonrenewable components (e.g., a wind/diesel unit), the eligibility limit of 15MW for a small scale CDM project activity applies only to the renewable component. If the new unit co-fires fossil fuel, the capacity of the entire unit shall not exceed the limit of 15 MW.	The project activity does not consider the installation of a power plant (unit) with both renewable and non-renewable components.
5. Combined heat and power (co-generation) systems are not eligible under this category.	The project activity is a run-of-river type hydro power plant, thus does not correspond to a combined heat and power (cogeneration) system.
6. In the case of project activities that involve the addition of renewable energy generation units at an existing renewable power generation facility, the added capacity of the units added by the project should be lower than 15 MW and should be physically distinct from the existing units.	The project activity does not consider the addition of renewable energy generation units at an existing renewable power generation facility. And does not consider the retrofit or replacement of any unit.
7. In the case of retrofit or replacement, to qualify as a small-scale project, the total output of the retrofitted or replacement unit shall not exceed the limit of 15 MW.	The project activity is a new run-of-river power plant, does not involve retrofit or replacement

In accordance with the project activity and the selected methodology the emission sources are properly described in the revised PDD version 3.1 in compliance with Guidelines for completing the project design document form for small scale CDM project activities (Version 01.1) and the "F-CDM-SSC-PDD - Project Design Document form, version

04.1"/13//14/. The greenhouse gas emissions occurring within the project boundary as a result of its implementation are all addressed by the applied methodology. There are no greenhouse gas emissions within the project boundary and caused by the implementation of the project activity that contribute to more than 1% of the expected annual emission reductions and that are not addressed by the applied methodology. This was verified by ICONTEC by means of the onsite visit.

ICONTEC concludes that the project description, as included in the revised PDD version 3.1, is sufficiently complete and accurate as to meet CDM requirements for renewal crediting period.

3.4. BASELINE DETERMINATION

The baseline determination has been developed using methodology AMS.I-D: Grid connected renewable electricity generation, Version 17.0 /10/ and Tool for the Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period – Version 03.0.1/12/

According to the tool /12/ the PP applied correctly the following steps:

Step 1: Assess the validity of the current baseline for the next crediting period

Step 1.1: Assess compliance of the current baseline with relevant mandatory national and/or sectoral policies

The principal institutions responsible for Colombians Electricity Wholesale Market are:

- The Ministry of Mines and Energy: This is the leading institution in Colombia's energy sector.
- The Unit for Mining and Energy Planning (UPME): This unit of the Ministry of Mines and Energy is responsible for the study of future energy requirements and supply situations, as well as for drawing up the National Energy Plan and Expansion Plan.
- The Regulatory Commission for Gas and Energy (CREG): This entity is in charge of regulating the market for the efficient supply of energy. It defines tariff structures for consumers, transmission charges, and standards for the wholesale market, guaranteeing the quality and reliability of the service and economic efficiency. It also provides regulations that ensure the rights of consumers, the inclusion of environmental and socially sustainable principles, improved coverage and financial sustainability for participating entities.
- XM Compañía de Expertos en Mercados S.A. E.S.P.: This is a non-governmental agency acting as the market administrator, being in charge of the registration of contracts, the settlement and billing of all the transactions that take place in this market. XM is also in charge of the National Dispatch Center.

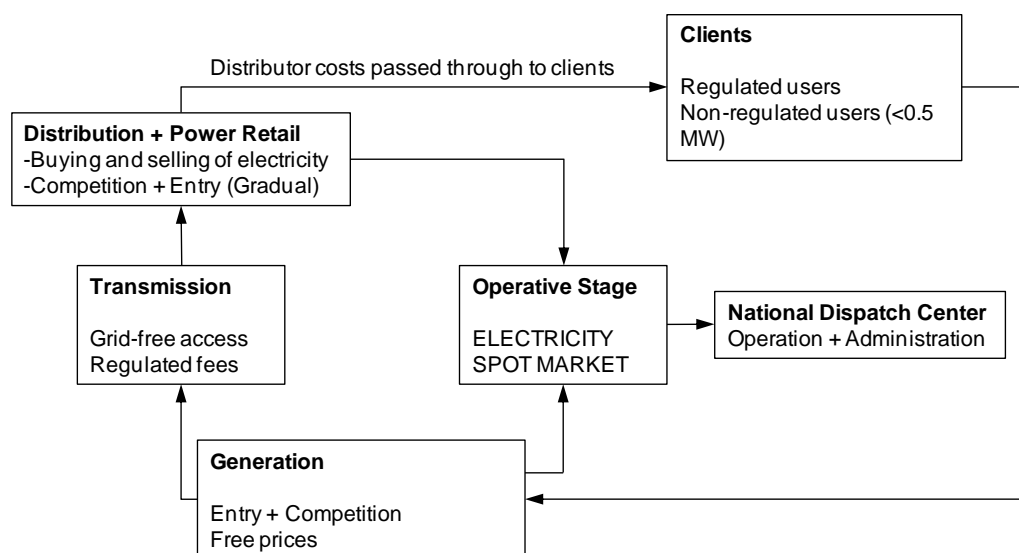
This structure is explained in the following link:
http://www.creg.gov.co/cxc/secciones/mercado_mayorista/estructura.htm

Table 4. Institutional structure of Colombian's electricity market.

Policies	Ministry of Mines & Energy
Planning	Planning Unit of the Mines and Energy (UPME)
Regulation	Commission for the Regulation of Energy and Gas (CREG)
System Operation and Market Administration	XM Compañía de Expertos en Mercados S.A. E.S.P.

The structure of the Colombian energy market is based on Laws 142 (Public Services Law) and 143 (Electricity Law) of 1994, which represent the last major reform of the power sector and establish the current regulatory framework. Since their enactment, Colombia has had a liberalized energy market, which is characterized by an unbundled generation, transmission, distribution, and commercialization scheme in order to separate the power activities and the markets. An electricity spot market and the development of a long-term contract market for electricity sales are the core of new structure to introduce a more effective framework for competition and an independent regulatory system supervised by the CREG (Regulatory Commission for Energy and Gas), created by the Law 143. This Electricity Law specifically introduced rules regarding: (i) Power sector planning; (ii) power generation; (iii) transmission and distribution; (iv) grid operation; (v) grid access fees; (vi) regime for electricity sales; (vii) concessions and contracts; and (viii) environmental issues, among others.

Simplified Scheme of the Colombian Power Market based on Electricity Law from 1994 (Law 143).



ICONTEC verified the applicable laws to the project activity by means of documental review of the information related on the website: <http://www.creg.gov.co/cxc/secciones/documentos/leyes.htm>, therefore ICONTEC confirmed that the current baseline complies with all relevant mandatory national and/or sectoral policies which had come into force (and is still on force) before the submission of the previous request for renewal of the crediting period and are applicable at the time of

requesting renewal of the crediting period.

Step 1.2: Assess the impact of circumstances

Since 1997 there has been no reform of the Colombian electricity sector, for this reason the circumstances at moment of request the renewal of crediting period are the same than validation moment.

Currently, the Mining Planning Unit (UPME), agency of Ministry of mines and energy, is responsible for the elaboration of the National Electricity Sector Expansion Plan and update the emission factor.

ICONTEC could conclude that the conditions used to determine the baseline emissions in the previous crediting period are still valid.

Step 1.3: Assess whether the continuation of use of current baseline equipment(s) or an investment is the most likely scenario for the crediting period for which renewal is requested.

In absence of the project activity, equivalent amount of electricity would have been generated by other power plants connected to Colombian electrical grid. Thus, this is not applicable to the project activity.

Besides that, ICONTEC confirmed by means of onsite visit and reviewing a certificate provided by the turbine and generator provider, VATECH /3/ that the equipment used on the first crediting period will be same on the second crediting period, for this reason this step does not apply.

Step 1.4: Assessment of the validity of the data and parameters

The emission factor for the Colombian electrical grid during the first crediting period was 0.477 kg CO₂/kWh, which was approved by Resolution No. 18 1401 October 29th, 2004, resolution issued by the Ministry of Mines. ICONTEC found an inconsistency that was declared on CL 8 due to the Resolution No. 18 1401 dated on October 29th, 2004 issued by the Ministry of Mines established the dispatch data analysis as method for the operating margin of Colombian grid emission factor, this means that it is necessary to updated it on a yearly basis, this misunderstood was corrected on new version of revised PDD /1/, and the PP provided a new calculation for the Colombian electrical grid emission factor based on the simple adjusted method for the operating margin of Colombian grid emission factor.

The project owner contract to the company Environmental Business & Technologies Ltda to update the emission factor of the grid, because the UPME agency of the Ministry of mines, has not updated this emission factor since 2004.

The relevant updates in the data and the source used have been elaborated under step 2.2 of this report.

Conclusion on step 1

Application of Steps 1.1, 1.2, 1.3 and 1.4 confirmed that the current baseline is still valid for the subsequent crediting period. The data and parameters have been updated based on the “Tool to calculate the emission factor for an electricity system” (Version 03.0.0) /11/. The relevant update in the data and the source used has been elaborated under step 2.2 of this report.

Step 2: Update the current baseline and the data and parameters

Step 2.1: Update the current baseline

As per the applied methodology, AMS-I.D, version 17 /10/ , the baseline emission is the product of electricity delivered to the Colombian electrical grid by the renewable generating unit multiplied by combined margin emission factor of Colombian electrical grid emission factor. In accordance with the “Tool to calculate the emission factor for an electricity system” (Version 03.0.0) /11/ an electricity baseline emission factor has been calculated as a combined margin emission coefficient, consisting of the combination of a simple operating margin (OM) emission coefficient and a build margin (BM) emission coefficient. Both, the OM and BM emission coefficient will be fixed based on ex-ante for the entire second renewable crediting period.

The simple adjusted OM was chosen by the PP to calculate the operating margin emission factor, using ex-ante data vintage taking into account that in the Colombian electric system, the low-cost/must-run resources constitute more than 50% of total grid generation, hence the Simple OM method cannot be used as it was verified by ICONTEC by means of reviewing the generation average of the five most recent years (<http://sv04.xm.com.co/neonweb/>). ICONTEC validated this choice. The option was chosen in order to use a fixed emission factor (there will be no need for monitoring and recalculating the emission factor during the crediting period) given the availability of public information of the last 3-year generation from official sources (available at the beginning of the validation of the renewal of crediting period process).

Calculations of OM emission factor were made as illustrated in the spreadsheet used for Colombian electrical grid emission factor calculation /2/, which is according to the tool’s specifications/11/. Plant emission factors $EF_{EL,m,y}$, were calculated under option A1 because the data on fuel consumption and energy generation are available. ICONTEC validated the values comparing the values presented for the PP in the mentioned spreadsheet/2/, against the values downloaded from the XM website <http://sv04.xm.com.co/neonweb/> (ICONTEC made a random sampling of 4 plants in four different dates and hours). After the comparison, ICONTEC deemed reliable and

appropriate the values used. The OM calculated was 0.5657 tCO₂/MWh, hence ICONTEC deemed the obtained value as reliable and credible.

In order to calculate the BM emission factor, option 1 (ex-ante) for the first crediting period was adopted. The option was chosen in order to use a fixed emission factor (there will be no need for monitoring and recalculating the emission factor during the first crediting period). The build margin emission factor is calculated based on the most recent information available on units already built for sample group *m* at the time of revised CDM-PDD submission to the DOE for validation of the renewal of the crediting period. The PP took the information from the latest official XM statistics (<http://sv04.xm.com.co/neonweb/>).

ICONTEC agreed with the data collection used by the PP to calculate the BM, hence the BM is confirmed as reliable and credible. The BM calculated was 0.0391 tCO₂/MWh, hence ICONTEC deemed the obtained value as reliable and credible.

The grid emission factor for the project activity has been calculated to be 0.1707 tCO₂/MWh, considering a weighted of $W_{OM} = 0.25$ and $W_{BM} = 0.75$, as stipulated for renewable crediting period in the “Tool to calculate the emission factor for an electricity system” /11/.

The baseline was updated using the Tool to calculate the emission factor for an electricity system”, Version 03.0.0. ICONTEC found an inconsistency and raised the CL 7.

The combined margin emission factor for the Colombian electrical grid is fixed ex-ante at 0.3024 tCO₂/MWh for the entire renewable crediting period.

Step 2.2: Update the data and parameters

Icontec could confirm through of spreadsheet 060213 AGUA FRESCA_Emission Factor Calculation 2011-Exante_V1.xls /2/, that the data and parameters were updated and correctly used on the calculation of emission reductions.

According to this information the total emission in absence of the project are 75,656 tons of CO₂e during the 7 years of second crediting period.

3.5. ADDITIONALITY

Not applicable for renewal of the crediting period.

3.6. MONITORING PLAN

Monitoring plan presented on revised PDD complies with requirements of approved methodology AMS.I-D (version 17.0.0) /10/ and all applied tools. During renewal process, a finding (CL 6) was raised with regard to the completeness of the monitoring plan. This situation was corrected on the last version of the revised PDD and the description of how each finding was closed it is found in the Table A 2: Resolution of Corrective Action, Forward Action and Clarification Request of Annex A validation protocol. Monitoring of GHG Emission reductions is based on the electricity generation by the project activity, which is transparently presented in section B.7 of the revised PDD, version 3.1 /1/.

ICONTEC verified through interviews with relevant personnel and onsite visit, that the project is equipped with an extensive monitoring system in accordance with the Colombian regulatory framework (<http://www.creg.gov.co/cxc/secciones/documentos/leyes.htm>). Staff training and the monitoring plan are established to maintain installed equipment and technology performance, as well as to ensure the measurements accuracy and the data reported.

Validation team checked all parameters presented at the monitoring plan of the latest version of the revised PDD /1/, against methodology and applied tools requirements; no deviations to the project activity were found.

3.6.1 Parameters ex-ante

Grid emission factor calculation:

The grid emission factor has been calculated by the PP by applying the Tool to calculate the emission factor for an electricity system”, Version 03.0.0 /11/, using the data provided by the Colombian authorities of the electrical market. ICONTEC verified each source provided on the spreadsheet as explained on this report above (Updating the current baseline).

Baseline emission factor for the Colombian electrical grid is established ex-ante based on the “Tool to calculate the emission factor for an electricity system” version 03.0.0/11/ using a combined margin approach. The combined margin emission factor for the Colombian electrical grid has been determined to be 0.1707 tCO₂/MWh, considering weights of $EF_{grid, OM,y} = 0.25$ and $EF_{grid, BM,y} = 0.75$, as per the “Tool to calculate the emission factor for an electricity system” /11/ and is fixed ex ante for the entire second renewable crediting period of 7 years. The OM emission factor is calculated ex-ante using the adjusted simple OM approach based on the generation-weighted average emissions per electricity unit over a three year period of 2008-09, 2009-10 and 2010-11. BM is calculated ex ante based on the 20% most recent capacity additions in the Colombian electrical grid based on net generation for the year 2010-11. The operating margin has been determined to be 0.5057 tCO₂e/MWh and the build margin to be 0.0391 tCO₂e/MWh. The calculations and assumptions have been verified and found to be correct by ICONTEC.

3.6.2 Parameters ex-post

The main monitoring parameter is: EG_y = Quantity of net electricity supplied to the grid, in year y. The DOE confirms that the latest revised PDD clearly states that it will be measured as required by the methodology.

Baseline parameters to be monitored ex post were indicated in Section B.7.1 of revised PDD and are as follows:

Table 5: Data and parameters ex-post

<i>Data/Parameter</i>	<i>ICONTEC's means of validation</i>
EG _y MWh/year	<p>The electricity exported to the grid by the project activity will be monitored continuously and recorded on monthly basis. This parameter will be measured through 0.2s accuracy energy meters consisting of one main meter and one backup meter and these meters will be calibrated every five years, this calibration frequency does not controvert the actual regulatory requirements in Colombia, neither the manufacturer specifications. The measurement system will be located at the electricity delivery point to Colombian electrical grid (Fredonia substation).</p> <p>This electricity delivered by the project activity and registered by XM will be cross check with the receipt of sales.</p>

With the above information, ICONTEC confirmed that the monitoring plan established by the PP, is feasible and that the PP has the ability and means of implementation sufficient to ensure that the emission reductions achieved as a result of the project activity, are reported ex-post and verified. It is according with paragraph 131 of VVS/7/.

3.7. CALCULATION OF GHG EMISSIONS

According to equation 10 of the methodology AMS.I-D, version 17/10/, emission reductions shall be calculated as follows:

$$ER_y = BE_y - PE_y - LE_y$$

For this type of project activity, according to Methodology the $L_y = 0$ and $PE_y = 0$.

The baseline emissions are the product of electrical energy baseline $EG_{BL,y}$ expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor.

$$BE_y = EG_{BL,y} \times EF_{CO_2,grid,y}$$

For ex-ante estimation of baseline emissions, the electric energy baseline $EG_{BL,y}$ was assessed as 63.3 MWh and the Grid emission factor was calculated as $EF_{grid,y} = 0.3024$ tCO₂/MWh

So the baseline emissions are:

$$BE_y = 63.3 \text{ GWh} \times 0.1707 \text{ tCO}_2/\text{MWh} = 10,808 \text{ tCO}_2\text{e/year}$$

3.8. ENVIRONMENTAL IMPACTS

Not applicable for renewal of the crediting period.

3.9. COMMENTS BY LOCAL STAKEHOLDERS

Not applicable for renewal of the crediting period.

4. GLOBAL STAKEHOLDERS CONSULTATION

Not applicable for renewal of the crediting period.

5. VALIDATION AND RENEWAL OPINION

ICONTEC has performed a renewal of the Agua Fresca Multipurpose and environmental services project, in Colombia. The validation for renewal 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 revised Project Design Documentation and the subsequent follow-up interviews has provided ICONTEC with sufficient evidence to determine the fulfillment of the stated criteria.

The project activity is being proposed as unilateral project by Aguas de la Cabaña S.A.E.S.P. Colombia has provided approval of voluntary participation and meets all requirements to participate in CDM. The Colombia DNA confirmed that the project helps in achieving sustainable development.

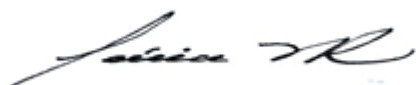
The project correctly applies the methodology: AMS.I-D: Grid connected renewable electricity generation - Version 17.0.

The project consists of the small run-of-river hydroelectric plant connected to the Colombian electrical grid with an installed capacity of 7.49 MW and is located in the municipality of Jerico (Department of Antioquia – Colombia). It is demonstrated that the project is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity.

The total emission reductions from the project are estimated to be on the average of 10,808 tCO₂e per year over the selected 7 year of the second crediting period. 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 "Agua Fresca Multipurpose and environmental services project" in Colombia, as described in the revised PDD version 3.1, meets all relevant UNFCCC requirements for the CDM and all relevant host country criteria and correctly applies the baseline and monitoring methodology "AMS-I.D.: Grid connected renewable electricity generation, version 17.0. ICONTEC thus requests the renewal of the crediting period of the project as a CDM project activity.

Bogotá D.C., September 3rd, 2013



Monica Vivas
Director of conformity assessment
ICONTEC

6. REFERENCES

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

- /1/ Revised PDD version 2 (dated on May 25th,2012), version 3 (dated on February 6th,2013), and version 3.1(dated on July 2nd,2013)
- /2/ Emission factor calculations for Colombian electrical grid(File:060213 AGUA FRESCA_Emission Factor Calculation 2011-Exante_V1.xls)
- /3/ Provisional acceptance certificate for commercial operation entry issued by Vatech Hydro and Andritz as a turbine and generator suppliers, dated on October 9th/2008, and signed, as acknowledging the information of this certificate, by Aguas de La Cabaña S.A. ESP.
- /4/ Letter of Approval issued by the Colombian Environmental and Sustainable development Ministry to Agua Fresca Multipurpose and environmental services project issued on November 24th,2004.
- /5/ Email sent by Aguas de la Cabaña S.A. E.S.P. to UNFCCC secretariat on June15th, 2012 about project proponents intention to renew the crediting period of the registered CDM project activity (0122) Agua Fresca Multipurpose and environmental services project.
- /6/ Email sent by UNFCCC Secretariat to Aguas de la Cabaña S.A. E.S.P. dated on June 18th, 2012 about the UNFCCC Secretariat's acknowledge about project proponents intention to renew the crediting period of the registered CDM project activity (0122) Agua Fresca Multipurpose and environmental services project.

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

- /7/ Clean development mechanism validation & verification standard, version 04.0
- /8/ Clean development mechanism project standard, version 04.0
- /9/ Clean development mechanism project cycle procedure, version 04.0
- /10/ Methodology AMS-I.D: Grid connected renewable electricity generation, version 17.0
- /11/ Tool to calculate the emission factor for an electricity system, version 3.0.0
- /12/ Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period, version 3.0.1
- /13/ Project Design Document form for Small-Scale CDM project activities, version 04.1
- /14/ Guidelines for completing the project design document form for small-scale CDM project activities, version 01.1
- /15/ General guidelines for SSC CDM methodologies, version 19.0

7. ANNEXES

Annex A

Validation Protocol

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The audit team conducts a thorough, independent assessment of the registered project activities.

The next table contains questions that the audit team shall follow in order to determine whether the project activity complies with the requirements of paragraph 62 of the CDM modalities and procedures. The audit team ensures that only the verification activities, undertaken after the publication of the monitoring report on the UNFCCC CDM website, were used as the basis for ICONTEC to conclude the verification and submission of a request for issuance of CERs to the board.

Questions were answered on the right column using the following scores:

- Full: When the audit team had full access to the required information, the information is complete and satisfactory
- Partial: When the audit team did not have access to the information, or the information is incomplete, or not satisfactory. In this case, indicate finding type and number.
- Resolved: When a partial score is assigned, indicate the date when the finding was closed
- N/A: Shall be used when the question does not apply.

When raising a clarification request, corrective action request and forward action, it is in accordance with VVS v 03.0§ 24-29.

TableA1: Validation Protocol

CHECKLIST QUESTION	REFERENCES	Final Conclusion
1. Global Stakeholder Consultation		
1.1 Has the validation team received and taken into account all comments on the PDD of the proposed project activity during the whole validation process? (not only during GSC) VVS § 34,35		N.A

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CHECKLIST QUESTION	REFERENCES	Final Conclusion
1.2 If comments indicate that the proposed project activity does not comply with the CDM requirements, Did the validation team request further clarification from the entity providing the comment? VVS § 34		N.A
2. Approval		
2.1 Has the designated national authority (DNA) of each Party indicated (as being involved in the proposed CDM project activity in the PDD) provided a written letter of approval? VVS § 38		N.A
2.2 Does the letter(s) of approval issued by the respective Party's DNA 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? VVS § 39 and 50		N.A
3. Authorization		
3.1 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. VVS § 46		N.A
3.2 Are there entities other than those authorized as project participants included in these sections of the PDD? VVS § 47		N.A
3.3 The approval of participation has been issued from the relevant DNA. VVS § 48		N.A
4. Modalities of communication		

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CHECKLIST QUESTION	REFERENCES	Final Conclusion
4.1 All focal points included in the MoC, as well as the personal identities, including specimen signatures and employments status and has been validated by directly evidence for corporative, personal identify and other relevant documentation like notarized documentation. VVS § 53		N.A
4.2 Does the MoC correctly completed and duly authorized? - The last version of the form F-CDM-MOC has been used? - The information required as per the F-CDM-MOC, including its annex 1, is correctly completed. -The project participants authorized signatories signing the F-CDM-MOC correspond to the project participants authorized signatories included in F-CDM-MOC, annex 1. VVS § 59 - 60		N.A
5. Project design document		
5.1. The PDD was completed using the last version of the PDD form and guidance appropriated to the type of project activity. VVS § 62	Section 3.3 Project Design Pages 13, 14 and 15	Full
6. Description of the project activity		
6.1 The PDD is accurate, complete, and provides an understanding of the proposed CDM project activity. (by reviewing available designs and feasibility studies and conducting comparison analysis with equivalent projects) VVS § 64	Section 3.3 Project Design Pages 14 and 15	Partial See CL 4 Resolved 12/02/2013
6.2 The project is correctly classified as large scale, non-bundled small-scale projects with emission reductions exceeding 15,000 tonnes per Year or bundled small-scale projects, each with emission reductions not exceeding 15,000 tonnes per year. VVS § 65	Section 3.3 Project Design Page 12	Full
6.3 For other individual proposed small-scale CDM project activities with emission reductions not exceeding 15,000 tonnes per year, the DOE should conduct a physical site visit as appropriate. If not, it shall be justified by the DOE. VVS § 66	Section 3.3 Project Design Page 12	Full

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CHECKLIST QUESTION	REFERENCES	Final Conclusion
6.4 If apply, the use of any sampling approach was made according to the "Standard for sampling and surveys for CDM project activities and programme of activities"? VVS § 66		N.A
7. Application of the selected Baseline and monitoring methodology		
7.1 The baseline and monitoring methodologies selected by the project participants are the valid versions of those approved by the Board. The selected version is valid at the time of submission of the proposed project activity for registration. VVS § 70 and 73	Section 3.4 Baseline Determination	Full
7.2 The selected methodology applies to the project activity and was correctly applied with respect to: Project Boundary, baseline identification, algorithms and/ formulae used to determine emission reduction, additionality, monitoring methodology. VVS § 72 and 74	Section 3.3 Project Design Section 3.4 Baseline Determination	Partial See CL 5 and CL 8 Resolved 12/02/2013
7.3 Has been confirmed each applicability condition listed in the approved methodology selected. VVS § 77	Section 3.3 Project Design	Partial See CL 1 Resolved 12/02/2013
8. Deviation from an approved methodology		
8.1 Did the project request a deviation from an approved methodology before the publication of the PDD? VVS § 78		N.A
8.2 if there are any request for deviation from an approved methodology, the applicability of the appendix 1 of Project standard must be applied. VVS § 79		N.A
9. Clarification on the applicability of an approved methodology		
9.1 Was requested any clarification on the applicability of the approved methodology since the DOE cannot make a determination regarding the		N.A.

VALIDATION REPORT VVS



CHECKLIST QUESTION	REFERENCES	Final Conclusion
<i>applicability of the selected methodology to the proposed project activity?</i> VVS § 81		
10. Project boundary		
<i>10.1 Are all main GHG emission sources, the physical delineation of the proposed project activity and other relevant project and baseline emission sources covered in the methodology, included within the project boundary for the purpose of calculating project and baseline emissions for the proposed project activity?</i> VVS § 82	Section 3.3 Project Design	Partial See CL 2 Resolved 12/02/2013
<i>10.2 Does the methodology allow project participants to choose whether a source or gas is to be included within the project boundary?</i> <i>-Have the project participant justified that choice?</i> <i>The DOE shall determine whether the justification provided is reasonable, based on an assessment of supporting documented evidence provided by the project participants and corroborated by observations if required.</i> VVS § 84	Section 3.3 Project Design	Full
<i>10.3 For the project activities that have both A/R and non-A/R components, please confirm that the emissions associated with the A/R activity will be accounted for and documented by the A/R project activity.</i> VVS § 85		N.A.
11. Baseline scenario identification and description		
<i>11.1 The Baseline identified for the proposed project activity is the scenario that reasonably represents the anthropogenic emissions by sources of GHGs that would occur in the absence of the proposed project activity.</i> VVS § 88	Section 3.4 Baseline Determination	Full
<i>11.2 Please confirm that all tools required by the methodology have been used by the PP.</i> VVS § 89	Section 3.4 Baseline Determination	Partial See CL 3 and CL 7 Resolved 12/02/2013

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CHECKLIST QUESTION	REFERENCES	Final Conclusion
11.3 Assess the baseline scenarios based on financial expertise and local and sectoral knowledge, make crosscheck of the information provided in the PDD with other verifiable and credible sources, such as local expert opinion, if available, relevant national and/or sectoral policies and circumstances, such as sectoral reform initiatives, local fuel availability, power sector expansion plans, and the economic situation in the project sector. VVS § 90, 91, 92	Section 3.4 Baseline Determination	Full
12. Algorithms and/or formulae used to determine emission reductions		
12.1 Does the steps taken and equations applied to calculate project emissions, baseline emissions, leakage and emission reductions comply with the requirements of the selected baseline and monitoring methodology. VVS § 96	Section 3.7 Calculation of GHG emissions	Full
12.2 If the methodology allows for selection between options for equations or parameters, the DOE shall determine whether adequate justification has been provided and if the justification provided is reasonable, based on an assessment of supporting documented evidence provided by the project participants and corroborated by observations if required VVS § 97	Section 3.7 Calculation of GHG emissions	Full
12.3 Verify the justification given in the PDD for the choice of data and parameters used in the equations (appropriate, conservative and reasonable). Data sources must be provided for each parameter. VVS § 98	Section 3.7 Calculation of GHG emissions	Full
13. Additionality of a project activity		
13.1 Assess and verify the reliability and credibility of all data and any assumptions, justifications and documentation provided by project participants to support the demonstration of additionality. Critically assess the evidence presented, using local knowledge and sectoral and financial expertise. VVS § 102		N.A.
13.2 Please confirm that all tools required by the methodology have been used by the PP. VVS § 103		N.A.

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CHECKLIST QUESTION	REFERENCES	Final Conclusion
13.3 For small scale project activities or micro scale project activities, the project participant used the applicable Guidelines, procedures and document issued by the EB VVS § 158 - 160		N.A.
14. Assessment of prior consideration of the clean development mechanism		
14.1 has been identified the start date of the project activity in accordance with the CDM glossary of terms. VVS § 106		N.A.
14.2 Prior consideration assessment must be done according to the latest version of the "guidelines on the demonstration and assessment of prior consideration of the CDM." VVS § 106, 107, 108		N.A.
14.3 Depending of the gap between the evidence documented, does the PP justify the validation opinion of the CDM status? VVS § 110, 111		N.A.
15. Identification of alternatives (if apply)		
15.1 Has been identified the alternatives in accordance with the approved methodology and/or the tool of additionality. VVS § 113		N.A.
15.2 Does the DOE evaluate if the list of alternatives includes as one of the options that the project activity is undertaken without being registered as a proposed project activity, contain all plausible alternatives to be viable means of supplying the comparable outputs or services that are to be supplied by the proposed project activity and comply with all applicable and enforced legislation? VVS § 114		N.A.
16. Investment analysis (if applicable)		
16.1 Was applied for the PP's the latest version of Guidelines on the assessment of investment analysis? VVS § 118		N.A.

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CHECKLIST QUESTION	REFERENCES	Final Conclusion
<p>16.2 Does the DOE verify if the project activity is not the most economically or financially attractive alternative:</p> <ul style="list-style-type: none"> Does not produce financial or economic benefits other than CDM-related income, Is less economically or financially attractive than at least one other credible and realistic alternative: The financial returns of the proposed project activity would be insufficient to justify the required investment? <p>VVS § 119</p>		N.A.
<p>16.3 Was verified:</p> <ul style="list-style-type: none"> suitability of the financial indicator selected, assessment of all parameters and assumptions used in calculating such financial indicators, and determine the accuracy and suitability Cross-check the parameters against third-party, review, as appropriate, feasibility reports, public announcements, annual financial reports sensitivity analysis The computations The correctness of carry out and documented by PP's <p>VVS § 120</p>		N.A.
<p>16.4 Was verified:</p> <ul style="list-style-type: none"> Determine whether the type of benchmark applied is suitable for the type of financial indicator presented Ensure that any risk premiums applied in determining the benchmark reflect the risks associated with the project type or activity Determine whether it is reasonable to assume that no investment would be made at a rate of return lower than the benchmark. <p>VVS § 121</p>		N.A.
<p>16.5 Was verified (if apply):</p> <ul style="list-style-type: none"> The FSR is the basis for the decision to proceed with the investment in the project, i.e. that the period of time between the finalization of the FSR and the investment decision is sufficiently short that it is unlikely in the context of the underlying project activity that the input values would have materially changed The values used in the PDD and associated annexes are fully 		N.A.

VALIDATION REPORT VVS



CHECKLIST QUESTION	REFERENCES	Final Conclusion
<p>consistent with the FSR, and where inconsistencies occur the DOE shall assess the appropriateness of the values</p> <ul style="list-style-type: none"> The input values from the FSR are valid and applicable at the time of investment decision. The DOE shall confirm this on the basis of its specific local and sectoral expertise and by cross-checking or other appropriate means. <p>VVS § 122</p>		
17. Barrier Analysis (if applicable)		
<p>17.1 Does the DOE determine whether the proposed project activity faces barriers that:</p> <p>(a) Prevent the implementation of this type of proposed project activity (See the latest “Guidelines for objective demonstration and assessment of barriers”)</p> <p>(b) Do not prevent the implementation of at least one of the alternatives.</p> <p>VVS § 124</p>		N.A.
<p>17.2 Did the DOE determine if the issues that have a direct impact on the financial returns of the project activity are not considered barriers and shall be assessed by investment analysis?. This does not refer to either:</p> <p>(a) Risk related barriers, for example risk of technical failure, that could have negative effects on financial performance; or</p> <p>(b) Barriers related to the unavailability of sources of finance for the project activity.</p> <p>VVS § 125</p>		N.A.
<p>17.3 Did the DOE apply the two step process to evaluate the barrier analysis performed determining if the barriers are real and if prevent the implementation of the project activity but not the implementation of at least one of the possible alternatives?</p> <p>VVS § 126</p>		N.A.
18. Common Practice Analysis (if applicable)		
<p>18.1 For proposed large-scale project activities, unless the proposed project type is first-of-its-kind as determined in accordance with the relevant guidelines, the DOE assess whether the project participants have conducted a common practice analysis.</p>		N.A.

VALIDATION REPORT VVS



CHECKLIST QUESTION	REFERENCES	Final Conclusion
VVS § 128		
<p>18.2 Did the DOE use official sources and its local and sectoral expertise to:</p> <p>(a) assess whether the geographical scope (e.g. the defined region) of the common practice analysis is appropriate for the assessment of common practice related to the project activity,</p> <p>(b) Determine to what extent similar and operational projects (e.g. using similar technology or practice), other than project activities, have been undertaken in the defined region;</p> <p>(c) Assess, if similar and operational projects, other than project activities, are already “widely observed and commonly carried out” in the defined region, whether there are essential distinctions between the proposed project activity and the other similar activities.</p> <p>(See the Tool for assessing the additionality and/or the latest version of the Guidelines for assessing the common practice)</p> <p>VVS § 129</p>		N.A.
19. Monitoring Plan		
<p>19.1 The Audit team identified the list of parameters required by the selected approved methodology including applicable tool(s), and confirmed that are includes the data management and quality assurance and quality control procedures to ensure that the proposed project activity can be reported ex post and verified.</p> <p>To assess the implementation of the plan the DOE shall, by means of review of the documented procedures, interviews with relevant personnel, project plans and any physical inspection of the proposed project activity site.</p> <p>VVS § 132</p>	Section 3.6 Monitoring Plan	<p>Partial See CL 6</p> <p>Resolved 12/02/2013</p>
20. Environmental Impacts		
<p>20.1 Did the project participants develops an environmental impact analysis including trans boundary impacts</p> <p>VVS § 134</p>		N.A.

VALIDATION REPORT VVS



CHECKLIST QUESTION	REFERENCES	Final Conclusion
20.2 Did the project participant conduct an environmental impact assessment, if required to do so by the host Party, in accordance with the host Party's procedures?		N.A.
21. Local stakeholder consultation		
21.1. Has the project participants completed a local stakeholder consultation process and that due steps were taken to engage stakeholders and solicit comments for the proposed project activity? VVS § 138		N.A.
21.2 The DOE determine whether: (a) Comments have been invited from local stakeholders that are relevant for the proposed project activity; (b) The summary of the comments received as provided in the PDD is complete; (c) The project participants have taken due account of all comments received and have described this process in the PDD. VVS § 139		N.A.
22. Specific validation requirements		
23.1. For certain specific validation activities such as SSC, A/R, and PoA, the DOE shall comply with the general validation requirements described in the sections above as well as those that follow, including the simplified modalities and procedures for small-scale project activities, the modalities and procedures for afforestation and reforestation project activities, and Standards for PoA. VVS § 149		Full
23. Small-scale project activities (if applicable)		
1. Project activity eligibility <ul style="list-style-type: none"> - The project activities qualified within the threshold of the three possible types of small project activities. - The DOE verified that the small-scale methodologies were applied in conjunction with the general guidance to the methodologies. - The DOE verified that the project activity is not a debundled component of a large-scale project, in accordance with the rules defined in the appendix C of 		Full

VALIDATION REPORT VVS



CHECKLIST QUESTION	REFERENCES	Final Conclusion
the simplified modalities for small-scale CDM project activities V/V Standard (v 02.0) art. 150-153		
2. Debundling <ul style="list-style-type: none"> The DOE shall verified that the proposed small-scale project activity to be a debundled component of a large-scale project activity if there is a registered small-scale project activity or an application to register another small-scale project activity. The DOE where appropriate, has taken into account specific debundling requirements for Type I project activities and small-scale transport project activities. V/V Standard (v 02.0) art. 154-157		Full
The proposed small-scale project activity is not a debundled component of a large-scale project activity in accordance with the Guidelines on assessment of debundling for SSC project activities VVS § 154		Full
The proposed small-scale project activity is a debundled component of a large-scale project activity if there is a registered small-scale project activity or an application to register another small-scale project activity. VVS § 155		Full
The Project participant takes into account specific debundling requirements for Type I project activities and small-scale transport project activities. VVS § 156		Full
3. Additionality <ul style="list-style-type: none"> The DOE verified that the proposed SSC project activity is additional in accordance with CDM requirements applicable for small-scale project activities. For the activities type I, II and III, the DOE assessed the fulfillment of the relevant criteria to establish the automatic additionality for these projects The DOE detailed all the steps taken to make the cross-check of the information contained in the PDD V/V Standard (v 02.0) art. 158-161		N.A.

VALIDATION REPORT VVS



CHECKLIST QUESTION	REFERENCES	Final Conclusion
24. Afforestation or reforestation project activities		
<p>Addition to the requirements listed above, the DOE verified the specific requirements for A/R CDM project activities, which include:</p> <ul style="list-style-type: none"> - Project boundary for A/R CDM; - Selection of carbon pool; - Eligibility of land; - Approach proposed to address non permanence; - Timing of management activities, including harvesting cycles and verifications; - Socio economics environmental impacts, including impacts on biodiversity and natural ecosystem. <p>V/V Standard (v 02.0) art. 162</p>		N.A.
<p>1. Project boundary</p> <p>The DOE described the documentation assessed and oral statements delivered by persons interviewed and conclude on their acceptability under the legal system of the host country.</p> <p>In a case the DOE has applied a sampling approach; the validation report shall describe how many sites have been assessed and how these were selected.</p> <p>V/V Standard (v 02.0) art. 163-166</p>		N.A.
<p>2. Selection of carbon pool</p> <p>The DOE verified whether the selection of carbon pool complied with the applied approved methodology. And if the exclusion of certain pool is allowed for the methodology and is justified correctly.</p> <p>V/V Standard (v 02.0) art. 167-169</p>		N.A.
<p>3. Eligibility of land</p> <p>DOE verified the reliably discriminates between forest and non-forest land according to the particular threshold adopted by the host country.</p> <p>V/V Standard (v 02.0) art. 170-172</p>		N.A.
<p>4. Addressing non permanence</p> <p>DOE verified the specification of proposed approach to address non performance</p>		N.A.

VALIDATION REPORT VVS



CHECKLIST QUESTION	REFERENCES	Final Conclusion
<i>in accordance with paragraph 38 of the modalities and procedures for A/R CDM projects activities. V/V Standard (v 02.0) art. 173-175</i>		
5. Timing of management activities <i>The DOE verified how the project participants have ensured that a systematic coincidence of verification and peaks in carbon stocks would be avoided. V/V Standard (v 02.0) art. 176-178</i>		N.A.
6. Socio economics and environmental impacts <i>The DOE verified using local official source whether the project participants have undertaken an analysis of socio-economic and environmental impacts, including impacts on biodiversity and natural ecosystem, and impacts outside the project boundary. V/V Standard (v 02.0) art. 179-183</i>		N.A.
25. Small-scale A/R project activities		
<i>The DOE determined whether: The project activities qualifies as a proposed small-scale A/R CDM project activity and complies with the threshold for the proposed small-scale A/R projects in accordance with the decision 5/CMP.1, annex paragraph 1(i). 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. The base line, monitoring methodology and the methodology is applied correctly. The proposed CDM project activity is not a part of a debulde large-scale A/R project activity, in accordance the rules defined in appendix C of the annex to decision 6/CMP.1. The proposed CDM project activity has been development or implemented by low-income communities and individuals as confirmed by the host Party in accordance with the decision 5/CMP.1, annex paragraph 1(i). V/V Standard (v 02.0) art. 184.</i>		N.A.
26. Programme of activities / Component project activities		
1. Coordinating/managing entity and participants in a PoA		N.A.

VALIDATION REPORT VVS



CHECKLIST QUESTION	REFERENCES	Final Conclusion
<p><i>The DOE 41assessed the management system described in the PoA design document (CDM PoA-DD) in accordance with the .Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities</i></p> <p>V/V Standard (v 02.0) art. 186</p>		
<p>2. CPA design document</p> <p><i>The DOE assessed the proposed CPA that a coordinating/managing entity wished to include in the PoA.</i></p> <p>V/V Standard (v 02.0) art. 187-188</p>		N.A.
<p>3. Description of a PoA/CPAs</p> <p><i>The DOE assessed the CDM-PoA-DD and the PoA-specific CDM-CPA-DD that It was submitted by the coordinating/managing entity and confirmed the framework developed for the implementation of the PoA, and defined a CPA under the PoA.</i></p> <p>V/V Standard (v 02.0) art. 189</p>		N.A.
<p>4. Application of multiple methodologies</p> <p><i>The DOE assessed the application of multiple methodologies in accordance with the .Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities</i></p> <p>V/V Standard (v 02.0) art. 190</p>		N.A.
<p>5. Boundary for the PoA in terms of geographical area</p> <p><i>The DOE verified the boundary of the PoA within which all CPAs included in the PoA will be implemented and if the project participant have taken in account all the applicable national and/or sectoral policies and regulations</i></p> <p>V/V Standard (v 02.0) art. 191-192</p>		N.A.

VALIDATION REPORT VVS



CHECKLIST QUESTION	REFERENCES	Final Conclusion
6. Start date of PoA/CPA <i>The DOE verified that the start date of the CPA is not prior to the commencement of the validation of the PoA, which is the date the CDM-PoA-DD is first published for global stakeholder consultation.</i> <i>V/V Standard (v 02.0) art. 193</i>		N.A.
7. Prior consideration of the CDM <i>The DOE is not required to assess prior consideration of CDM for PoAs, as it is expected that no component of the programme will commence prior to the start date of validation.</i> <i>V/V Standard (v 02.0) art. 194</i>		N.A.
8. Demonstration of additionality of the PoA as a whole <i>The DOE verified the additionality of a PoA in accordance with the .Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities.</i> <i>V/V Standard (v 02.0) art. 195</i>		N.A.
9. Eligibility criteria for inclusion of a CPA in the PoA <i>The DOE assessed the eligibility criteria for inclusion of a CPA in the PoA in accordance with the .Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities.</i> <i>V/V Standard (v 02.0) art. 196</i>		N.A.
10. Crediting period of a PoA/CPA <i>The DOE determined that the length of a PoA does not exceed 28 years (60 years for A/R).</i> <i>V/V Standard (v 02.0) art. 197</i>		N.A.
11. Monitoring plan for a PoA/CPA <i>The DOE verified that the monitoring plan for a CPA is in accordance with the approved monitoring methodology, including applicable tool(s).</i>		N.A.

VALIDATION REPORT VVS



CHECKLIST QUESTION	REFERENCES	Final Conclusion
V/V Standard (v 02.0) art. 198		
12. Environmental Analysis of a PoA <i>The DOE determined that It was realized an analysis of the environmental impacts of the PoA in accordance with CDM-PoA-DD and the CDM-CPA-DD.</i> V/V Standard (v 02.0) art. 199-200		N.A.
13. Local stakeholder consultation <i>The DOE verified that the local stakeholder consultation process It was carried out for the whole PoA or at the CPA level.</i> <i>DOE verified that the comments were summarized and that are completes and that were taken in account.</i> <i>If the local stakeholder consultation is conducted at the CPA level, the DOE shall determine whether it is in accordance with the level of consultation specified by the coordinating/managing entity and whether the local stakeholder comments were taken into account and described in the CDM-PoA-DD and the CDM-CPA-DD.</i> V/V Standard (v 02.0) art. 201-202		N.A.
14. Determination of occurrences of debundling under a PoA <i>The DOE verified that the proposed small-scale CPA of a PoA is not a debundled component of a large-scale project activity in accordance with the Guidelines on assessment of debundling for SSC project activities.</i> V/V Standard (v 02.0) art. 203		N.A.
15. Inclusion or renewal of a crediting period of a CPA under a registered PoA <i>The DOE verified that the specific CDM-CPA-DD is in accordance with the latest version of the PoA and determined that the CPA meets the requirements of the PoA.</i> V/V Standard (v 02.0) art. 204		N.A.

VALIDATION REPORT VVS



CHECKLIST QUESTION	REFERENCES	Final Conclusion
27. Validation status and outcomes, opinion, and report		
1. Validation status and outcomes <i>The DOE provided an update of the status of its validation activity, unless the project activity has been submitted for registration 180 days subsequent to the end of the period for the submission of public comments.</i> <i>The updated status presented for the DOE, must contain one of the following conditions:</i> <i>Finalization of the validation contract</i> <i>A negative validation opinion</i> <i>Summary of the issues raised and update or reconfirm of the validation status at three month intervals</i> <i>Which party/parties involved in the absence of sending of a valid letter of approval</i> <i>Explanation about the length of the validation activity and the update of the validation status if the validation activities are ongoing and has not sent yet CAR or CL to the project participant.</i> <i>V/V Standard (v 02.0) art. 141-142</i>		N.A
2. Validation opinion <i>It was emitted an opinion of the likelihood of the project activity achieving the anticipated emission reductions stated in the PDD, where is informed to the PP the validation outcome, positive or negative opinion.</i> <i>The DOE's opinion must include:</i> <ul style="list-style-type: none"> - <i>A summary of the validation methodology and process used and the validation criteria applied</i> - <i>A description of project components or issues not covered by the validation process</i> - <i>A summary of the validation conclusions</i> - <i>A statement on the validation of the expected emission reductions</i> - <i>A statement as to whether the proposed project activity meets the stated criteria.</i> 		Full

VALIDATION REPORT VVS



CHECKLIST QUESTION	REFERENCES	Final Conclusion
<p>- The validation opinion confirms whether the project meets the stated criteria and that the methods presented in the project design documentation are acceptable and have been correctly applied. V/V Standard (v 02.0) art. 143-146</p>		
<p>3. Validation Report</p> <p><i>The validation report is in line with IN-P-CC-01</i></p> <p><i>The DOE included in the validation report a validation opinion that integrated:</i></p> <p><i>Conclusions regarding the proposed project activity's conformity with applicable</i></p> <p><i>CDM requirements</i></p> <p><i>Overview of the validation activities</i></p> <p><i>Findings and conclusions</i></p> <p><i>Information on the global stakeholder consultation process carried out.</i></p> <p><i>A list of interviewees and documents reviewed</i></p> <p><i>Details of the validation team</i></p> <p><i>Information on quality control within the team and in the validation process</i></p> <p><i>Appointment certificates or curricula vitae of the DOE's validation team members, technical experts and internal technical reviewers for the project activity.</i></p> <p>V/V Standard (v 02.0) art. 147-148</p>		Full

TableA2: Resolution of Corrective Action, Forward Action and Clarification Request

The following table explains how ICONTEC resolve or “close out” CARs and CLs describing how the project participants modify the project design, rectify the PDD or provide additional explanations or evidence that satisfy the ICONTEC’s concerns. VVS (V 03.0) para. 28.

This table explains the issues raised, the responses provided by the project participants, the means of validation of such responses and references to any resulting changes in the PDD or supporting annexes. VVS (V 03.0) para. 29.

Report clarifications and corrective action requests	Reference	Summary of project owner response	Validation conclusion
<p>CAR 1</p> <p><i>Because the operating characteristics of Colombian National Interconnected System and the availability of information for the Mining and Energy Planning Unit (UPME), the operating margin method selected is the Data Analysis of Dispatch, which is set out in Appendix 3 of the document. This method is based on generating plants that were released in 2008 as an analysis schedule for release this year of the Colombian electric power system.</i></p> <p><i>Table 6.2 of PDD version 2 specifies the EF as a variable fixed ex-ante and the text above is in contrary</i></p>	<p><i>Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period</i></p>	<p><i>PDD was updated in the CO2 emission factor for the Colombian National Electric Grid System, for 2011.</i></p> <p><i>This factor has been calculated by the consulting firm hired by Aguas de la Cabaña SA ESP, Environmental Technologies & Business - EB&T.</i></p> <p><i>The methodology used to calculate the CO2 emission factor is "Tool to calculate the emission factor for an electricity system", version 03.0.0., TOOL07.</i></p> <p><i>To calculate the Operating Margin was selected Simple Adjusted Method (II BASELINE METHODOLOGY PROCEDURE, Step 3 (b)). Choosing the option Ex-ante.</i></p> <p><i>Therefore to Table 6.2, the fixed variable is CO₂ emission factor.</i></p>	<p><i>Validation Team Response:</i></p> <p><i>The inconsistencies regarding the emission factor for the Colombian Electrical grid found by the audit team solved in the latest version of the revised PDD</i></p> <p><i>Validation Team Conclusion:</i> <i>Closed</i></p>

VALIDATION REPORT VVS



<p>CL 1</p> <p><i>The statement in applicability condition N° 4 provided by the PP should be clarified taking into account the footnote 6 in the applied methodology (PDD version 2 page 8)</i></p>	<p>VVS Clause 77 AMS I.D, version 17, clause 4</p>	<p><i>The Agua Fresca Multipurpose and environmental services project does not own reservoir, and therefore according to the methodology applicable to the project, Indicative simplified baseline and monitoring methodologies for selected small-scale CDM project activity categories, Version 17, item 4, and the definition expressed in footnote 6, this condition does not apply (A reservoir is a water body created in valleys to store water generally made by the construction of a dam).</i></p>	<p>Validation Team Response:</p> <p><i>The applicability condition regarding the power plant reservoir was clarified in the latest version of the revised PDD</i></p> <p>Validation Team Conclusion: Closed</p>
<p>CL 2</p> <p><i>The project boundary should be described in accordance with the applied methodology (PDD version 2 , section B.3 page 8)</i></p>	<p>VVS Clause 82 AMS I.D Ver 17 Clause 9</p>	<p><i>In the PDD was corrected the scheme and text related to the project boundary, which indicates that the project boundary is the entire National Electric Grid System.</i></p>	<p>Validation Team Response:</p> <p><i>The project activity boundary was described in a proper way in the latest version of the revised PDD.</i></p> <p>Validation Team Conclusion: Closed</p>
<p>CL 3</p> <p><i>The project owner should reference correctly the latest version of the "Methodological Tool for the Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period" (PDD version 2 , section B.4 page 8)</i></p>	<p>VVS Clause 89</p>	<p><i>Corrected referencing methodology for validation and updating of the baseline and the renewal of the crediting period, which is: "Assessment of the validity of the original/current baseline and update of the baseline at the renewal of the crediting period Validity", Version 03.0.1, (EB 66 Annex 47)</i></p>	<p>Validation Team Response:</p> <p><i>The documental referenced described in the latest version of the revised PDD are right</i></p> <p>Validation Team Conclusion: Closed</p>
<p>CL 4</p> <p><i>The implementation status of the second stage of the project activity should be precised</i></p>	<p>VVS Clause 64</p>	<p><i>The construction of the regional aqueduct is expected to develop according to the area real demand warrants. To date the current conditions in the area have prevented this second stage is implemented.</i></p> <p><i>The current state of the second stage of</i></p>	<p>Validation Team Response:</p> <p><i>The implementation status of the regional aqueduct was clarified in the latest version of the revised PDD</i></p> <p>Validation Team Conclusion:</p>

VALIDATION REPORT VVS



		<p><i>Agua Fresca Multipurpose Project has no impact on it as Project Clean Development Mechanism.</i></p>	<p><i>Closed</i></p>
<p>CL 5</p> <p><i>The statement about “the project contribution to national economic growth by placing the company shares in the Colombian capital market” should be clarified (PDD version 2 , page 11)</i></p>	<p>VVS Clause 299 (a)</p>	<p><i>This phrase was contextualized in a better way to signify the idea.</i></p> <p><i>This sentence is as follows:</i></p> <ul style="list-style-type: none"> <i>Additionally, the project contributes not only to the growth of the national economy through private investment but boosts the energy sector in the country through the development of this type of power generation projects.</i> 	<p>Validation Team Response:</p> <p><i>The intention of this statement was modified and clarified in the latest version of the revised PDD</i></p> <p>Validation Team Conclusion:</p> <p><i>Closed</i></p>
<p>CL 6</p> <p><i>Specific regulations regarding to measurement and equipment should be mentioned</i></p>	<p>VVS Clause 132 (b)</p>	<p><i>Colombia has no regulations governing the frequency of calibrating measuring equipment. However, with reference to the provisions of the UNFCCC, according to the "Guidelines for Assessing Compliance With The calibration frequency requirements", Annex 60, Version 01, EB52. Number 8, if you do not specify the frequency of calibration of the equipment is taken as reference established by the technical specifications of the equipment or international standards.</i></p> <p><i>In accordance with the above international standards and where the periodicity consulted varies between 4 and 20 years, decision was taken to perform the calibration of the measuring equipment every five (5) years.</i></p>	<p>Validation Team Response:</p> <p><i>The status of regulations regarding to measurement and equipment was clarified and précised in the latest version of the revised PDD, as well as calibration frequency for equipments involved in energy generation.</i></p> <p>Validation Team Conclusion:</p> <p><i>Closed</i></p>

VALIDATION REPORT VVS



<p>CL 7</p> <p>The version of the "Tool to calculate the emission factor for an electricity system" and mentioned in the PDD version 2 is not consistent with the version used in the "Calculation of CO₂ Emission Factor Colombian Interconnected Electric System. Version 2009.3 prepared by the Mining and Energy Planning Unit-UPME- special administrative unit under the Ministry of Mines and Energy of Colombia.</p>	VVS Clause 89	<p>PDD was adjusted with the new calculation of CO₂ emission factor that made the UPME. This calculation is based on the latest version of the Methodological Tool ". Tool to calculate the emission factor for an electricity system", Version 03.0.0, TOOL07.</p> <p>This version has been applied both to calculate the CO₂ emission factor to the weighting factor for the renewal of the crediting period.</p>	<p>Validation Team Response:</p> <p>The emission factor for the Colombian electrical grid calculations was executed in accordance with the latest version of the "Tool to calculate the emission factor for an electricity system", the steps undertaken for these calculations were explained in the latest version of the revised PDD</p> <p>Validation Team Conclusion: Closed</p>
<p>CL 8</p> <p>The statement: "As mentioned in step1.3, the emission factor is a fixed datum unmonitored, according to Colombian legislation in this area" (PDD version 2 page 11) is not in accordance with the Resolution No. 18 1401 dated on October 29th, 2004 issued by the Ministry of Mines</p>	VVS Clause 299 (b)	<p>According to the calculation of the new CO₂ emission factor performed by the consulting firm hired by Aguas de la Cabaña S.A. E.S.P., Environmental Technologies & Business - EB&T, it was established that the emission factor is fixed as unmonitored data, as shown in Table No. B.6.2 - Data and parameters fixed ex ante.</p> <p>And to monitor data as shown in Table B.7.2 - Data and parameters to be Monitored, is only the energy generated by the project activity and that is delivered to the National Electricity Grid System.</p>	<p>Validation Team Response:</p> <p>The inconsistency was clarified in the latest version of the revised PDD</p> <p>Validation Team Conclusion: Closed</p>

ANNEX B

AUDIT TEAM EXPERIENCE AND KNOWLEDGE

1) Composition

Role	Name
Lead Auditor and Technical Specialist	Francy Ramirez
Technical Expert	Fernando Gomez
CDM and Specialist Technical Reviewer	Cristian Grisales

2) Team audit experience and knowledge**FRANCY MILENA RAMÍREZ TORRES**
CDM Lead Auditor and Technical Specialist

Electrical Engineer. Universidad Los Andes, 2001

Postgrade: Assessment of Social Projects. Universidad Los Andes, 2005

University of Oxford. Course: Applying Knowledge Management, Principle and Practices (December 1 de 2009).

University of Oxford. Course: Successful Change Management for Engineers, Scientists and Staff in Hi-tech Companies (Diciembre 2 de 2009).

University of Oxford. Course: Essentials of Project Management for Engineers, Scientists and Staff in Hi-tech Companies (December 3 de 2009).

University of Oxford. Course: Advanced Project Management for Engineers, Scientists and Staff in Hi-tech Companies (December 4 de 2009).

Climate Change, Trade and Standardization - in a development perspective". Estocolmo, Suecia (23 y 25 de Noviembre de 2009)

ISO global workshop on Greenhouse Gas Schemes Addressing Climate Change – How ISO Standards Help, Estocolmo, Suecia. (20 y 21 de Noviembre de 2009)

Conference on Climate Change – Deforestation and Standardization. Bali, Indonesia (31 de mayo y 1 de junio de 2010)

PROFESSIONAL EXPERIENCE

- ICONTEC. (2005 – Actually)

Professional of Standardization

Planning, coordinate, implement and ensure compliance with the program of national standardization in technical committees among which are electrical installations, electrical power quality, electrical transformers, substations and equipment for medium and high voltage, lighting, appliances and electrical accessories, protection against lightning strikes and electrical equipment. Develop technical standards. Develop and manage special projects assigned. Participate in programs of regional and international standardization.

- CODENSA (2002 – 2005)

Inspections and electrical works coordinator

Supervise field work and download the results in the central information system, evaluate the inspections performed, reconciled with contractors, addressing the results of inspections to different areas of the company, charging inspections and electrical work to clients of the firm, coordination and support group field sales engineers, technical training for technical staff, administrative support to department business processes and lost control, maintenance of the database for internal management inspections. Project Leader for the Optimization of Technical Processes and Regional Trade in Cundinamarca.

EXPERIENCE IN CDM ACTIVITIES:

Lead Auditor

- Validation of Guanaquitas 9.74 MW hydroelectric project, Colombia
- Validation of Fuel Switching through change of furnaces at Imusa S.A., Colombia
- Validation of Installation of a high-pressure/high-efficiency bagasse boiler to cogenerate heat and power, Argentina
- Validation of Cueva Maria Hydroelectric Expansion Project, Guatemala
- Validation of Paysandú Clean Energy, Uruguay
- Validation of La Vegona Hydroelectric project, Honduras
- Validation of Chamelecón 280 Hydroelectric project, Honduras

- Validation of Pardos SHPs and LOGICarbon CDM Project, Brazil
- Validation of Pequi and Sucupira SHPs and LOGICarbon CDM Project, Brazil
- Validation of Cambará and Embaúba SHPs and LOGICarbon CDM Project, Brazil
- Validation of Bonyic hydroelectric project, Panamá
- Validation of METALDOM Fossil fuel switch from reheat furnace, República Dominicana
- Validation of Toachi – Pilaton Hydroelectric Project, Ecuador
- Validation of EMGEA Small Hydropower (SHP) Run-of-the-River CDM Project Bundle, Colombia
- Validation of Energy efficiency at Malvinas Gas Plant, Perú
- Validation of Marañon Hydroelectric Project, Perú
- Validation of Santa Rita Hydroelectric Plant, Guatemala
- Validation of Ventana, Suba and Usaquén Hydroelectric CDM Bundled, Colombia
- Verification of Los Algarrobos hydroelectric project, Panamá
- Verification of Bio energy in General Deheza –Electric power generation from peanut hull and sunflower husk-, Argentina
- Validation of Taurichuco Hydropower Project, Perú
- Validation of Aguafresca Multipurpose and Environmental Service Project, Colombia
- Verification of Agua Fresca Multipurpose and Environmental Service Project, Colombia
- Verification of La Joya Hidroelectric project, Costa Rica
- Verification of Amaime Minor Hydroelectric Power Plant, Colombia

Specialist

- Validation of Rio Bonito and Baitaca SHPs and LOGICarbon CDM Project, Brazil
- Validation VCS of Pequi and Sucupira SHPs and LOGICarbon CDM Project, Brazil
- Verification of three crediting periods of La Vuelta and la Herradura hydroelectric project, Colombia

CDM Technical Reviewer

- Validation of Improving energy efficiency in a new Gas Plant in Gibraltar - Colombia

- Validation of Tres Valles Cogeneration Project, Honduras
- Validation of Tunjita Diversion Hydroelectric Project, Colombia
- Validation of Ferreira Gomes Hydro Power Plant CDM Project, Brazil
- Verification of two crediting periods of La Venta II, México
- Verification of two crediting periods of La Joya Hidroelectric Project, Costa Rica
- Verification of Bio energy in General Deheza –Electric power generation from peanut hull and sunflower husk-, Argentina
- Verification of Tres Valles Cogeneration Project, Honduras
- Verification of Agua Fresca Multipurpose and Environmental Services, Colombia
- Verification of La Venta II, México
- Verification of two crediting periods of Fertinal Nitrous Oxide Abatement Project, México
- Verification of Co-composting of EFB and POME project, Guatemala
- Verification of Biogas Project, Olmeca III, Tecun Uman, Guatemala
- Verification of Jepirachi Wind Power Project, Colombia
- Verification of Biogas energy plant from palm oil mill effluent, Guatemala
- Verification of Santa Ana Hydroelectric Project, Colombia
- Validation of SHP Morro Azul CDM Project (JUN1164), Colombia
- Verification of Biogas Project, Olmeca III, Tecun Uman, Guatemala

Specialist Technical Reviewer

- Validation of Biogas project, Olmeca I, Santa Rosa, Guatemala
- Validation of CGR Catanduva Landfill Gas Project, Brazil
- Validation of Macaubas Landfill Gas Project, Brazil

FERNANDO GÓMEZ GÓMEZ **Technical Expert**

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

PROFESSIONAL EXPERIENCE

- **ECONOMETRÍA S.S.** - Technical Advisory (October 2002 - March 2003)

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

- ECOENERGIA S.S. ESP - Founding Member and Manager

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

- UNIDAD DE PLANEACIÓN MINERO ENERGÉTICA – UPME (October 1996 - October 1997)

Elaboration of Catalog of Generation Projects for National Energy Plan,

- AUDITORES ENERGÉTICOS - AENE LTDA (October 1994 - March 1995)

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:

- 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 energía de Cundinamarca - EEC: Advisory in convoking and long-term power contracting, July 1995 - September 1995.
 - Instituto Nacional de Ciencias Nucleares y Energías Alternativas - INEA: Development of tutorial model for financial assessment of energy projects in the industry, April 1995 - September 1995.
 - Consorcio Nacional de Energía CNE : Consortium Management. Elaboration of studies on power commercialization in Colombia and competitive strategies. Interpretation and application of the Code of Commerce, Code of Networks and other power regulatory standards - commercial activity in Colombia, October 1995 - March 1996.
- EMPRESA DE ENERGIA DE BOGOTÁ – EEB (1978 – 1994)

Positions:

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Approved: 2012/12/21

- 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

Participation as an Energy expert in:

- Validation of El Bote Small Hydroelectric Plant project
- Validation of Caruquia 9.76 MW hydroelectric project
- Validation of Guanaquitas 9.74 MW hydroelectric project
- Validation of Hydroelectric Project of the Amoya River
- Validation of Fuel Switching through change of furnaces at Imusa S.A.
- Validation of Cervecería Hondureña Methane Capture Project
- Validation of Installation of a high-pressure/high-efficiency bagasse boiler to cogenerate heat and power
- Validation of Macano Small Hydro Power Plant
- Validation of Cueva Maria Hydroelectric Expansion Project
- Validation of La Vegona Hydroelectric project
- Validation of Chamelecón 280 Hydroelectric project
- Validation of Pardos SHPs and LOGICarbon CDM Project
- Validation of Pequi and Sucupira SHPs and LOGICarbon CDM Project
- Validation of Cambará and Embaúba SHPs and LOGICarbon CDM Project
- Validation of Bonyic hydroelectric project
- Validation of Tres Valles Cogeneration Project
- Validation of Tunjita Diversion Hydroelectric Project
- Validation of METALDOM Fossil fuel switch from reheat furnace.
- Validation of Toachi – Pilaton Hydroelectric Project

- Validation of El Toqui wind power project
- Validation of EMGEA Small Hydropower (SHP) Run-of-the-River CDM Project Bundle
- Validation of Ferreira Gomes Hydro Power Plant CDM Project
- Validation of Providencia I: 1.8MW Small Hydro Power Generation Plant
- Validation of Providencia III: 9.11MW Small Hydro Power Generation Plant
- Validation of Marañon Hydroelectric Project
- Validation of Santa Rita Hydroelectric Plant
- Renewal of Agua fresca Multipurpose and Environmental Service Project
- Verification of four crediting periods of Agua Fresca Multipurpose and Environmental Services
- Verification of La Cascada 2.3 MW Hydroelectric Project
- Verification of three crediting periods of La Venta II
- Verification of RIMA Fuel Switch in Bocaiúva
- Verification of Biogas Project, Olmeca III, Tecun Uman
- Verification of Jepirachi Wind Power Project
- Verification of A joint venture project of cogeneration of electricity and hot water using natural gas and biogas produced from on-site wastewater biodigesters
- Verification of Santa Ana Hydroelectric Project
- Verification of Los Algarrobos hydroelectric project
- Verification of two crediting periods of La Joya Hidroelectric project
- Verification of Bio energy in General Deheza –Electric power generation from peanut hull and sunflower husk-
- Verification of Thuan Nhien Phong Wind Farm
- Verification of Phuong Mai 3 Wind Power Project
- Verification of CTR Rosario Landfill Gas Project
- Verification of SHP Itaguacu CDM Project (JUN 1146), Brazil
- Verification of Palmaceite Wastewater Treatment and Biogas Utilization Project
- Verification of Feira de Santana Landfill Gas Project
- Verification of SHP Morro Azul CDM Project (JUN1164)

Technical Reviewer

- Validation of Energy efficiency at Malvinas Gas Plant
- Verification of Bio energy in General Deheza –Electric power generation from peanut hull and sunflower husk-
- Verification of Teresina Landfill Gas Project
- Verification of Maceio Landfill Gas Project

CRISTIAN DARIO GRISALES BERNAL
Specialist Technical Reviewer

Electrical Engineer
National University Of Colombia
Bogotá - Colombia
July 2009

ISO 9001 Lead Auditor
ICONTEC
August - October 2012

CDM Professional
ICONTEC
May 2012 – Today

Electrical Maintenance Engineer
Hydroelectric Power Plants Guaca, Tinta, Junca
Bogotá River Hydroelectric Plants
EMGESA S.A ESP. Colombia

Preventive, predictive and corrective maintenance of the generating units, auxiliary services, power transformers and electrical substation, developed of the investment projects interventory in accordance with annual operating budget, implementation of maintenance plans from systems analysis as RCM decision sheets, monthly service availability in the plant, and availability of full-time in failure attention, electrical testing of generators, transformers, motors and substation equipment.

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November 3, 2009 - April 30, 2012

EXPERIENCE IN CDM ACTIVITIES:

Specialist

- Validation of Biogas project, Olmeca I, Santa Rosa, Guatemala

- Validation of CGR Catanduva Landfill Gas Project, Brazil
- Validation of Macaubas Landfill Gas Project, Brazil
- Validation of Taurichuco Hydropower Project, Perú
- Validation of Teresina Landfill Gas Project, Brazil
- Validation of Maceio Landfill Gas Project, Brazil
- Verification of Amaime Minor Hydroelectric Power Plant, Colombia
- Validation of Doña Teresa Small Hydro Power Plant, Colombia

Technical Reviewer

- Validation of Thuan Nhien Phong Wind Farm, Viet Nam
- Validation of Phuong Mai 3 Wind Power Project, Viet Nam
- Validation of Chamelecón 280 Hydroelectric project, Honduras
- Validation of Providencia I: 1.8MW Small Hydro Power Generation Plant, Colombia
- Validation of Providencia III: 9.11MW Small Hydro Power Generation Plant, Colombia
- Validation of SHP Itaguacu CDM Project (JUN 1146), Brazil, Brazil
- Renewal of Aguafresca Multipurpose and Environmental Service Project, Colombia
- Validation of Feira de Santana Landfill Gas Project, Brazil
- Validation of SHP Morro Azul CDM Project (JUN1164), Colombia
- Verification of Santa Ana Hydroelectric Plant, Colombia
- Verification of Methane recovery and effective use of power generation project Norte III-B Landfill, Argentina