

**VALIDATION ASSESSMENT FOR APPROVAL OF CHANGES IN A REGISTERED
PDD**

**La Vuelta and La Herradura Hydroelectric Project
(UNFCCC REGISTRATION REF. No. 0735)**

**Empresas Publicas de Medellin E.S.P.
(COLOMBIA)**

**Electric Power Development Co., Ltd.
(JAPAN)**

**MGM Carbon Portafolio, S.a.r.l.
(SWITZERLAND)**

VALIDATION ASSESSMENT No. CDMPRC-14-001-01

MARCH, 2014

VALIDATION ASSESSMENT

Project title:	La Vuelta and La Herradura Hydroelectric Project	Project No.:	UNFCCC REGISTRATION REF. No. 0735
Audit team:	Francy Ramírez ICONTEC Lead Auditor and Technical Expert	Organizational unit:	Instituto Colombiano de Normas Técnicas y Certificación – ICONTEC Calle 53 No.58-33 Bogotá - Colombia
Date of first issue:	28/02/2014	Validation Assessment No:	CDMPRC-14-001-01
Version No.:	01	Last version date:	18/03/2014
PDD original Version No./ date	6 06/09/2006	PDD Last version No./ date:	7 12/02/2014
Sectoral scope	1 : Energy industries (renewable - / non-renewable sources)	Crediting period number	Not Applicable
		Duration of crediting period	Not Applicable
Client:	MGM international SAS	Client ref.:	CDMPRC-14-001

1 OBJECTIVE

ICONTEC was contracted by MGM international SAS to perform a validation assessment of changes to the registered PDD of the project No.0735 La Vuelta and La Herradura Hydroelectric Project.

The purpose of the validation assessment is to have an independent third-party assessment of the revision of the monitoring plan in order to request for approval by the CDM EB.

2 SCOPE

The validation assessment involves the independent and objective revision to determine whether permanent changes from the registered PDD comply with the procedures of the UNFCCC.

Relevant rulings by the CDM Executive Board:

- CDM Project Cycle Procedure, ver. 05.0, paragraph 130 to 157.
- CDM Project Standard, ver. 05.0, paragraph. 209 to 228,
- CDM Validation and Verification Standard, ver. 05.0, paragraph. 247 to 282.

3 GHG PROJECT DESCRIPTION

The project activity examined under this assessment process consists of the installation of two hydroelectric plants (La Vuelta and La Herradura) in chain, which take advantage of the La Herradura River. The project activity has an installed capacity of 33.48 MW (La Vuelta 12.4 MW and La Herradura 21.08 MW). The energy produced by this project activity is delivered to the Colombian electrical grid.

La Vuelta and La Herradura Hydroelectric Project reduces GHG emissions by means of the electricity delivered by the project activity to the Colombian interconnected grid that would have otherwise been generated by the operation of the grid-connected power plants and by the addition of new generation sources.

The Project applied the consolidated methodology for grid-connected electricity generation from renewable sources, ACM 0002, Version 6.

4 DESCRIPTION OF POST REGISTRATION CHANGE

Description of the changes is presented by comparing the registered PDD, with the revised PDD, annexed to the Submission of Request for Approval of Changes.

4.1 Temporary deviations from the registered monitoring plan and/or monitoring methodology

No deviations from the registered monitoring plan and/or methodology were identified during this assessment

4.2 Corrections

It was included an authorized Participant in accordance with the information described in the UNFCCC Web site (<http://cdm.unfccc.int/Projects/DB/DNV-CUK1161865279.03/view>), named MGM Carbon Portfolio, S.a.r.l. This information was included on the first page and on section A.4 of the revised PDD. ICONTEC deemed this information as reliable and credible, since at the

registration time MGM Carbon Portfolio, S.a.r.l. was not an authorized participant, its participation was approved on July 22nd, 2012.

4.3 Changes to the start date of the crediting period

No change to the start date of the crediting period is identified during this assessment

4.4 Permanent changes from the registered monitoring plan or monitoring methodology

No permanent changes from the registered monitoring plan or monitoring methodology were identified during this assessment

4.5 Changes to the project design of a registered project activity

It was identified only one change to the project design: The increase in the project installed capacity from 31.5 MW to 33.48 MW. Nevertheless, it is worth to mention that the electromechanical equipment has been the same (turbines and generators) since the beginning of its commercial operations, but at the registration time, the value used was the effective net output capacity¹ (31.5 MW) instead of the installed capacity. Hence there is no additional energy generated.

4.5.1 Dates of changes

Both power plants, La Vuelta and La Herradura has been operated with the same elctromechanical equipment since the beginning of its commercial operations on December 2004

4.5.2 Reasons for changes taking place

The values stated in the registered PDD (La Vuelta: 11.7 MW and La Herradura: 19.8 MW) corresponding to the effective net output capacity¹, hence it is necessary to modify the PDD with the aim to report the installed capacity of the project activity in accordance with the CDM Project Standard.

ICONTEC considered that the changes do not impact on the overall operation /ability of the project activity to deliver emission reductions as stated in the PDD, since the project's nature remains the same: to deliver hydropower energy to Colombian electrical interconnected system in order to reduce CO₂ emissions.

¹ This effective net output capacity is ruled by the Colombian Regulatory Commission for Gas and Energy (CREG). CREG defined the effective net output capacity as the maximum capacity (expressed in MW) that can be delivered by a plant and/or generation unit in normal operational conditions, measured at the interconnection point. It is calculated as the plant rated capacity minus the plant auxiliary consumption and/or the generator unit capacity. (Source consulted by the auditor: <http://apolo.creg.gov.co/Publicac.nsf/Indice01/Resoluci%C3%B3n-1999-CREG059-99>)

4.5.3 Knowledge of changes prior to registration of the project activity

The installed capacity values of both hydro power plants were known before the registration of the project activity. At the registration time, the value used was the effective net output capacity¹ (31.5 MW) instead of installed capacity.

4.5.4 Impact of changes

The assessment regarding to if the change of installed capacity of the project activity impacts the conclusions of the validation report of the registered PDD is described below:

4.5.4.1 Additionality of the project activity

The project activity had argued its additionality based on investment analysis, barrier analysis (barrier due to prevailing practice, sectoral barrier, Social and institutional barrier, and political and investment barrier) and common practice analysis (See pages 18 to 23 of registered PDD):

- Investment Analysis

Since there is no spreadsheet (Excel file) with the financial calculations used to assess the project additionality uploaded in the UNFCCC Website, ICONTEC requested to PP the information used in the validation stage (2005-2006) to support this barrier, based on the assumption that the increase in the installed capacity of the hydroelectric plant affects the annual generation therefore it affects the project's revenue².

In the file *NPV-LVLH (10Mar14).xls*, in the line where are described the inflows of the cashflow, the PP increases it at the same percentage of the increased project total installed capacity (5.91%). ICONTEC deemed this assumption as credible and reliable. The NPV remains negative (USD\$ -8.71 millions), applying the same discount rate (WACC: 7.86%) at the validation time. Hence the argument described in the registered PDD for financial analysis is still valid with the revised values.

- Barrier Analysis

Barrier due Prevailing Practice

The increase in the project installed capacity from 31.5 MW to 33.48 MW does not impact the argument presented by the PP in the registered PDD.

Social and institutional barrier

The increase in the project installed capacity from 31.5 MW to 33.48 MW does not impact the argument presented by the PP in the registered PDD.

² It is worth to draw attention that the installed capacity depends on the electromechanical equipment configuration, as well as the energy production depends on the generators technical specifications (In this particular case, the generators capacity remains the same), hence any increase in the turbine capacity would not affect the real power output capacity since the generator technical specifications remains unchanged.

Political and investment barrier

The increase in the project installed capacity from 31.5 MW to 33.48 MW does not impact the argument presented by the PP in the registered PDD.

- Common Practice Analysis

The increase in the project installed capacity from 31.5 MW to 33.48 MW does not impact the argument presented by the PP in the registered PDD.

4.5.4.2 Scale of the project activity

La Vuelta and La Herradura Hydroelectric Project was registered as a large scale project activity. The increase in the project installed capacity does not impact the scale of the project activity.

4.5.4.3 Applicability and application of approved baseline methodology under which the project activity has been registered or the later version of the applied methodology

La Vuelta and La Herradura Hydroelectric Project was registered under the methodology ACM 0002: Consolidated methodology for grid-connected electricity generation from renewable sources, version 6; on page 4, this methodology states that *the baseline scenario is the electricity delivered to the grid by the project would have otherwise been generated by the operation of grid-connected power plants and by the addition of new generation sources, as reflected in the combined margin (CM) calculations.* With the increase in the project installed capacity, La Vuelta and La Herradura Hydroelectric Project is still a renewable energy generation unit that supply electricity to Colombian electric interconnected grid with a total installed capacity of 33.48 MW.

4.5.4.4 The compliance of the monitoring plan with applied monitoring methodology

The increase in the project installed capacity does not affect the registered monitoring plan with the applied monitoring methodology (ACM 0002 version 6), since there is not a monitoring parameter related or affected by this change in the project design (either energy generation or CO₂ emission factor for the Colombian grid).

4.5.4.5 The level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan

The increase in the project installed capacity does not affect the level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan, since there is not a monitoring parameter or measurement equipment related or affected by this change in the project design (either energy generation or CO₂ emission factor for the Colombian grid).

ICONTEC, according to the CDM Validation and Verification Standard, consider that the change submitted, the increase in the project installed capacity does not impact either the additionality, or the scale, or the applicability and application of approved

baseline methodology under which the project activity has been registered, or the compliance of the monitoring plan with the applied monitoring methodology.

5 CONCLUSION OF VALIDATION ASSESSMENT

ICONTEC can confirm that the changes on PDD, Version 7, dated on February 12th, 2014, described on the Section 4 of this document, which corresponds to the increase in the project installed capacity from 31.5 MW to 33.48 MW

Summary, Project activity description:

CDM project: La Vuelta and La Herradura Hydroelectric Project

Reg. number: 0735

Register Date: 15/01/2007

PDD date and Version: 06/09/2006, version 6

PDD revised: 12/02/2014, version 7

This validation opinion follows guidance and complies with the requirements of the VVS.

Bogotá D.C., March 18th, 2014



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ICONTEC