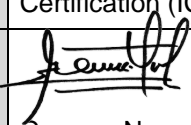




**Validation report form for post-registration changes for
CDM project activities
(Version 03.0)**

Complete this form in accordance with the instructions attached at the end of this form.

BASIC INFORMATION

Title and UNFCCC reference number of the project activity	Sogamoso Hydroelectric Project 10236
Process track	<input type="checkbox"/> Prior approval <input checked="" type="checkbox"/> Issuance <input type="checkbox"/> Renewal of crediting period
Version number of the validation report	02.0
Completion date of the validation report	14/08/2019
Type(s) of PRCs	<input type="checkbox"/> Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents ¹ <input checked="" type="checkbox"/> Corrections <input type="checkbox"/> Changes to the start date of the crediting period <input type="checkbox"/> Inclusion of a monitoring plan <input checked="" type="checkbox"/> Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines or other methodological regulatory documents <input type="checkbox"/> Changes to the project design <input type="checkbox"/> Changes specific to afforestation and reforestation project activities
Version number of PDD to which this report applies	09
Project participants	ISAGEN S.A. E.S.P.
Host Party	Colombia
Applied methodologies and standardized baselines	Large-scale consolidated methodology ACM0002, Grid-connected electricity generation from renewable sources, version 16.0
Mandatory sectoral scopes	1 - Energy industries (renewable - / non-renewable sources)
Conditional sectoral scopes, if applicable	N/A
Name and UNFCCC reference number of the DOE	Colombian Institute for Technical Standards and Certification (ICONTEC) – E-0024
Name, position and signature of the approver of the validation report	 German Nava Technical Director

¹ Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied(selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

SECTION A. Executive summary

ICONTEC was contracted by ISAGEN S.A. ESP to perform a validation assessment of PRC to registered PDD of the project No.10236 Sogamoso Hydroelectric Project on the basis of UNFCCC criteria contained in the criteria of the CDM Executive Board and the host country, as well as the operational and technical monitoring criteria specific to this type of project.

The proposed project activity under verification process is based on the approved large-scale consolidated methodology ACM0002 Grid-connected electricity generation from renewable sources, version 16.0. The project involves the installation of a hydroelectric power plant, which take advantage of the Sogamoso River. The hydroelectric power plant is located in the municipalities of: Giron, Betulia, Zapatoca, Los Santos and San Vicente de Chucuri in the Departament of Santander in Colombia. The project activity has an installed capacity of 874.8 MW. The energy produced by this project activity is delivered to the Colombian electrical grid.

The verification process consisted of the following three phases:

- I. Desk review of the monitoring documentation, registered PDD, validation report and if apply, previous verification reports and relevant information (e.g. IPCC reports).
- II. On-site visit and follow up interviews with project stakeholders
- III. Resolution of outstanding issues and the issuance of the final verification and certification report.

The review of the project's documentation, revised PDD, previous validation report at registration stage, relevant information and interviews allowed ICONTEC to collect enough evidence to completely assess the validation criteria and determinate that changes on PDD, version 09, dated on August 12th/2019, comply with relevant requirements related to permanent changes from the approved monitoring plan, and also with the relevant requirements in the Project Standard

SECTION B. Validation team, technical reviewer and approver

B.1. Validation team member

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interview(s)	Validation findings
1.	Team Leader and Technical Expert in Sectoral Scope 1.2	IR	Ramirez	Francy	Employee	✓	✓	✓	✓

B.2. Technical reviewer and approver of the validation report on PRCs

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Lead Technical Reviewer and Technical Expert Reviewer in Sectoral Scope 1.2	EI	Grisales	Cristian	Freelance
2.	Approver	IR	Nava	German	Employee

SECTION C. Means of validation

C.1. Desk/document review

The PRC validation of the project documentation provided by the project proponent is based upon both quantitative and qualitative information on emission reductions and project activity description.

Quantitative information comprises the reported figures in the PDD (clean and track change versions) submitted together with this report. Qualitative information comprises information on project activity features, internal management controls, calculation procedures, and actions for transferring of data, frequency of emission reports, and review and internal audit of calculations.

Main documents reviewed during the desk review stage, provided by the project proponent, are:

- Registered PDD version 08, dated on June 10th/2015 /1/
- Revised PDD version 09, dated on August 12th/2019 /2/
- Validation Report issued by RINA Services S.p.A., version 1.2*Aa, dated on June 15th/2016 /3/

In addition to the monitoring documentation provided by the project proponent, ICONTEC reviewed:

- Approved large-scale consolidated methodology ACM0002 Grid-connected electricity generation from renewable sources, version 16.0. /UN1/
- CDM validation and verification standard for project activities, version 02.0 /UN2/
- CDM project standard for project activities, version 02.0 /UN3/
- CDM project cycle procedure for project activities, version 02.0 /UN4/
- Project design document form, version 11.0 /UN5/

A compilation of the documents related to the validation activities have been compiled under Appendix 3.

C.2. On-site inspection

This request for post registration changes is submitted under the issuance track. An on-site inspection was carried out between February 13th/2018 to February 15th/2018 as part of the verification audit for the first monitoring period (June 15th/2016 to June 14th/2017) where the following activities were performed:

Duration of on-site inspection: 13/02/2018 to 15/02/2018				
No.	Activity performed on-site	Site location	Date	Team member
1.	Description of the nature of the project, its implementation and its operation	ISAGEN's office located at Carrera 30 N° 10C – 280 in Medellín, Colombia	13/02/2018	Francy Ramírez
2.	Compliance of the monitoring report with the monitoring report form			
3.	Compliance of the project implementation and operation with the registered PDD			
4.	Possible post-registration changes			
5.	Compliance of the registered monitoring plan with the methodologies including applicable tools and standardized baselines			
6.	Compliance of monitoring activities with the registered monitoring plan			
7.	Compliance with the calibration frequency requirements for measuring instruments			
8.	Assessment of data and calculation of emission reductions			
9.	Tour by the project's facility	Project's site located in the municipalities of: Giron, Betulia, Zapatoca, Los Santos and San Vicente de Chucuri in Departament of Santander in Colombia	14/02/2018 to 15/02/2018	
10.	Visit to the interconnection Point (Sogamoso substation)			
11.	Verification of the monitoring system in place			
12.	Verification of compliance of the project implementation with the registered project design document			
13.	Verification of operational and maintenance activities			

C.3. Interviews

The following interviews were carried out during the onsite inspection between February 13th/2018 to February 15th/2018 as part of the verification audit for the first monitoring period (June 15th/2016 to June 14th/2017):

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Cáceres	Raul	Environmental project director ISAGEN	13/02/2018	<ul style="list-style-type: none">• Description of the nature of the project, its implementation and its operation• Compliance of the project implementation and operation with the registered PDD	Francy Ramírez
2.	Fehrmann	Adolfo	Generation projects manager ISAGEN			
3.	Montoya	Miguel	Environmental studies coordinator ISAGEN			
4.	Bernal	Juan Isaías	Professional of infrastructure of information technology and communication ISAGEN		<ul style="list-style-type: none">• Compliance of the registered monitoring plan with the methodologies including applicable tools and standardized baselines• Compliance of monitoring activities with the registered monitoring plan• Compliance with the calibration frequency requirements for measuring instruments	
5.	Hincapie	Carlos Mario	Professional of Systems and information processes ISAGEN			
6.	Álvarez	Carlos Andrés	Professional of Systems and information processes ISAGEN			
7.	Ealo	Armando José	Hydrology Professional ISAGEN			
8.	Posada	Luis	Director of research and development ISAGEN		<ul style="list-style-type: none">• Description of the nature of the project, its implementation and its operation• Compliance of the monitoring report with the monitoring report form• Compliance of the project implementation and operation with the registered PDD	

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
					<ul style="list-style-type: none"> • Possible post-registration changes • Compliance of the registered monitoring plan with the methodologies including applicable tools and standardized baselines • Compliance of monitoring activities with the registered monitoring plan • Compliance with the calibration frequency requirements for measuring instruments • Assessment of data and calculation of emission reductions 	

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
9.	Arcos	Yanet	Operation Coordinator ISAGEN	14/02/2018	Verification of operational and maintenance activities	
10.	Pérez	Carlos Andrés	Projects development professional ISAGEN	13/02/2018 to 15/02/2018	<ul style="list-style-type: none">• Description of the nature of the project, its implementation and its operation• Compliance of the monitoring report with the monitoring report form• Compliance of the project implementation and operation with the registered PDD• Possible post-registration changes• Compliance of the registered monitoring plan with the methodologies including applicable tools and standardized baselines• Compliance of monitoring activities with the registered monitoring plan• Compliance with the calibration frequency requirements for measuring instruments• Assessment of data and calculation of emission reductions• Tour by the project's facility• Visit to the interconnection Point (Sogamoso substation)• Verification of the monitoring system in place• Verification of compliance of the project implementation with the registered project design document• Verification of operational and maintenance activities	
11.	Benítez	Jorge	Projects development specialist ISAGEN			

C.4. Sampling approach

ICONTEC checked 100% of project's information hence, no sampling approach was required.

C.5. Clarification requests (CLs), corrective action requests (CARs) and forward action requests (FARs) raised

Areas of validation findings	No. of CL	No. of CAR	No. of FAR
Compliance with PDD form	CL 1	-	-
Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents	-	-	-
Corrections	-	-	-
Changes to the start date of the crediting period	-	-	-

Inclusion of a monitoring plan	-	-	-
Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines or other methodological regulatory documents	-	-	-
Changes to the project design	-	-	-
Changes specific to afforestation and reforestation project activities	-	-	-
Others (please specify)	-	-	-
Total	1	-	-

SECTION D. Validation findings

D.1. Compliance with PDD form

Means of validation	The audit team verified during the desk review that the latest version of PDD form/UN5/ was used by the PP, however, some clarifications request were detected.
Findings	CL 1 was raised since in Appendix 7 of the revised PDD, a summary of the post-registration changes being proposed is missing. More details about this finding in Appendix 4.
Conclusion	Once the PP solved the finding raised, the audit team confirmed the compliance of the PDD version 09 with relevant forms and instructions therein.

D.2. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents

Means of validation	N/A
Findings	N/A
Conclusion	N/A

D.3. Corrections

Means of validation	<p>The PP made some corrections to the project information and also to the parameters fixed ex-ante at registration.</p> <p>The corrections are the following:</p> <ul style="list-style-type: none"> • Adjustment of the rated power of the hydraulic turbines, from 278.8 MW to 281.35 MW, as well as the speed of the hydraulic turbine, from 163.63 rpm to 163.64 rpm, as it was verified by the audit team by means of onsite inspection/7/. <p>This correction does not affect the emission reduction estimation made at registration time since the annual electricity production (5,056 GWh) was calculated based on the Total Installed Capacity of the Project, which it is based on the generators' nameplate and the power factor of these generators, this is 874.8 MW. Keep in mind that generators power stated in the nameplate does not have any corrections.</p> <p>This fact was already assessed at the registration time by the DOE /3/ (CAR 1), and the response gave by the PP is in accordance with the definitions of the applied methodology /UN1/: "The installed power generation capacity of a power unit is the capacity, expressed in Watts or one of its multiples, for which the power unit has been designed to operate at nominal conditions. The installed power generation capacity of a power plant is the sum of the installed power generation capacities of its power units".</p> <ul style="list-style-type: none"> • A description about the monitoring system and their location was included in Section A.3 of the revised PDD /2/ in accordance with <i>the instructions for completing the PDD form /UN5/</i>. • PricewaterhouseCoopers Asesores Gerenciales Ltda was removed as PP in
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	<p>accordance with the last modification to the MoC /4/. Likewise, the contact information was updated in accordance with the new MoC/5/.</p> <ul style="list-style-type: none"> • A description of the project activity's history was added in Section A.6 of the revised PDD /2/, in accordance with the latest version of the PDD form/UN5/ and the instructions for its completing. • A repeated text along the registered PDD was detected, hence it was deleted on pages 25 and 26/2/. The erased and reapeted texts are: <ul style="list-style-type: none"> – “Based on the above records, the figure below shows the percentage of occurrence of the generation of the Project every year and can be seen that there is 98% of probability that the annual average generation in the long-term is between 4,500 and 5,500 GWh/year. Values on the top of each range show the number of times that average annual generation of the Project (5,056 GWh) is repeated in each range.” – “Figure above shows the changes in the IRR of the Project (y-axis) due to different percentage variations of the energy generation (x-axis). The figure also shows the comparison between this IRR variation and the constant value (in percentage) of the Benchmark.” – “Figure 8 Range of variation of power generation compared to the benchmark of the electric sector”. The Figure is also erased since it was repeated with Figure 7. • The Figure 12 was updated in accordance with the current configuration of the facilities of the project activity and the Colombian electrical legal framework. <p>Since, there is not auxiliary services meter in the machines cavern to the registered project consumption, this fact is also mentioned in Appendix 5 of the registered PDD (page 78).</p> <p>In the Colombian Electrical Measurement Code/7/ it is mentioned that in the electrical delivery point, for this particular case: Sogamoso electrical substation, it shall be installed using bi-directional energy meter which register in separate way, the electrical energy generated by the project activity and the electrical energy consumed by the project activity. The above mentioned was assessed by the audit team during the onsite inspection by reviewing the Colombian Electrical Measurement Code/7/.</p> <p>This modification also impacts Appendix 5. It is worth drawing attention to the fact that this modification does not impact the parameter $EG_{\text{facility},y} \rightarrow$ Quantity of net electricity generation supplied by the Project plant to the grid in every hour of year y; given that, this parameter is measured in Sogamoso electrical substation, which is the commercial frontier where the electrical energy produced by the project activity is delivered to the Colombian electrical grid (no correction was made on revised PDD on that issue).</p> <ul style="list-style-type: none"> • Appendixes 1 and 7 of the revised PDD /2/ were adjusted in accordance with the corrections explained above and the instructions for completing the PDD form /UN6/ <p>It is worth drawing attention to the fact that changes presented in this submission only refer to corrections. None of these changes affect the additionality².</p> <p>For the rest, the corrections made in the revised PDD are editorial in nature (grammatical or writing errors)</p>
Findings	No finding was raised on this issue.
Conclusion	The audit team concludes that the corrections made by the PP on the revised

² In accordance with section 8.3. of CDM project standard for project activities, version 02.0

	PDD/3/ are an accurate reflection of the actual project information, and the corrected parameters are in accordance with the applied methodologies and the revised monitoring plan.
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D.4. Changes to the start date of the crediting period

Means of validation	N/A
Findings	N/A
Conclusion	N/A

D.5. Inclusion of a monitoring plan

Means of validation	N/A
Findings	N/A
Conclusion	N/A

D.6. Permanent changes to the registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines or other methodological regulatory documents

Means of validation	<p>The PP proposed some changes in the “<i>Measurement methods and procedures</i>” and “<i>QA/QC procedures</i>” described for parameter A_{PJ}: Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full /1/.</p> <p>In the revised PDD /2/, it was defined that A_{PJ} is a measured parameter by means of a bathymetry study, this change is in accordance with the monitoring methodology established in the applied methodology /UN1/.</p> <p>Likewise, in the revised PDD /2/ in Section B.7.1 it was corrected the mention satellite picture in the field “<i>QA/QC procedures</i>” for the parameter A_{PJ}</p>
Findings	No finding was raised on this issue.
Conclusion	In accordance with the assessment carried out by the audit team and described above, it is confirmed that permanent changes to the registered monitoring plan described in the revised PDD/2/ are in compliance with the applied methodologies/UN1/ and do not reduce the level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan.

D.7. Changes to the project design

Means of validation	N/A
Findings	N/A
Conclusion	N/A

D.8. Changes specific to afforestation and reforestation project activities

Means of validation	N/A
Findings	N/A
Conclusion	N/A

SECTION E. Internal quality control

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

The technical review and the quality control process was performed by an internal technical reviewer team in accordance with the ICONTEC's internal procedures for carrying out validation, verification and certification audits of CDM project activities. After this step, the submission for requesting the post registration changes was conducted.

The technical reviewers are qualified in accordance with the ICONTEC's professional qualification scheme for CDM validation and verification.

SECTION F. Validation opinion

ICONTEC performed the validation of post registration changes to Sogamoso Hydroelectric Project, registration number 10236, owned by ISAGEN S.A. E.S.P. This validation was performed based on the requirements set by the CDM and relevant guidance provided by CMP and the CDM Executive Board.

The validation consisted of the following three phases: i) desk review of the project design document and additional background documents; ii) on-site inspection and follow-up interviews to project stakeholders; iii) resolution of outstanding issues and the issuance of the final validation report and opinion.

The review of the revised project design document, relevant additional information and the subsequent follow-up interviews have provided ICONTEC with sufficient evidence to determine the fulfilment of stated criteria. In ICONTEC's opinion, that the post registration changes meet all relevant requirements for the CDM. ICONTEC thus request the approval of the post registration changes of the project activity.

Appendix 1. Abbreviations

Abbreviations	Full texts
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CERs	Certified emission reductions
CL	Clarification Request
CND	Colombian National Dispatch Center (Centro Nacional de Despacho)
CNO	Colombian national electrical operation council (Consejo Nacional de Operación)
CO ₂ e	Carbon dioxide equivalent
CREG	Colombian Regulatory Commission for energy and gas (Comision de Regulación de Energia y Gas)
DNA	Designated National Authority
DOE	Designated Operational Entity
EBT	Environmental Business Technology
ERs	Emission Reductions
GHG	Greenhouse Gases
ICONTEC	Colombian Institute of Technical Standards and Certification (Instituto Colombiano de Normas Técnicas y Certificación)
IPCC	Intergovernmental Panel on Climate Change
ISAGEN	ISAGEN S.A. E.S.P.
MoC	Modalities of Communication
MR	Monitoring Report
ONAC	Colombian national accreditation body (Organismo Nacional de Acreditación)
PCP	CDM Project Cycle Procedure
PDD	Project Design Document
PP	Project Participant
PRC	Post Registration Change
PS	CDM Project Standard for project activities
UNFCCC	United Nations Framework Convention for Climate Change
VVS	CDM Validation and Verification Standard for project activities
UPME	Colombian Unit for mining and energy planning (Unidad de Planeacion Minero Energetica)
XM	Abbreviation for "Market Experts". XM is a company of the ISA Group that provides integral services. www.xm.com.co . It is Colombian administrator of the wholesale electric market

Appendix 2. Competence of team members and technical reviewers

Francy Ramírez

Lead auditor and Technical Expert in Sectoral Scope 1.2

Education:

Electrical Engineer. Universidad Los Andes, 2001

Post grade:

Assessment of Social Projects. Universidad Los Andes, 2005

Environmental Management. Universidad Los Andes, 2016

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

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

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

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

Climate Change, Trade and Standardization - in a development perspective". Stockholm, Sweden(23 and 25 November 2009)

ISO global workshop on Greenhouse Gas Schemes Addressing Climate Change – How ISO Standards Help, Stockholm, Sweden. (20 and 21st November 2009)

Conference on Climate Change – Deforestation and Standardization. Bali, Indonesia (31st May and 1st June 2010)

Professional Background:

ICONTEC (2005 - 2010)

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.

CDM Experience

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

Cristian Grisales

Lead technical reviewer and Technical Expert in Sectoral Scope 1.2

Education:

Clean Technologies – Environmental technology, innovation and management systems as means for regional and local economic development
Weitz Center for Development Studies – Israel
July 2015

Master Executive in Renewable Energies
EOI-Madrid, Spain
February 2015

Certified ISO 14001
ICONTEC
May 2012

Certified ISO 9001
ICONTEC
August 2012

Electrical Engineer
National University of Colombia
Bogotá - Colombia
July 2009

Professional Background

Professional of Climate Change
ICONTEC
May 2012 – Today

Professional on developing validation and verification on CDM projects as lead auditor and as technical expert in the energy sector.

Electrical Maintenance Engineer
EMGESA S.A ESP. Colombia
November 2009 – May 2012

Electrical maintenance engineer in the Bogotá River Hydroelectric plants. Executing preventive, predictive and corrective maintenance of the generators, auxiliary services, power transformers and electrical substation. Developed the investment projects' inventory in accordance with the annual operating budget. Implementation of RCM maintenance programs. Monthly service availability in the plant, and full-time availability in failure care. Electrical testing of generators, transformers, motors and substation equipment.

CDM Experience

Auditor and 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
- Validation of Doña Teresa Hydroelectric Power Plant, Colombia
- Validation of SHPs Poço Fundo and Providência CDM Project (JUN1133), Brazil
- Validation of SHPs Tambaú, das Pedras and Rio do Sapo CDM Project (JUN1132), Brazil
- Verification of Amaime Minor Hydroelectric Power Plant, Colombia
- Verification of Ciudad Juarez Landfill Gas to Energy Project, Mexico
- Verification of Santa Ana Hydroelectric Plant, Colombia
- Verification of Biogas Project, Olmeca III, Tecún Uman, Guatemala
- Verification of Berlin Geothermal Project, Phase Two, San Salvador

Technical Reviewer:

- Validation of Thuan Nien 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.

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
/1/	ISAGEN	Registered project design document (PDD).	Version 08, dated on June 10 th /2015 .	Other
/2/	ISAGEN	Revised project design document (PDD).	Version 09, dated on August 12 th /2019.	PP
/3/	RINA Services S.p.A.	Previous validation report for registration purposes.	Version 1.2*Aa, dated on June 15 th /2016.	Other
/4/	ISAGEN	Modalities of Communication Statement. Annex 2. Voluntary withdrawal of PricewaterhouseCoopers Asesores Gerenciales Ltda	Dated on June 20 th /2018	Other
/5/	ISAGEN	Modalities of Communication	Dated on January 18 th /2017	Other
/6/	ICONTEC	Photos taken by the lead auditor during the onsite visit to the facilities of the Sogamoso Hydroelectric Project	Photos taken between February 14 th /2018 to February 15 th /2018	Other
/7/	CREG	Resolution 038	Issued on 2014 http://www.creg.gov.co/index.php?option=com_phocadownload&view=category&id=178	Other
/UN1/	UNFCCC	Approved large-scale consolidated methodology ACM0002 Grid-connected electricity generation from renewable sources, version 16.0.		Other
/UN2/	UNFCCC	CDM validation and verification standard for project activities, version 02.0		Other
/UN3/	UNFCCC	CDM project standard for project activities, version 02.0		Other
/UN4/	UNFCCC	CDM project cycle procedure for project activities, version 02.0		Other
/UN5/	UNFCCC	Project design document form, version 11.0		Other

Appendix 4. Clarification requests, corrective action requests and forward action requests

Table 1. CLs from this validation

CL ID	01	Section no.	D.1	Date :	19/07/2019
Description of CL					
<i>It is missing to provide a summary of the post-registration changes proposed in the revised PDD (version 09) in Appendix 7</i>					
<i>Project design document form Attachment. Instructions for completing this form, Section 2. Appendix 7</i>					
					Date: 26/07/2019
<i>ISAGEN included in the revised PDD the summary of the changes proposed with the Monitoring Report for the period June 15th, 2016 to June 14th, 2017.</i>					
Documentation provided by project participant					
<i>Version 09 of the PDD</i>					
DOE assessment					Date: 26/07/2019
In the updated version of the revised PDD it was included a summary of the post-registration changes being proposed in this version of the PDD.					
Audit team conclusion:					
Closed					

Table 2. CARs from this validation

CAR ID	N/A	Section no.		Date:	DD/MM/YYYY
Description of CAR					
Project participant response					Date: DD/MM/YYYY
Documentation provided by project participant					
DOE assessment					Date: DD/MM/YYYY

Table 3. FARs from this validation

FAR ID	N/A	Section no.		Date:	DD/MM/YYYY
Description of FAR					
Project participant response					Date: DD/MM/YYYY
Documentation provided by project participant					
DOE assessment					Date: DD/MM/YYYY

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Document information

Version	Date	Description
03.0	31 May 2019	Revision to: <ul style="list-style-type: none"> Ensure consistency with version 02.0 of the "CDM validation and verification standard for project activities" (CDM-EB93-A05-STAN); Make editorial improvements.

<i>Version</i>	<i>Date</i>	<i>Description</i>
02.0	31 October 2017	Revision to align with the requirements in the “CDM validation and verification standard for project activities” (version 01.0).
01.0	23 March 2015	Initial publication.

Decision Class: Regulatory
Document Type: Form
Business Function: Registration
Keywords: post-registration change, project activities, validation report
