

RENEWAL OF CREDITING PERIOD FOR
Amayo 40 MW Wind Power Project - Nicaragua

CONSORCIO EOLICO AMAYO S.A.
(NICARAGUA)

SHELL TRADING INTERNATIONAL LIMITED
(SWITZERLAND)

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Audit team:	Francy Ramírez Lead Auditor, Technical Expert (Sector 1.2) and Sustainability Expert	Organizational unit:	Instituto Colombiano de Normas Técnicas y Certificación- ICONTEC Cra 37 # 52-95 Bogotá-Colombia
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Client:	Consorcio Eólico Amayo S.A.	Client Reference:	GSVA-16-001

Summary:

ICONTEC performed the assessment for the first renewal of crediting period of Amayo 40 MW Wind Power Project - Nicaragua in Nicaragua on the basis of Gold Standard criteria for clean development mechanisms, as well as criteria given to provide for consistent project operations, monitoring and reporting. This report summarizes the findings of the assessment.

The main objective of the Amayo Wind Power Project is to provide affordable electricity to the Nicaraguan grid using a clean and renewable energy source: the wind. For this purpose, the project makes use of nineteen 2.1 megawatt Suzlon S88 60HZ wind turbine generators, for a total power capacity of 39.9 MW per year. The net power production provided to the national grid is expected to be approximately 169 GWh per year. The project activity involves every stage, from the development, design, engineering and financing, to the construction, operation and maintenance of the Amayo's power plant facilities.

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

In summary, it is ICONTEC's opinion that Amayo 40 MW Wind Power Project – Nicaragua meets all relevant Gold Standard requirements for the clean development mechanisms. Hence, ICONTEC requests the renewal of crediting period of the project as Gold Standard project activity.

Work verified by:	Diana Santos Lead Technical Reviewer and Sustainability Expert Cristian Grisales Technical Expert (Sector 1.2)	☒ No distribution without permission from the client or responsible organizational unit ☐ Limited distribution ☐ Unrestricted distribution
Technical review date:	27/06/2016	

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Abbreviations

CAR	Corrective Action Request
CDM	Clean Development Mechanism
ERs	Emission Reductions
CERs	Certified emission reductions
CL	Clarification Request
CO ₂ e	Carbon dioxide equivalent
DOE	Designated Operational Entity
GHG	Greenhouse Gases
ICONTEC	Colombian Institute of Technical Standards and Certification (Instituto Colombiano de Normas Técnicas y Certificación)
UNFCCC	United Nations Framework Convention for Climate Change
PP	Project Participant
IPCC	Intergovernmental Panel on Climate Change
GS	Gold Standard
MARENA	Nicaraguan Environmental and Natural Resources Ministry (Ministerio de Ambiente y los Recursos Naturales)
CNDC	Nicaragua National Load Dispatch Center (Centro Nacional de Despacho de Carga)

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1. INTRODUCTION

Consortio Eolico Amayo S.A commissioned ICONTEC to perform the assessment for the first renewal of crediting period of Amayo 40 MW Wind Power Project - Nicaragua (hereafter called “the project”).

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

According to the documentation of the project activity consists in providing affordable electricity to the Nicaraguan grid using a clean and renewable energy source: the wind. For this purpose, the project makes use of nineteen 2.1 megawatt Suzlon S88 60HZ wind turbine generators, for a total power capacity of 39.9 MW per year. The net power production provided to the national grid is expected to be approximately 169 GWh per year. The project activity involves every stage, from the development, design, engineering and financing, to the construction, operation and maintenance of the Amayo’s power plant facilities.

1.1. Objective

The purpose of the assessment is to secure the opinion of an independent third party in order to assess the establishment of the baseline, monitoring plan and compliance with relevant Gold Standard rules and requirements of a proposed project activity.

1.2. Scope

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

- Gold Standard Version 1.0, and
- Annex Z: Renewal of Crediting Periods of the Gold Standard

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 Gold Standard requirements. Likewise, ICONTEC focuses on the identification of significant risks for sustainability issues during its audits.

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

1.3. Validation Team

The validation team consists of the following personnel:

Table 1. Validation Team

ROLE/QUALIFICATION	LAST NAME	FIRST NAME	COUNTRY
Lead Auditor, Technical Expert (Sector 1.2) and Sustainability Expert	Ramirez	Francy	Colombia
Lead Technical Reviewer and Sustainability Expert	Santos	Diana	Colombia
Technical Expert (Sector 1.2)	Grisales	Cristian	Colombia

1.4. Methodology

The assessment consists of the following three phases:

- A desk review of the project design documents
- Follow up interviews with project stakeholders
- Resolution of outstanding issues and the issuance of a final report and opinion.

All documentation reviewed during the validation process was included in chapter 7 (REFERENCES).

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 PP made mistakes which directly influenced the ability of the project activity to achieve real, measurable and additional sustainability goals;
- The Gold Standard requirements have not been met; or
- There is a risk that sustainability issues cannot be monitored or calculated

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

A Clarification Request is raised when information is insufficient or not clear enough to establish whether a requirement was met.

ICONTEC resolved or closed out CARs and CLs only if the PP modify the project documentation or provide additional explanations or evidence that satisfies the DOE's concerns. In addition, this assessment report explains findings raised during the assessment process as well as responses provided by the PP, means of validation of such responses and references to any resulting changes in the project documentation or supporting annexes.

1.5. Internal Quality Control

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

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

1.6. Follow Up 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.

Table 2. Follow up Interviews

DATE	INTERVIEW	ORGANIZATION	INTERVIEW TOPICS
May 24 th /2016	Martha Hernandez Project and Planning Director	Municipality of Rivas	• Local stakeholder issues • Sustainable development Assessment • Sustainable Development Monitoring Plan
	Felipe Florez Maintenance Chief	Consortio Eolico Amayo S.A.	
	Felipe Saldaña Health & Safety Operator		
	Vladiedska Mendoza CDM Coordinator		

DATE	INTERVIEW	ORGANIZATION	INTERVIEW TOPICS
	Mariana Barrios	CDM & GS Consultant	

1.7. Resolution of CLs, CARs and FARs

CARs, CLs and FARs raised by ICONTEC were presented to the PP and resolved through communication and meetings between Consorcio Eolico Amayo S.A and ICONTEC. To guarantee the transparency of the assessment process, the concerns raised and the responses provided by the PP are documented inside this report.

Since modifications to the project documentation were necessary to resolve ICONTEC's concerns, the client decided to review the project documentation and re-submit corrected versions.

2. STAKEHOLDER CONSULTATION

The PP did not performed a stakeholder consultation for the second crediting period since the MARENA as Nicaraguan environmental authority granted the environmental license and it is still valid and no further consultation to stakeholder needs to carry out.

Despite that, the audit team verified by means of interviews with local authorities of municipality of Rivas¹ (where the project is located) that a permanent communication channel exists between the community and the project responsible personnel. By this channel, the community can address concerns, petitions or disclaims regarding to the project. Likewise the project has the capacity to answer these issues

The audit team concludes that concerns, petition or disclaims from stakeholders of the project can be addressed by the PP.

¹ Project and Planning Director of Municipality of Rivas

3. SUSTAINABLE DEVELOPMENT ASSESSMENT

The sustainable development indicators relevant for the project activity have been assessed using the Gold Standard Sustainable Development (SD) assessment matrix^{1/}.

The scoring is reproducible and the justification considers existing information like results from: the environmental impact assessment, the four local stakeholder consultations performed at registration time, and the current situation at the project site. All considered changes are relative to the baseline situation. Even the correction made by the PP in the Sustainable Development assessment matrix regarding to CO emissions attributable to the project operation.

MARENA² issued a letter ^{2/} which confirmed that Amayo Wind farm does not generate pollutant gases in the operation phase; hence this Nicaraguan environmental authority granted the permission for no monitoring the carbon monoxide emissions.

The total score is +4. There is no sub-total score negative and only two indicators have a negative score (Other pollutants and Biodiversity). The PP considers in the Sustainable Development Assessment, the noise as other pollutant ^{8/}, likewise the bird collisions as an issue to be taken into account in the biodiversity assessment ^{3/}.

Comprehensive information has been provided to the audit team, suitable for evidencing the data and statements.

ICONTEC concludes that Consorcio Eolico Amayo S.A. has carried out the Sustainable Development assessment in accordance with Gold Standard requirements ^{GS1/} and ^{GS2/}.

4. SUSTAINABLE DEVELOPMENT MONITORING PLAN

PP developed a sustainability development monitoring plan on the basis of the Sustainable Development Matrix, and the Local Stakeholder Consultation³.

² <http://www.marena.gob.ni/>

³ This refers to the previous 4 local stakeholder consultations carried out at the registration time and the permanent communication channel held by the PP and the community

Altogether, the previous mentioned processes provided necessary parameters to monitor sustainability of the project. Parameters to be monitored are derived from the interaction with stakeholders as well as the possible impact on environment determined by PP:

Table 3. Assessment of Sustainable Development Monitoring Plan

Indicator		Chosen Parameter	Baseline situation of the Project Activity	Validation Team Conclusion
01	Water quality and quantity	a. pH level in lake and river b. Water temperature in lake and river c. BOD in lake and river d. Dissolved oxygen level in lake and rivers e. pH level in project waste waters f. Temperature in the project's waste waters g. TSS in project's waste waters h. BOD in project's waste waters i. COD in project's waste waters j. Grease and oil in project's waste waters k. Phosphorous level in project's waste waters l. Fecal coliforms and total coliforms in project's waste waters. m. Methylene blue active substances in project's waste waters	Current situation: Treatment of small amounts of waste water from the project activity/4/. These values must be between normal ranges according to Nicaraguan environmental ministry. Baseline: no waste water emission because of the absence of human activity in the project site	The parameters allow monitoring impact of the project activity in terms of the sustainable development indicators. Additionally parameters as frequency of measurement and means of measurement were properly defined by the PP /1/. The audit team assessed proposed parameters and considers current situation, baseline and means of measurement are reasonable as well as feasible to be carried out. On the matters of Other pollutants, noise generated during construction phase is not taken into account since these activities are no longer in place. Nevertheless, noise during operation has been considered as another source of pollution. Finally, figures related to chosen parameters were verified by the audit team.

02	Soil	a. Actions to promote sustainable use of land. b. Number of trees planted during Reforestation / afforestation. c. Number and description of maintenance activities undertaken by project members to the reforested areas	Current situation: The project cooperates every year with the reforestation plan of the local government, which plants trees all over the Department of Rivas /5/ /7/. The PP participates by donating trees and inputs for planting. Besides that, the PP makes donations for clean up beaches at the lake shore /6/. These contributions can be done either to the local government, NGOs or local landowners. Baseline: same than current situation	
03	Other pollutants	a. Workers hearing level. b. Project Noise level	a. Current situation: No auditive problems on workers caused by project activity. Baseline: same than current situation b. Current situation: Values between normal ranges according to noise level study and Nicaraguan environmental ministry /8/. Baseline: same than current situation	
04	Biodiversity	Number of birds collisions	Current situation: No relevant numbers of birds collisions /3/ Baseline: same than current situation	
05	Access to energy services	a. Amount of fossil fuels avoided by the	Current situation: 0 (fossil fuels are used if the project is not in operation)	

		project. b. Difference between spot price for energy (short-run marginal costs) and the price of Amayo invoices	Regarding the spot price, this can be monitored by the CNDC ⁴ Baseline: same than current situation	
06	Balance of payments and investment	Value of fossil fuels avoided by the project	Current situation: 0 (fossil fuels are used if the project is not in operation) Baseline: same than current situation	
07	Technology transfer	Number and description of events related to technology transferring activities undertaken by project members	Current situation: One event per year There are visits that the project receives from educational institutions and other institutions from public and private sector. Baseline: One event per year	

ICONTEC concludes that in addition to the monitoring plan of the approved PDD and the monitoring requirements regarding the implementation of the environmental prevention and mitigation plan, that seven SD indicators will be monitored as indicated by the PP/1/.

The indicators and data collection methodology have been described in a sufficient manner. The indicators are deemed appropriate. Difficulties regarding availability are not expected.

5. VALIDATION OPINION

ICONTEC has performed the assessment for the first renewal of crediting period of Amayo 40 MW Wind Power Project - Nicaragua in Nicaragua. The assessment was performed on the basis of Gold Standard criteria for the Clean Development

⁴ <http://www.cndc.org.ni/>

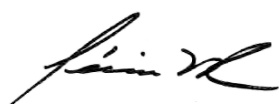
Mechanism, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The review of the project documentation and the subsequent follow up interviews has provided ICONTEC with sufficient evidence to determine the fulfillment of the stated criteria.

The main objective of the Amayo Wind Power Project is to provide affordable electricity to the Nicaraguan grid using a clean and renewable energy source: the wind. For this purpose, the project makes use of nineteen 2.1 megawatt Suzlon S88 60HZ wind turbine generators, for a total power capacity of 39.9 MW per year. The net power production provided to the national grid is expected to be approximately 169 GWh per year. The project activity involves every stage, from the development, design, engineering and financing, to the construction, operation and maintenance of the Amayo's power plant facilities.

In summary, it is ICONTEC's opinion that Amayo 40 MW Wind Power Project - Nicaragua in Nicaragua, as described in the project documentation, meets all relevant Gold Standard requirements for clean development mechanisms. ICONTEC thus requests the renewal of crediting period of the project as a GS project activity.

Bogotá, 27/06/2016



Monica Vivas
Director of conformity assessment
ICONTEC

6. 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 PP modify the project design, rectify the project documentation or provide additional explanations or evidence that satisfy the ICONTEC’s concerns.

This table explains the issues raised, the responses provided by the PP, the means of validation of such responses and references to any resulting changes in the project documentation or supporting annexes.

VALIDATION REPORT



<i>Report clarifications and corrective action requests</i>	<i>Reference</i>	<i>Summary of project owner response</i>	<i>Validation/Verification conclusion</i>
CAR 1 No evidence was found regarding to monitoring of parameter associated with the sludge drying area	Annex Z of Gold Standard	As with carbon monoxide, MARENA (national environmental authority) has provided written confirmation that the project sludge is negligible and therefore not subject to monitoring.	Verification Team Response: The audit team reviewed the letter issued by MARENA/2/, this letters confirms the MARENA's concept regarding to the carbon monoxide emissions Verification Team Conclusion: Closed 10/06/2016
CAR 2 No parameter is associated with the Employment component stated in the Sustainable Development Assessment Matrix	Annex Z of Gold Standard	Kindly note that the Gold Standard manual for CDM project developers (version 3) does not require monitoring of every parameter with a positive score. As explained in the GS Annex and the EIA, the greatest impact on employment happens during the project construction, after which a stable staff is hired to operate the plant. This is the same reason why this parameter was not included in the first crediting period.	Verification Team Response: Since version 3 of Gold Standard manual for CDM project developers states that a parameter with a positive score does not need monitoring this finding is resolved Verification Team Conclusion: Closed 10/06/2016

7. REFERENCES

/1/	Additional PDD Annex as required for Gold Standard validation, version 8 dated on April 2016
/2/	Letter issued by MARENA, dated on July 9 th /2010, which states that the project activity does not generate pollutant gases (CO included)
/3/	Record of bird collisions since August 2015 to May 2016 at Amayo Wind Power Project issued by Consorcio Eolico Amayo S.A
/4/	Analysis of Quality and Quantity of water performed by Universidad Nacional Autónoma de Nicaragua for years 2015 and 2016 for Consorcio Eolico Amayo S.A at Amayo Wind Power Project facilities
/5/	Trees Maintenance Report Amayo Wind Farm. Monitoring Period: July 2014 – June 2015 issued by Consorcio Eolico Amayo S.A
/6/	Records about the requesting donations from Rivas Municipality for cleaning up beaches and Records associated with the deliveries made by Consorcio Eolico Amayo S.A during 2015
/7/	Records about the requesting donations from Rivas Municipality for reforestations activities ad Records associated with the deliveries made by Consorcio Eolico Amayo S.A during 2015
/8/	Noise Monitoring Report for Amayo Wind Power Project, dated on April 2016
/GS1/	Gold Standard Version 1.0
/GS2/	Annex Z of Gold Standard: Renewal of Crediting Periods of the Gold Standard

8. EXPERIENCE AND KNOWLEDGE OF AUDIT TEAM AND REVIEWER TEAM

Francy Ramírez

Lead Auditor, Sector Specialist (Sector 1.2) and Technical Expert in Sustainability Issues

Education:

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 (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". Estocolmo, Suecia (23 and 25 November 2009)

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

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

Professional Background:

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.

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.

Eng. Diana Santos

CDM Lead Technical Reviewer and Technical Expert Reviewer in Sustainability Issues

Industrial Engineer, Los Andes University, Bogotá, Colombia 2002

Post degree on Clean Production, Los Andes University, Bogotá, Colombia 2003

Master on International cooperation for development, Pavia University. Italy –

San Buenaventura University, Cartagena, Colombia 2007

Specialization on Climate Change and Kyoto Protocol OEA 2011-ILC, Latin American Institute of Sciences, Perú, 2011

Quality Management Systems Diploma, ISO 9000, 9001, 9004 y 14001

Lead Auditor Sello Ambiental Colombiano, Sostenibilidad Turística, Auditor ISO 14001

RELEVANTS

Calculating the Carbon Footprint. ISO Committee 207, SC 07. ISO. Oslo, Noruega Junio 2011

Roundtable on Verification of Afforestation / Reforestation (A/R) CDM Projects. Carbon Finance Unit - The World Bank, UNFCCC. Paris France. May 2011

Regional work shop ISO / BAS life cycle analysis e ISO 14040 y 14064 Nov 2010

Latin American and Caribbean Carbon Forum - BID2010 UNEP RISO CENTRE, Santo Domingo – Dominican Republic Oct 2010

CARBON MARKETS AND CLIMATE FINANCE CONFERENCE Green Power Academy and Action for Sustainable, México City, México. Sept 2010

Sustainable development indicators World Bank, CEPAL – United Nations, Los Andes University, Bogotá, Colombia Jul 2007

RELEVANT WORK EXPERIENCE

2008 –Actual ICONTEC: Climate Change Professional:

CDM Management system support, Development of new services and innovate the current ones in order to meet the Climate Change market needs, control Support of Climate Change Product and Services.

2007 ECLAC –Economic Commission for Latin America and the Caribbean– Unit Nations Organization – UNO:

Formulation and management Support of the projects, participate on the link enforcement with the UNICEF initiative of public investment for children; support on the management of the project Efectos y Costos de la Desnutrición Infantil en Colombia, currently in process, made in association with the Programa Mundial de Alimentos PMA, lead by CEPAL; y also support other projects for sustainable Development and environment.

2004-2005 ODES. Organización para el Desempeño Empresarial Sostenible:

Professional on the development and implementation of PGIRS (Integrated Solid Waste Management) with the Tolima government and the Environmental authority.

EXPERIENCE IN CDM ACTIVITIES:

Lead Auditor

- Validation of La Venta II
- Verification of Santa Ana Hydroelectric Plant

Auditor

- Validation of Estancia NINA Afforestation project

- Verification of PROCUENCA: Forestry Project to Restore the Watershed of the Chinchiná River, an Environmental and Productive Alternative for the City of Manizales and the Surrounding Region

Technical Reviewer

- Validation of San Nicolas CDM Reforestation Project
- Validation of Providencia I: 1.8MW Small Hydro Power Generation Plant
- Validation of Providencia III: 9.11MW Small Hydro Power Generation Plant
- 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 Reduction of energy consumption during the production of hydraulic lime for the construction industry through the addition of non-calcined mineral components and additives
- Verification of Fertinal Nitrous Oxide Abatement Project
- Validation of N₂O Abatement at Austin Bacis Mexico Nitric Acid Plant
- Validation of Project LRT system in tunis
- Verification of Biogas energy plant from palm oil mill effluent
- Verification of Santa Ana Hydroelectric Plant
- Verification of Co-composting of EFB and POME project
- Verification of Methane recovery and effective use of power generation project Norte III-B Landfill
- Biogas Project, Olmeca III, Tecun Uman

Cristian Grisales

Technical Reviewer Sector 01

Education:

Clean Technologies – Environmental technology, innovation and management systems as means for regional and local economic development

Weitz Center for Development Studies – Israel

June 16th - July 10th 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.

Engineering Intern

INGENIERIA ESPECIALIZADA

Commercial visits to different industries, sales, design and assembly of shielding systems, grounding grids, power quality studies, calculation of electrical installations, RETIE inspections, diagnostic grounding systems, implementation, supervision and maintenance of the developed projects.

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 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