

GOLD STANDARD MONITORING REPORT
Retroactive Verification of the 1st Monitoring Period CERs
Version 2, as of: February 8th, 2011
Amayo 40 MW Wind Power Project – Nicaragua
Monitoring Period: From April 12th 2009 to September 30th 2009 (both dates included)

The following document is an addendum to the CDM monitoring report corresponding to the April 12th 2009 to September 30th 2009 period for the Amayo Wind Power Project. The purpose of this document is to present the results of the implementation of the sustainable indicators monitoring plan, a specific request for the GS.

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SECTION A. Description of the sustainable indicators monitoring plan

In addition to the requirement of emission reduction monitoring, candidate Gold Standard projects need to monitor and verify the development of *sustainable indicators*.

This section describes the results obtained from the monitoring of sustainability indicators. As specified in the GS Annex, sustainability indicators are integrated within the environmental monitoring and management plan. As this monitoring period was before the date of Gold Standard Registration, the Sustainable Indicators Monitoring Plan was not developed by that time, and for instance the sustainable monitored parameters were not established as well.

See below the complete list of each parameters¹ and a description of the implementation of the monitoring plan for those parameters that applied for this specific period of time.

A.1 - Soil

Parameter	Actions to promote sustainable use of land
Sampling points	N/A
Frequency	Yearly
Method Q/Q	Beach Clean Ups, Donation of trees and contributions to local Nurseries.
Results	- Donation of trees in order to contribute with the forestation of several areas in Rivas. These trees (10,000 trees) were donated to environmental Rivas authorities to support their reforestation campaigns. This donation took place in July 2009. - Beach cleanup took place on September 2009. Amayo sponsored the cleanup of tree beaches of the Municipality of San Juan del Sur, Rivas. Due that the registration of GS took place on August 27th 2010, no more activities to promote sustainable use of land where contemplated by this time.

Parameter	Number of trees planted during Reforestation / afforestation
Sampling points	Project site
Frequency	Once
Method Q/Q	Manual count
Results	Due that this monitoring period was several months before the date of Gold Standard Registration (August 27th 2009), no trees were planted during this monitoring period, since this activity was not contemplated by that time. For instance it is not applicable. The project has planned to plant trees at project's site on approximately July 2010.

¹ As per "Table 8: List of parameters to be monitored" on page 27 of the registered GS Annex).

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Parameter	Number and description of maintenance activities undertaken by project members to the reforested areas
Sampling points	Project site
Frequency	Yearly
Method Q/Q	An annual report will be prepared with all the activities undertaken.
Results	Due that the registration of GS took place on August 27 th 2010, no trees were planted during this monitoring period, since this activity was not contemplated by that time, and for instance no maintenance activities were done for this monitoring period. Since the planting of trees is planned for approximately July 2010, the annual report will be prepared on August 2010.

A.2. - Biodiversity

Parameter	Number of birds collision
Sampling points	Rows of aerogenerators
Frequency	Twice a week
Method Q/Q	Count
Results	There has not been any bird collision for this monitoring period. The project developed a mechanism to follow up the monitoring of bird collisions, and additionally bat collisions as well, which consist of a writing procedure in order to undertake the counting and reporting and a form to be filled twice a week.

A.3 - Water quality and quantity

Parameter	Lake and river water, and water and sludge of the wastewater system.
Sampling points	Five meters from the lake's shore and rivers in points close to the project activity. At the entrance and exit of the wastewater system.
Frequency	Yearly
Method Q/Q	Standard Methods 2000
Results	Water tests were done on July 2009 at all the monitoring points. The results are found in Annex B of this monitoring report. The environmental authority MARENA confirms through a letter from December 11 th 2009 that all parameters tests results are between the normal ranges.
	Due the nature of this kind of system (septic tank with ascendant flow anaerobic filter) no sludge is accumulated at the final stage, which is the absorption well. The environmental authority MARENA confirms through a letter from July 9th 2009 to Amayo that the project does not require performing tests to the sludge.

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A.4 - Air quality

Parameter	Carbon Monoxide (CO)
Sampling points	Project Southeast sector
Frequency	Yearly
Method Q/Q	non-dispersive infrared spectrophotometry
Results	There are not results for this parameter.
Comments	There are no results for this parameter since there are no CO emissions related to wind power projects. It is understood that by a mistake this parameter was left as part of the monitoring plan of the Environmental Impact Study of the project that was done several years ago. Due this, the environmental authority MARENA confirms through a letter from July 9 th 2009 to Amayo that the project does not require performing tests of CO.

A.5 - Other Pollutants

Parameter	Workers hearing level
Sampling points	Project site
Frequency	Yearly
Method Q/Q	Audiometry
Results	The audiometry tests were performed on July 2009, to the operators, management team and field staff, for a total of 13 workers. According to the results none of the workers have a disorder in the audition or communication or any other serious disorder. 9 of the workers have a complete normal audition, and 4 of them present hipoacusia attributable to common causes. ¹

¹¹ A complete individual diagnosis and audiometric evaluation of each worker is available. It has already been supplied and checked by the DOE as evidence.

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Parameter	Project Noise level (db)
Sampling points	Project surroundings
Frequency	Yearly
Method Q/Q	Measures to be performed by means of a sonometer
Results	The noise level study was done on August 2009. The measures were done in 16 different areas of the wind farm (and one on the Panamerican road). According to the conclusions the noise is in compliance with international norms for fixed noise sources and in accordance to the technology of the wind turbines. ² The results are as follow:

A.6 - Access to energy services

Parameter	Amount of fossil fuels consumption avoided by the project (as per equations presented on page 25 of the GS Annex)
Sampling points	N/A
Frequency	Yearly during crediting period
Method Q/Q	To be performed on an audited worksheet
Results	Since this parameter is monitored yearly with the data available at the end of each year, this parameter does not apply for this monitoring period since it goes from April 12 th to September 30 th 2009.

² . The study considered as a reference two international norms (EPA and official Mexican norm NOM-081-Semarnat-1994 for fixed sources of noise) which are based on the exposure time of a person to the noise from a fixed source of noise. Even when there are no communities or households affected by the noise, the measures of noise are below of the maximum permissible values of those norms. The study also concludes that the wind turbines technology is designed to reduce the noise emissions.

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Parameter	Difference between spot price for energy (short-run marginal costs) and the price Amayo receives (as per equation 1.2 on page 26 of the GS Annex)
Sampling points	N/A
Frequency	Yearly during crediting period
Method Q/Q	To be performed on an audited worksheet.
Results	Since this parameter is monitored yearly with the data available at the end of each year, this parameter does not apply for this monitoring period since it goes from April 12 th to September 31 st 2009.

A.7 - Balance of payments

Parameter	Value of fossil fuels avoided by the project (as per equation 1.3 on page 26 of the GS Annex).
Sampling points	N/A
Frequency	Yearly during crediting period
Method Q/Q	To be performed on an audited worksheet.
Results	Since this parameter is monitored yearly with the data available at the end of each year, this parameter does not apply for this monitoring period since it goes from April 12 th to September 30 th 2009.

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A.8 - Technology transfer

Parameter	Number and description of events related to technology transfer activities undertaken by project members			
Sampling points	N/A			
Frequency	Yearly during crediting period			
Method Q/Q	Evidence from each activity and feedback from participants will be collected and archived			
Results	1. During this monitoring period 267 students from universities visited the project. They were received by the project site staff that performed a presentation about the technical and environmental items of the project activity, and then took all the visitors to a visit around the project site. See below a list of the visits.			
		Institution	Number of persons who attended	Date of visit
		Facultad Regional Multidisciplinaria de Esteli (FAREM-UNAN)	54	April 22th 2009
		Instituto Tecnológico Regional	38	June 4 th 2009
		Facultad Regional Multidisciplinaria de Esteli (FAREM-UNAN)	45	June 6 th 2009
		Universidad Nacional de Ingeniería (group 1)	25	June 11 th 2009
		Universidad Nacional de Ingeniería (group 2) ³	23	June 11 th 2009
		INTECNA – Granada	26	June 12 th 2009
		Universidad Nacional de Ingeniería	21	June 30 th 2009
		Facultad Regional Multidisciplinaria de Esteli (FAREM-UNAN)	13	July 4 th 2009
		Universidad Centroamericana	14	August 19 th 2009
		Universidad Nacional de Ingeniería	43	September 28 th 2009
	2. As part of the technology transfer, the Nicaraguan Amayo plant personnel received training from the training department of SUZLON, on the following themes: Suzlon 88 Turbine Training, SC (Suzlon Control System) –Commander, and SCADA System Training. These training took place on May and June 2009.			

³ There were two different visits on June 11th 2009 from the same university but different groups at different moments of the day. The two separate lists of each group were available to the DOE during the site visit.

A.9 - Additional information on the implementation status of other items

The purpose of this section is supply information on the implementation status of some other items mentioned on the GS Annex.

During the project's construction several environmental mitigation measures were implemented as follow (according to the environmental impact study of the project, as it has been stated in the GS Annex):

- **Soil conditions:** several drainages were constructed on the roads in order to maintain the natural flow of the rain water. These drainages are permanently on the project roads. A concrete retaining impermeable pool was constructed for the diesel tank that was used for the construction of the project back in 2008 in order to protect the soil of any fuel spillage. The diesel tank was removed once the construction ended and no fuel spillage took place. Fertile soil was removed in order to clear the sites mainly for the roads, provisory camping site and platforms for the crane. After the construction was ended this same fertile soil was used for the revegetation of many pasture areas around the site, planting grass for pasture, as it was the original condition of the soil of those areas. Currently these areas are completed covered by grass for pasture and for instance there is no possibility of erosion.
- **Air:** The roads were irrigated during construction in order to avoid the suspension of particles, keeping the air clear as possible of particles. The contractor for the construction had a permanent water truck irrigating permanently the roads during all the construction stage.
- **Birds and Fauna:** In order to protect the birds and other fauna of the project all the workers during construction were instructed on the prohibition of hunting and fishing. As of today the project has surveillance all around the project in order to avoid the entrance of non authorized persons. As well the project installed four sonic deterrents in the wind turbines lines in order to prevent the birds collision to the blades. During the site visit the DOE could verified that these devices are installed. As of today non bird collision has been reported as it could be verified on the monitoring forms for birds collisions counting.
- **Flora:** The wind turbines were installed in places where there was not forest or trees, as well the construction of the provisory camping site, roads and platforms, so no damages were caused to the small forests that are inside the project site. The wind turbines were installed in open areas (pasture lands). As well, the wind turbines installed at the project site meet the international design standards to minimize the

impact on the landscape.

- **Project's noise:** it is important to remark that there is not a close community to the wind farm. Inside the wind farm lands are a few houses (for vacations) that belong to the land owners and a few houses of their workers, which are far enough from the wind turbines. As of today there has not been any complaint regarding the noise.
- **Protection of superficial waters and aquatic fauna:** There was not any activity close to superficial waters that involved lubricant wastes or any kind of pollutant substance. Anyway, all the oil and lubricant wastes were disposed adequately and non spillage took place during construction.

Besides the information regarding the mitigation measures mentioned, the GS Annex mentions an educational center and the participation of the DNA operating as a broker for the CERs sale (as an option). Regarding the first item, the educational center refers to the use of an area inside the offices and control building, and not to the construction of another

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building as educational purposes, the standard designated for educational purposes has been the meeting room at the office and control building. There, the students and visitors in general receive the information regarding the park and wind energy through talks and ppt presentations given by the plant staff. After the talks and presentation, the visitors receive as well a visit all around the wind farm.

Regarding the second item, the DNA did not operate as a broker for the period reviewed since according to the cooperation agreement that was signed by the DNA and the project it is not a requirement that the DNA will act as a broker, and for instance it is up to the project to decide if the DNA will operate as a broker or not. This cooperation agreement also states that the DNA will receive a monetary contribution (percentage of the incomes of the sales) only if they act as a broker. As of today the DNA has not been involved in the sales of the project's CERs.

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Annex A: Sustainable Development Assessment Matrix⁴

Amayo Wind Farm – Sustainable Development Assessment Matrix

Component	Score (-2 to 2)	Comments
Local/regional/global environment		
Water quality and quantity (*)	1	Analyzed explicitly in the EIA, receiving a “+2” score (page 4-8 and 4-14), which corresponds to a “+1” in the GS SD Matrix.
Air quality (emissions other than GHGs) (*)	0	In the EIA noise pollution is included within this indicator; however, under the GS this type of pollution is included in the “other pollutants” component. CO emissions will be monitored; however, the project does not involve any major emissions sources (see EIA 4-11 to 4-13 and 6-1).
Other pollutants (*)	-1	Noise will be generated from the operation of the generators (EIA: 4-8, 4-11 to 4-13, under the “air component” subtitle)
Soil condition (quality and quantity) (*)	1	EIA pages 4-8 and 4-13
Biodiversity (*)	-1	EIA pages 4-8, 4-16 and 4-17.
Sub total	0	
Social sustainability and development		
Employment (quality)	0	No changes in employment quality are expected
Livelihood of the poor	0	Although the project will benefit an economically depressed area, its effects will reach all the inhabitants, no matter whether they are rich or poor.
Access to energy services (*)	1	The project will lower the amount of fossil fuels consumed. An ex-ante estimation of this value is provided in the “Sustainable indicators monitoring plan” section (see also footnote 40).
Human and institutional capacity	0	No changes in this component are expected.
Sub total	1	
Economic and technological development		

⁴ As per Table 4: Amayo Wind Farm- Sustainable Development Assessment Matrix. Page 8 of Gold Standard Annex.

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Employment	1	The project has clear benefits related to this component. See page 4-18 on the EIA for a discussion and box 8 (page 4-8) for a quantification of this impact.
Balance of payments (*)	1	The project has clear benefits related to this component. See the “Sustainable indicators monitoring plan” section in this annex for an ex-ante calculation of this impact.
Technological self reliance (*)	1	Project is first of its kind in Nicaragua.
Sub total	3	
TOTAL	4	

(*) Items marked with an asterisk are the ones included in the monitoring plan as per GS requirements.

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Annex B: Water quality test results

Water test results from water lake and rivers

Parameter	Results
Lake water	
• pH	8,30 pH units
• Dissolved oxygen	6,87 mg.l-1
• Biochemical oxygen demand	4,33 mg.l-1
• Temperature	30,7 C
River San Luis Water	
• pH	7,77 pH units
• Dissolved oxygen	2,19 mg.l-1
• Biochemical oxygen demand	4,33 mg.l-1
• Temperature	28,9 C
River Tisla	
• pH	7,32 pH units
• Dissolved oxygen	2,49 mg.l-1
• Biochemical oxygen demand	9,52 mg.l-1
• Temperature	28.1 C

Water test results for wastewater

Parameter	Results
Exit septic tank	
• pH	8,66 pH units
• suspended solids	151,82 mg.l-1
• sedimentable solids	<RD
• grease and oils	11,10 mg.l-1
• Biochemical oxygen demand	5,96
• Chemical oxygen demand	10,90
• Total phosphorus	0,525
• Active blue methylene substances	0,104
• Temperature	31,9 C
• Fecal coliforms	1.30E+03 NMP/100 ml
• Total coliforms	1.30E+03 NMP/100 ml
Entrance septic tank	
• pH	7,90 pH units
• suspended solids	29,50 mg.l-1
• sedimentable solids	1,0 mg.l-1
• grease and oils	24,14 mg.l-1
• Biochemical oxygen demand	53,99 mg.l-1
• Chemical oxygen demand	94,53 mg.l-1
• Total phosphorus	2,680 mg.l-1
• Active blue methylene substances	2,590 mg.l-1
• Temperature	30,7C mg.l-1
• Fecal coliforms	1.30E+06 mg.l-1
• Total coliforms	1.10E+07 mg.l-1