Monitoring report form
(Version 05.1)

Complete this form in accordance with the Attachment "Instructions for filling out the monitoring report form" at the end of this form.

MONITORING REPORT		
Title of the project activity	Los Santos Wind Power Project	
UNFCCC reference number of the project activity	6275	
Version number of the monitoring report	1.2	
Completion date of the monitoring report	27/05/2016	
Monitoring period number and duration of this monitoring period	02 (01/07/2014 – 01/05/2016 – both days included)	
Project participant(s)	Cooperativa de Electrificación Rural Los Santos (COOPESANTOS) Carbonbay GmbH & Co. KG	
Host Party	Costa Rica	
Sectoral scope(s)	01	
Selected methodology(ies)	AMS-I.D.ver. 17- Grid connected renewable electricity generation.	
Selected standardized baseline(s)	Not Applicable	
Estimated amount of GHG emission reductions or net GHG removals by sinks for this monitoring period in the registered PDD	27,379	
Total amount of GHG emission reductions or net GHG removals by sinks achieved in this monitoring period	GHG emission reductions or net GHG removals by sinks reported up to 31 December 2012	GHG emission reductions or net GHG removals by sinks reported from 1 January 2013 onwards
	Not applicable	27,192

SECTION A. Description of project activity

A.1. Purpose and general description of project activity

The project consists of fifteen 850kW GAMESA wind power turbines installed in Cooperativa de Electrificación Rural Los Santos' (COOPESANTOS) concession area in El Guarco and Desamparados, Costa Rica. The project requires a total investment of approximately US$ 38 million for an installed capacity of 12.75 MW.

The technology applied is: The project activity utilizes 15 horizontal axis GAMESA G52-850 WTGs with a rated capacity of 850 kW each. Table A.1. shows the detail specifications of the turbines . The turbine lifetime according to the detailed datasheets for the GAMESA G52-850 is of 20 years.

The project feasibility study calculated a plant load factor of 42.68% and the turbine supply contract guarantees a minimum of 42 GWh per year.

To most relevant dates in the development of the project are: The WTG Purchase contract is dated on 05/05/2010. The construction contract was signed on 27/05/2010. The initial ERPA was signed on 16/06/2010.

The commercial operation of the project started on 11/11/2011.

The proposed project has generated and supplied 76,471 MWh to the grid during the presented monitoring period. The GHG emission reductions achieved in this monitoring period, from 01/07/2014 to 01/05/2016, are 27,192 tCO_2.

A.2. Location of project activity

The project is located in the Cooperativa de Electrificación Rural Los Santos (COOPESANTOS) concession; specifically near the villages of La Paz y Casamata in Costa Rica, Central America.

Figure 1: Overall location of the Project Activity

Figure 2: Precise location of the Project Activity

The coordinates of each of the turbines are:

Los Santos WPP WTG location per WGS-84 in Decimal Degrees		
WTG	**Point X**	**Point Y**
1	-83.988589825	9.7897531113
2	-83.98860966	9.7883634826
3	-83.989456506	9.7873123643
4	-83.994728062	9.7804501239
5	-83.995051061	9.77956023
6	-83.995144276	9.7785940543
7	-83.995391708	9.7778119651
8	-83.995728875	9.7770686646
9	-83.989123902	9.7765678523
10	-83.988797486	9.7756851295
11	-83.978657513	9.7599926323
12	-83.979018405	9.759236338

13	-83.978944143	9.7552176092
14	-83.977049062	9.7540770716
15	-83.977161488	9.7532034666

A.3. Parties and project participant(s)

Party involved ((host) indicates a host Party)	Private and/or public entity(ies) project participants (as applicable)	Indicate whether the Party involved wishes to be considered as project participant (yes/no)
Costa Rica (Host Party)	Cooperativa de Electrificación Rural Los Santos (COOPESANTOS) (Private Entity)	No
Germany	Carbonbay GmbH & Co. KG.	No

A.4. Reference of applied methodology and standardized baseline

The project applies following methodology:

AMS-I.D – Grid connected renewable electricity generation (version 17). https://cdm.unfccc.int/methodologies/DB/W3TINZ7KKWCK7L8WTXFQQOFQQH4SBK

The project is a small scale project activity and falls under the category I.D as per the Appendix B of the Simplified Modalities and Procedures for Small-Scale CDM project activities.

The applicable tools are:

- "Tool to calculate the emission factor for an electricity system" – Version 02.2.1.

A.5. Crediting period of project activity

Renewable crediting period, starting on 01/07/2012, 7 years twice renewable

A.6. Contact information of responsible persons/entities

The overall responsibility for the preparation of the Monitoring Report is under:
Christian Giles
Anaconda Cabon S.A.
christian.giles@anacondacarbon.com
www.anacondacarbon.com
Tel: +504 2550 0387

Anaconda Carbon S.A. is not a project participant.

SECTION B. Implementation of project activity

B.1. Description of implemented registered project activity

The project is completely installed and was under operation during the monitoring period.

The technical specifications of the installed equipment are as follows:

Parameter	Specification
Operating Data	
Rated power	850 kW
Cut-in wind speed	4 m/s
Rated wind speed	13 m/s
Cut-off wind speed	25 m/s
Rotor	
Type	3 Blades, Upwind / Horizontal axis
Diameter	52 m
Rotational speed at rated power	14.6 to 30.8 rpm
Swept area	2,124 m^2
Gearbox	
Type	1 planetary stage / 2 helical stages
Ratio	1: 74.5
Nominal Load	850 kW
Generator	
Type	Double feed generator
Speed at rated power	1.320:2.340 rpm
Rated power	850 kW
Rated voltage	690 V AC (phase to phase)
Frequency	60 Hz

There were no relevant downtimes during the presented monitoring period. All downtimes are recorded at the site and for each turbine and the electricity meters worked properly during the presented monitoring period.

B.2. Post registration changes

B.2.1. Temporary deviations from registered monitoring plan, applied methodology or applied standardized baseline

No deviation was observed for the project activity during the monitoring period.

B.2.2. Corrections

Not applicable

B.2.3. Changes to start date of crediting period

No change to the start date of the crediting period has been requested.

B.2.4. Inclusion of a monitoring plan to the registered PDD that was not included at registration

Not applicable

B.2.5. Permanent changes from registered monitoring plan, applied methodology or applied standardized baseline

The monitoring plan has not been revised

B.2.6. Changes to project design of registered project activity

No changes apply for the project activity.

B.2.7. Types of changes specific to afforestation or reforestation project activity

Not applicable

SECTION C. Description of monitoring system

Management Structure and Responsibilities

Overall responsibility for daily monitoring and reporting lies with the project owner. The manager of the proposed project is responsible for review the monthly reported results/data and checks the calibration certificates.

Data Collection: The electricity supplied by the project activity to the grid is measured by calibrated electricity meters 0.2 class. The parameter is monitored at the control room with a Supervisory Control and Data Acquisition (SCADA) system and crosschecked with review of the receipts of electricity sales to Cooperativa de Electrificación Rural Los Santos (COOPESANTOS)' co-operative members and invoices of electricity purchase from the grid company ICE.

It shall be mentioned that a discrepancy between the records on delivered electricity to the grid and the invoices to the ICE can occur due to the following reason:

The Los Santos Wind Park has been build based on the national law 8345 "Participation of Rural Electrification Cooperatives in the National Development". As per Article 9, the national grid can buy the surplus of generated electricity which is not consumed by the members of the cooperative, but is not force to do so. Therefore, not all generated electricity which is delivered to the grid is also paid by ICE, generating for some months a discrepancy between the metered electricity and the invoices.

Data is measured continuously and recorded at least hourly as required by the applicable methodology.

Data Recording: All data collected is recorded monthly into an electronic spreadsheet.

Data Calibration: All measurements are conducted with calibrated measurement equipment according to relevant industry or national standards. As per the country regulations (RRG-2440-2001), the electricity meters shall be tested or calibrated every 5 years (see section 9.1).

Data Report: Data recorded and the receipts will be consolidated on a monthly basis and will be checked for quality control purposes with official reports or statistics. If there are discrepancies in the data, the source of the variation will be identified. The data report will be concluded monthly and will be verified by the Project Developer's Head Office.

Data Archives: The data recording, the data report and the invoices are archived, together with this monitoring plan. All data collected as part of monitoring are archived electronically and be kept at least for 2 years after the end of the last crediting period or the last issuance of CERs, whichever is later.

Data Quality Control: An internal procedure to secure the correctness of data is regularly carried out. Data and reports are checked internally to secure correctness of data. In case of mistakes, the source of the variation will be identified, whether it is the main measured value or the control value. The data report is concluded monthly and verified by the Project Developer's Head Office.Corrective actions will be applied to avoid future similar mistakes wherever appropriate.

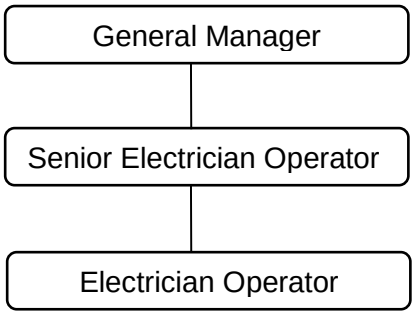
Training and Monitoring Personnel: All people that participate in the monitoring process are suitably qualified and trained in the operation and maintenance of the plant. They will also receive instructions of the monitoring plan.

Emission factor calculation: The combined margin emission factor is fixed for the first crediting period, using ex-ante data for OM and BM as described in section B.6.3. of the registered PDD.

Verification and Monitoring Results: The monitoring report is prepared by the monitoring personnel and/or the designed consulting company, in this case Anaconda Carbon S.A. It contains the data report, the emission factor calculation and the results of the emissions reductions of the project for a certain period.

Leakage monitoring: No energy generating equipment is transferred from another activity to this project and there is no existing equipment to be transferred to another activity. The project activity involves electricity generation from wind. The employed wind energy generator can only convert wind energy into electrical energy and cannot use any other input fuel for electricity generation. Thus, in no ways and means are required to monitor leakage from the project activity. The project owner can adjust and modify the monitoring plan accordingly in order to meet operational requirements. These changes need to be approved by the verifier during the periodic verifications.

The relevant company personnel involved in the monitoring activities are:



The responsibilities of each function are as follows:

General Manager

1. Signs off on the written statement for each month.
2. Designates the representative for precision testing and calibration.
3. Attaches seals to the meters or designates the appropriate person for this function.

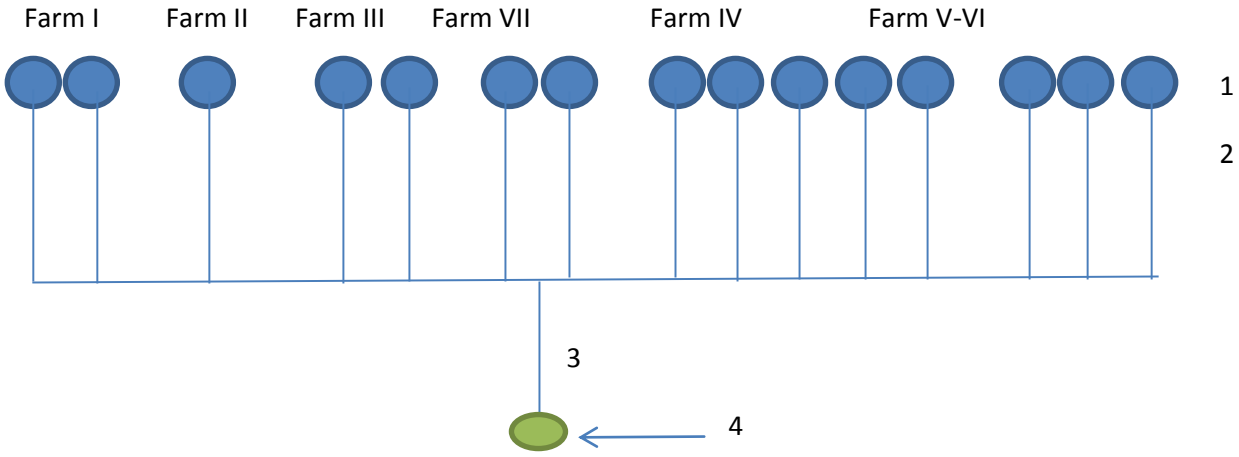
Senior Electrician Operator

1. Drafts the written statement for each month to be delivered to the General Manager for signature.
2. Verifies the readings carried out by the Electrician Operator.
3. Maintains communication with the energy buyer.

Electrician Operator

1. Carries out readings from meters.
2. Stores readings in electronic database.
3. Sends meter readings to Senior Electrician Operator for the monthly written statement.

Metering diagram for the project Los Santos:



1: Generator 1-15

2: Underground three phase line

3: Air three phase circuit

4: Entry to substation “La Lucha” with meter ION and Nexus

SECTION D. Data and parameters

D.1. Data and parameters fixed ex ante or at renewal of crediting period

Data/parameter:	**$EF_{grid,CM,y}$**
Unit	tCO_2/MWh
Description	Combined margin CO_2 emission factor for the electricity system in year y
Source of data	Calculated
Value(s) applied)	0.35559
Choice of data or measurement methods and procedures	Calculated as per “Tool to calculate the emission factor for an electricity System
Purpose of data	To calculate baseline emissions.
Additional comments	Calculated as weighted sum of the OM and BM emission factors, as explained in section B.6.3. of the registered PDD. This data will be archived electronically and according to internal procedures, until 2 years after the end of the crediting period.

D.2. Data and parameters monitored

Data/Parameter	**$EG_{facility,y}$**
Unit	MWh
Description	Net quantity of electricity produced by the wind farm and supplied to the Grid

Measured/calculated/default	Measured.
Source of data Value(s) of monitored parameter	Electricity meter. 77,179.07 MWh
Monitoring equipment	Main meter (bidirectional): Schneider Electric – ION 7650 Class 0.2 Serial number: 24306 Last Calibration: 29/09/2014
Measuring/Reading/ Recording frequency	Continuously monitored and at least monthly recording.
Calculation method (if applicable)	Net electricity is defined as the electricity produced minus the imported electricity.
QA/QC procedures	As per the country regulations (RRG-2440-2001), the electricity meters shall be tested or calibrated every 5 years (see section 9.1). To guarantee QC/QA, it will be double checked by receipts for electricity sales.
Purpose of data	Calculation of emission reductions.
Additional comment	The net electricity is defined as the electricity produced minus the imported electricity. In this case, the meters show automatically the net electricity generated, as they are bidirectional. This data will be archived electronically and according to internal procedures, until 2 years after the end of the crediting period.

D.3. Implementation of sampling plan

Not applicable

SECTION E. Calculation of emission reductions or GHG removals by sinks

E.1. Calculation of baseline emissions or baseline net GHG removals by sinks

$BE_y = EG_{facility,y} * EF_{grid,CM,y}$

Where:

BE_y = Baseline emissions in year y (tCO2)
$EG_{facility,y}$ = Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the CDM project activity in year y (MWh)
$EF_{grid,CM,y}$ = Combined margin CO2 emission factor for grid connected power generation in year y calculated using the “Tool to calculate the emission factor for an electricity system” (tCO2/MWh)

BE_y = 76,471.00 MWh * 0.35559 tCO_2/MWh

BEy = 27,192 tCO_2

E.2. Calculation of project emissions or actual net GHG removals by sinks

No project emissions apply for the project activity as per the applied methodology. No relevant emission source applies for the project activity that has not been reported.

E.3. Calculation of leakage

No leakage is accounted as per the applied methodology.Summary of calculation of emission reductions or net GHG removals by sinks

E.4. Summary of calculation of emission reductions or net GHG removals by sinks

Item	Baseline emissions or baseline net GHG removals by sinks (tCO_2e)	Project emissions or actual net GHG removals by sinks (tCO_2e)	Leakage (tCO_2e)	GHG emission reductions or net GHG removals by sinks ($t\ CO_2e$) achieved in the monitoring period		
				Up to 31/12/2012	From 01/01/2013	Total amount
Total	27,192	0	0	0	27,192	27,192

E.5. Comparison of actual emission reductions or net GHG removals by sinks with estimates in registered PDD

Item	Values estimated in ex ante calculation of registered PDD	Actual values achieved during this monitoring period
Emission reductions or GHG removals by sinks (tCO_2e)	27,379	27,192

E.6. Remarks on difference from estimated value in registered PDD

The achieved emission reductions are lower than the expectations of the PDD, therefore, no further assessment is required.

Appendix 1. Contact information of project participants and responsible persons/entities

Project participant and/or responsible person/ entity	☒ Project participant ☐ Person/entity responsible for completing the CDM-MR-FORM
Organization name	Cooperativa de Electrificación Rural Los Santos (COOPESANTOS)
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Website	www.coopesantos.com
Contact person	
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Salutation	Mr.
Last name	Calderon
Middle name	
First name	Elías
Department	
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Direct fax	
Direct tel.	+506 2546-2525
Personal e-mail	info@coopesantos.com

Project participant and/or responsible person/ entity	☒ Project participant ☐ Person/entity responsible for completing the CDM-MR-FORM
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Contact person	
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Contact person	Mr. Christian Giles
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