




Verification and certification report form for CDM project activities

(Version 01.0)

Complete this form in accordance with the "Attachment: Instructions for filling out the verification and certification report form for CDM project activities" at the end of this form.

VERIFICATION AND CERTIFICATION REPORT

Title of the project activity	Los Santos Wind Power Project
Reference number of the project activity	6275
Version number of the verification and certification report	02
Completion date of the verification and certification report	10/09/2016
Monitoring period number and duration of this monitoring period	Second; 01/07/2014-30/04/2016 (both days included)
Version number of monitoring report to which this report applies	3.2
Crediting period of the project activity corresponding to this monitoring period	7 years, 01/07/2012, Renewable
Project participant(s)	1. Cooperativa de Electrificación Rural Los Santos (COOPESANTOS) 2. Carbonbay GmbH & Co. KG
Host Party	Costa Rica
Sectoral scope(s), selected methodology(ies), and where applicable, selected standardized baseline(s)	Sectoral Scope(s); 1 Methodology: AMS-I.D. Version 17.0 - Grid connected renewable electricity generation
Estimated GHG emission reductions or net anthropogenic GHG removals for this monitoring period in the registered PDD	27,413 tCO ₂ e
Certified GHG emission reductions or net anthropogenic GHG removals for this monitoring period	27,193 tCO ₂ e
Name of DOE	Earthood Services Private Limited
Name, position and signature of the approver of the verification and certification report	 Dr. Kaviraj Singh, Managing Director

SECTION A. Executive summary

Brief summary of the project activity

The project activity involves generation of electricity by using wind electricity turbines. The energy generated is supplied to the local Grid. The project activity leads to reduction of greenhouse gas(GHG) because the generated energy is from renewable source. The emission reductions were real, measurable, and verifiable and also plays a beneficial role in the mitigation of climate change.

The Project activity involves installation of 15 Wind turbine generators of capacity 850 kW of make GAMESA G52-850. Thus, the total capacity of the installed WTGs is 12.75MW. The project was completed and handed over by the technology supplier to the PP on 30/09/2011 /20/. The project activity was inaugurated for commercial production on 11/11/2011 as confirmed from the news articles /23/. Therefore, the same date was accepted as the commissioning date for the project activity.

After carrying out the on-site assessment of the project activity, the verification team confirms that all the WTGs are fully functional. The total emission reductions achieved under the monitoring period 01/07/2014-30/04/2016 are 27,193 tCO₂e/06/.

The basic details of the project activity are mentioned below:

Project title	Los Santos Wind Power Project
UNFCCC registration number	6275
Date of registration	11/06/2012
Sectoral scope	1
Methodology/ies applied	AMS-I.D. Version 17.0
Project participants	<ol style="list-style-type: none"> 1. Cooperativa de Electrificación Rural Los Santos (COOPESANTOS) 2. Carbonbay GmbH & Co. KG
Location of Project Activity	Cooperativa de Electrificación Rural Los Santos (COOPESANTOS) concession; near the villages of La Paz y Casamata in Costa Rica, Central America
Geographical coordinates	See Appendix 05

Scope of verification

The scope of the verification was limited to the monitoring period covered under the current monitoring period 01/07/2014-30/04/2016 of the registered CDM PA “Los Santos Wind Power Project” to determine whether;

- The project activity has been implemented and operated as per the registered PDD or any approved revised PDD, and that all physical features (technology, project equipment, and monitoring and metering equipment) of the project are in place;
- The monitoring report and other supporting documents provided are complete in accordance with the latest applicable version of the completeness checklist for requests for issuance of CERs, verifiable, and in accordance with applicable CDM requirements;
- The actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan, any revised approved monitoring plan, the approved methodology including applicable tool(s) and/or, where applicable, the approved standardized baseline;
- The data recorded and stored as per the monitoring methodology including applicable tool(s) and, where applicable, the standardized baseline.

Verification process

The verification process involved following;

- Contract with M/s Carbonbay GmbH & Co. KG for the scope of verification;
- Publication of monitoring report Version 1.2
- Desk review
- Physical on-site inspection
- Issuance of verification findings
- Reporting, calculation checks, QA/QC and resolution of findings
- Issuance of draft verification report
- Independent technical review of the project documentation
- Issuance of the final verification report

- Submission of the request for issuance, as appropriate

Conclusion

ESPL has performed the verification of the CDM PA “Los Santos Wind Power Project” having UNFCCC Ref. Number 6275 for the monitoring period 01/07/2014-30/04/2016. The verified emission reductions amount to 27,193 tCO2e in the aforesaid monitoring period.

The verification concluded that the registered CDM PA complies with all relevant CDM procedures/standards/guidance and therefore request for issuance is being submitted in accordance with the CDM procedures.

SECTION B. Verification team, technical reviewer and approver

B.1. Verification 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 review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader	IR	Mahawar	Abhishek	Central Office	Y	Y	Y	Y
2.	Verifier	IR	Deka	Nayan	Central Office	Y	N	N	Y
3.	Technical Expert	IR	Mahawar	Abhishek	Central Office	Y	Y	Y	Y
4.	Trainee (Verifier)	IR	Mahala	Deepika	Central Office	Y	N	N	Y
5.	Local Expert	EI	Padilla	Victor	Central Office	N	Y	Y	Y
6.	Methodology Expert (AMS.I.D.)	IR	Mahawar	Abhishek	Central Office	Y	Y	Y	Y

B.2. Technical reviewer and approver of the verification and certification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)
1.	Technical reviewer	IR	Singh	Kaviraj	Central Office
2.	Technical Expert to TR	IR	Singh	Kaviraj	Central Office
3.	Approver	IR	Singh	Kaviraj	Central Office

SECTION C. Application of materiality

C.1. Consideration of materiality in planning the verification

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	Human error caused due to recording monitored data in Main meter tabular report sheets	Low	The tabular reports are generated from the SCADA system and the finalized by an independent division of	All Invoices and final tabular report issued by planification department were checked.

			Coopesantos - planification department.	
2.	Error in transferring the recorded data to ER sheet	Medium	The procedure for transferring the final tabular report readings to the ER calculation spreadsheet is manual in nature thus increasing the chances of error.	All the monthly reported values inserted in the ER sheet were verified with final tabular report.

C.2. Consideration of materiality in conducting the verification

In accordance with CDM VVS Version 9 para 361 the prescribed thresholds for materiality for CDM PAs are as under;

Emission Reductions (tCO2e)/year	500,000 or moraae	300,001 to 499,999	300,000 or less	Small Scale CDM PAs	Micro Scale CDM PAs
Materiality Threshold (para 361)	0.5%	1.0%	2.0%	5.0%	10.0%

As per the above table, the applicable materiality threshold is 5.0% for this project activity.

Particulars / Monitoring Report	MR Version (Public)	MR Version (Revised/Final)
Emission Reductions Achieved (tCO2e) in this monitoring period	27,192 tCO2e	27,193 tCO2e
Applicable Threshold (%) as per para 361 of CDM VVS Version 9	5.0%	5.0%

The verification team has identified the impact of errors observed and those were corrected by PP during verification for all monitoring parameter at individual level. The extrapolated impact on ERs is also provided for parameters individually and in aggregated manner in the end.

Monitored Parameter (Symbol / Description)	Reporting Frequency	Number of Discrete Data (Total) RRR (100%)	Sample selected for verification XX(YY%)	Type of error identified	Impact on ERs	
					ERs impacted (Sample)	ERs impacted (Population based on extrapolation)
EG _{facility,y} , Net quantity of electricity produced by the wind farm and supplied to the grid.	Monthly	22	22 (100%)	Insignificant variation (<0.01%) was observed in the tabular readings and the monthly invoices. Please refer CL-02 for the same.	No Impact	No Impact

Based on the above table, it can be confirmed that the materiality threshold is not breached for the registered PA as per CDM VVS.

SECTION D. Means of verification

D.1. Desk review

A desk review was conducted by the verification team that included

- a) A review of the data and information presented to verify its completeness;
- b) A review of the registered monitoring plan, the monitoring methodology including applicable tool(s) and, where applicable, the applied standardized baseline, paying particular attention to the frequency

of measurements, the quality of metering equipment including calibration requirements, and the quality assurance and quality control procedures;

- c) An evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions;

A complete list of documents/evidences reviewed is included as Appendix 3.

D.2. On-site inspection

Duration of on-site inspection: 03/08/2016 to 04/08/2016				
No.	Activity performed on-site	Site location	Date	Team member
1	An assessment of the implementation and operation of the registered CDM project activity as per the registered PDD or any approved revised PDD;	Cooperativa de Electrificación Rural Los Santos (COOPESANTOS) concession; near the villages of La Paz y Casamata in Costa Rica	03/08/2016-04/08/2016	Abhishek Mahawar, Victor Padilla
2	A review of information flows for generating, aggregating and reporting the monitoring parameters;	Cooperativa de Electrificación Rural Los Santos (COOPESANTOS)	03/08/2016-04/08/2016	Abhishek Mahawar, Victor Padilla
3	Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the registered monitoring plan;	concession; near the villages of La Paz y Casamata in Costa Rica	03/08/2016-04/08/2016	Abhishek Mahawar, Victor Padilla
4	A cross check between information provided in the monitoring report and data from other sources such as plant logbooks, inventories, purchase records or similar data sources;	Cooperativa de Electrificación Rural Los Santos (COOPESANTOS)	03/08/2016-04/08/2016	Abhishek Mahawar, Victor Padilla
5	A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the PDD, the applied methodology including applicable tool(s), and, where applicable, the applied standardized baseline;	concession; near the villages of La Paz y Casamata in Costa Rica	03/08/2016-04/08/2016	Abhishek Mahawar, Victor Padilla
6	A review of calculations and assumptions made in determining the GHG data and emission reductions;	Cooperativa de Electrificación Rural Los Santos (COOPESANTOS)	03/08/2016-04/08/2016	Abhishek Mahawar, Victor Padilla
7	An identification of quality control and quality assurance procedures in place to prevent or identify and correct any errors or omissions in the reported monitoring parameters;	concession; near the villages of La Paz y Casamata in Costa Rica	03/08/2016-04/08/2016	Abhishek Mahawar, Victor Padilla

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Luna Galera	Jeffrey	Coopesanto R.L.	03/08/2016	Monitoring Data Collection	Abhishek Mahawar + Victor Padilla
2.	Fallas Fallas	Raquel	Coopesanto R.L.	03/08/2016	Sustainability parameters,	Abhishek Mahawar
3.	-	Olger	Coopesanto R.L.	03/08/2016	Metering of electricity	Abhishek Mahawar
4.	Giles	Christian	Anaconda Carbon S.A	03/08/2016	Calculation of ERs	Abhishek Mahawar
5.	Hernandez	Marcell	Coopesanto R.L.	03/08/2016	Staff Training	Abhishek Mahawar

D.4. Sampling approach

No sampling approach has been applied by the verification team as all the monthly reported figures in the MR/04/ and the ER sheet/06/ were checked from the actual records.

D.5. Clarification requests, corrective action requests and forward action requests raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Compliance of the monitoring report with the monitoring report form	0	0	0
Compliance of the project implementation with the registered PDD	CL#03	0	FAR#01
Post-registration changes	0	0	0
Compliance of the monitoring plan with the monitoring methodology including applicable tool and standardized baseline	0	0	0
Compliance of monitoring activities with the registered monitoring plan	0	0	0
Compliance with the calibration frequency requirements for measuring instruments	0	0	0
Assessment of data and calculation of emission reductions or net removals	CL#02	CAR#05	0
Others (please specify)	0	CAR#04	0
Total	02	02	01

SECTION E. Verification findings**E.1. Compliance of the monitoring report with the monitoring report form**

Means of verification	The monitoring report form used is CDM-MR-FORM version 05.1. The form used was appropriate and latest available. All the details were filled as per the MR filling guidelines of the CDM-MR-FORM/14/.
Findings	No Findings.
Conclusion	The verification team confirms the compliance of the final monitoring report with the valid version of the CDM-MR-FORM and the instructions therein for filling out the CDM-MR-FORM.

E.2. Remaining forward action requests from validation and/or previous verification

There is one FAR from the previous monitoring period/15/. The FAR states that during the next verification it should be ensured that the back-up meter is replaced and/or duly calibrated. It was checked during on-site assessment that a new back-up meter, which can be calibrated, was duly installed at the site. The details of the back-up meter are discussed in section E.6.2 of this report. Hence, the FAR is closed.

E.3. Compliance of the project implementation with the registered project design document

Means of verification	Physical on-site inspection was carried out by the verification team to check the implementation status of the project activity and the instrumentation installed for the project activity.
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	<p>Installation of 15 WTGs at Cooperativa de Electrificación Rural Los Santos' (COOPESANTOS) concession area in El Guarco and Desamparados, Costa Rica was confirmed by the verification team. The project was completed and handed-over to the PP on 30/09/2011 /20/ and was inaugurated for commercial operation on 11/11/2011 /02, 23/.</p> <p>The verified geographical coordinates of all the WTGs have been listed in Appendix 5 at the end of this report. The locations of the WTGs are duly confirmed during the on-site assessment.</p> <p>The WTGs are of GAMESA G52-850 model (ID No. AE01 – AE15) with an individual capacity 850kW, summing up to 12.75 MW of total capacity. The installation and specification of the WTGs installed were checked with the SCADA system during physical inspection.</p> <p>During on-site inspection, it was identified that 1 generator and the back meter has been changed which is duly reported in the MR. It was verified from the replacement records that the changed generator and the meter have the same specifications as the original ones and do not raise any concern of post registration change.</p> <p>Interview of the personnel was conducted by the verification team, which revealed that all the QA/QC procedures listed in the registered PDD have been followed while operating the project activity/01/.</p>
Findings	CL 03 was raised and resolved successfully.
Conclusion	<p>Assessment concludes the following:</p> <ol style="list-style-type: none"> a. The implementation status of project activity was found to be in compliance with registered PDD b. DOE has conducted the on-site visit to confirm the implementation status of the project. c. The commissioning date of the project activity was found to be accurately and consistently recorded. d. The actual operation of project activity was found to be in compliance with the flow diagram provided in registered PDD. e. There was no increase in emission reduction from estimates made in registered PDD, therefore no additional explanation was sought from PP regarding the same. <p>This is in compliance with para 385 of VVS Version 09..</p>

E.4. Post-registration changes

E.4.1. Temporary deviations from the registered monitoring plan, monitoring methodology or standardized baseline

Not applicable

E.4.2. Corrections

Not applicable

E.4.3. Changes to the start date of the crediting period

Not applicable

E.4.4. Inclusion of a monitoring plan to a registered project activity

Not applicable

E.4.5. Permanent changes from registered monitoring plan, monitoring methodology or standardized baseline

Not applicable

E.4.6. Changes to the project design of a registered project activity

Not applicable

E.4.7. Types of changes specific to afforestation and reforestation project activities

Not applicable

E.5. Compliance of monitoring plan with the monitoring methodology including applicable tool and standardized baseline

Means of verification	After reviewing the monitoring plan provided in the revised PDD version 3.6 dated 23/04/2012 and the applied methodology AMS-I.D. version 17.0, the verification team was able to establish that the monitoring plan provided in the MR is in compliance with the applied methodology/01,04,07/.
Findings	No findings
Conclusion	The monitoring plan is in compliance with the applied methodology/07/.

E.6. Compliance of monitoring activities with the registered monitoring plan**E.6.1. Data and parameters fixed ex ante or at renewal of crediting period****E.6.1.1. Combined margin CO₂ emission factor for the electricity system in year y, EF_{grid,CM,y}, in tCO₂/MWh**

Means of verification	The registered PDD gives the value of 0.35559 for this parameter. The parameter is calculated as per the "Tool to calculate the emission factor for an electricity system"/01,10/.
Findings	No findings.
Conclusion	The value used was found to be correct and justified.

E.6.1.2. Operating margin CO₂ emission factor for the electricity system in year y, EF_{grid,OM,y}, in tCO₂/MWh

Means of verification	The registered PDD gives the value of 0.4537 for this parameter. The parameter is calculated as per the "Tool to calculate the emission factor for an electricity system"/01,10/.
Findings	No findings.
Conclusion	The value used was found to be correct and justified.

E.6.1.3. Build margin CO₂ emission factor for the electricity system in year y, EF_{grid,BM,y}, in tCO₂/MWh

Means of verification	The registered PDD gives the value of 0.0612 for this parameter. The parameter is calculated as per the "Tool to calculate the emission factor for an electricity system"/01,10/.
Findings	No findings.
Conclusion	The value used was found to be correct and justified.

E.6.1.4. Amount of fossil fuel type i consumed by power plant/ unit m, FCI_{i,m,y}, in mass or volume unit

Means of verification	The parameter is not directly used for the calculation of emission reduction, but were used for calculation of combined margin emission factor at the time of CDM registration. The values of the parameter have been verified from the ER calculation sheet prepared during the validation process/19/.
Findings	No findings.
Conclusion	The value used was found to be correct and justified.

E.6.1.5. Net calorific value(energy content) of fossil fuel type i in year y, NCV_{i,y}, in GJ/mass or volume unit

Means of verification	The parameter is not directly used for the calculation of emission reduction, but were used for calculation of combined margin emission factor at the time of CDM
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	registration. The values of the parameter have been verified from the ER calculation sheet prepared during the validation process/19/.
Findings	No findings.
Conclusion	The value used was found to be correct and justified.

E.6.1.6. CO₂ emission factor of fossil fuel type i used in power unit m in year y, EF_{CO2,i,y}, in tCO₂/GJ

Means of verification	The parameter is not directly used for the calculation of emission reduction, but were used for calculation of combined margin emission factor at the time of CDM registration. The values of the parameter have been verified from the ER calculation sheet prepared during the validation process/19/.
Findings	No findings.
Conclusion	The value used was found to be correct and justified.

E.6.1.7. Net electricity generated by power plant/unit m in year y, Eg_{m,y}, in MWh

Means of verification	The parameter is not directly used for the calculation of emission reduction, but were used for calculation of combined margin emission factor at the time of CDM registration. The values of the parameter have been verified from the ER calculation sheet prepared during the validation process/19/.
Findings	No findings.
Conclusion	The value used was found to be correct and justified.

E.6.2. Data and parameters monitored

E.6.2.1. Net quantity of electricity produced by the wind farm and supplied to the Grid, EG_{facility,y}, in MWh

Means of verification	<p><u>Measurement & Recording</u> The parameter is measured continuously while reported on monthly basis which is in accordance with the registered PDD/1/. A bi-directional "Schneider Electric ION 7650" make energy meter, with an accuracy class of 0.2 and serial number PJ-1103A527-02, is used to monitor the parameter as checked through on-site assessment and calibration certificates. The meters provide constant measurement accuracy across the operating range, which is also confirmed through periodic calibration of the meters (discussed in detail in section E.7 of this report). A back-up meter with the same specifications is also installed at the project site. The installation and replacement record of the back-up meter has been provided in the Monitoring Report. The back up meter has been replaced once during the current monitoring period, which was verified from the relevant replacement record /24/. It was also observed that further replacement of back-up meter took place after the completion of monitoring period /25/. The details of the operational period of each back up meter is reported in section E.7 of this report.</p> <p><u>Management & Operational System</u> The meter records the gross generation and electricity import readings at 15-min interval and transfers the data to centralized SCADA system for the project activity. A tabular sheet is generated by the SCADA system for each month which is submitted to the Planification Department of Coopesanto cooperative. The Planification department reviews the sheets for any loss of data and completes it by inserting correct readings from the back-up meter. The final tabular sheet issued by the planification department is then used to prepare the electricity sale invoices. The monthly net electricity generation is calculated by deducting the monthly electricity imports from the monthly gross generation by the project activity.</p> <p><u>Data Verification</u> Reported Parameter Value = 76,475.16 MWh Verified Value = 76,475.16 MWh The monthly readings of the parameter reported in ER calculation sheet were</p>
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	verified from the final tabular reports issued by the planification department/18/. For cross-checking the data, the monthly invoices raised by the PP were also reviewed and found consistent/17/.
Findings	CL#02 & CAR#05 were raised and resolved successfully
Conclusion	Through onsite audit and assessment of documents DOE can conclude that: <ul style="list-style-type: none"> Monitoring results are consistently recorded as per approved frequency QA/QC procedures have been applied in accordance with the registered monitoring plan. No sampling approach has been followed for monitoring which is appropriate for the project activity. This is in compliance with para 390 of VVS Version 09.

E.6.3. Implementation of sampling plan

Means of verification	No sampling plan has been reported in the registered PDD.
Findings	No findings
Conclusion	Not applicable

E.7. Compliance with the calibration frequency requirements for measuring instruments

Means of verification	As per the registered PDD, the calibration frequency of the meters, used for monitoring the net electricity exported to the grid, is determined as per the local regulations of Costa Rica /01/. The verification team reviewed the country regulations (RRG-2440-2001) and confirmed that the electricity meters are required to be tested or calibrated every 5 years /26/.					
	The calibration certificate submitted by the PP was used by the verification team to check the calibration details/09,21/. The details of the calibration are given in the table below:					
		Make	Serial Number (Accuracy Class)	Date of calibration	Validity	Conclusion
	1 Main meter	ION 7650	PJ-1103A527-02 (0.2 s)	29/06/2011 29/09/2014	28/06/2016 28/09/2019	No Gap in Calibration
	2 Back up meter (01/07/2014-28/06/2015)	Nexus 1252	412-99939 (0.2 s)	-	-	FAR 01 (raised in last verification)
	3 Back up meter (29/06/2015 to 06/06/2016)	ION 7650	PJ-1103A523-02 (0.2 s)	12/05/2015	11/05/2020	No Gap in Calibration
	4 Back up meter (07/06/2016-till date)	ION 7650	MJ1501A45 605 (0.2 s)	11/05/2015	10/05/2020	No Gap in Calibration
	The calibration was conducted by Laboratorio de Sistemas de Medicion de Energia Electrica(LASIMEE), which is ISO/IEC 17025 certified Laboratory /9/. The calibration certificate does not report any validity date for the next calibration. However, the technical description of the meters available at the manufacturer website confirms that these meters do not require calibration /22/. Therefore, calibration validity of 5 years is considered valid.					
	The back-up meter has been replaced once during the current monitoring period. This has been verified from the meter replacement reports and calibration certificates/21/. The details of back up meters have been provided in section D.2. of the MR.					
Findings	Finding CAR#04 was raised and resolved successfully.					
Conclusion	All the above meters are duly calibrated before the expiry of the calibration validity, and cover the monitoring period. Moreover, it has been confirmed that no emergency procedures have been applied for the monitoring equipment during the current monitoring period and all the meters were under valid calibrated period and working properly					

E.8. Assessment of data and calculation of emission reductions or net removals**E.8.1. Calculation of baseline GHG emissions or baseline net GHG removals by sinks**

Means of verification	<p>The baseline emissions are calculated as per provisions indicated in the registered PDD and applied methodology/01,07/.</p> <p>Baseline emissions are calculated as follows: $BE_y = EG_{\text{facility},y} * EF_{\text{grid,CM},y}$</p> <p>Where,</p> <table border="1"> <tr> <td>BE_y</td> <td>=</td> <td>Baseline emission in year y (tCO₂e)</td> </tr> <tr> <td>$EG_{\text{facility},y}$</td> <td>=</td> <td>Net quantity of electricity produced by the wind farm and supplied to the Grid in MWh</td> </tr> <tr> <td>$EF_{\text{grid,CM},y}$</td> <td>=</td> <td>Combined margin CO₂ emission factor for grid connected power generation in year y in (tCO₂/MWh)</td> </tr> </table> <p>Assessment of the parameters used to calculate baseline emission is discussed in section E.6.1. and E.6.2.</p> <p>All the data was made available and have monitored as per required monitoring frequency.</p> <p>The baseline emissions are calculated as per provisions indicated in the registered PDD and applied methodology/01,07/.</p> <p>The value of baseline emission achieved after applying all the formulae is 27,193 tCO₂e.</p>	BE_y	=	Baseline emission in year y (tCO ₂ e)	$EG_{\text{facility},y}$	=	Net quantity of electricity produced by the wind farm and supplied to the Grid in MWh	$EF_{\text{grid,CM},y}$	=	Combined margin CO ₂ emission factor for grid connected power generation in year y in (tCO ₂ /MWh)
BE_y	=	Baseline emission in year y (tCO ₂ e)								
$EG_{\text{facility},y}$	=	Net quantity of electricity produced by the wind farm and supplied to the Grid in MWh								
$EF_{\text{grid,CM},y}$	=	Combined margin CO ₂ emission factor for grid connected power generation in year y in (tCO ₂ /MWh)								
Findings	No findings									
Conclusion	<p>Calculation of baseline GHG emissions was found to be satisfactory.</p> <p>The verification team confirms that</p> <p>(a) The monitored data was available in accordance with the registered monitoring plan;</p> <p>(b) The monthly reported data was cross-checked, as prescribed in the registered PDD, with the invoices /17/ and was found consistent;</p> <p>(c) Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals have been followed;</p> <p>(d) The assumptions, emission factors and default values that were applied in the calculations have been justified;</p> <p>(f) The first day in which CERs are being claimed has been correctly specified, where applicable.</p>									

E.8.2. Calculation of project GHG emissions or actual net GHG removals by sinks

Means of verification	There are no project emissions associated with the project activity as it is a wind energy based project. This was found to be in line with the applied methodology AMS-I.D. version 17.0 /07/.
Findings	No findings
Conclusion	Project emission from the project activity is 0 tCO ₂ e.

E.8.3. Calculation of leakage GHG emissions

Means of verification	There are no leakages associated with the project activity as it is a wind energy based project. This consideration was found to be in line with the applied methodology AMS-I.D. version 17.0 /07/.
Findings	No findings
Conclusion	Leakage from the project activity is 0 tCO ₂ e.

E.8.4. Summary of calculation of GHG emission reductions or net anthropogenic GHG removals by sinks

Means of verification	The value of baseline emission obtained by applying the equations provided in the registered PDD is 27,193 tCO ₂ e. The project emissions and leakages for the project activity are considered as zero. Therefore, the final value of net GHG emission reductions obtained is 27,193 tCO ₂ e.
Findings	No findings
Conclusion	<p>Calculation of GHG emissions was found to be satisfactory.</p> <p>The verification team confirms that</p> <p>(a) The monitored data was available in accordance with the registered monitoring</p>

	plan; (b) The monthly reported data was cross-checked, as prescribed in the registered PDD, with the invoices /17/ and was found consistent; (c) Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals have been followed; (d) The assumptions, emission factors and default values that were applied in the calculations have been justified.
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E.8.5. Comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Means of verification	The actual emission reduction achieved in the monitoring period is 27,193 tCO _{2e} , whereas the estimated ERs in the registered PDD is 27,413 tCO _{2e} . This has been verified from the ER sheet/06/.
Findings	No findings.
Conclusion	Actual emission reduction is lower than the emission reductions for the considered monitoring period. No further justification is required.

E.8.6. Remarks on difference from estimated value in registered PDD

Means of verification	According to the project participant, the emission reductions have decreased from the estimated emission reduction due to the lower wind availability in the project area during the monitoring period.
Findings	No findings
Conclusion	Actual emission reduction is lower than the emission reductions for the considered monitoring period. No further justification is required.

E.8.7. Actual GHG emission reductions or net anthropogenic GHG removals by sinks during the first commitment period and the period from 1 January 2013 onwards

Means of verification	Earthood Services Private Limited is able to certify that the emission reduction from the CDM project activity 6275 "Los Santos Wind Power Project" in Costa Rica during the period 01/07/2014 – 30/04/2016 (including both the days) amounts to 27,193 tCO _{2e} . Verified and certified emission reductions as per commitment period: <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Commitment period</th> <th style="text-align: right;">Amount</th> </tr> </thead> <tbody> <tr> <td>Upto 31/12/2012 (1st commitment period).</td> <td style="text-align: right;">0 tCO_{2e}</td> </tr> <tr> <td>From 01/01/2013</td> <td style="text-align: right;">27,193 tCO_{2e}</td> </tr> </tbody> </table>	Commitment period	Amount	Upto 31/12/2012 (1 st commitment period).	0 tCO _{2e}	From 01/01/2013	27,193 tCO _{2e}
Commitment period	Amount						
Upto 31/12/2012 (1 st commitment period).	0 tCO _{2e}						
From 01/01/2013	27,193 tCO _{2e}						
Findings	No findings						
Conclusion	Actual GHG emission reductions in the commitment period (01/01/2013 onwards) were found to be 27,193 tCO _{2e} .						

SECTION F. Internal quality control

The draft verification report that is prepared by verification team is reviewed by an independent technical review team (one or more members) to confirm if the internal procedures established and implemented by Earthood were duly complied with and such opinion/conclusion is reached in an objective manner that complies with the applicable CDM rules/requirements. The technical review team is collectively required to possess the technical expertise of all the technical area/sectoral scope the project activity relates to. All team members of technical review team are independent of the verification team.

During the technical review process additional findings may be identified or the closed out findings may be opened, which needs to be satisfactorily resolved before the request for issuance is submitted to UNFCCC. The independent technical reviewer may either approve the report as such or reject/return the same in such case providing the comments/findings/issues that needs to be resolved by the verification team. The decision taken by the Technical Reviewer is final and is authorized on behalf of Earthood Services Private Limited.

SECTION G. Verification opinion

Earthood Services Private Limited (Earthood), contracted by Carbonbay GmbH & Co. KG, has performed the independent verification of the emission reductions for the CDM project activity 6275 "Los Santos Wind Power Project" in Costa Rica for the monitoring period 01/07/2014 – 30/04/2016 (including both days) as reported in the Monitoring Report (public) Version 1.2 dated 27/05/2016. Carbonbay GmbH & Co. KG is

responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity.

Earthood commenced the verification on the basis of the baseline and monitoring methodology AMS I.D Version 17, the monitoring plan contained in the PDD Version 3.6 dated 23/04/2012, Monitoring Report (public) Version 1.2 dated 27/05/2016.

Earthood's verification approach is based on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. Earthood planned and performed the verification by obtaining evidence and other information and explanations that Earthood considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

The verification team confirms that:

- The project activity was found completely implemented as per the description given in the registered PDD.
- The actual operation conforms to the description in the registered PDD.

SECTION H. Certification statement

It is our responsibility to express an independent verification statement on the reported GHG emission reductions from the project activity.

In our opinion the GHG emissions reductions reported for the project activity for the period 01/07/2014 – 30/04/2016 (including both days) are fairly stated in the Monitoring Report Version 3.2 (Final) dated 08/09/2016. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology AMS-I.D. Version 17.0 and the monitoring plan contained in the PDD Version 3.6 dated 23/04/2012.

Earthood Services Private Limited is able to certify that the emission reductions from the CDM project activity 6275 "Los Santos Wind Power Project" in Costa Rica during the period 01/07/2014 – 30/04/2016 (including both days) amount to 27,193 tCO₂e.

Verified and certified emission reductions as per commitment period:

Commitment period	Amount
Upto 31/12/2012 (1 st commitment period)	Nil
From 01/01/2013 onwards	27,193 tCO ₂ e

Appendix 1. Abbreviations

Abbreviations	Full texts
General	
ACM	Approved Consolidated Methodology
AM	Approved Methodology
AMS	Approved Methodology for SSC Projects
BE	Baseline Emission
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CH4	Methane
CL	Clarification Request
CM	Combined Margin
CME	Coordinating/Managing Entity
CO2	Carbon di oxide
CP	Crediting Period
CPA DD	Component Project Activity Design Document
DNA	Designated National Authority
DR	Desk Review
DOE	Designated Operational Entity
EB	Executive Board
EIA	Environmental Impact Assessment
ESPL	Earthood Services Private Limited
FAR	Forward Action Request
GHG	Green House Gas
GSC/GSP	Global Stakeholder Consultation Process
GW	Giga Watt
GWh	Giga Watt hour
IPCC	Intergovernmental Panel on Climate Change
KP	Kyoto Protocol
kW	kilo Watt
kWh	kilo Watt hour
LoA	Letter of Approval/Authorization
LSC	Local Stakeholder Consultation Process
MoC	Modalities of Communication
MoV	Means of Validation
MP	Monitoring Plan
MW	Mega Watt
MWh	Mega Watt hour
N2O	Nitrous Oxide
OM	Operating Margin
PCP	Project Cycle Procedure
PDD	Project Design Document
PE	Project Emission
PLF	Plant Load Factor
PoA DD	Programme of Activities Design Document
PP	Project Participant
PS	Project Standard
RFR	Request for Registration
tCO2e	Tonnes of Carbon di oxide equivalent
TPH	Tonnes Per Hour
UNFCCC	United Nations Framework Convention on Climate Change
V	Version
VVS	Validation and Verification Standard
Project Specific	

ECA	Ente Costarricense Accreditation
LASIMEE	Laboratorio de Sistemas de Medicion de Energia Electrica
ISO	International Organization for standardization

Appendix 2. Competence of team members and technical reviewers

Competence Statement			
Name	Abhishek Mahawar		
Country	India		
Education	B. Tech. (Chemical Engineering) MBA (Finance)		
Experience	7 Years		
Field	Climate Change & Environment		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Financial Expert	YES		
Technical Reviewer	YES		
TA Expert (1.2)	YES		
Reviewed by	Ashok Gautam	Date	29/12/2014
Approved by	Kaviraj Singh	Date	29/12/2014

Competence Statement			
Name	Nayan Jyoti Deka		
Country	India		
Education	M.Tech. (Energy Technology), Tezpur University		
Experience	8 Years		
Field	Climate Change & Energy Management		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert (1.1, 1.2, 3.1, 13.1)	YES		
Reviewed by	Abhishek Mahawar	Date	12/10/2015
Approved by	Ashok Kumar Gautam	Date	12/10/2015

Competence Statement			
Name	Deepika Mahala		
Country	India		
Education	M. Sc. (Environment Mgmt), GGSIP University B.Sc. Honour (Chemistry), Sri Venkateshwar College, DU		
Experience	1 Year		
Field	Climate Change		
Approved Roles			
Team Leader	NO		
Validator	NO		
Verifier	NO		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert	NO		
Trainee (Validator/Verifier)	YES		
Reviewed by	Abhishek Mahawar	Date	28/03/2016
Approved by	Ashok Kumar Gautam	Date	28/03/2016

Competence Statement			
Name	Kaviraj Singh		
Country	India		
Education	Ph.D. (Environmental Engineering), IIT Delhi M.Phil. (Energy & Environmental), DAVV Indore		
Experience	8 Years		
Field	Climate Change & Environment		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert (1.1)	YES		
TA Expert (1.2)	YES		
TA Expert (13.1)	YES		
TA Expert (13.2)	YES		
TA Expert (15.2)	YES		
Reviewed by	Abhishek Mahawar	Date	29/12/2014
Approved by	Ashok Gautam	Date	29/12/2014

Competence Statement			
Name	Victor Padilla Segura		
Education	Wind Engineering Elements, Faculty of Engineering, UNLP, Argentina		
Experience	1.9 Yrs		
Field	Renewable Energy		
Approved Roles			
Team Leader	NO		
Validator	NO		

Verifier	NO		
Methodology Expert	NO		
Local expert	YES (Cost Rica)		
Financial Expert	NO		
Technical Reviewer	NO		
TA Expert (X.X)	NO		
Reviewed by	Abhishek Mahawar	Date	07/09/2016
Approved by	Ashok K Gautam	Date	07/09/2016

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1.	PP	Registered/Revised PDD Version 3.6	23/04/2012	Others
2.	ERM CVS	Validation Report- Version 02	07/06/2012	Others
3.	PP	Monitoring Report (public) version 1.2	27/05/2016	PP
4.	PP	Monitoring Report Monitoring Report (final)	Version 2.0, 10/08/2016 Version 3.2, 08/09/2016	PP
5.	PP	ER Spreadsheet (draft)	-	PP
6.	PP	ER Spreadsheet (final)	-	PP
7.	UNFCCC	Methodology: AMS-I.D. version 17.0	03/06/2011	Others
8.	ECA	Accreditation Certificate of LASIMEE	-	Other
9.	LASIMEE	Calibration certificate (ref. no. for main meter no. PJ-1103A527-02)	29/09/2014	PP
10.	UNFCCC	Tool to calculate the emission factor for an electricity system version 2.2.1	29/09/2011	
11.	UNFCCC	CDM PS Ver. 9	20/02/2015	Other
12.	UNFCCC	CDM PCP Ver. 9	20/02/2015	Other
13.	UNFCCC	CDM VVS Ver. 9	20/02/2015	Other
14.	UNFCCC	Form: CDM-MR-FORM, Version 05.1	-	Others
15.	TUV NORD	1 st MP Verification Report	07/13/2015	PP
16.	PP	1 st MP Monitoring Report Version 3.3	11/06/2012	PP
17.	COOPESANTOS	Sale Invoices	01/07/2014-01/05/2016	PP
18.	PP	Main meter tabular Report	01/07/2014-01/05/2016	PP
19.	PP	ER sheet(for Validation)	-	Others
20.	PP	Acceptance Certificate for Wind Farm (Annex-F)	30/09/2011	PP
21.	PP	a) Calibration Report and Accuracy Compliance by Electro Industries/GaugeTech b) Calibration Certificate for back-up meter (S/N - PJ-1103A523-02) from LASIMEE c) Calibration Certificate for back-	28/02/2007 12/05/2015 11/05/2015	PP

		up meter (S/N – MJ1501A45605) from LASIMEE		
22.	Others	a) Technical Note on ION 7650 - http://www.chipkin.com/files/liz/PowerLogic%20ION%207550%20ION7650%20Verifying%20Accuracy%20Technical%20Note%20032009.pdf b) Technical FAQ by Schneider Electric - http://www.schneider-electric.com/en/faqs/FA202852/	N/A	PP
23		News Article about inauguration of the Project Activity http://www.municipalcr.com/index.php?option=com_content&view=article&id=6052:nueve-cantones-reciben-energia-producida-con-el-viento-121111&catid=1843:ano-2011-noticias	-	
24	PP	Replacement Record for new meter (S/N PJ-1103A523-02) replacing old meter (412-99939)	29/05/2015	PP
25	PP	Replacement Record for new meter (S/N - MJ1501A45605) replacing old meter (S/N - PJ-1103A523-02)	06/06/2016	
26	PP	Regulation “RRG-2440-2001” to the law No. 7593 issued by Regulatory Authority of Public Services	21/10/2001	PP

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

Table 1. Remaining FAR from validation and/or previous verification

FAR ID	01	Section no.	E.2	Date : 05/08/2016
Description of FAR				
There is a FAR from the last verification which PP is requested to kindly address the same. The description of FAR as per the last verification report is “During the next verification it should be ensured that the back-up meter is replaced and/or duly calibrated.”				
Project participant response				Date : 10/08/2016
Back up meter has been duly replaced by PP.				
Documentation provided by project participant				
Work order for the replacement of the original backup meter has been presented				
DOE assessment				Date : 23/08/2016
The work order for the replacement of the original backup meter was reviewed and found appropriate. The replacement was done on 29/06/2015. DOE also confirm that the new back-up meter was duly calibrated for the complete monitoring period. Hence, FAR is resolved. (Closed).				

Table 2. CL from this verification

CL ID	02	Section no.	E.6.2.1	Date : 05/08/2016
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Description of CL	
a) During on-site assessment, it was observed that the published MR performs the ER calculation on the basis of raw data generated from SCADA which does not account the loss of data from the main meter on few occasions due to technical error. As per the internal protocol, such loss of data shall be accounted by applying the data from the back-up meter during the affected period. It is also observed that due to the above issue, there are insignificant variation in the net generation reported in the invoices raised for the respective months. Please provide clarification for the discrepancy.	
Project participant response	Date : 10/08/2016
Detailed procedure for accounting of energy produced has been given in the MR. The energy generation data is revised to include minor correction as per the final consolidated tabular sheets issued by the planification department.	
Documentation provided by project participant	
Revised MR Version 3.0 Revised ER sheet	
DOE assessment	Date: 23/08/2016
The revised MR include the procedure for accounting of energy produced. The revised ER sheet was also found to be consistent with the final consolidated tabular sheets as verified during on-site assessment. CL#02 is closed.	

CL ID	03	Section no.	E.3	Date : 05/08/2016
Description of CL				
The evidences for commissioning/commercial operation of the project activity is not provided to the DOE.				
Project participant response				Date : 10/08/2016
DOE has been given the official completion of works documentation signed between GAMESA and the PP.				
Documentation provided by project participant				
Official completion of works documentation signed between GAMESA and the PP.				
DOE assessment				Date: 23/08/2016
The review of document reveals that the completion of work was officially accepted by the PP on 30/09/2011 followed by the inauguration of the project activity on 11/11/2011 as reported in the registered PDD. The same is clearly reported in the MR. (Closed)				

Table 3. CAR from this verification

CAR ID	04	Section no.	E.6.2.1	Date : 05/08/2016
Description of CAR				
a) The complete details on the specification and calibration of the back-up meter viz. last date of calibration, validity, present date of calibration etc. is not reported in the MR.				
b) The replacement details about the back-up meter(s) used during the monitoring period is not provided in the MR.				
c) The value of the monitored parameter “ EG_{facility,y} ” is found to be inconsistent with the ER sheet.				
d) The description of the monitored parameter “ EG_{facility,y} ” does not adequately reports the complete procedure for accounting of consumption of electricity due to the project activity.				
Project participant response				Date : 10/08/2016
a) Details of the backup meters have been given in the MR				
b)Replacement details of the backup meters have been given in the MR.				
c)MR and ER sheet are consistent				
d)Procedure for accounting of energy produced has been given in the MR.				
Documentation provided by project participant				
a) Details of the backup meters have been given in the MR, as well as work orders for their replacements and calibration certificate.				
b)Replacement details of the backup meters have been given in the MR, and work orders for the replacement have been given to the DOE.				
c)MR and ER sheet are consistent.				
d)Procedure for accounting of energy produced has been given in the MR.				
DOE assessment				Date: 23/08/2016

a) Complete details of back up meter is included in the revised version 3.0 of the MR. (Closed)
b) Replacement details of the backup meter has been added to Section D.2. of the MR. (Closed)
c) The value has been corrected in the revised MR version 3.0 and the MR is consistent with the ER sheet now. (Closed)
d) The description has been added to the section D.2. of the MR. (Closed)
The finding is closed.

CAR ID	05	Section no.	E.6.2.1	Date : 26/08/2016
Description of CAR				
The end date of the monitoring period mentioned in the MR is 01/05/2016. However, the ER calculation sheet does not report ER calculations for the date 01/05/2016. This is inconsistent with the information provided in the monitoring report.				
Project participant response				Date : 29/08/2016
The Monitoring Report is revised to update the end date of monitoring period as 30/04/2016. The revised monitoring period (01/07/2014 to 30/04/2016) is consistent across all documents.				
Documentation provided by project participant				
Revised MR Version 3.1 is submitted.				
DOE assessment				Date: 01/09/2016
The revised MR has updated the monitoring period as 01/07/2014 to 30/04/2016. The revised documents are found mutually consistent with respect to the monitoring period. The change in the monitoring period is in accordance with the Para 78 of EB 41 report , since the PP has revised the monitoring period after the DOE has raised a CAR. Finding is closed.				

Table 5. FAR from this verification

There is no FAR from this verification.

Appendix 5: Geographical coordinates of WECs:

Sr no.	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

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