





Verification and certification report form for CDM project activities

(Version 01.0)

VERIFICATION AND CERTIFICATION REPORT

Title of the project activity	Enercon Wind Farm (Hindustan) Ltd in Karnataka
Reference number of the project activity	1259
Version number of the verification and certification report	2
Completion date of the verification and certification report	11/10/2017
Monitoring period number and duration of this monitoring period	Monitoring Period: 08 Period: 01/06/2016 to 30/06/2017 (both dates are included)
Version number of monitoring report to which this report applies	3
Crediting period of the project activity corresponding to this monitoring period	Fixed crediting period Start date: 27/10/2008 Length: 10 years (27/10/2008 to 26/10/2018)
Project participant(s)	M/s Wind World (India) Limited Numerco Limited Statkraft Markets GmbH ACT Commodities B.V. First Climate Markets A.G.
Host Party	India
Sectoral scope(s), selected methodology(ies), and where applicable, selected standardized baseline(s)	Sectoral scope : 1- Energy industries (renewable - / non-renewable sources Selected Methodology: ACM0002 Version 6 – “Consolidated methodology for grid-connected electricity generation from renewable sources” Selected standardized baseline: N/A
Estimated GHG emission reductions or net anthropogenic GHG removals for this monitoring period in the registered PDD	161,093 tCO ₂ e
Certified GHG emission reductions or net anthropogenic GHG removals for this monitoring period	105,751 tCO ₂ e
Name of DOE	 LGAI Technological Center, S.A. (Applus)
Name, position and signature of the	Name: Carla Debat Mollevi Position: B.U. Systems Certification Area Manager

approver of the verification and certification report	Signature of the approver: 
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SECTION A. Executive summary

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LGAI Technological Center, S.A. (hereafter referred to as Applus+ LGAI) has been contracted by M/s Wind World (India) Limited to perform the eighth periodical verification of "Enercon Wind Farm (Hindustan) Ltd in Karnataka" (UNFCCC Ref. No. 1259) applying the methodology ACM0002 Version: 06. The management of M/s Wind World (India) Limited is responsible for the preparation of the GHG emissions data and the reported GHG emission reductions.

A desk review and a site visit have been conducted to verify the data submitted in the monitoring report. Applus+ LGAI confirms the following has been reviewed:

- (a) The registered PDD/1.6/ and revised approved PDD/1.3/, including the monitoring plan and the corresponding validation report;
- (b) Revised monitoring plan, approved on 15/03/2011/1.8/
- (c) Validation Report on changes in registered PDD, version 3, dated 04/10/2012/1.7/
- (d) Validation report for permanent changes in the monitoring plan, dated 24/02/2011/1.9/
- (e) Monitoring report of previous monitoring period as well as corresponding verification report;
- (f) Monitoring report of this monitoring period;
- (g) The applied monitoring methodology;
- (h) Relevant decisions, clarifications and guidance from the CMP and the CDM Executive Board;
- (i) All information and references relevant to the project activity's resulting in emission reductions.

The project activity involves electricity generation by wind turbine generators (WTGs) and supplying the same to the southern regional electricity grid. This is renewable energy generation which can replace the fossil fuel dominated grid connected electricity generation. The project activity involves the installation of 86 WTGs of capacity 0.8 MW each at Chitradurga and Tumkur districts of Karnataka, India, reaching a total installed capacity of 68.8 MW. These WTGs are of Enercon make E-48. It is to be noted that name of company "Enercon India Limited" is changed as "M/s Wind World (India) Limited" from 01/01/2013 onwards, the same is verified through the name change consent issued by Government of India/3.7/.

The generated electricity is evacuated to Karnataka state grid substation. The project activity generates power by using the kinetic energy of wind, thus resulting in zero emissions during electricity production. The power produced displaces an equivalent amount of power from the grid, which is fed mainly by fossil fuel fired power plants. Hence, it results in reduction of GHG emissions.

Applus+ LGAI confirms that the project is implemented in accordance with the validated and approved revised PDD. The monitoring plan complies with the applied methodology ACM0002 Version: 06 and the monitoring have been carried out in accordance with the monitoring plan. The monitoring system is in place and the emission reductions are calculated without material misstatements. Our opinion relates to the projects GHG emissions and the resulting GHG emission reductions reported and related to the valid and registered project baseline and monitoring and its associated documents. Based on the information reviewed and evaluated Applus+ LGAI confirms that the implementation of the project has resulted in 105,751 tCO₂e emission reductions during period 01/06/2016 to 30/06/2017.

SECTION B. Verification team, technical reviewer and approver**B.1. Verification team member**

No.	Role	Signature	Last name	First name	Affiliation	Involvement in
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					(e.g. name of central or other office of DOE or outsourced entity)	Desk review	On-site inspection	Interview(s)	Verification findings
1.	Team Leader / Technical Expert	OR	Ahirwar	Vivek Kumar	GCEES	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	EI	Xue	Denny	Applus+ LGAI
3.	Approver	IR	Mollevi	Carla Debat	Applus+ LGAI

Note: IR: Internal Resources, EI: External Individuals, OR: Outsourced Resource.

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.	Manual adjustment of otherwise automatically recorded activity levels: This error may be due to manually recording of actual readings in-to original records.	Low	Monitoring Equipment e.g. Energy Meters have totalizer which reduce the chance of error as initial readings and final readings can be cross –check in every records /3.3/, /3.4/. The reading of JMR is being recorded in the presence of representatives of DISCOM and O&M contractor. So chances of noting down incorrect reading diminish. Monthly Form-B (JMR) is endorsed by state utility.	100 per cent of the data and information was checked from monthly JMRs/3.3/ and cross-checked from sold electricity invoices /3.4/
2.	Human error in the quantification of emissions. This error may be due to transfer of monitored data in-to Emission Reduction calculation sheet/4.2/ for calculation of actual emission reduction archived during monitoring period.	High	The monitoring data is transfer manually, so there is high potential risk of errors/errors, omissions or misstatements.	100 per cent of the data and information was checked from Monthly JMRs/3.3/and cross-checked from monthly invoices raised to state utility /3.4/.

C.2. Consideration of materiality in conducting the verification

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The project activity is large- scale project and applicable threshold for materiality in accordance with CDM VVS for PAs Version 01.0 paragraph 329(c) is 2%. All the monthly reported figures for parameter **EG_y** were verified with respective monthly Form B(JMR) and were found to be consistent. Therefore, it can be stated that the verified value is free from any potential error / omission / misstatement. The project activity, being a wind energy project, has assumed the project emission and leakages to be zero which is in line to the applied methodology/2.3/ and is also reasonable in the opinion of assessment team. Therefore, there are no additional factors which might lead to introduction of error in emission reduction estimation.

SECTION D. Means of verification

D.1. Desk review

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The Monitoring Report version 1 dated 01/08/2017/1.0/ submitted by the PP was made publicly available on the UNFCCC website before the verification activities started. The published MR was assessed based on all the relevant documents. The aim of the assessment in the desk review was to:

- verify the completeness of the data and the information presented in the MR;
- check the compliance of the MR with respect to the monitoring plan depicted in the registered PDD and verify that the applied methodology was carried out. Particular attention to the frequency of measurements, the quality of the metering equipment including calibration requirements, and the quality assurance and quality control procedures was paid;
- evaluate the 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 reviewed or referenced is available in Appendix 3 of this report.

D.2. On-site inspection

Duration of on-site inspection:				
No.	Activity performed on-site	Site location	Date	Team member
1.	Confirm the implementation and operation of the project;	WTG project site at Chitradurga and Tumkur; State-Karnataka; India	06/09/2017	Vivek Kumar Ahirwar
2.	Review the data flow for generating, aggregating and reporting the monitoring parameters;	WTG project site at Chitradurga and Tumkur; State-Karnataka; India	06/09/2017	Vivek Kumar Ahirwar
3.	Confirm the correct implementation of procedures for operations and data collection;	WTG project site at Chitradurga and Tumkur; State-Karnataka; India	06/09/2017	Vivek Kumar Ahirwar
4.	Cross-check the information provided in the MR documentation with other sources;	WTG project site at Chitradurga and Tumkur; State-Karnataka; India	06/09/2017	Vivek Kumar Ahirwar
5.	Check the monitoring equipment against the requirements of the PDD and the approved methodology, including calibrations, maintenance, etc.;	WTG project site at Chitradurga and Tumkur; State-Karnataka; India	06/09/2017	Vivek Kumar Ahirwar
6.	Review the calculations and assumptions used to obtain the GHG data and ER;	WTG project site at Chitradurga and Tumkur; State-Karnataka; India	06/09/2017	Vivek Kumar Ahirwar
7.	Identify if the quality control and quality assurance procedures are in	WTG project site at Chitradurga and	06/09/2017	Vivek Kumar Ahirwar

	place to prevent or correct errors or omissions in the reported parameters.	Tumkur; State-Karnataka; India		
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D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Kumar	Vijay	WWIL /Substation	06/09/2017	Project Activity Description, implementation and operation of the project	Vivek Kumar Ahirwar
2.	Kumar	Nikil	WWIL /Substation	06/09/2017	Procurement Records & Consumption , Bill & Energy Bills/Records	Vivek Kumar Ahirwar
3.	Kumar	Kaniyappa	WWIL /Substation	06/09/2017	Monitoring Data & Records Monitoring Plan, equipment , calibrations, maintenance, data records, certificates etc.; Calculations and assumptions used to obtain the GHG data and ER	Vivek Kumar Ahirwar
4.	Borah	Deepjyoti	WWIL/ (CDM-Sr. Manager)	06/09/2017	Monitoring Data & Records Monitoring Plan, equipment , calibrations, maintenance, data records, certificates etc.; Calculations and assumptions used to obtain the GHG data and ER	Vivek Kumar Ahirwar

D.4. Sampling approach

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Not Applicable, as all monitoring data as reported in MR and ER were verified and checked from 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	-	-	-
Compliance of the project implementation with the registered PDD	-	-	-
Post-registration changes	-	-	-
Compliance of the monitoring plan with the monitoring	-	-	-

methodology including applicable tool and standardized baseline			
Compliance of monitoring activities with the registered monitoring plan	-	-	-
Compliance with the calibration frequency requirements for measuring instruments	-	1	-
Assessment of data and calculation of emission reductions or net removals	-	1	-
Others (Inconsistencies/typo errors)	-	1	-
Total	-	3	-

SECTION E. Verification findings

E.1. Compliance of the monitoring report with the monitoring report form

Means of verification	The Monitoring Report version 2/1.2/ is compliant with Monitoring Report form (Version 06.0) /2.4/ and guidance as provided by UNFCCC. Applus+ LGAI considers that the attachment "Instructions for filling out the monitoring report form" at the end of template "Monitoring report form (Version 06.0)" /2.4/ has been followed. Relevant information was provided by the project participant in the applicable Monitoring Report sections.
Findings	No non-conformability was observed, hence findings not raised.
Conclusion	Applus+ LGAI confirms that the monitoring report is in compliance with the relevant valid form and instructions therein as accordance to "Clean Development Mechanism Validation and Verification Standard for Project Activity" (CDM- VVS for PA) v01.0 §§ 355-356.

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

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This is eighth periodic verification of the project. There are no pending issues from the validation or the previous verification/1.10/. This was verified and confirmed from the project documents on the UNFCCC project webpage /1.5/.

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

Means of verification	<p>The project activity is fully implemented according to the description presented in the approved revised PDD /1.3/. The assessment team confirms, through the visual inspection that all physical features of the CDM project activity including data collecting systems and storage have been implemented in accordance with the approved revised PDD /1.3/.</p> <p>This project activity involves generation of electricity from WTGs and supplying the generated electricity to the Southern grid of India. The project, located at Chitradurga and Tumkur districts of Karnataka state in India, has an installed capacity of 68.8 MW (86 WTGs x 0.8 MW/WTG). The PP has signed a PPA/3.2/ with BESCOM for the sale of electricity to the grid.</p> <p>The project was registered as a CDM project on 27/10/2008 and the same date is the starting date of the crediting period (fixed). The PP has undertaken a revision in the monitoring plan which was approved by the EB on 15/03/2011/1.8/ and corrections in registered PDD were approved by CDM EB on 08/01/2013 as reflected on the UNFCCC project webpage/1.5/. This is the eighth verification of the project activity covering the period from 01/06/2016 to 30/06/2017.</p> <p>The project has been implemented; equipment installed and is being operated as described in the registered PDD (approved on 08/01/2013). The monitoring plan implemented during the current monitoring period is in compliance with the revised and approved monitoring plan (RMP) and the applied methodology. This was verified during the site visit.</p> <p>The project is located between latitude 13°, 31' to 13°, 45' N and longitude 76°, 30' to 76°,44' E. Location of the project was verified through Google Maps (https://www.gps-coordinates.net/) and found consistent with the same mentioned in the registered PDD</p>
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and MR.

The project activity WTGs have been commissioned in 3 phases between 29/09/2006 and 28/12/2006 as mentioned in the Monitoring Report. The details of the WTGs installed are mentioned in the table below. All details mentioned in the below table have been verified against the commissioning certificates/3.1/ and is found to be correct.

Phase	No. of WTGs	Capacity of each WTG (MW)	Installed Capacity (MW)	Commissioning date
I	56	0.8	44.8	29/09/2006
II	9	0.8	7.2	26/10/2006
III	21	0.8	16.8	28/12/2006
Total	86		68.8	

The line diagram of the metering system of the project activity showing metering points is indicated in Annex 3 of the MR/1.2/. There are two 33 kV metering points to which 71 WTGs (i.e. 56.8 MW) and 15 WTGs (i.e. 12 MW) respectively involved in the project activity. Each metering point consists of two meters i.e. a main meter and a check meter. All 86 WTGs, through the 33 kV metering point, are further connected to the 220 kV metering point at the sub-station. During the current monitoring period, only WTGs belonging to the project activity were connected to the 220 kV metering point at the sub-station.

During the site visit, the assessment team verified the technology used and the capacity of WTGs implemented at the project site through physical inspection and it can be confirmed that there are no changes in the project design against the approved revised PDD/1.3/.

Actual emission reductions achieved during the current monitoring period are 34.35% lesser than the same estimated in the approved revised CDM-PDD for comparable period. This is due to low plant load factor achieved during the current monitoring period (Kindly refer section E.8.6 of this report for further details).

No events or situations that may impact the applicability of the methodology occurred during this monitoring period, which was confirmed by checking the operational/shut down details available at site office and interviewing the site personnel. The project was checked against the applicability criteria in the applied methodology ACM0002 Version 06 and it is confirmed that the methodology is applicable to the project activity. The data and variables provided in the Monitoring Report are the same as stated in the approved monitoring plan.

Findings	No non-conformability was observed during assessment for implementation of project activity against the description presented in the approved revised PDD/1.3/. Therefore no finding was raised.
Conclusion	<p>Applus+ LGAI confirms that the implementation of project activity is in compliance with the CDM requirement stipulated under CDM- VVS for PA v01.0 §§ 357-359.</p> <ol style="list-style-type: none"> The implementation and operation of the project activity has been conducted in accordance with the description contained in the approved revised PDD. By means of an on-site inspection the verification team is able to confirm that all physical features (technology, project equipment, and monitoring and metering equipment) of the registered CDM project activity are in place and that the project participants have operated the project activity as per the approved revised PDD. No information with regard to data and variables was identified that may surpass the estimated quantity of ERs in the registered PDD. The emission reductions achieved during the current monitoring period are 105,751 tCO₂e within the estimated quantity (161,093 tCO₂e) in the approved revised PDD for the comparable period.

E.4. Post-registration changes

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

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There are no temporary deviations from the monitoring plan of approved revised PDD/1.3/ or applied methodology/2.3/ during the current monitoring period. It was verified and confirmed from the Monitoring Report/1.2/, revised approved PDD/1.3/, UNFCCC project webpage /1.5/ and on-site verification/6.1/ & /6.2/.

E.4.2. Corrections

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There are no corrections during the current monitoring period.

Corrections identified in the registered PDD were approved by the CDM EB on 08/01/2013(Ref.No- PRC-1259-001).

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

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There are no changes to the start date of crediting period identified during the current monitoring period. It was verified and confirmed from the UNFCCC project webpage /1.5/.

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

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There is no inclusion of a monitoring plan identified during the current monitoring period.

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

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There are no permanent changes from the approved monitoring plan/1.8/ or applied methodology/2.3/ during the current monitoring period. A revision in the monitoring plan was approved on 15/03/2011/1.8/.

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

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There is no change to project design of the registered project activity identified during the current monitoring period. It was verified and confirmed from the Monitoring Report/1.2/, revised approved PDD/1.3/, UNFCCC project webpage /1.5/ and on-site verification/6.1/&/6.2/.

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

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Not Applicable.

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

Means of verification	<p>The project has been registered with the “Consolidated methodology for grid-connected electricity generation from renewable resources” ACM0002 version 06/2.3/. The assessment team verified the revised monitoring plan against ACM0002 version 06, and confirms that the revised monitoring plan approved by the CDM EB on 15/03/2011 is in accordance with the approved methodology applied by the project activity.</p> <p>The monitoring parameter relevant to this project activity described in the applied methodology is:</p> <p>EG_y – Electricity Supplied to the grid by the project</p> <p>However the following parameters are defined in the approved monitoring plan:</p> <ul style="list-style-type: none"> i. EG_y – Net electricity Supplied to the grid by the project ii. EG_{export} – Summation of electricity Export recorded at meters (two main and two check) connecting 86 machines of the project activity and can be sourced from two joint meter readings (Form B) issued by BESCO for 56.8 MW and 12 MW at 33 kV metering point iii. EG_{import} – Summation of electricity Import recorded at the meters (two main and two check) connecting 86 machines of the project activity and can be sourced from two joint meter readings (Form B) issued by BESCO for 56.8 MW and 12 MW at 33 kV metering point iv. T_E – Transmission loss for export between the metering location at 33 kV point and the
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metering location at 220 kV at the WWIL substation

In accordance with the actual practice followed at site, the parameter EG_y is calculated using the parameters EG_{export} , EG_{import} and T_E . Hence, the PP has included these parameters in the approved monitoring plan along with the parameter EG_y .

The approved monitoring plan was implemented and followed during previous in previous monitoring periods. This was checked from the verification available on the UNFCCC webpage of this project. Hence, it can be assured that the approved monitoring plan of the registered project is in accordance with the applied methodology.

A comparison between the requirement of the methodology, for the parameter EG_y , and the description of the same parameter in the approved monitoring plan is provided in the table below:

Approved revised PDD (approved on 08/01/2013) Approved Methodology	Requirement in the applicable methodology and relevant EB documents	Requirement in the approved monitoring plan	Opinion
Data/Parameter	EG_y	EG_y	In compliance with the applicable methodology.
Description	Electricity supplied to the grid by the project	Net electricity supplied to the grid by the Project	In compliance with the applicable methodology.
Measured/Calculated /Default	Directly measured	Calculated	This parameter is calculated using the directly measured values of import and export as per the actual practice on site by the state utility (BESCOM), which is governed by the PPA signed specifically for this project activity. This approach has been described in the monitoring plan approved by the EB on 15/03/2011. Hence accepted.
Source of data	Not Specified	JMR (Form B)	This is as per the actual practice on site by the state utility, governed by the PPA signed for this project activity. Hence accepted.
Monitoring equipment	Not Specified	Not Applicable since this is a calculated parameter	This parameter is calculated using the directly measured values of EG_{import} and EG_{export} . Hence accepted.
Measuring/Reading/Recording frequency	Hourly measurement and monthly Recording	Recording Frequency: Monthly	The Hourly measurement and monthly Recording is for the directly measured EG_y as per the applicable methodology. However this parameter is calculated as justified in the row "Measured/Calculated /Default" above, hence the monthly recording frequency is acceptable since it is as per the actual practice on site by the state utility. Hence accepted.
Calculation method (if applicable)	Not Applicable	$EG_y = EG_{\text{export}} - 115\% * EG_{\text{import}} - T_E$	This is as per the actual practice on site by the state utility. Hence accepted. The same formula is mentioned in the approved monitoring plan and PPA as well.

	QA/QC procedures	Electricity supplied by the project activity to the grid. Double check by receipt of sales.	The values EG_y mentioned in the JMR (Form B) will be cross-checked against values mentioned in the invoice raised on the state utility	This is in compliance with the applicable methodology.
	In view of the above assessment, the verification team is able to confirm that the approved monitoring plan of the registered project is in accordance with the applied methodology.			
Findings	No non-conformability was observed during assessment for monitoring plan against applied monitoring methodology. Therefore, no finding was raised.			
Conclusion	Applus+ LGAI confirms that the monitoring plan is in accordance with the approved methodology /2.3/ and correctly applied by the registered CDM project activity and CDM-VVS for PA v01.0 §§ 360-362 have been met.			

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

Means of verification	The following three parameters are fixed ex-ante defined in approved revised PDD:			
	Data/parameter:	$EF_{OM,y}$	$EF_{BM,y}$	$EF_{CM,y}$
	Unit	tCO ₂ /MWh	tCO ₂ /MWh	tCO ₂ /MWh
	Description	Operating Margin Emission Factor of Southern Regional Electricity Grid	Build Margin Emission Factor of Southern Regional Electricity Grid	Combined Margin Emission Factor of Southern Regional Electricity Grid
	Source of data	Central Electricity Authority: CO2 Baseline database Version 1.1 /6.3/		
	Value(s) applied)	1.00338	0.71799	0.93204
Findings	No non-conformability was observed about data and parameters fixed ex ante in registered PDD. Therefore, no finding was raised.			
Conclusion	Value of all 3 parameters reported in the monitoring report /1.2/ and corresponding emission reduction calculations spreadsheet /4.1/ are consistent with the approved revised PDD. The applied values are correct and justified.			

E.6.2. Data and parameters monitored

Means of verification	Following monitoring parameters are defined by in the approved monitoring plan:
	<ul style="list-style-type: none"> i. EG_y – Net electricity Supplied to the grid by the project ii. EG_{export} – Summation of electricity Export recorded at meters (two main and two check) connecting 86 machines of the project activity and can be sourced from two joint meter readings (Form B) issued by BESCO for 56.8 MW and 12 MW at 33 kV metering point iii. EG_{import} – Summation of electricity Import recorded at the meters (two main and two check) connecting 86 machines of the project activity and can be sourced from two joint meter readings (Form B) issued by BESCO for 56.8 MW and 12 MW at 33 kV metering point iv. T_E – Transmission loss for export between the metering location at 33 kV point and the metering location at 220 kV at the Enercon substation <p>The analysis of the compliance of the actual monitoring, of the each monitoring parameter with the approved monitoring plan is provided as following:</p> <p>(1) Net electricity Supplied to the grid by the project, EG_y (MWh)</p>

	Monitoring Report, onsite checks Revised Monitoring Plan & Approved Methodology	Requirement in the approved monitoring plan/1.8/	Implementation of the project	Conclusion on the compliance of the implementation with the monitoring plan
	Data/Parameter	EG _y	EG _y	In compliance
	Description	Net electricity supplied to the grid by the Project	Net electricity supplied to the grid by the Project	In compliance
	Measured/Calculated /Default	Calculated	Calculated	In compliance
	Source of data	JMR (Form B)	JMR (Form B)	In compliance
	Monitoring equipment	Not Applicable since this is a calculated parameter	Not Applicable since this is a calculated parameter	In compliance
	Measuring/Reading/ Recording frequency	Recording Frequency: Monthly	Recording Frequency: Monthly	In compliance
	Calculation method (if applicable)	$\frac{EG_y}{EG_{\text{export}} - 115\% \cdot EG_{\text{import}} - T_E} =$	$\frac{EG_y}{EG_{\text{export}} - 115\% \cdot EG_{\text{import}} - T_E} =$	In compliance
	QA/QC procedures	The values EG _y mentioned in the JMR (Form B) will be cross-checked against values mentioned in the invoice raised on the state utility	The values EG _y mentioned in the JMR (Form B) have been cross-checked against values mentioned in the invoice raised to the state utility and found consistent.	In compliance
<p>EG_y is a calculated parameter, as indicated in the table above. This calculation is carried out by the state utility (BESCOM). The PP has no role in the calculation. This was verified by interviewing the BESCOM officials during the site visit. The calculated monthly values of EG_y are directly sourced from two Form B (JMRs) prepared and issued by BESCOM/3.3/ at two separate 33 kV metering points i.e. for 56.8 MW and 12 MW. The PP has correctly reported the monthly values from the Form B (JMR) in the emission reduction spread sheet/4.1/. Monthly values of EG_y have been cross checked with the monthly invoices/3.4/ raised by the PP and are found to be consistent. The monthly values of EG_y have also been checked against the daily generation data/3.6/ recorded by the personnel of the O&M service provider (WWIL) at the 220 kV metering point at the sub-station. The values are found to be comparable and acceptable.</p> <p>The value of EG_y for the current monitoring period is 113,463.391 MWh. This parameter is directly used for the emission reduction calculations.</p> <p>(2)Summation of electricity Export recorded at meters (two main and two check) connecting 86 machines of the project activity and can be sourced from two joint meter readings (Form B) issued by BESCOM for 56.8 MW and 12 MW at 33 kV metering point, EG_{export} (MWh)</p>				
	Monitoring Report, onsite checks Revised Monitoring Plan & Approved Methodology	Requirement in the approved monitoring plan/1.8/	Implementation of the project	Conclusion on the compliance of the implementation with the monitoring plan
	Data/Parameter	EG _{export}	EG _{export}	In compliance

	Description	Summation of electricity Export recorded at meters (two main and two check) connecting 86 machines of the project activity and can be sourced from two JMR (Form B) issued by BESCOM for 56.8 MW and 12 MW at 33 kV metering point.	Summation of electricity Export recorded at meters (two main and two check) connecting 86 machines of the project activity and can be sourced from two JMR (Form B) issued by BESCOM for 56.8 MW and 12 MW at 33 kV metering point.	In compliance
	Measured/Calculated /Default	Measured	Measured	In compliance
	Source of data	JMR (Form B)	JMR (Form B)	In compliance
	Monitoring equipment	Two-way trivector energy meters	Two-way trivector energy meters	In compliance
	Measuring/Reading / Recording frequency	Recording Frequency: Monthly The meters are capable of recording and storing half hourly readings.	Recording Frequency: Monthly The meters are capable of continuous measurement; recording and storing half hourly readings.	In compliance
	Calculation method (if applicable)	Not applicable	Not applicable	In compliance
	QA/QC procedures	QA/QC procedures are mentioned in Annex 4 of the approved monitoring plan.	During the physical site visit it was confirmed that the QA/QC procedures as described in the Annex 4 of the approved monitoring plan have been followed in the current monitoring period.	In compliance
<p>EG_{export} is the summation of the energy exported to the grid, measured at the two 33 kV metering points (i.e. for 56.8 MW and 12 MW), as indicated in the table above. The electricity exported to the grid is monitored through the main meter, at the metering point. Apart from the main meter, the metering point also consists of a check meter. Both tri-vector energy meters have the capability of continuous measurement, which was verified during the site visit.</p> <p>Joint meter reading (Form B) is taken by the officials of BESCOM in the presence of the WWIL representative at the two metering points. Form B records the readings of both the main and check meter. Both values have been checked and are found to be comparable. The monthly values of electricity exported are directly sourced from two Form B (JMRs) prepared by BESCOM for the two metering points. The PP has correctly reported the monthly values in the emission reduction spread sheet/4.1/.</p> <p>The value of EG_{export} for the current monitoring period is 114,364.500 MWh. This parameter is used in the calculation of EG_y. This calculation is solely carried out by the state utility (BESCOM) and PP has no role in this process. This was verified through interactions with the site personnel and BESCOM officials during the site visit.</p> <p>In summary, the actual of monitoring for EG_{export} is in compliance with the approved monitoring plan.</p> <p>3. Summation of electricity Import recorded at the meters (two main and two check) connecting 86 machines of the project activity and can be sourced from two joint meter readings (Form B) issued by BESCOM for 56.8 MW and 12 MW at 33 kV metering point, EG_{import} (MWh)</p>				

	Monitoring Report, onsite checks Revised Monitoring Plan & Approved Methodology	Requirement in the approved monitoring plan/1.8/	Implementation of the project	Conclusion on the compliance of the implementation with the monitoring plan
	Data/Parameter	EG _{import}	EG _{import}	In compliance
	Description	Summation of electricity Import recorded at the meters (two main and two check) connecting 86 machines of the project activity and can be sourced from two JMR issued by BESCOM for 56.8 MW and 12 MW at 33 kV metering point.	Summation of electricity Import recorded at the meters (two main and two check) connecting 86 machines of the project activity and can be sourced from two JMR issued by BESCOM for 56.8 MW and 12 MW at 33 kV metering point.	In compliance
	Measured/Calculated /Default	Measured	Measured	In compliance
	Source of data	JMR (Form B)	JMR (Form B)	In compliance
	Monitoring equipment	Two-way trivector energy meters	Two-way trivector energy meters	In compliance
	Measuring/Reading/Recording frequency	Recording Frequency: Monthly The meters are capable of recording and storing half hourly readings.	Recording Frequency: Monthly The meters are capable of continuous measurement; recording and storing half hourly readings.	In compliance
	Calculation method (if applicable)	Not applicable	Not applicable	In compliance
	QA/QC procedures	QA/QC procedures are mentioned in Annex 4 of the approved RMP.	During the physical site visit it was confirmed that the QA/QC procedures as described in the Annex 4 of the approved monitoring plan have been followed in the current monitoring period.	In compliance
<p>EG_{import} is the summation of the energy imported from the grid, measured at the two 33 kV metering points (i.e. for 56.8 MW and 12 MW), as indicated in the table above. The electricity imported from the grid is monitored through the main meter, at the metering point. Apart from the main meter, the metering point also consists of a check meter. Both tri-vector energy meters have the capability of continuous measurement, which was verified during the site visit. A joint meter reading is taken by the officials of BESCOM in the presence of the WWIL representative at the two metering points. The Form B records the readings of both, the main and check meter. Both values have been checked and are found to be comparable. The monthly values of electricity imported are directly sourced from two Form B (JMRs) prepared by BESCOM for the two metering points. The PP has correctly reported the monthly values in the emission reduction spread sheet/4.1/.</p> <p>The value of EG_{import} for the current monitoring period is 40.365 MWh. This parameter is used in the calculation of EG_y. This calculation is solely carried out by the state utility (BESCOM) and PP has no role in this process. This was verified through interactions with the site personnel and BESCOM officials during the site visit.</p> <p>In summary, the actual of monitoring for EG_{import} is in compliance with the approved monitoring</p>				

plan.

4. Transmission loss for export between the metering location at 33 kV point and the metering location at 220 kV at the Enercon substation, T_E (MWh)

Monitoring Report, onsite checks Revised Monitoring Plan & Approved Methodology	Requirement in the approved monitoring plan/1.8/	Implementation of the project	Conclusion on the compliance of the implementation with the monitoring plan
Data/Parameter	T_E	T_E	In compliance
Description	Transmission loss for export between the metering location at 33 kV point and the metering location at 220 kV at the Enercon substation.	Transmission loss for export between the metering location at 33 kV point and the metering location at 220 kV at the Enercon substation.	In compliance
Measured/Calculated /Default	Calculated (by the state utility)	Calculated (by the state utility)	In compliance
Source of data	JMR (Form B)	JMR (Form B)	In compliance
Monitoring equipment	Not Applicable	Not Applicable	In compliance
Measuring/Reading / Recording frequency	Monthly recording frequency	Monthly recording frequency	In compliance
Calculation method (if applicable)	Calculation method is described in section B.7.2 of the approved monitoring plan and is from the signed PPA	Calculation method is described in section B.7.2 of the approved monitoring plan and is from the signed PPA	In compliance
QA/QC procedures	QA/QC procedures are mentioned in Annex 4 of the approved monitoring plan.	During the physical site visit it was confirmed that the QA/QC procedures as described in the Annex 4 of the approved monitoring plan have been followed in the current monitoring period.	In compliance

Transmission losses refer to the energy loss incurred between the 2 metering points for the project WEGs connected at 33 kV substations and the receiving substation at Dasudi village where voltage is stepped up to 220 KV and exported to the grid. The transmission losses are calculated by the state utility considering the export readings of the meter at the 220 kV substation as well as the export readings at the 33 kV metering point.

The monthly values of transmission loss are directly sourced from two Form B (JMRs) prepared by BESCOM for the two metering points. The PP has correctly reported the monthly values in the emission reduction spread sheet. These monthly values reported in the ER spread sheet are verified with the values in the monthly JMRs issued by BESCOM and are found to be consistent. These values are cross- checked with the invoices raised to the state utility and are found to be consistent.

In line with approved monitoring plan, validation report of revised monitoring plan/1.9/ and the PPA

signed by the PP with state utility, T_E losses are determined using following formula:

$$Z = ((X_i - Y) / X_i) * 100$$

Where,

Z = Percentage transmission loss for export incurred in transmission line between the meters located at 33 kV metering point (including the machines of the project activity and other project developers) and the meters located at 220kV metering point (bulk meter: main and check) at high voltage side of receiving sub-station.

X_i = Energy Export Reading (X_i) noted at energy meter installed at 33kV metering point where i vary from 1 to n which represents the meters connected to project activity and other project developers. $X_1, X_2, X_3, \dots, X_n$ are the meters that are installed at 33kV metering point (including the machines of the project activity and other project developers) and further connected to the receiving substation at 220 kV by internally connected lines.

$$X_i = X_1 + X_2 + X_3 + X_4 + \dots + X_n$$

Y = Energy Export Reading at bulk meter installed at high voltage side of transformer of the receiving sub-station at 220 kV connecting machines of the project activity and other project developers.

It is worthwhile to note that during the current monitoring period, WTGs belongs to project activity only connected to 220 kV metering point (Bulk meter). Formula as mentioned above, to calculate value of Z is standard one and exclusively used by state utility.

It is also noted that value of T_E is directly sourced from month Form B (JMR) issued by state utility and cross verified with invoices raised by the PP to state utility. Transmission losses calculation is done by state utility and PP has no role in the entire calculation.

Adjustment of transmission losses in the calculation of net energy export and import:

Transmission losses in the net export is calculation:

Transmission Loss in Export (T_E) = Percentage transmission Loss (Z) * Energy Export at 33kV metering point (EG_{Export})

Hence net energy export after adjustment of transmission losses is determined as:

$$\text{Net Energy Export after adjustment of } T_E = EG_{\text{export}} - \text{Transmission Loss } (T_E) \dots\dots\dots(i)$$

Transmission losses in the net import calculation:

In line with provisions of PPA/3.2/, state utility conservatively applies adjustment of 15% to the import values recorded at 33 kV metering point i.e

$$\text{Transmission Loss in Import } (T_I) = 15\% * \text{Energy Import at 33kV metering point } (EG_{\text{import}})$$

Hence net energy import after adjustment of transmission loss is determined as:

$$\begin{aligned} \text{Net Energy Import after adjustment of } T_E &= EG_{\text{import}} + 15\% * EG_{\text{import}} \\ &= 115\% * EG_{\text{import}} \dots\dots\dots(ii) \end{aligned}$$

Determination of net electricity supplied to the grid by project activity (EG_y):

Value of EG_y is calculated as the difference of net energy export and import arrived after adjustment of T_E [Equation (i) and (ii)] as following:

$$EG_y = EG_{\text{export}} - 115\% * EG_{\text{import}} - \text{Transmission Loss } (T_E) \dots\dots\dots(iii)$$

Value of the parameters EG_y , EG_{export} , EG_{import} and transmission loss (T_E) are indicated in the

	<p>monthly From B (JMR) issued by state utility and cross verified through the invoice raised by the PP to state utility for respective month.</p> <p>The JMR (Form B), from which all parameters are sourced, is prepared and endorsed by an external government agency i.e. the State Electricity Board and the PP has no influence in the entire procedure. Hence the data issued by the state electricity board through Form B is considered to be authentic.</p>
Findings	No non-conformability was observed during assessment for Data and parameters monitored against applied monitoring methodology and registered monitoring plan. Therefore, no finding was raised.
Conclusion	<p>Applus+ LGAI confirms that the actual monitoring activities observed on site are in compliance with the approved monitoring plan and as described in the approved revised PDD/1.3/ and the same is in line with the monitoring methodology /2.3/.</p> <p>The applicable parameters stated in the approved revised PDD monitoring plan/1.3/ and the applied methodology/2.3/ have been sufficiently monitored. The responsibilities and authorities for monitoring and reporting are in accordance with what is stated in the approved revised PDD monitoring plan/1.3/. The information flow (data generation, aggregation, recording, calculation and reporting) for the parameters to be monitored including its values in the final version of the MR/1.2/ have been correctly reported and confirmed. Hence, the requirement of CDM-VVS for v01.0 §§ 363-367 have been met.</p>

E.6.3. Implementation of sampling plan

Means of verification	No sampling plan is defined in the registered approved monitoring plan. All the data and information has been checked during verification assessment, thus no sampling plan has been applied in the Project.
Findings	Not Applicable
Conclusion	Not Applicable

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

Means of verification	<p>As per the monitoring plan in the registered PDD/01/ the meters are to be tested and calibrated annually. The project activity metering has been physically inspected during the site visit. The details of monitoring equipment is involved in the project activity and their calibration dates are mentioned in Section C of the final MR and are summarised in the tables below. All the meters are of accuracy class of 0.2s and calibration frequency of once in a year.</p> <p>The assessment team has checked the calibration certificates/5.1/ for accuracy and validity, so as to assure reliability and steadiness of monitoring results. The calibrations results have been verified as below.</p>			
	Metering Point Identification	KBCWP-02 (56.8 MW) at 33 kV	KBCWP-03 (12 MW) at 33 kV	KBCWP-01 (68.8 MW) at 220 kV sub-station
	Monitoring equipment	Trivector Energy Meter	Trivector Energy Meter	Trivector Energy Meter
	Monitoring parameter	EG _{export}	EG _{import}	N/A
	S/N	5389967 (Main Meter) 5389970 (Check Meter)	5463844 (Main Meter) 5463845 (Check Meter)	13191156 (Main Meter) 14194655 (Check Meter)
	Type	L&T	L&T	L&T
	Level	0.2	0.2	0.2
	Meter Testing frequency	Annual	Annual	Annual

requirement			
Meter Testing date	24/05/2016 and 24/05/2017	24/05/2016 and 24/05/2017	22/02/2016 ,09/06/2016 and 13/07/2017
Validity	One year	One year	One year
Are there delays in testing/calibration?	No	No	Yes
Testing / Calibration Entity	KPTCL or BESCOM as per approved monitoring plan. This has been mentioned as state utility in the MR.		
Accreditation Certificate for the calibration entity	As per PPA, the periodic calibration is being done by state utility (BESCOM) and PP has no involvement in the calibration process. The calibration of the reference meter is carried out at the laboratory of The Central Power Research Institute, Government of India. The laboratories of CPRI are accredited under National Accreditation Board for Testing and Calibration of Laboratories (NABL), which is the National body for accreditation of Laboratories		
<p>The installation and working condition of the meters were checked during the on-site inspection and it was found to be satisfactory. These meters are duly approved, installed, tested, sealed and in the custody of the state utility. The PP has no control over the same.</p> <p>Accordance with the guidelines as state under section 3.2.3 of CEA Notification No. 502/70/CEA/DP&D dated 17/03/2006/6.3/ which is considered as national standard "All interface meters shall be tested at least once in five years." Hence, the calibration frequency of once in a year, mentioned in the revised approved PDD/1.3/ for the meters is appropriate.</p> <p>Assessment on delay in calibration:</p> <p>It is evident from the above table that calibration of meters installed at 220 kV sub-station [KBCWP-01(68.8 MW), Bulk meter] is not carried out as per the frequency mentioned in the approved monitoring plan. As verified from calibration certificates, calibration of bulk meter (earliest) were done on 09/06/2016 (next calibration was due on 09/06/2017) but subsequent calibration was done on 13/07/2017. Hence the delay in calibration of meters considered for the period from 09/06/2017 to 12/07/2017 has been deemed appropriate. The current monitoring period ends on 30/06/2017, hence delayed calibration period in the current monitoring period is considered from 09/06/2017 to 30/06/2017.</p> <p>It is to be noted that there is no delay identified in calibration of meters installed at 33 kV metering points, hence no error factor is applied to electricity export or import values in the delayed calibration period.</p> <p>For the meters at 220 kV substation, an error factor of +0.2% is applied to transmission losses because the export readings recorded through the substation meters (Bulk meter) are used for calculation of transmission losses only. Furthermore value of the transmission losses is used for the calculation of EG_y and as a conservative approach the adjusted monthly values of transmission loss after applying +0.2% of correction factor has been used to calculate EG_y in the delayed calibration period.</p> <p>It is worthy to note that the billing cycle for the project activity starts from 1st day and ends on last day of the every month, hence the error factor is applied to the transmission loss values for the entire month of June 2017 (01/06/2017 to 30/06/2017) during the current monitoring period. The approach followed by the PP was found to be conservative and appropriate, hence accepted.</p> <p>The verification team has checked the latest calibration certificates/5.1/ for all the meters and confirmed that the meters were working satisfactorily and error in the meters was within permissible limits of accuracy. Hence it can be concluded that the approach followed by the PP is conservative and in line with the guidelines provided under paragraph 369 (a) of CDM-VVS for PA v01.0.</p>			
Findings	CAR #2 was raised and resolved.		
Conclusion	Applus+ LGAI confirms that the calibration is conducted at the frequency following the relevant industry standard as specified by the methodology /2.3/ and the monitoring plan contained in the approved revised PDD /1.3/. Therefore, the requirement of CDM-VVS for PA v01.0 §§ 374 have		

been met.

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 verification team verified that</p> <ol style="list-style-type: none"> A complete set of data for the monitoring period was available for the monitoring period and the verification of each monitoring parameter is elaborated under Section E.6.2 of this report. The complete monitoring data is also presented in the corresponding ER sheet /4.1/ of final Monitoring Report /1.2/. The information provided in the monitoring report was cross checked with other sources, wherever appropriate and available, and such information is also included under Section E.6.2 of this report . The calculations of baseline emissions as presented in the corresponding ER sheet of final Monitoring Report were checked and found to be consistent with the formulae and methods described in the registered monitoring plan and the applied methodology. All assumptions used in the emission calculations were found appropriate and therefore justified Appropriate emission factors and other reference values have been correctly applied. This has also been elaborated under Section E.6.1 of this report. No standardized baseline was prescribed in the revised approved PDD and therefore it has not been applied. There is no pro-rate approach was applied in the current monitoring period as entire monitoring period falls into period that is after the end of first commitment period of Kyoto Protocol. <p>The baseline emissions are the product of net electricity supplied to the grid EG_y expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor. Baseline emission factor is calculated as combined margin, consisting of a combination of operating margin (OM) and build margin (BM) factors.</p> $BE_y = EG_y * EF_y$ <p>Where:</p> <p>BE_y: Baseline Emissions in year y; t CO₂</p> <p>$EG_{y,y}$: Net electricity supplied to the grid by the project activity</p> $EG_y = EG_{Export,y} - (115\% * EG_{import}) - T_E$ <p>EF_y = Combined margin CO₂ emission factor (tCO₂/MWh)</p> <p>As per the revised approved PDD, combined margin emission factor is 0.93204 tCO₂ /MWh. Hence the baseline emissions for the project activity for the current monitoring period are as follows.</p> $BE_y = 113,463.391 * 0.93204 = 105,751 \text{ tCO}_2\text{e}$
Findings	No non-conformability was observed during assessment for this monitored parameter. Therefore, no finding was raised.
Conclusion	<p>Applus+ LGAI confirms that the requirement outlined under CDM-VVS for v01.0 §§ 377 have been met as:</p> <ul style="list-style-type: none"> A complete set of data for the monitoring period is available. Information on the baseline GHG emission calculation provided in the monitoring report /1.2/ has been cross-checked with other sources. Calculations of baseline emissions have been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology document. Appropriate emission factor of the power grid has been correctly applied.

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

Means of verification	The revised approved PDD/1.3/ and applied monitoring methodology/2.3/ does not
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	prescribe any project emissions to be considered. The onsite visit and project design also did not reveal any potential source to be considered in this regard.
Findings	No non-conformability was observed during assessment for this section. Therefore, no finding was raised.
Conclusion	No project emissions were required to be calculated.

E.8.3. Calculation of leakage GHG emissions

Means of verification	The revised approved PDD/1.3/ and applied monitoring methodology/2.3/ does not prescribe any leakage emissions to be considered. The onsite visit and project design also did not reveal any potential source to be considered in this regard.
Findings	No non-conformability was observed during assessment for this section. Therefore, no finding was raised.
Conclusion	No leakage emissions were required to be calculated.

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

Means of verification	As elaborated above, the entire emission reductions from the project activity were based on baseline emissions. The calculations presented in this regard in the final monitoring report and corresponding ER calculation sheet were found appropriate and complying with the provisions prescribed in the registered monitoring plan of revised approved PDD and applied methodology. The verification team confirms that an audit trail that contains the evidence and records that validated the stated figures were checked and found acceptable.
Findings	No non-conformability was observed during assessment for this section. Therefore, no finding was raised.
Conclusion	Applus+ LGAI confirms that the requirement outlined under CDM-VVS for PA v01.0§§ 377 have been met as: <ul style="list-style-type: none"> • A complete set of data for the monitoring period is available. • Information provided in the monitoring report /1.2/ has been cross-checked with other sources; • Calculations of baseline emissions, and project activity emissions and leakage, as appropriate, been carried out in accordance with the formulae and methods described in the monitoring plan and the applied methodology document. • There are no assumptions in emission reductions calculation. • Appropriate emission factor of the power grid has been correctly applied.

E.8.5. Comparison of actual GHG emission reductions or net anthropogenic GHG removals by sinks with estimates in registered PDD

Means of verification	As verified and evident from the final Monitoring Report /1.2/ and corresponding ER sheet /4.1/, the actual emission reductions achieved by the project activity in the current monitoring period were found less than the estimated quantity in the revised approved PDD/1.3/ for the comparable period. This is largely due to low plant load factor achieved during the current monitoring period.			
	Annual CERs estimated in the approved revised PDD (tCO ₂ e)	Estimated CERs for current monitoring period (395 days), tCO ₂ e	Actual CERs achieved in the current monitoring period, tCO ₂ e	Difference
	148,858	161,093	105,751	-34.35%
	Considering, there is no increase in ERs than the estimated amount; it was found acceptable.			
Findings	No non-conformability was observed during assessment for this section. Therefore, no finding was raised.			
Conclusion	Applus+ LGAI confirms that the requirement outlined under CDM-PS for PA v01.0 §§ 268 have been meet as: <ul style="list-style-type: none">• A comparison of actual GHG emission reductions or net anthropogenic GHG removal of the project activity achieved during this monitoring period with the estimates in the approved revised PDD /1.3/ has been provided in			

	<p>the Monitoring Report /1.2/.</p> <ul style="list-style-type: none"> The verification team confirms that the calculation of the comparison is correct.
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E.8.6. Remarks on difference from estimated value in registered PDD

Means of verification	<p>The verification team has assessed the cause of any variation in the actual GHG emission reductions achieved during the current monitoring period. There is decrease of around 34.35% in the actual emission reductions achieved during the current monitoring period from that stated in the approved revised CDM-PDD. This is largely due to low plant load factor achieved during the current monitoring period. It is to be noted that PLF is completely governed by the availability of wind, which is natural phenomenon and it is beyond the control of PP.</p>
Findings	CAR #3 was raised and resolved.
Conclusion	<p>Applus+ LGAI confirms that the requirement outlined under CDM-PS for PA v01.0 §§ 269 and CDM-VVS for PA v01.0 §§ 359 (d) have been met as:</p> <ul style="list-style-type: none"> The verified emission reductions are lesser than the estimated value in the monitoring period. The project participants have explained the cause of any decrease in the actual GHG emission reductions achieved during the current monitoring period, and including all information (i.e. data and/or parameters) that is different from that stated in the approved revised PDD /1.3/. The variation is deemed to be reasonable.

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	<p>Based on the assessment done in section E.8.1 to E.8.6, the verification team is able to certify that the emission reductions from the CDM project activity 1259 “Enercon Wind Farm (Hindustan) Ltd in Karnataka” in India during the period 01/06/2016 to 30/06/2017 (including both days) is 105,751 tCO₂e.</p>
Findings	No non-conformability was observed during assessment for this section. Therefore, no finding was raised.
Conclusion	Applus+ LGAI confirms that the requirement outlined under CDM-PS for PA v01.0 §§ 266 as the project participants has calculated GHG emission reductions.

SECTION F. Internal quality control

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As a final step of verification, the final documentation including the verification report has to undergo an internal quality control by the Technical Reviewer. Each report has to be finally approved either by the DOE's Technical Manager or the Deputy. In case one of these two persons is part of the assessment team, the approval can only be given by the person who is not a part of the assessment team. If the documents have been satisfactorily approved, the Request for Issuance is submitted to the CDM-EB along with the relevant documents.

SECTION G. Verification opinion

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Applus+ LGAI has been contracted by M/s Wind World (India) Limited to perform the verification of the emission reductions reported for the CDM project “Enercon Wind Farm (Hindustan) Ltd in Karnataka” in the period 01/06/2016 to 30/06/2017.

Applus+ LGAI concludes that the CDM Project “Enercon Wind Farm (Hindustan) Ltd in Karnataka”, as described in the monitoring plan contained in the approved revised PDD /1.3/ (Version 6, 03/09/2012), and Monitoring Report /1.2/ (Version 3, 04/10/2017), meets all relevant requirements of the UNFCCC for CDM project activities including article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakesh Accords) and the subsequent decisions by the COP/MOP and CDM Executive Board. The verification is conducted in line with the (CDM-VVS for PA) Version 01.0 /2.1/ requirements. The Project is implemented according to selected monitoring methodology /2.3/ and the monitoring plan contained in the approved revised PDD /1.3/. The monitoring equipment was installed, calibrated and maintained in a proper manner. The monitoring system is in place and the Project is generating GHG emission reductions as a CDM project.

Applus+ LGAI confirms that the project is implemented in accordance with the validated and approved revised Project Design Document/1.3/. The monitoring system is in place and the emission reductions are calculated without material misstatements. Our opinion relates to the projects GHG emissions and the resulting GHG emission reductions reported and related to the valid and registered project baseline and monitoring and its associated documents. Based on the information seen and evaluated we confirm that the implementation of the project has resulted in 105,751 tCO₂e emission reductions during the period 01/06/2016 to 30/06/2017 (both days included).

Applus+ LGAI therefore issues the positive verification opinion expressed in the Certification statement in Section H.

SECTION H. Certification statement

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Applus+ LGAI has been engaged by M/s Wind World (India) Limited to perform the eighth periodical verification of the 'Enercon Wind Farm (Hindustan) Ltd in Karnataka' (UNFCCC Ref. No. 1259).

The management of M/s Wind World (India) Limited is responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project's Monitoring Plan in the approved revised PDD version 6 /1.3/, completed on 03/09/2012 and the applied methodology ACM0002 Version: 06 /2.3/.

Our verification approach was based on the requirements as defined under the Kyoto Protocol, Marrakesh accord, as well as those defined by the CDM Executive Board. Our approach is risk-based, drawing on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these. The verification can confirm that:

- the project is operated as planned and described in the project design document approved by the EB;
- the monitoring plan is as per the applied methodology;
- the monitoring in Monitoring Report is as per the PDD and the monitoring plan approved by the EB;
- the development and maintenance of records and reporting procedures are in accordance with the registered monitoring plan;
- the installed equipment being essential for generating emission reduction runs reliably and is calibrated appropriately;
- the monitoring system is in place and generates GHG emission reductions data;
- the GHG emission reductions are calculated without material misstatements.

In our opinion, the GHG emission reductions for 'Enercon Wind Farm (Hindustan) Ltd in Karnataka' for the monitoring period 01/06/2016 to 30/06/2017 as reported in Monitoring Report, prepared on the basis of the project's Monitoring Plan are fairly stated.

Based on the information we have seen and evaluated, we confirm the following statement:

Reporting period:	From 01/06/2016 to 30/06/2017
Verified emissions in the above reporting period:	
Leakage emissions	00,000 tCO ₂ equivalents
Project emissions	00,000 tCO ₂ equivalents
Baseline emissions	105,751 tCO ₂ equivalents
Emission reductions in this monitoring period (i.e. 01/06/2016 to 30/06/2017)	105,751 tCO ₂ equivalents
Emission reductions achieved during the period up to 31 December 2012	Nil
Emission reductions achieved during the period from 1 January 2013 onwards. (i.e. 01/06/2016 to 30/06/2017)	105,751 tCO ₂ equivalents

Appendix 1. Abbreviations

Abbreviations	Full texts
BESCOM	Bangalore Electricity Supply Company
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CDM PCP	Clean Development Mechanism Project Cycle Procedure
CDM PS	Clean Development Mechanism Project Standard
CDM VVS	Clean Development Mechanism Validation and Verification Standard
EB	Executive Board
EF	Emission Factor
EPC	Engineering ,Procurement and Construction
ER	Emission Reductions
CEA	Central Electricity Authority
CER	Certified Emission Reduction
CL	Clarification Request
DOE	Designated Operational Entity
DNA	Designated National Authority
FAR	Forward Action Request
GCEES	Green Carbon Energy & Environment Services
GHG	Greenhouse Gas(es)
GOI	Government of India
IPCC	Intergovernmental Panel on Climate Change
JMR	Joint Meter Reading
KPTCL	Karnataka Power Transport Company Limited
MP	Monitoring Plan
MR	Monitoring Report
MWh	Megawatt hour
PDD	Project Design Document
PPA	Power Purchase Agreement
PP	Project Participant
PRC	Post Registration Changes
PS	Project Standard
RMP	Revised Monitoring Plan
SLDC	State Load Dispatch Center
TR	Technical Review
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard
WTG	Wind Turbine Generator
WEC	Wind Energy Convertor
WWIL	M/s Wind World (India) Limited

Appendix 2. Competence of team members and technical reviewers

According to the sectoral scopes / technical area and experiences in the sectoral or national business environment, Applus+ LGAI has composed a project validation team in accordance with the appointment rules in Applus+ LGAI. The composition of assessment team has to be approved by the Applus+ LGAI ensuring that the required skills are covered by the team. The four qualification levels for team members that are assigned by formal appointment rules as below:

- Leader Auditor (LA)
- Auditor (A)
- Auditor Trainee (T)
- Technical Experts (E)

It is required that the sectoral scope / technical area related to the methodology has to be covered by the assessment team.

Name	Qualification	Coverage of scope	Coverage of technical Area	Financial aspect	Host country Experience	Attendance to the On-Site Assessment
Vivek Kumar Ahirwar	LA/E	Yes (1)	Yes (1.2)	N/A	Yes	Yes

Technical Reviewers:

- Denny Xue

The curricula vitae of the DOE's validation team members are provided below:

Vivek Kumar Ahirwar is a BEE-Certified Energy Auditor by Govt of India with over eight years of relevant experience in energy efficiency, energy audit, thermal and electrical energy generation technology from renewable source and energy conservation in energy intensive industries, designated consumers and commercial buildings, implementation of energy conservation building codes, research, process and green building projects. He is a certified lead auditor for ISO 14001 EMS and 14064. He has experience under various categories of projects stating from renewable to waste to supercritical projects and WCD. He has successfully audited more than 100 GHG (CDM/VCS/GS) projects in different states across the India. He has done Master in Technology (Energy Management) from a premier institute, School of Energy & Environmental Studies, DAVV, Indore (M.P.), India and Bachelor of Engineering (Mechanical Engineering) from Govt. Engineering college, Rewa, RGPV, India.

Hanshen (Denny) Xue (Master Degree in Environmental Engineering, Bachelor Degree in Thermal Engineering) is an Auditor appointed by Applus+ LGAI for the GHG project assessment. He is based on Shanghai. He has 1.5 years of work experiences in CDM project development. Before he joined Applus+ LGAI, he has been worked for Shanghai Chuanji Investment and Management which is a CDM consultancy company as a project manager for CDM project development.

Appendix 3. Documents reviewed or referenced

No.	Author	Title	References to the document	Provider
1.	Basic Documents (Monitoring Report, Project Design Documents, Previous Verification Reports)			
1.0	WWIL	MR , version 1 (Published)	Dated 01/08/2017	PP
1.1	WWIL	MR, version 2	Dated 12/09/2017	PP
1.2	WWIL	MR, version 3 (final)	Dated 04/10/2017	PP
1.3	WWIL	Revised approved PDD Version 6, approved on 08/01/2013	Dated 03/09/2012	PP
1.4	DNV	Validation Report of the registered CDM project activity (Report No. 2007-1021 Revision No. 03 dated issued by)	Dated 24/10/2008	Other: UNFCCC
1.5	UNFCCC	CDM Project activity view page "Enercon Wind Farm (Hindustan) Ltd in Karnataka " https://cdm.unfccc.int/Projects/DB/DNV-CUK1185356859.49/view	-	Other: UNFCCC
1.6	WWIL	Registered PDD version 5	Dated 01/10/2008	Other: UNFCCC
1.7	SGS	Validation Report on changes in registered PDD, version 3	Dated 04/10/2012	Other: UNFCCC
1.8	WWIL	Revised approved monitoring plan	Approved on 15/03/2011	Other: UNFCCC
1.9	TUV Nord	Validation report for permanent changes in the monitoring plan	Dated 24/02/2011	Other: UNFCCC
1.10	RINA	Verification report for 7 th monitoring period (01/01/2015-31/05/2016), version 1.1Aa	Dated 17/10/2016	Other: UNFCCC
2.	References and requirements at UNFCCC/IPCC/etc.			
2.1	UNFCCC website	Clean Development Mechanism Validation and Verification Standard for Project Activity (CDM-VVS for PA), version 01.0 as per EB 93, Annex 5	Dated 03/03/2017	Other: UNFCCC
2.2	UNFCCC website	CDM Project Standard for Project Activity (CDM-PS for PA), version 01.0 as per EB 93, Annex 4	Dated 03/03/2017	Other: UNFCCC
2.3	UNFCCC website	Consolidated baseline methodology for grid-connected electricity generation from renewable sources ,ACM0002,version 06	Dated 19/05/2006	Other: UNFCCC
2.4	UNFCCC website	Guidance to Complete "Monitoring Report Form (CDM-MR-FORM), Version 06.0" as accordance with the Attachment "Instructions for filling out the monitoring report form"	Dated 07/06/2017	Other: UNFCCC
3.	Project implementation information			
3.1	State utility(KP TCL)	Commissioning Certificates of all WTGs commissioned from 29/09/2006 to 28/12/2006	-	PP
3.2	State utility	Power Purchase Agreement between BESCO and M/s Wind World (India) Limited	Dated 01/03/2006	PP
3.3	State utility	Monthly JMR (Form B) – 33 kV (12 MW; KBCWP-03) Monthly JMR (Form B) – 33 kV (56.8 MW; KBCWP-02) Monthly JMR (Form B) – 220 kV (sub-station; KBCWP-01)	For the period 01/06/2016 - 30/06/2017	PP
3.4	WWIL	Monthly invoices issued by PP to BESCO	For the period 01/06/2016 - 30/06/2017	PP
3.5	CEA	CEA CO ₂ Baseline Database for the Indian Power Sector	-	Other

		Version 1.1														
3.6	WWIL	Daily Generation Data recorded by the WWIL Personnel at the sub-station	For the period 01/06/2016 - 30/06/2017	PP												
3.7	Ministry of corporate Affairs, GOI	Name change consent issued by Government of India,	dated 01/01/2013	PP												
4.	ER calculation and cross checking issue															
4.1	WWIL	Emission reduction calculation sheet	-	PP												
5.	Calibration issues															
5.1	State utility	Calibration certificates issued by KPTCL	-	PP												
		<table border="1"> <thead> <tr> <th>Meter location</th><th>Meter Sr.No.</th><th>Calibration date(s)</th></tr> </thead> <tbody> <tr> <td>KBCWP-01</td><td>Main: 13191156 Check: 14194655</td><td>22/02/2016, 09/06/2016 and 13/07/2017</td></tr> <tr> <td>KBCWP-02</td><td>Main: 5389967 Check: 5389970</td><td>24/05/2016 and 24/05/2017</td></tr> <tr> <td>KBCWP-03</td><td>Main: 5463844 Check: 5463845</td><td>24/05/2016 and 24/05/2017</td></tr> </tbody> </table>	Meter location	Meter Sr.No.	Calibration date(s)	KBCWP-01	Main: 13191156 Check: 14194655	22/02/2016, 09/06/2016 and 13/07/2017	KBCWP-02	Main: 5389967 Check: 5389970	24/05/2016 and 24/05/2017	KBCWP-03	Main: 5463844 Check: 5463845	24/05/2016 and 24/05/2017		
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KBCWP-03	Main: 5463844 Check: 5463845	24/05/2016 and 24/05/2017														
6.	Others															
6.1	LGAI	Site Visit Attendance Sheet	06/09/2017	-												
6.2	LGAI	Site Visit Photograph	06/09/2017	-												
6.3	CEA	Central Electricity Authority (Installation and Operation of Meters) Regulations <ul style="list-style-type: none"> - Notified on 17/03/2006 No.502/70/CEA/DP&D - Amendments Notified on 26/06/2010 No.502/6/2009/DP&D/D-I http://www.cea.nic.in/reports/regulation/meter_reg.pdf	17/03/2006	Other: CEA												

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

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

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

Table 2. CL from this verification

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

Table 3. CAR from this verification

CAR ID	01	Section no.	D.2	Date: 12/09/2017
Description of CAR				
<ol style="list-style-type: none"> 1. Number of the project participants mentioned at page 1 of the MR is inconsistent with the same reflected at project webpage. 2. Title and reference of the applied methodology mentioned in the MR (P.1) is inconsistent with registered PDD and meth document. 3. Source web link provided in the MR for CEA database v.1.1 is not working. 				
Project participant response				Date: 12/09/2017
<ol style="list-style-type: none"> 1. Number of project participants mentioned at page 1 of the revised version of MR is consistent with the same reflected at project webpage. The version of MR form is revised from Version 05.1 to Version 06.0. 2. Title and reference of the applied methodology mentioned in the revised version of MR (P.1) is consistent with registered PDD and meth document. 3. Source web link has been corrected in the revised version of MR for CEA database v.1.1. 				
Documentation provided by project participant				
Revised Version of MR, dated 12/09/2017				
DOE assessment				Date: 18/09/2017
<p>Number of project participants involved in the project is updated in the revised MR, found consistent with project webpage. Also the PP has voluntarily submitted revised MR using latest template (CDM-MR-FORM, version 06.0), found satisfactory, hence accepted.</p> <p>Title and reference of the applied methodology ACM0002 is corrected in the MR and made with approved PDD and meth document.</p> <p>Source web link for CEA database v.1.1 is updated in the MR, found to be correct.</p> <p>CAR #1 is closed.</p>				

CAR ID	02	Section no.	E.7	Date: 12/09/2017
Description of CAR				
<ol style="list-style-type: none"> 1. Calibration date of the meters (location:KBCWP-01(68.8 MW) reported in section C of the MR is not consistent with the calibration certificate. 2. It is not clear why latest valid version of VVS not referred while addressing the calibration delay in the meters observed during the current monitoring period. 				
Project participant response				Date: 12/09/2017
<ol style="list-style-type: none"> 1. Calibration date of the meters (parameter: KBCWP-01(68.8 MW) reported in section C of the revised version of MR is consistent with the calibration certificate. 2. In revised version of MR, latest valid version of VVS is referred while addressing the calibration delay in the meters observed during the current monitoring period. 				
Documentation provided by project participant				
Revised Version of MR,dated 12/09/2017				
DOE assessment				Date: 18/09/2017
Date of calibration for the meters at location KBCWP-01(68.8 MW) is corrected in the MR, found consistent with calibration certificate. The PP has updated the reference of VVS guidelines referred to address identified delay in calibration, found satisfactory. CAR #2 is closed.				
CAR #2 re-opened				Date: 03/10/2017
Duration of delayed period as mentioned under section C of the monitoring report is inconsistent with the calibration dates verified through calibration certificates, please clarify the same.				
Project participant response				Date: 04/10/2017
The duration of delayed period has been corrected in Section C of revised version of MR.				
Documentation provided by project participant				
Revised MR version 3 ,dated 04/10/2017				
DOE assessment				Date: 11/10/2017
The PP has corrected the duration of delayed calibration period in section of the revised MR,found consistent with the calibration dates, hence accepted. CAR #2 is closed.				

CAR ID	03	Section no.	E.5	Date: 03/10/2017
Description of CAR				
The estimated emission reductions for current monitoring period as reported under section E.5 of the MR is inconsistent with the same mentioned at page 1 of the MR and ER calculation sheet as well. PP is requested to clarify the same.				
Project participant response				Date: 04/10/2017
The estimated ERs value has been corrected in section E.5 of the revised version of monitoring report.				
Documentation provided by project participant				
MR, version 3,dated 04/10/2017				
DOE assessment				Date: 11/10/2017
PP has corrected the value of estimated emission reductions for current monitoring period in section E.5 of the revised MR, found consistent across MR and ER calculation sheet. CAR #3 is closed.				

Table 4. FAR from this verification

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

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
01.0	23 March 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: project activities, verifying and certifying		