

UCR VERIFICATION REPORT FOR "ENERCON WIND FARM (HINDUSTAN) LTD IN KARNATAKA"

Project/PoA Title:	Enercon Wind Farm (Hindustan) Ltd in Karnataka
UCR ID:	106
Internal ID:	UCR.VER.02.22
Customer/ Project Aggregator:	VIVIID Emissions Reductions Universal Pvt Ltd
Date:	03/04/2022
Revision:	01
Prepared By	Ravi Kant Soni (Independent Verifier)
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COVER PAGE Project Verification Report Form (VR) BASIC INFORMATION Ravi Kant Soni Name of approved UCR Project Verifier / Reference No. CDM or other GHG Type of Accreditation Accreditation ☐ ISO 14065 Accreditation Provide details (if any) below for the boxes ticked above including the name of the entity that provided the accreditation and the date of validity (DD/MM/YYYY to DD/MM/YYYY) of the approval. Not applicable Approved UCR Scopes and GHG Sectoral scopes for Project Verification Sectoral Scope: 1 From 09/02/2022 Validity of UCR approval of Verifier Completion date of this VR 03/04/2022 Title of the project activity Enercon Wind Farm (Hindustan) Ltd in Karnataka UCR Ref.No-106 Project reference no. (as provided by UCR Program) Name of Entity requesting verification service **VIVIID Emissions** Reductions Universal (can be Project Owners themselves or any Entity having authorization of Pvt. Ltd. Project Owners, example aggregator.)





Contact details of the representative of the Entity, requesting verification service (Focal Point assigned for all communications)	Mr. Puneet Katyal Email: puneet.katyal@viviidrene wables.com Phone: +91 98671 65214	
Country where project is located	India	
Applied methodologies (Approved methodologies by UCR Standard used)	ACM0002, version 06 Title: Grid-connected electricity generation from renewable sources	
	UCR Standard Protocol Emission Factors	
GHG Sectoral scopes linked to the applied methodologies	01 Energy industries (Renewable/Non- renewable sources)	
Project Verification Criteria: Mandatory requirements to be assessed	 □ UCR Standard □ Applicable Approved Methodology □ Applicable Legal requirements /rules of host country □ Eligibility of the Project Type □ Start date of the Project activity □ Meet applicability conditions in the applied methodology □ Credible Baseline □ Do No Harm Test □ Emission Reduction calculations □ Monitoring Report □ No GHG Double Counting □ Others (please mention below) 	
Project Verification Criteria:	Environmental Safeguards	

Optional requirements to be assessed	Standard and do- no-harm criteria Social Safeguards Standard do-no- harm criteria
Project Verifier's Confirmation:	The UCR Project Verifier
The UCR Project Verifier has verified the UCR project activity and therefore confirms the following:	Ravi Kant Soni, certifies the following with respect to the UCR Project Activity "Enercon Wind Farm (Hindustan) Ltd in Karnataka".
	The Project Owner has correctly described the Project Activity in the Project Concept Note (dated 14/02/2022 and revised PCN dated 21/03/2022) including the applicability of the approved methodology ACM0002 V06 and meets the methodology applicability conditions and has achieved the estimated GHG emission reductions, complies with the monitoring methodology and has calculated emission reductions estimates correctly and conservatively.
	The Project Activity is likely to generate GHG emission reductions amounting to the estimated 119,332 tCO _{2e} , as indicated in the PCN, which are additional to the reductions that are likely to occur in absence of the Project Activity and complies with all applicable UCR rules, including ISO 14064-2 and ISO 14064-3.
	☐ The Project Activity is not likely to cause any net-harm to the environment and/or society





	The Project Activity complies with all the applicable UCR rules¹ and therefore recommends UCR Program to register the Project activity with above mentioned labels.
Project Verification Report, reference number and date of approval	RKS/UCR/VCR/002
	Date: 03/04/02022
Name of the authorised personnel of UCR Project Verifier and his/her signature with date	Name: Ravi Kant Soni Date: 03/04/2022
	Signature:
	orginataro.
	Rismi



PROJECT VERIFICATION REPORT

Section A. Executive summary

>> The project activity involves electricity generation by wind electric convertors and supplying the generated electricity to the southern grid (now part of integrated Indian Grid). The project being a renewable energy generation activity, it leads to removal of fossil fuel dominated electricity generation. The project activity results in reductions of greenhouse gas (GHG) emissions that are real, measurable, and verifiable and plays beneficial role in the mitigation of climate change.

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.. Enercon India Limited is the supplier of WECs and the O&M contractor for the project activity. It is to be noted that name of company "Enercon India Limited" is changed as "Wind World (India) Limited from 01/01/2013 onwards, the same is verified through the name change consent issued by Government of India.

The WECs have been commissioned between 29/09/2006 and 28/12/2006. The same was verified against the commissioning certificates/15/.

All 86 WECs are fully functional, and the assessment team verified this during the site visit. The assessment team confirms that the total emission reductions achieved under this monitoring period 27/10/2018 - 31/01/2022 (including both days) is 258,886 tCO₂e.

A.1 Project Verification team, technical reviewer, and approver

Project Verification team:

No.	Role	Last name	First name	Affiliation	Inv	olveme	ent in
				(e.g. name of central or other office of UCR Project Verifier or outsourced entity)	Doc review	Off- Site inspec tion	Interviews
1.	Team Leader	Soni	Ravi Kant	Independent Verifier	Υ	Υ	Υ
2.	Technical Expert	Soni	Ravi Kant	Independent Verifier	Υ	Υ	Υ

Technical reviewer and approver of the Project Verification report

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of UCR Project Verifier or outsourced entity)
1.	Technical reviewer	OR	Ahirwar	Vivek	OR
2.	Approver	IE	Soni	Ravi Kant	Independent Verifier



Section C. Means of Project Verification

C.1 Desk/document 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.

C.2 Off-site inspection

Dura	Duration of on-site inspection: 10/03/2022				
No.	Activity performed on-site	Site location	Date	Team member	
1	An assessment of the implementation and operation of the registered UCR project activity as per the registered PCN or any approved revised PCN;	District: Chitradurga and Tumkur State-	10/03/2022	Ravi Kant Soni	
2	A review of information flows for generating, aggregating and reporting the monitoring parameters;	Karnataka; India			
3	Interviews with relevant personnel to determine whether the operational and data collection procedures are implemented in accordance with the registered monitoring plan;				
5	A check of the monitoring equipment including calibration performance and observations of monitoring practices against the requirements of the PCN, the applied methodology including applicable tool(s), and, where applicable, the applied standardized baseline;				
6	A review of calculations and assumptions made in determining the GHG data and emission reductions;				
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;				

C.3 Interviews:



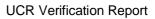
No.	Interviewee		Date	Subject	Team	
	Last name	First name	Affiliation		•	member
1.	D	Manjunath	WWIL	10/03/2022	Electricity Generation Records (monthly energy statements, Invoices and break up sheets), Reliability & accuracy of readings considered for emission reduction calculations, Calibration procedure	Ravi Kant Soni
2.	Gowda	Harish	WWIL	10/03/2022	Monitoring and measuring system, Collection of measurements, Observations of established practices and Data Verification of monitoring parameters	Ravi Kant Soni
3.	Murthy	Shankar	WWIL	10/03/2022	QA/QC procedures, data management, internal audits to maintain data quality & reliability, maintenance Practices Consideration of monitoring period, monitoring methodology, project documentation and emission reduction calculations	Ravi Kant Soni

C.4 Sampling approach:

Not applicable.

C.5 Clarification request (CLs), corrective action request (CARs) and forward action request (FARs) raised

Areas of Project Verification findings	No. of CL	No. of CAR	No. of FAR
Green House Gas (GHG)			
Identification and Eligibility of project type	-	-	-
General description of project activity	-	CAR #1	-
Application and selection of methodologies and standardized	-	-	-
baselines			
 Application of methodologies and standardized 	-	-	-
baselines			
- Deviation from methodology and/or methodological	-	-	-
tool			
 Clarification on applicability of methodology, tool 	-	-	-
and/or standardized baseline			
 Project boundary, sources and GHGs 	-	-	-
- Baseline scenario	-	-	-
- Estimation of emission reductions or net	-	-	-
anthropogenic removals			
- Monitoring Report	-	CAR #3	-





Start date, crediting period and duration	-	-	-
Environmental impacts	-	-	-
Project Owner- Identification and communication	CL #1	-	-
Others (please specify)	-	CAR #2 (double counting)	-
Tot	al 1	3	0

SECTION D. **Project Verification findings**

D.1 Identification and eligibility of project type

Means of Project Verification	 The project activity is a registered UCR project (UCR ref. No-106) and activity meets the eligibility criteria of the Gold Standard as justified below: The project activity is a large-scale wind power project and fall under renewable energy category. The project activity involves reducing CO₂ emission by replacing equivalent electricity from the grid of India. The project activity has also registered under CDM (UNFCCC ref. No-1259) with 10 years fixed crediting period from 27/10/2008 to 26/10/2018. The crediting period under UCR is starting from 27/10/2018. The project under CDM was registered adopting the approved methodology ACM0002, version 06.0 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources".
Findings	No finding was raised
Conclusion	The project activity meets the requirement of UCR verification standard and UCR project standard. The project owner is Wind World (India) Limited as indicated in the registered UCR PCN and VIVIID Emissions Reductions Universal Pvt Ltd is the project aggregator as verified through the UCR communication agreement. The verifier can confirm that the project activity is overall meeting the requirements of UCR Verification standard and UCR project standard.

D.2 General description of project activity

Means of Project Verification	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/17/ with BESCOM for the sale of electricity to the grid.
	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/15/ and is found to be correct.



	Phase	No. of WTGs	Capacity of each WTG (MW)	Installed Capacity (MW)	Commissio ning 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 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 PCN and MR. The technical specifications of WECs were verified through the nameplate details (imprinted/placed at the bottom of WEC tower)				
	available at the WECs physically checked during the site visit and were found to be consistent with the details provided in the registered UCR PCN /09/.				
	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 registered PCN/09/.				
	The PP has signed PPA/17/ with state utility for the sale of electricity to the grid and has been supplying electricity in compliance with the PPA as confirmed from the monthly invoices /14/. The project was registered as a UCR project, and this is the first verification of the project activity covering the period from 27/10/2018 to 31/01/2022.				
Findings		s raised and			
Conclusion	In view of the information verified during the site visit, it can be confirmed that all physical features (technology, project equipment, and monitoring and metering equipment) of the registered UCR project activity are in place and that the project participants have operated the project activity as per the approved PCN.				

D.2 Application and selection of methodologies and standardized baselines

(.a.i) Application of methodology and standardized baselines



Means of Project Verification	The project is registered under UCR adopting the large-scale methodology ACM0002, version 06.0 "Consolidated baseline methodology for grid-connected electricity generation from renewable sources", which is UCR approved methodology. It is verified that the project activity applies the applicability and monitoring requirements of version 06 of the methodology ACM0002.		
Findings	No finding was raised.		
Conclusion	It can be concluded that: • All applied methodological tools are valid and approved.		
	The applied methodology and methodological tools derived from UNFCCC CDM website.		
	All methodology applicability conditions are met.		
	The project is in line with all requirements and stipulations mentioned in all sections of the applied methodology.		

(.a.ii) Clarification on applicability of methodology, tool and/or standardized baseline

Means of Project Verification	Not applicable
Findings	Not applicable
Conclusion	Not applicable

(.a.iii) Project boundary, sources and GHGs

Means of Project Verification	To assess the project boundary in accordance with applicable related		
	verification requirements in the UCR standard, the verifier has reviewed		
	the registered PCN and the applied CDM methodology ACM0002 V		
	06.0.		
	All sources and GHGs are included in the project boundary as required		
	by the monitoring methodology and UCR project standard.		
	The spatial (geographical) boundaries of the project are described in the		
	registered PCN/09/.		
Findings	No finding was raised.		
Conclusion	It can be concluded that:		
	The spatial (geographical) boundaries of the project are clearly		
	defined at the PDD.		
	The methodology allows choosing whether a source and/or gas		
	are to be included. The choice is sufficiently explained and		
	justified.		

(.a.iv) Baseline scenario

Means of Project Verification	The baseline scenario and the emission reduction calculations hav been performed as per the registered PCN /09/. The emission factor of grid, in the UCR registered PCN is directly sourced from UCR standard in line with the provisions of applied methodology ACM0002 versio 06.0. However, following the UCR requirement the value of emissio factor is considered as 0.9 tCO ₂ e/MWh.	
Findings	No finding was raised.	
Conclusion	All data sources and assumptions are appropriate, and calculations are correct as applicable to the project activity and will result in an accurate and conservative estimate of the emission reductions. The baseline scenario is in accordance with UCR project verification standard and UCR project standard.	



(.a.v) Estimation of emission reductions or net anthropogenic removal

Means of Project Verification	The baseline emissions are the product of net electricity supplied to the grid 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. BEy = EGy* EFy Where: BEy = Baseline emissions in year y (tCO2/yr) EGy = Net electricity supplied to the grid in year y (MWh/yr) EFy = Combined margin CO2 emission factor for grid connected power generation in year y, considered as default value as mentioned in the UCR standard" (tCO2/MWh) As per the approved UCR PCN, combined margin emission factor is 0.9 tCO2 /MWh. Hence the baseline emissions for the project activity for the current monitoring period are as follows. BEy = 287,653.906 *0.9 = 258,886 tCO2e Project Emissions: The approved UCR PCN and applied monitoring methodology does not 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. Leakage Emissions: The approved UCR PCN and applied monitoring methodology 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 finding was raised.		
Conclusion	 a) The calculations of baseline GHG emissions or baseline net GHG removals, project GHG emissions or actual net GHG removals, and leakage GHG emissions have been carried out in accordance with the formulae and methods described in the registered PCN, the applied methodology. b) All assumptions used in emission or removal calculations have been 		
	justified. c) Appropriate emission factors and other reference values were correctly applied.		

(.a.vi) Monitoring Report

Means of Project Verification	The project has been registered with the "Consolidated methodology for grid-connected electricity generation from renewable resources" ACM0002 version 6.0/10/. The assessment team verified the revised monitoring plan against ACM0002 version 6.0 and confirms that the approved registered monitoring plan is in accordance with the approved methodology applied by the project activity.	
	The monitoring parameter relevant to this project activity described in the applied methodology is:	
	EG,y - Electricity supplied to the grid by the project	
	However, the following parameters are defined in the approved monitoring plan as	





described in the registered UCR PCN:

- 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 BESCOM 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 BESCOM 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 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 $_y$.

During the onsite visit, representatives of O&M contractor were interviewed and confirmed that they implement the apportioning procedure described in the section B.1 of the MR.

In view of the above discussion, the assessment team confirms that the apportioning procedure revealed under section B.1 of the MR is the actual procedure implemented by the O&M contractor, provides completeness of the monitoring plan, and reflect the actual monitoring practices and procedure implemented at project site.

The applied methodology ACM0002 version 06 requires the monitoring of "Electricity generation from the project activity". The net electricity supplied by the project activity is a calculated parameter; however, input values used in calculation are measured from energy meters installed at state utility substation and the LCS meters installed at individual WECs. Hence, it can be concluded that registered monitoring plan complies with the approved monitoring methodology applied to the project activity.

Data and parameters monitored:

Parameter 1: Net electricity supplied to the grid by the Project Activity, EGy (MWh)

Determine / Assessment Criteria	Assessment Remarks
The monitoring of parameter in the registered PDD has been implemented in	The parameter is calculated as difference of EG Export and EG Import,y & transmission losses in line with the approved monitoring plan.
accordance with the registered monitoring plan.	$EG_y = EG_{export} - 115\%*EG_{import} - T_E$
	WhereEG _{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 BESCOM for 56.8 MW and 12 MW at 33 kV metering point 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 BESCOM for 56.8





 	KN3/UCR/VCR/UU2
	MW and 12 MW at 33 kV metering point
	T _E =Transmission loss for export between the metering location at 33 kV point and the metering location at 220 kV at the WWIL substation
The equipment used for monitoring is controlled and calibrated in accordance with the registered monitoring plan, the applied methodologies, the applied standardized baselines, Board guidance, local/national standards, or as per the manufacturer's specification; Monitoring results are	No monitoring equipment is used as this parameter is calculated. Yes. In line with the approved monitoring plan,
consistently recorded as per the approved frequency;	this parameter is recorded on monthly basis in the JMRs (Form-B) issued by state utility.
Quality assurance and quality control procedures have been applied in accordance with the registered monitoring plan.	Yes, all the stakeholders, namely, the Grid Authority (DISCOM), and the WWIL (O&M Contractor), implemented the adequate QA/QC procedures.
Describe how it verified the information flow (from data generation, aggregation, to recording, calculation and reporting) for the parameter including the values in the monitoring report.	The data transfer process for the said parameter is as follows: EGy is a calculated parameter, and the calculation is carried out by the state utility (BESCOM). The calculated monthly values of EGy are directly sourced from two Form B (JMRs) prepared and issued by BESCOM/13/ 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/08/. The monthly values of EGy 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. The value of EGy for the current monitoring period is 287,653.906 MWh. This parameter is directly used for the emission reduction calculations.
The information provided in the monitoring report has been cross-checked with other sources such as plant logbooks, inventories, purchase records and laboratory analysis;	Monthly reported values of EG _y for the current monitoring period were further cross-checked with the monthly invoices raised by the PP /14/ to state utility and found to be consistent.



The calibration of the	Not applicable.
measuring equipment that has an impact on the claimed	
GHG emission reductions or	
net anthropogenic GHG	
removals is conducted by the project participants at a	
frequency specified in the	
applied methodologies, the	
applied standardized baselines and/or the	
registered monitoring plan.	

Parameter 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)

Determine / Assessment Criteria	Assessment Remarks
The monitoring of parameter in the registered PDD has been	The parameter is the summation of electricity exported to the grid by all the
implemented in accordance with the registered monitoring plan.	WECs included in the project activity.
The equipment used for monitoring is controlled and calibrated in accordance with the registered monitoring plan, the applied methodologies, the applied standardized baselines, Board guidance, local/national standards, or as per the manufacturer's specification;	The accuracy of the monitoring equipment (energy meters) used to measure the input values used to monitor this parameter is 0.2s as verified from the physical inspection of the project activity, which is as per the revised PCN/09/ which is as per the norm defined in the PPA/17/.
Monitoring results are consistently recorded as per the approved frequency;	Yes. In line with the approved monitoring plan this parameter is recorded on monthly basis in the breakup sheets issued by state utility.
Quality assurance and quality control procedures have been applied in accordance with the registered monitoring plan.	Yes, all the stakeholders, namely, the Grid Authority (BESCOM), and the WWIL (O&M Contractor), implemented the adequate QA/QC procedures.
Describe how it verified the information flow (from data generation, aggregation, to recording, calculation and reporting) for the parameter including the values in the monitoring report.	The data transfer process for the said parameter is as follows: 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/08/.



The information provided in the monitoring report has been cross-checked with other sources such as plant logbooks, inventories, purchase records and laboratory analysis.	The value of EG _{export} for the current monitoring period is 290456.204 MWh. Monthly values of EG _{export} for the current monitoring period were further cross-checked with the monthly invoices raised by the PP /14/ to state utility and found to be consistent.
The calibration of the measuring equipment that has an impact on the claimed GHG emission reductions or net anthropogenic GHG removals is conducted by the project participants at a frequency specified in the applied methodologies, the applied standardized baselines and/or the registered monitoring plan.	Delay in calibration of meters identified during the current monitoring period and the project participant has addressed the same in line with the requirements of paragraph 366(a) of VVS PA V 03.0

Parameter 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)

Determine / Assessment Criteria	Assessment Remarks
The monitoring of parameter in the registered PDD has been implemented in accordance with the registered monitoring plan.	The parameter is the summation of electricity imported to the grid by all the WECs included in the project activity.
The equipment used for monitoring is controlled and calibrated in accordance with the registered monitoring plan, the applied methodologies, the applied standardized baselines, Board guidance, local/national standards, or as per the manufacturer's specification;	The accuracy of the monitoring equipment (energy meters) used to measure the input values used to monitor this parameter is 0.2s as verified from the physical inspection of the project activity, which is as per the revised PCN/09/ which is as per the norm defined in the PPA/17/.
Monitoring results are consistently recorded as per the approved frequency;	Yes. In line with the approved monitoring plan this parameter is recorded on monthly basis in the breakup sheets issued by state utility.
Quality assurance and quality control procedures have been applied in accordance with the registered monitoring plan.	Yes, all the stakeholders, namely, the Grid Authority (BESCOM), and the WWIL (O&M Contractor), implemented the adequate QA/QC procedures.
Describe how it verified the information flow (from data generation, aggregation, to recording, calculation and reporting) for the parameter including the values in the monitoring report.	The data transfer process for the said parameter is as follows: 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 imported are



The information provided in the monitoring report has been cross-checked with other sources such as plant logbooks, inventories, purchase records and laboratory analysis.	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/08/. The value of EG _{import} for the current monitoring period is 211.428 MWh. Monthly values of EG _{import} for the current monitoring period were further cross-checked with the monthly invoices raised by the PP /14/ to state utility and found to be consistent.
The calibration of the measuring equipment that has an impact on the claimed GHG emission reductions or net anthropogenic GHG removals is conducted by the project participants at a frequency specified in the applied methodologies, the applied standardized baselines and/or the registered monitoring plan.	Delay in calibration of meters identified during the current monitoring period and the project participant has addressed the same in line with the requirements of paragraph 366(a) of VVS PA V 03.0

Parameter 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)

Determine / Assessment Criteria	Assessment Remarks
The monitoring of parameter in the registered PDD has been	Transmission losses (T _E) are determined using following formula:
implemented in accordance with the registered monitoring plan.	Z= ((Xi- Y)/ Xi)*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.
	Xi = Energy Export Reading (Xi) 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. X1, X2, X3,Xn 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.
	Xi = X1 + X2+ X3+ X4++ Xn





	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.
The equipment used for monitoring is controlled and calibrated in accordance with the registered monitoring plan, the applied methodologies, the applied standardized baselines, Board guidance, local/national standards, or as per the manufacturer's specification;	No monitoring equipment is used as this parameter is calculated.
Monitoring results are consistently recorded as per the approved frequency; Quality assurance and quality control	Yes. In line with the approved monitoring plan, this parameter is recorded on monthly basis in the JMRs (Form-B) issued by state utility. Yes, all the stakeholders, namely, the
procedures have been applied in accordance with the registered monitoring plan.	Grid Authority (DISCOM), and the WWIL (O&M Contractor), implemented the adequate QA/QC procedures.
Describe how it verified the information flow (from data generation, aggregation, to recording, calculation and reporting) for the parameter including the values in the monitoring report.	The data transfer process for the said parameter is as follows: 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.



The information provided in the monitoring report has been cross-checked with other sources such as plant logbooks, inventories, purchase records and laboratory analysis.	Monthly reported values of T _E for the current monitoring period were further cross-checked with the monthly invoices raised by the PP /14/ to state utility and found to be consistent.
The calibration of the measuring equipment that has an impact on the claimed GHG emission reductions or net anthropogenic GHG removals is conducted by the project participants at a frequency specified in the applied methodologies, the applied standardized baselines and/or the registered monitoring plan.	Not applicable.

Compliance with the calibration frequency requirements for measuring instruments:

As per the monitoring plan in the registered PCN/09/ 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 are involved in the project activity and their calibration dates are mentioned in Section B.1 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.

The assessment team has checked the calibration certificates/16/ for accuracy and validity, to assure reliability and steadiness of monitoring results. The calibrations results have been verified as below.

Metering Point Identification	Meter Sr. No	Calibration dates	Validity	Remark
	Main meter(old):	23/03/2018,	22/03/2019	Existing main & check
	5389967	21/05/2019	20/05/2020	meters were
	Main meter(new):	29/08/2019	28/08/2020	replaced with new meters
	18093162	06/08/2020	05/08/2021	on 29/08/2019 as
KBCWP-		21/06/2021	20/06/2022	per the state
02(56.8 MW)	Check meter(old):	23/03/2018,	22/03/2019	DISCOM notification.
	5389970	21/05/2019	20/05/2020	
	Check meter(new):	29/08/2019	28/08/2020	
	18069106	06/08/2020	05/08/2021	
		21/06/2021	20/06/2022	
	Main	28/11/2018	27/11/2019	Old main
	meter(old):			meter was
	13191156	06/03/2019	05/03/2020	replaced with
KBCWP-	Main	24/05/2019	23/05/2020	new meter on
01(68.8 MW)	meter(new): 18092881	06/08/2020	05/08/2020	24/05/2019 as per the state
		21/06/2021	20/06/2022	DISCOM notification.
	Check meter:	28/11/2018	27/11/2019	-





	14194655	06/03/2019	05/03/2020	
		24/05/2019	23/05/2020	
		06/08/2020	05/08/2021	
		21/06/2021	20/06/2022	
KBCWP- 03(12 MW)	Main meter: 5463844	23/03/2018,	22/03/2019	-
		21/05/2019	20/05/2020	
	Check meter: 5463845	23/03/2018,	22/03/2019	-
		21/05/2019	20/05/2020	

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.

Accordance with the guidelines as state under section 3.2.3 of CEA Notification No. 502/70/CEA/DP&D dated 17/03/2006/19/ 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 PCN/09/ for the meters is appropriate.

Assessment on delay in calibration:

It is evident from the above table that calibration of meters installed at 220 kV substation [KBCWP-01(68.8 MW), Bulk meter] and meters at 33 kV metering points is not carried out as per the frequency mentioned in the approved monitoring plan.

Metering points	Calibration period	delayed	Remark
KBCWP-01(68.8 MW) 220 kV substation	27/10/2018 27/11/2018 24/05/2020 05/08/2020	to	The export recorded through the meters at 220 kV substation used for calculation of transmission losses only, hence an error factor of +0.2% is applied to transmission losses for the delayed period.
KBCWP-02(56.8 MW) 33 kV metering point	23/03/2019 20/05/2019	to	Meters installed at 33 kV metering point is used to monitor the export and import data, hence an error factor -0.2% is applied to export and +0.2% is applied to the import values for the delayed period.
KBCWP-03(12 MW) 33 kV metering point	23/03/2019 20/05/2019 20/05/2020 31/01/2022	to	Meters installed at 33 kV metering point is used to monitor the export and import data, hence an error factor -0.2% is applied to export and +0.2% is applied to the import values for the delayed period.



	It is worthy to note that the billing cycle for the project activity starts from 1 st day and ends on last day of the every month, hence the error factor is applied to the monitoring parameters for the entire month where the calibration delay is identified during the current monitoring period. The approach followed by the PP was found to be conservative and appropriate, hence accepted. The verification team has checked the latest calibration certificates/16/ 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 366 (a) of CDM-VVS for PA v03.0.
Findings	CAR #3 was raised and resolved.
Conclusion	The parameter has been monitored appropriately, in accordance with the registered monitoring plan (as per measurement methods and procedures to be applied) and applied methodology. The monitoring results were recorded consistently as per the approved frequency in the monitoring plan. The calibration is conducted at the frequency following the relevant industry standard as specified by the methodology /10/ and the monitoring plan contained in the approved PCN. The calibration delay is addressed appropriately, and the error has been applied: (a) In a conservative manner, such that the adjusted measured values of the delayed calibration shall result in fewer claimed GHG emission reductions or net anthropogenic GHG removals. (b) For all measured values taken during the period between the scheduled date of calibration and the actual date of calibration.

SECTION E. Start date, crediting period and duration

	= -
Means of Project Verification	The starting date of the project activity 05/08/2004 which is the of placement of purchase order for the wind energy generators. The operational lifetime of the project activity is 20 years as per the CDM PDD, UCR PCN and presented evidence. The current monitoring period is from 27/10/2018 until 31/01/2022. The commercial operation of the project activity had been started on 29/09/2006 and remaining project life is well ahead of current monitoring period. All the WTGs belongs to the project activity were functioning during the current monitoring period as verified during physical inspection of site and generation records.
Findings	No findings
Conclusion	It can be concluded that start date and crediting period duration specified in the PCN is in line with the relevant requirements in the UCR verification standard and UCR project standard.

Section F. Positive Environmental impacts

Means of Project Verification	The precautionary principles have been applied in this project. The environment is protected by several Laws and Regulations in the Host country (India). The purpose of the "Law on Environmental Protection" is to protect the environment with principles of sustainable development and environment. Project owner has conducted the EIA (Environmental Impact Assessment) to study impacts on the environment resulting from the project activity. EIA study demonstrated that there is no major impact on the environment due to the installation and operation of the windmills.
Findings	No findings



Conclusion	No adverse environmental impact has been envisaged in the project activity, still all the necessary clearances from the state pollution control board, public works department, department of irrigation and local villages as well the ministry of environment and forests has been obtained. It is worthy to note that a comprehensive ESIA had been conducted for
	the project activity by a third party. The ESIA report was referred by assessment team and it can be concluded that no adverse impact of the project has been anticipated.

Section G. Project Owner-Identification and communication

Means of Project Verification	The project owner is Wind World (India) Limited and VIVIID Emissions Reductions Universal Pvt Ltd from India, is the entity having authorization of Project Owner. The project participant is correctly listed in table under section A.4 of the PDD and information is consistent with the contact details provided in Appendix 1 of the PDD.		
Findings	CL #1 was raised and resolved.		
Conclusion	Identification of the project owner is confirmed through communication agreement signed between project owner and aggregator/20/. The identification of project owner and communication correctly meets the requirement of project verification and UCR project standard.		

Section H. Positive Social Impact

Means of Project Verification	A positive impact is verified with the project activity with the increase of the quality of employment with installation and operations of the plant. Also, most of the staff of WWIL is from the local areas however it does have some senior personal from outside. The local contracts were also found from the local nearby areas. The assessment team has interviewed the guards and observed that almost all of the personnel were unemployed before taking up the job of security guards with the project developer.
Findings	No findings
Conclusion	The assessment team is in opinion that the project activity has positive social impact.

Section I. Sustainable development aspects (if any)

Means	of	Project	Not applicable
Verificati	ion		
Findings			Not applicable
Conclusi	ion		Not applicable

Section J. Internal quality control

>> Final documentation including the verification report must undergo an internal quality control by the Technical Reviewer. Each person who is part of the assessment team, has confirmed the no conflict of interest as the verifier/technical reviewer, having no other engagement with either aggregator or project owner directly or indirectly.

Section K. Project Verification opinion

We have has performed the independent verification of the emission reductions for the UCR project activity "Enercon Wind Farm (Hindustan) Ltd in Karnataka" (UCR ref.No-106) in India for the monitoring period 27/10/2018 to 31/01/2022 (including both days) as reported in the Monitoring Report (Final) Version 1.1 dated 21/03/2022. The Wind World (India) Limited is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project



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

The verification has commenced based on the baseline and monitoring methodology ACM0002 Version 06; the monitoring plan contained in the revised UCR PCN Version 1.1 dated 21/03/2022.

The 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. We have planned and performed the verification by obtaining evidence and other information and explanations that considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

In our opinion the GHG emissions reductions reported for the project activity for the period 27/10/2018 to 31/01/2022 (including both days) are fairly stated in the Monitoring Report (final) Version 1.1 dated 21/03/2022. The GHG emission reductions were calculated correctly based on the approved baseline and monitoring methodology ACM0002, version 06 and the monitoring plan contained in the revised UCR PCN Version 1.1 dated 21/03/2022.

We can certify that the emission reductions from the UCR project activity "Enercon Wind Farm (Hindustan) Ltd in Karnataka" (UCR ID-106) in India during the period 27/10/2018 to 31/01/2022 (including both days) amount to 258,886 tCO2e.



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
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
UCR	Universal Carbon Registry
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard
WTG	Wind Turbine Generator
WEC	Wind Energy Convertor
WWIL	Wind World (India) Limited

Appendix 2. Competence of team members and technical reviewers

Name: Ravi Kant Soni (Verifier)



Ravi Kant Soni is a certified lead auditor for Lead Auditor ISO 14001:2004&Lead Auditor ISO 14064:2006 GHG Inventory and verification. He has more than 10 years of work experience across Climate Change, Environmental Management & Monitoring, Health & Safety Management, and Statutory Compliance. He was involved in more than 100 CDM validation and verifications activities and Gold Standard, VER projects as a team leader/technical reviewer / validator / verifier covering the sectoral scope 1 technical area 1.2. He has done Mater 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 M.I.T.S Gwalior Jiwaji University Gwalior, India

Name: Vivek Ahirwar (Technical Reviewer)

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 Mater 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.

Appendix 3. Document reviewed or referenced

No.	Author	Title	References to the document	Provider
1	UCR	UCR Program Verification Guidance Document	Ver. 01.0, dated August 2021	Others
2	UCR	Universal Carbon Registry Program Manual	Ver. 02.0, dated August 2021	Others
3	UNFCCC	Standard: CDM VVS for PAs	Ver. 03.0	Others
4	UCR	UCR Standard	Jan 2022	Others
5	PP	Monitoring Report	Ver.1, dated 19/02/2022	PP
6	PP	Monitoring Report (revised/final)	Ver.1.1, dated 21/03/2022	PP
7	PP	ER Spread sheet (draft)	Ver.1, dated 19/02/2022	PP
8	PP	ER Spread sheet (revised/final)	Ver.1.1, dated 21/03/2022	PP
9	PP	Revised UCR PCN	Ver.1.1, dated 21/03/2022	PP
10	UNFCCC	Consolidated baseline methodology for grid-connected electricity generation from renewable sources ,ACM0002,version 6.0	dated 19/05/2006	
11	UCR	Project Webpage	https://www.ucarbonre gistry.io/Registry/Detail s?id=gD9LNsqxKYwzv wBp4KoSVQ%3D%3D	Others
12	WWIL	Monthly generation reports issued by the O&M contractor	For the period 27/10/2018 to	PP



Date: 31/03/2022

			31/01/2022	
13	BESCOM	Monthly JMRs (Form-B) issued by state utility		
14	PP	Monthly Invoices raised by the PP to state utility	For the period 27/10/2018 to 31/01/2022	PP
15	KPTCL	Commissioning certificates for project WTGs issued by state utility	-	PP
16	BESCOM	Calibration certificates for all the meters	-	PP
17	KPTCL	Power purchase agreements signed between WWIL and state electricity board.	Dated 01/03/2006	PP
18	Verifier	Site visit observation and photographs	Dated 23/11/2017	PP
19	CEA	CEA Notification No. 502/70/CEA/DP&D	Dated 17/03/2006	Others
20	PP	Communication agreement b/w PP and aggregator	-	PP

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

Table 1. CLs from this Project Verification

CL ID	01	Section no.	G	Date:14/03/2022
Description of CL				
End date of the current monitoring period as reported under section A.1 of the MR is not consistent with the				

ER sheet.

Name of the PP as mentioned under section A.3 of the MR is not consistent with the same as mentioned in the approved PCN.

Date: 21/03/2022 Project Owner's response

End date of the current monitoring period as reported under section A.1 of the revised MR is consistent with

Name of the PP as mentioned under section A.3 of the MR is consistent with the same as mentioned in the revised PCN.

Documentation provided by Project Owner

Revised MR. v 1.1

Revised PCN v 1.1

UCR Project Verifier assessment

The PP has corrected the end date of the monitoring period under section A.1 of the revised MR, found to be

The PP has updated the name and contact details of the representative (aggregator) in the revised PCN, found to be consistent with the communication agreement, hence accepted. CL #1 is closed.

Table 2. CARs from this Project Verification

CAR ID	01	Section no.	D.2	Date: 14/03/2022



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Description of CAR

Please clarify why the actual project implementation status is not described under section B.1 of the MR, in line with the UCR PCN.

Project Owner's response

Date: 21/03/2022

The actual project implementation status is described under section B.1 of the revised MR

Documentation provided by Project Owner

Revised MR V1.1

UCR Project Verifier assessment

Date: 31/03/2022

The PP has updated the actual implementation status of the project under section B.1 of the MR, found to be in line with the revised UCR PCN.

CAR #1 is closed.

 CAR ID
 02
 Section no.
 D.2
 Date: 14/03/2022

Description of CAR

The project is also registered under other GHG programme (CDM & GS). Please clarify why the details of previously issued carbon credits is not provided under section C.3 of MR in accordance with the MR template guidelines.

Identification of the grid as mentioned under section C.4 is not appropriate.

Project Owner's response

Date: 21/03/2022

The details of previously issued carbon credits is provided under section C.3 of revised MR Correction has been made for the identification of the grid as mentioned under section C.4 of the revised

MR.

Documentation provided by Project Owner

Revised MR V1.1

UCR Project Verifier assessment

Date: 31/03/2022

Date: 21/03/2022

The project owner has reported the details of previously issued carbon credits under section C.3 of revised MR, found to be satisfactory.

The grid identification is mentioned correctly in the MR.

CAR #2 is closed.

 CAR ID
 03
 Section no.
 D.2
 Date: 14/03/2022

Description of CAR

Please clarify why the value of the monitoring parameters is not reported under section C.10 of the monitoring report.

Serial numbers and calibration details of the monitoring equipment's used to monitor the electricity generation/supplied to grid is not provided in the MR.

Project Owner's response

The value of the monitoring parameters is reported under section C.10 of the revised monitoring report. Serial numbers and calibration details of the monitoring equipment's used to monitor the electricity generation/supplied to grid is provided in section C.10 of the revised MR.

Documentation provided by Project Owner

Revised MR

UCR Project Verifier assessment Date: 31/03/2022

The PP has reported the value of the monitoring parameters under section C.10 of the monitoring report, found consistent with the ER sheet.

The project owner has reported the calibration details of the energy meters used to monitor the electricity generation/supplied to grid in the MR, found to be appropriate.

CAR #3 is closed.

Table 3. FARs from this Project Verification

FAR ID	XX	Section no.	Date: DD/MM/YYYY
Description	of FAR		
NA			



UCR Verification Report

Project Owner's response	Date: DD/MM/YYYY
NA	
Documentation provided by Project Owner	
NA	
UCR Project Verifier assessment	Date: DD/MM/YYYY
NA	