



**Verification and certification report form for
CDM project activities
(Version 04.0)**

BASIC INFORMATION

Title and UNFCCC reference number of the project activity	9.9 MW Bundled Wind Power Project in Tirupur, Tamil Nadu UNFCCC ref. No- 9487		
Scale of the project activity	<input type="checkbox"/> Large-scale <input checked="" type="checkbox"/> Small-scale		
Version number of the verification and certification report	5		
Completion date of the verification and certification report	22/12/2021		
Monitoring period number and duration of this monitoring period	Monitoring Period No.: 01(of the Fixed Crediting Period) Monitoring Period Duration: 23/09/2013 to 31/08/2018(both dates are included)		
Version number of the monitoring report to which this report applies	05.0		
Crediting period of the project activity corresponding to this monitoring period	23/09/2013 to 22/09/2023 (Fixed, Fixed Crediting period) Length: 10 years		
Project participants	M/s Vestas Wind Technology India Private Limited		
Host Party	India		
Applied methodologies and standardized baselines	Selected Methodology: AMS-I.D. Version 17 – “Grid connected renewable electricity generation” Selected standardized baseline: N/A		
Mandatory sectoral scopes	Sectoral scope : 1- Energy industries (renewable - / non-renewable sources)		
Conditional sectoral scopes, if applicable	NA		
Estimated amount of GHG emission reductions or GHG removals for this monitoring duration in the registered PDD	120,398 tCO ₂ e		
Certified amount of GHG emission reductions or GHG removals for this monitoring period	Amount before 1 January 2013	Amount from 1 January 2013 until 31 December 2020	Amount from 1 January 2021
	NA	95,229 tCO ₂ e	NA
Name and UNFCCC reference number of the DOE	Earthood Services Private Limited UNFCCC Ref.: E-0066		

Name, position and signature of the approver
of the verification and certification report



Dr. Kaviraj Singh
Managing Director

SECTION A. Executive summary

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The project activity which became operational on 21/04/2010 comprises of 6 numbers of WTGs of 1650kW. Earthood Services Private Limited (hereafter referred to as ESPL) has been contracted by M/s Vestas Wind Technology India Private Limited to perform the periodical verification of “9.9 MW Bundled Wind Power Project in Tirupur, Tamilnadu” (UNFCCC Ref. No. 9487) applying the methodology AMS-I.D. Version: 17. The management of M/s Vestas Wind Technology India Private Limited is responsible for the preparation of the GHG emissions data and the reported GHG emission reductions. The purpose of the project activity is to generate electricity by harnessing renewable energy sources (Wind) with the help of Wind Turbine Generators (WTGs). The generated electricity by the project activity is supplied to the Indian grid. Thus, replacing the equivalent amount of fossil fuel dominated grid electricity consumption, thereby contributing to GHG emission reduction. The assessment team confirms that the total emission reduction achieved under this monitoring period 23/09/2013– 31/08/2018 (including both dates) are 95,229 tCO₂e.

Project title	9.9 MW Bundled Wind Power Project in Tirupur, Tamilnadu
UNFCCC registration number	9487
Earthood reference number	CDM.VER.18.37
Date of registration	23/09/2013
Sectoral scope	1- Energy industries (renewable / non -renewable sources)
Methodology/ies applied	AMS-I.D. Version 17 – “Grid connected renewable electricity generation”
Project participant	M/s Vestas Wind Technology India Private Limited
Location of Project Activity	India
Geographical coordinates	10°42'33.21" N - 10°44'51.27" N 77°08'40.48" E - 77°11'45.40" E

Scope of verification:

M/s Vestas Wind Technology India Private Limited has contracted Earthood Services Private Limited (hereafter referred as ESPL) to perform the periodical verification of the project activity 9487 “9.9 MW Bundled Wind Power Project in Tirupur, Tamilnadu” in India for the period 23/09/2013 to 31/08/2018 (both dates are included). The verification is an independent and objective review and ex-post determination of the monitored reductions in GHG emissions by the DOE.

The verification tests the data and assertions set out in the monitoring report prepared for this monitoring period by the project participant and is based on the following:

- (i) The verification includes the implementation and operation of the project activity as set out in the registered PDD in the monitoring period and that all physical features (technology, project equipment, monitoring and metering equipment) of the project are in place;
- (ii) The monitoring report and other supporting documents provided are complete in accordance with the latest applicable version of the completeness checklist for requests for issuance of CERs, verifiable, and in accordance with applicable CDM requirements
- (iii) The actual monitoring systems and procedures comply with the monitoring systems and procedures described in the monitoring plan, any revised approved monitoring plan, the approved methodology (AMS I. D. Version 17 “Grid connected renewable electricity generation”) including applicable tool(s) and/or, where applicable, the approved standardized baseline;
- (iv) The data is recorded and stored as per the monitoring methodology including applicable tool(s) and, where applicable, the standardized baseline.
- (v) UNFCCC criteria referred to in the Kyoto Protocol criteria and the CDM modalities and procedures as agreed in the Bonn Agreement and the Marrakech Accord
- (vi) The CDM Project Standard (PS) Version 03 and Project Cycle Procedure (PCP) for Project Activity, version 3.0.
- (vii) Relevant decisions, guidance and clarifications of the CMP and CDM Executive Board and any other information and references relevant to the project activity's reported emission reductions.

Verification Process:

The verification process involves an agreement with project participant for verification scope and defined monitoring period in accordance with the latest valid CDM PS Version 3.0. The monitoring report was published on 25/02/2019 and verification was performed as per latest valid CDM Standards i.e., CDM PS Version 03 /2.2/, VVS for PA version 03/2.1/ and the latest valid CDM PCP Version 3.0. /2.8/ The verification process is conducted as per internal CDM Quality Manual, which includes the following steps;

- a) Contract with M/s Vestas Wind Technology India Private Limited and appointment of verification team and technical review team (refer Section B.1 and B.2 of this report)
- b) Completeness check of Monitoring Report
- c) Publication of Monitoring Report at UNFCCC website
- d) Desk review (refer Section D.1 of this report) of Monitoring Report and corresponding ER sheet by verification team and planning of onsite audit (including sampling approach (refer Section C.4 of this report) to be applied)
- e) On site audit (refer Section D.2 of this report) (physical implementation and interview with relevant stakeholders) by verification team consistent of Team Leader and all Technical Experts, as a minimum
- f) Follow up activities e.g., interviews (refer Section D.3 of this report)
- g) Reporting and closure of findings (CARs/CLs/FARs) and preparation of draft verification report (refer Section D.5 of this report)
- h) Independent technical review of the draft verification report and final/revised documentation (e.g., Monitoring Report, corresponding ER sheet and evidences)
- i) Reporting and closure of TR comments/findings (refer Section D.5 of this report) (CARs/CLs/FARs) and final approval for the decision made (refer Section E and F of this report).
- j) Issuance of final verification report to contracted CME (or authorized representatives) and submission of request for issuance, as appropriate.

Verification Conclusion:

Based on the outcome of the verification process of the registered Project activity “9.9 MW Bundled Wind Power Project in Tirupur, Tamilnadu” (UNFCCC Ref. No. 9487) for the monitoring period 23/09/2013 to 31/08/2018 (including both dates) we confirm that the implementation of referenced registered project activity is complying with applicable CDM rules and regulations as stated in the Monitoring Report (final) Version 5.0 dated 15/12/2021. The GHG emission reductions were calculated correctly based on the approved baseline and monitoring methodologies, AMS- I.D. Version: 17 and the monitoring plan contained in the registered PDD/1.2/.

Earthood Services Private Limited is able to certify that the emission reductions from the registered CDM project activity “9.9 MW Bundled Wind Power Project in Tirupur, Tamilnadu” (UNFCCC Ref. No. 9487) during the period 23/09/2013 to 31/08/2018 (including both days) amount to 95,229 tCO₂e. Therefore, this is being submitted for request for issuance, as per UNFCCC procedures.

Earthood has performed the first verification of the CDM project “9.9 MW Bundled Wind Power Project in Tirupur, Tamilnadu” UNFCCC Ref. No. 9487. The verification includes confirming the implementation of the project as per description in the monitoring plan of the PDD/1.2/ and MR final version 5.0 dated 15/12/2021 and the application of the monitoring methodology as per AMS- I.D “Grid connected renewable electricity generation” Version 17 /2.3/. Earthood confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements. The emission reductions from the CDM project activity 9487 “9.9 MW Bundled Wind Power Project in Tirupur, Tamilnadu” in India during the period 23/09/2013 to 31/08/2018 (including both dates) amount to 95,229 tCO₂e. Therefore, this is being submitted for request for issuance, as per UNFCCC procedures.

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

No.	Role	Type of resource	Last name	First name	Affiliation (e.g. name of central or other office of DOE or outsourced entity)	Involvement in			
						Desk/document review	On-site inspection	Interviews	Verification findings
1.	Team Leader /Verifier/ Technical Expert/ Local expert/ Methodological expert	EI	Soni	Ravikant	Central office	Y	Y	Y	Y

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

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

SECTION C. Application of materiality**C.1. Consideration of materiality in planning the verification**

No.	Risk that could lead to material errors, omissions or misstatements	Assessment of the risk		Response to the risk in the verification plan and/or sampling plan
		Risk level	Justification	
1.	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 to totalize which reduce the chance of error as initial readings and final readings can be cross-checked by JMRs/3.2/and monthly records /3.3/. The plant data was verified by plant manager on regular intervals, so low potential risk of errors, omissions or misstatements.	100 per cent of the data and information was checked from JMR/3.2/ and cross checked from state electricity board invoices /3.3/
2.	Error in transferring the recorded data to ER sheet/4.4/	High	The procedure for transferring the recorded Joint meter readings to the spreadsheet is manual in nature thus increasing the chances of error	All the monthly reported values in ER sheet to be verified with Joint meter Reading/3.2/ and cross-checked from state electricity board invoices /3.3/

C.2. Consideration of materiality in conducting the verification

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In accordance with CDM VVS for PA, Version 03.0 para 326 the prescribed thresholds for materiality for CDM Pas are as under;

Emission Reductions (tCO ₂ e)/year	500,000 or more	300,001 to 499,999	300,000 or less	Small Scale CDM Pas	Micro Scale CDM Pas
Materiality Threshold (para 326)	0.5%	1.0%	2.0%	5.0%	10.0%

The applicable materiality threshold is 5% as this is a small scale CDM project activity.

Particulars / Monitoring Report	MR Version (Public)	MR Version (Revised/Final)
Emission Reductions Achieved (tCO ₂ e) in this monitoring period	101,727 tCO ₂ e	95,229 tCO ₂ e
Applicable Threshold (%) as per para 326(d) of CDM VVS for Pas Version 03.0	5%	5%

Monitored Parameter (Symbol / Description n)	Reporting Frequency	Number of Discrete Data (Total) Total (100%)	Sample selected for verification-ion Sample (%)	Type of error identified	Impact on ERs	
					ERs impacted (Sample)	ERs impacted (Population based on extrapolation)
EGy (Export)	Continuous monitoring, hourly measurement and at least monthly recording	60 (100%)	100%	The application of maximum permissible error of 0.2% is applied for delayed calibration-period in the quantification of emissions.	0 tCO ₂ e	0 tCO ₂ e
EGy(Import)	Continuous monitoring, hourly measurement and at least monthly recording	60 (100%)	100%	The application of maximum permissible error of 0.2% is applied for delayed calibration-period in the quantification of emissions.	0 tCO ₂ e	0 tCO ₂ e
EGy	monthly recording and reporting	60 (100%)	100%	The application of maximum permissible error of 0.2% is applied for delayed calibration-period in the quantification of emissions.	0 tCO ₂ e	0 tCO ₂ e

All the monthly/daily/hourly reported figures for all monitoring parameters were verified with respective JMRs and were found to be consistent in the final Monitoring Report version 05 /1.8/ and ER sheet version 04/4.4/. Therefore, it can be stated that the verified value is free from any potential error / omission / misstatement. Therefore, there are no additional factors that might lead to the introduction of error in emission reduction estimation. The values reported in the column of related final ER sheet version 04/4.4/ were cross-checked from the originally recorded values in JMRs. The total of all these values reported in that column was also cross verified from source values i.e. Invoices. This ensured that the PP has applied the maximum permissible error of 0.2% for the delayed calibration period in the quantification of emissions, which led to the change in the achieved ERs.

Based on the above table it can be confirmed that the materiality threshold is not breached applicable for the registered PA as per CDM VVS for PA, Version 03.0.

SECTION D. Means of verification

D.1. Desk/document review

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A desk review was conducted by the verification team that included:-

- A review of the data and information presented in the MR to verify its completeness;
- 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;
- An evaluation of data management and the quality assurance and quality control system in the context of their influence on the generation and reporting of emission reductions.

A complete list of documents reviewed or referenced is included in Appendix 3 of this report.

D.2. On-site inspection

Duration of on-site inspection: 27/07/2019				
No.	Activity performed on-site	Site location	Date	Team member
1.	Confirm the implementation and operation of the project;	Tirupur district in the state of Tamilnadu	27/07/2019	Ravikant Soni
2.	Review the data flow for generating, aggregating and reporting the monitoring parameters;	Tirupur district in the state of Tamilnadu	27/07/2019	Ravikant Soni
3.	Confirm the correct implementation of procedures for operations and data collection;	Tirupur district in the state of Tamilnadu	27/07/2019	Ravikant Soni
4.	Cross-check the information provided in the MR documentation with other sources;	Tirupur district in the state of Tamilnadu	27/07/2019	Ravikant Soni
5.	Check the monitoring equipment against the requirements of the PDD and the approved methodology, including calibrations, maintenance, etc.;	Tirupur district in the state of Tamilnadu	27/07/2019	Ravikant Soni
6.	Review the calculations and assumptions used to obtain the GHG data and ER;	Tirupur district in the state of Tamilnadu	27/07/2019	Ravikant Soni
7.	Identify if the quality control and quality assurance procedures are in place to prevent or correct errors or omissions in the reported parameters.	Tirupur district in the state of Tamilnadu	27/07/2019	Ravikant Soni

D.3. Interviews

No.	Interviewee			Date	Subject	Team member
	Last name	First name	Affiliation			
1.	Sharma	Harish	Environmentfirst Pvt. Ltd.	26/07/2019	Project Activity Description, implementation and operation of the project. Procurement Records & Consumption, Bill & Energy Bills/Records. Calculations and assumptions used to obtain the GHG data and ER	Ravikant Soni
2.	Mazumdar	Abhishek	Environmentfirst Pvt. Ltd.	26/07/2019	Monitoring Data & Records Monitoring Plan, equipment, calibrations, maintenance, data records, certificates etc.	Ravikant Soni

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 (CLs), corrective action requests (CARs) and forward action requests (FARs) raised

Areas of verification findings	No. of CL	No. of CAR	No. of FAR
Compliance of the monitoring report with the monitoring report form	-	CAR #1 & CAR#2	-
Compliance of the project implementation and operation with the registered PDD	-	-	-
Post-registration changes	-	-	-
Compliance of the registered monitoring plan with the methodologies including applicable tools and standardized baselines	-	-	-
Compliance of monitoring activities with the registered monitoring plan	-	-	-
Compliance with the calibration frequency requirements for measuring instruments	CL#1	CAR#1 & CAR#3	-
Assessment of data and calculation of emission reductions or net removals	CL#1	CAR#4 & CAR#5	-
Assessment of reported sustainable development co-benefits	-	-	-
Global stakeholder consultation	-	-	-
Others (please specify)	-	-	-
Total	1	5	-

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

Means of verification	The latest monitoring report form used is CDM-MR-FORM version 09.0/2.4/ which
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	was the appropriate form available at the time of verification. "Instructions for filling out the monitoring report form" were done as per the guidelines of UNFCCC and PP provided all the relevant details in applicable Monitoring Report sections.
Findings	CAR #1 was raised and resolved.
Conclusion	ESPL 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) v03.0 §§ 352-353.

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

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This is the first periodical verification of the project. There is no FAR(s) from the validation/1.3/. This was verified and confirmed from the project documents on the UNFCCC project webpage /1.4/.

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

Means of verification	<p>The project activity was fully implemented according to the description presented in the PDD /1.2/. The assessment team confirms, through the visual inspection that all physical features of the CDM project activity including data collecting systems have been implemented in accordance with the PDD /1.2/.</p> <p>The project involves the installation of 6 no's of 1650 kW (V82/1650 model) rated Wind Electric Generators of Vestas make. These WEGs are ideal for Indian meteorological conditions. The V82/1650 with a rated capacity of 1650 kW is an ACTIVE STALL™ machine with cut-in and cut-out speeds of 2.5 m/s and 32 m/s, respectively. The machines are particularly suitable for the low and medium wind sites available in India. The V82/1650 machines are type tested and certified by DNV, Denmark A/S.</p> <p>The project is located in the Tirupur district in the state of Tamil Nadu, India and has an installed capacity of 9.9 MW (6WTGs x 1.65 MW/WTG). This was confirmed from document review of commissioning certificates /3.1/.</p> <p>The commercial operation of the project activity had started on 21/04/2010, which was verified by commissioning certificates/3.1/ and corroborated by monthly JMRs/3.2/ issued by state utility, indicating the start date of commercial operation. The expected operational lifetime of the project is 20 years.</p> <p>The technical specifications of WTGs were verified through the nameplate details (imprinted/placed at the bottom of WTG tower) available at the WTGs physically checked during the site visit and were found to be consistent with the details provided in the registered PDD.</p> <p>The project is located between latitude (10°42'33.21" N to 10°44'51.27" N) and longitude (77°08'40.48" E to 77°11'45.40" E). Location of the project was verified through Google Maps (https://www.gps-coordinates.net/) and found consistent with the same mentioned in the PDD/1.2/ and MR/1.8/.</p> <p>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.</p> <p>In addition to the physical inspection of the site, the following documents have been reviewed by the assessment team during the site visit to verify the project implementation:</p> <ol style="list-style-type: none"> Commissioning certificates/3.1/ Power Purchase Agreement/3.4/ Invoices raised by the PP to State utility /3.3/ Testing certificates of all energy meters /5.1/ Monthly Joint Meter Reports (JMRs) issued by TNSEB /3.2/
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	The information relating to the project implementation, provided in the Monitoring Report/1.9/ is consistent with that stated in the registered PDD/1.2/. The data and variables provided in the monitoring report are the same as stated in the registered PDD. Total emission reductions achieved under this monitoring period 23/09/2013 to 31/08/2018 (including both dates) is 95,229 tCO ₂ e.
Findings	No non-conformability was observed during assessment for implementation of project activity against the description presented in the approved PDD/1.2/. Therefore, No finding was raised.
Conclusion	<p>ESPL confirms that the implementation of project activity is in compliance with the CDM requirement stipulated under CDM- VVS for PA v03.0 §§ 354-356.</p> <ul style="list-style-type: none"> i. The implementation and operation of the project activity has been conducted in accordance with the description contained in the registered and approved PDD/1.2/. ii. In view of the information's verified during the site visit, the verification team is able to confirm that all physical features (technology, project equipment, 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 registered PDD/1.2/. iii. No information with regard to data and variables was identified that may surpass the estimated quantity of ERs in the approved PDD/1.2/. iv. The emission reductions achieved during the current monitoring period are 95,229 tCO₂e lower than the estimated quantity (120,398 tCO₂e) in the registered PDD for the comparable period.

E.4. Post-registration changes

E.4.1. Temporary deviations from the registered monitoring plan, applied methodologies, standardized baselines or other methodological regulatory documents¹

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There are no temporary deviations from the registered monitoring plan/1.2/ or applied methodology/2.3/ during the current monitoring period. It was verified and confirmed from the Monitoring Report/1.8/, registered PDD/1.2/, UNFCCC project webpage/1.4/ and on-site verification.

E.4.2. Corrections

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There are no corrections during the current monitoring period.

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/1.4/.

E.4.4. Inclusion of a monitoring plan

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There is no inclusion of a monitoring plan identified during the current monitoring period. It was verified and confirmed from the UNFCCC project webpage/1.4/.

¹ Other standards, methodologies, methodological tools and guidelines (to be) applied in accordance with the applied(selected) methodologies are collectively referred to as the other (applied) methodological regulatory documents).

E.4.5. Permanent changes from registered monitoring plan, or permanent deviation of monitoring from the applied methodologies, standardized baselines or other methodological regulatory documents

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There are no Permanent changes from the registered monitoring plan or permanent deviation of monitoring from the applied methodology, identified during the current monitoring period.

E.4.6. Changes to the project design

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Not Applicable

E.4.7. Changes specific to afforestation and reforestation project activities

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Not Applicable

E.5. Compliance of the registered monitoring plan with applied methodologies, applied standardized baselines, and other applied methodological regulatory documents

Means of verification	<p>The monitoring plan as contained in the registered PDD/1.2/ was reviewed against the monitoring requirements of the applied methodology AMS .I.D-Version 17.0.0/2.3/. Based on this review it was found that the monitoring plan contained in the registered PDD includes all the required parameters to be monitored in the context of project design and description and allows proper determination of emission reductions in accordance with the PDD /1.2/ and applied methodology AMS .I.D- Version 17.0.0/2.3/.</p> <p>It was observed during the site visit that, the WTGs are connected to the common metering system at 220/22kV pooling sub-station.</p> <p>Values of the parameter “EG_{BL,y}” is calculated as the difference of net energy export and the electricity import as recorded at 22 kV metering points.</p> <p>Net electricity delivered/exported by the project activity is calculated using following formula:</p> $EG_y = EG_{Export,y} - EG_{Import,y}$ <p>Where, EG_y – Net electricity supplied to grid by the project activity EG_{Export,y}- Electricity exported to the grid by the project activity in year y. EG_{Import,y}- Electricity Imported from the grid by the project activity in year y.</p> <p>The assessment team has verified that monthly values of electricity exported, electricity imported and net electricity exported to the grid are directly sourced from JMR which are in line with the requirements of approved monitoring plan. The JMR are prepared and endorsed by TNEB, a government agency and the PP has no influence in the entire procedure. Hence, the data issued by the state electricity board through the JMR is deemed authentic.</p> <p>During the site visit, it was observed that, the WTGs belonging to the project activity are connected to the grid through an appropriate power evacuation system. Appropriate metering system and calculation procedures are transparently described in the monitoring plan to enable accurate determination of emission reductions achieved by the project activity.</p>
Findings	No finding was raised.
Conclusion	ESPL 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 v03.0 §§ 357-359 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****The Operating Margin Emission Factor of Southern grid ($EF_{grid,OM,y}$)**

Means of verification	The value of this parameter is considered as 0.9863 This was checked with the registered PDD /1.2/ and “CO2 Baseline Database for Indian Power Sector”, version 06.0 published by the Central Electricity Authority, Ministry of Power, Government of India. (www.cea.nic.in) /6.3/
Findings	No issues identified and hence finding was not raised for this section.
Conclusion	The value in the monitoring report version 05 /1.9/ and corresponding emission reduction calculations spreadsheet version 04 /4.5/ are consistent with the registered PDD (page 32). The applied value is correct and justified.

The Build Margin Emission Factor of Southern grid ($EF_{grid,BM,y}$)

Means of verification	The value of this parameter is considered as 0.8179. This was checked with the registered PDD /1.2/ and ‘CO2 Baseline Database for Indian Power Sector’, version 06.0 published by the Central Electricity Authority, Ministry of Power, Government of India. (www.cea.nic.in) /6.3/
Findings	No issues were identified and hence finding was not raised for this section.
Conclusion	The value in the monitoring report version 05 /1.9/ and corresponding emission reduction calculations spreadsheet version 04/4.5/ are consistent with the registered PDD/1.2/ (page 32). The applied value is correct and justified.

The Emission Factor of the Southern grid ($EF_{grid,CM,y}$)

Means of verification	The value of this parameter is considered as 0.9442. This was checked with the registered PDD /1.2/ and “CO2 Baseline Database for Indian Power Sector”, version 06.0 published by the Central Electricity Authority, Ministry of Power, Government of India. (www.cea.nic.in) /6.3/
Findings	No issues were identified and hence finding was not raised for this section.
Conclusion	The value in the monitoring report version 05 /1.9/ and corresponding emission reduction calculations spreadsheet version 04 /4.5/ are consistent with the registered PDD/1.2/ (page 32). The applied value is correct and justified.

E.6.2. Data and parameters monitored**Parameter 1: EG_y (Export) Electricity exported to the grid by the project in year y”**

Means of verification	The monitoring of reductions in GHG emissions resulting from the registered project has been implemented in accordance with the monitoring plan contained in the PDD/1.2/. The monitoring mechanism, including the data collection system, is effective and reliable. During the site visit, personnel involved at various levels of operation of the project activity have been interviewed. It has been confirmed that the O&M personnel from the plant are conscious of the importance of the monitoring activities.	
	Criteria/Requirements	Assessment/Observation

	Measuring /Reading /Recording frequency	<p>During on-site visit, it was verified and confirmed that the quantity of electricity exported to grid is measured by the main meter at the grid interface. Based on physical inspection and interview with PP of project activity during on-site visit; the assessment team confirmed that Monthly joint meter reading of main meters installed at the substation has been taken and signed by authorized personnel of PP and TNEB. Also, the Joint meter reading is basis for monthly invoice of net energy exported to the grid confirmed against JMR /3.2/ and Bill /3.3/</p> <p>This is in compliance with the applicable methodology and monitoring plan.</p>
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PDD/1.2/ and monitoring methodology/2.3/.
	Monitoring equipment	<p>The Energy Meter as a monitoring equipment is used for this parameter.</p> <p>The monitoring equipment's (Energy meters) discussed in this section are concerning to the input values (Used in calculation of EG_y) only.</p> <p>Additional details of energy meters are verified in section E.7 of this report.</p>
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	The accuracy of the monitoring equipment used to measure the input values used to calculate EG_y is 0.2s as verified from the physical inspection of the project activity, which is as per the registered CDM PDD/1.2/ which is as per the norm defined in the PPA/3.4/.
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	<p>Yes, the accuracy is valid for the entire measuring range.</p> <p>During site visit it was observed by verification team that 0.2s accuracy class meters were already installed since the time of commissioning. It was verified from Calibration certificates /3.1/</p>
	Calibration frequency /interval:	Calibration frequency of the meters is once in a year according to the PPA/3.4/.
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	<p>Yes. The calibration interval is in line with the monitoring plan/ methodology.</p> <p>PP has chosen frequency once in a year as per the Para 81(c) of PS Version 03/2.2/. For further information refer Section C of MR /1.8/</p>

	Is the calibration of measuring equipment carried out by an accredited person or institution?	Yes. The calibration is conducted by TNEB which is NABL Accredited Government institution.
	Is(are) calibration(s) valid for the whole reporting period?	The energy meters are not calibrated as per the registered monitoring plan and calibration delay is identified during the current monitoring period. The PP has addressed the calibration delay following the guidelines as outlined under Para 366 (a) of VVS for PA V03, (Please refer section E.7 of this report for further details).
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Yes. The calibration is carried out appropriately/12/.
	How were the values in the monitoring report verified?	Cumulative value of $EG_{Export,y}$ for entire monitoring period is reported in the monitoring report, however, monthly values are reported in the ER calculation sheet. The monthly values were verified from the shared certificates issued by state utility and found to be consistent. Value of this parameter for the current monitoring period was verified as 101,787 MWh.
	If applicable, has the reported data been cross-checked with other available data?	The monthly reported values of $EG_{Export,y}$ were further cross checked with the monthly invoices raised by PP /3.3/ to state utility board and found to be consistent.
	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The Energy meter serial number was cross-checked with electricity bill/3.3/ provided by the PP and found meters are identified by their unique number; this was also checked with monthly JMR statements/3.2/ issued by TNEB. The electricity invoices record /3.3/ provided by the PP were checked and found acceptable. The monthly Joint Meter Reading statements /3.2/, monthly electricity Bills /invoices record /3.3/was checked and found acceptable. Methodology does not provide any specifications; this is as per actual practice. But, this is in line with the general CDM requirements
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
Findings	CAR#1 and CL#1 raised and resolved successfully	
Conclusion	ESPL confirms that the actual monitoring activities observed on site are in compliance with the approved monitoring plan and the same is in line with the	

	<p>monitoring methodology /2.3/.</p> <p>The applicable parameter stated in the approved revised monitoring plan 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 PDD/1.2/. 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/1.9/ have been correctly reported and confirmed. Hence, the requirement of CDM-VVS for v03.0 §§ 360-364 have been met.</p>
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Parameter 2: EG_y (Import) “ Electricity imported from the grid by the project activity in year y”

Means of verification	The monitoring of reductions in GHG emissions resulting from the registered project have been implemented in accordance with the monitoring plan contained in the PDD/1.2/. The monitoring mechanism, including the data collection system, is effective and reliable. During the site visit, personnel involved at various levels of operation of the project activity have been interviewed. It has been confirmed that the O&M personnel from the plant are conscious of the importance of the monitoring activities.	
	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	During on-site visit, it was verified and confirmed that the quantity of electricity imported to grid is measured by the main meter at the grid interface. Based on physical inspection and interview with PP of project activity during on-site visit; the assessment team confirmed that Monthly joint meter reading of main meters installed at the substation has been taken and signed by authorized personnel of PP and TNEB. Also, the Joint meter reading is basis for monthly invoice of net energy exported to the grid confirmed against JMR /3.2/ and Bill /3.3/ This is in compliance with the applicable methodology and monitoring plan.
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PDD/1.2/ and monitoring methodology/2.3/.
	Monitoring equipment	The Energy Meter as a monitoring equipment is used for this parameter. The monitoring equipment's (Energy meters) discussed in this section are concerning to the input values (Used in calculation of EG _y) only. Additional details of energy meters are verified in section E.7 of this report.
	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	The accuracy of the monitoring equipment used to measure the input values used to calculate EG _y is 0.2s as verified from the physical inspection of the project activity, which is as per the registered CDM PDD/1.2/ which is as per the norm defined in the PPA/3.4/.
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Yes, the accuracy level is applicable for the entire measuring range. During site visit it was observed by verification team that 0.2s accuracy class meters were already

	installed at the site since the time of commissioning. It was verified from Calibration certificates /3.1/
Calibration frequency /interval:	Calibration frequency of the meters is once in a year according to the PPA.
Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Yes. The calibration interval is in line with the monitoring plan/ methodology. PP has chosen frequency once in a year as per the Para 81(c) of PS Version 03/2.2/. For further information refer Section C of MR /1.8/
Is the calibration of measuring equipment carried out by an accredited person or institution?	Yes the calibration is conducted by TNEB which is NABL Accredited Government institution.
Is(are) calibration(s) valid for the whole reporting period?	The energy meters are not calibrated as per the registered monitoring plan and calibration delay is identified during the current monitoring period. The PP has addressed the calibration delay following the guidelines as outlined under Para 366 (a) of VVS for PA V03, (Please refer section E.7 of this report for further details).
Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Yes. The calibration is carried out appropriately/12/.
How were the values in the monitoring report verified?	Cumulative value of $EG_{import,y}$ for entire monitoring period is reported in the monitoring report, however monthly values are reported in the ER calculation sheet. The monthly values were verified from the shared certificates issued by state utility and found to be consistent. Value of this parameter for the current monitoring period was verified as 929 MWh.
If applicable, has the reported data been cross-checked with other available data?	The monthly reported values of $EG_{import,y}$ were further cross checked with the monthly invoices raised by PP /3.3/ to state utility board and found to be consistent.
Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The Energy meter serial number was cross-checked with electricity bill/3.3/ provided by the PP and found meters are identified by their unique number; this was also checked with monthly JMR statements/3.2/ issued by TNEB. The electricity invoices record /3.3/ provided by the PP were checked and found acceptable. The monthly Joint Meter Reading statements /3.2/, monthly electricity Bills /invoices record /3.3/was checked and found acceptable. Methodology does not provide any specifications; this is as per actual practice. But, this is in line with the general CDM requirements

	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
Findings	CAR#1 and CL#1 raised and resolved successfully	
Conclusion	<p>ESPL confirms that the actual monitoring activities observed on site are in compliance with the approved monitoring plan and the same is in line with the monitoring methodology /2.3/.</p> <p>The applicable parameter stated in the approved revised monitoring plan 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 PDD/1.2/. 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/1.9/ have been correctly reported and confirmed. Hence, the requirement of CDM-VVS for v03.0 §§ 360-364 have been met.</p>	

Parameter 3: EG_y, “Quantity of net electricity supplied to the grid in year y”

Means of verification	The monitoring of reductions in GHG emissions resulting from the registered project have been implemented in accordance with the monitoring plan contained in the PDD/1.2/. The monitoring mechanism, including the data collection system, is effective and reliable. During the site visit, personnel involved at various levels of operation of the project activity have been interviewed. It has been confirmed that the O&M personnel from the plant are conscious of the importance of the monitoring activities.	
	Criteria/Requirements	Assessment/Observation
	Measuring /Reading /Recording frequency	<p>During on-site visit, it was verified and confirmed that the quantity of net electricity supplied to grid is calculated based on measured value of EG_{Export,y} and EG_{Import,y} by the main meter at the grid interface. Based on physical inspection and interview with PP of project activity during on-site visit; the assessment team confirmed that Monthly joint meter reading of main meters installed at the substation has been taken and signed by authorized personnel of PP and TNEB. Also, the Joint meter reading is basis for monthly invoice of net energy exported to the grid confirmed against JMR /3.2/ and Bill /3.3/</p> <p>This is in compliance with the applicable methodology and monitoring plan.</p>
	Is measuring and reporting frequency in accordance with the monitoring plan and monitoring methodology? (Yes / No)	Yes. The reporting frequency is in line with the monitoring plan as outlined in the registered PDD/1.2/ and monitoring methodology/2.3/.
	Monitoring equipment	<p>No monitoring equipment is used as this parameter is calculated using the measured values.</p> <p>The monitoring equipment's (Energy meters) discussed in this section are concerning to the input values (Used in calculation of EG_y) only.</p> <p>Additional details of energy meters are verified in section E.7 of this report.</p>

	Is accuracy of the monitoring equipment as stated in the monitoring plan? If the monitoring plan does not specify the accuracy of the monitoring equipment, does the accuracy of the monitoring equipment comply with local/national standards, or as per the manufacturer's specification?	The accuracy of the monitoring equipment used to measure the input values used to calculate EG_y is 0.2s as verified from the physical inspection of the project activity, which is as per the registered CDM PDD/1.2/ which is as per the norm defined in the PPA/3.4/.
	Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Yes, the same accuracy levels was applied to the entire measuring range. During site visit it was observed by verification team that 0.2s accuracy class meters were already installed at the site since the time of commissioning. It was verified from Calibration certificates /3.1/ .
	Calibration frequency /interval:	Calibration frequency of the meters is once in a year according to the PPA.
	Is the calibration interval in line with the monitoring plan and/or methodology? If the monitoring plan does not specify the frequency of calibration, is the selected frequency in accordance with the local/national standards, or as per the manufacturer's specifications?	Yes. The calibration interval is in line with the monitoring plan/ methodology. PP has chosen frequency once in a year as per the Para 81(c) of PS Version 03/2.2/. For further information refer Section C of MR /1.9/
	Is the calibration of measuring equipment carried out by an accredited person or institution?	Yes the calibration is conducted by TNEB which is NABL Accredited Government institution.
	Is(are) calibration(s) valid for the whole reporting period?	The energy meters are not calibrated as per the registered monitoring plan and calibration delay is identified during the current monitoring period. The PP has addressed the calibration delay following the guidelines as outlined under Para 366 (a) of VVS for PA V03, (Please refer section E.7 of this report for further details).
	Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Yes. The calibration is carried out appropriately/12/.
	How were the values in the monitoring report verified?	Cumulative value of EG_y for entire monitoring period is reported in the monitoring report, however monthly values are reported in the ER calculation sheet. The monthly values were verified from the shared certificates issued by state utility and found to be consistent. Value of this parameter for the current monitoring period was verified as 100,858 MWh.
	If applicable, has the reported data been cross-checked with other available data?	The monthly reported values of EG_y were further cross checked with the monthly invoices raised by PP/3.3/ to state utility board and found to be consistent.

	Does the data management ensure correct transfer of data and reporting of emission reductions and are necessary QA/QC processes in place?	The Energy meter serial number was cross-checked with electricity bill/3.3/ provided by the PP and found meters are identified by their unique number; this was also checked with monthly JMR statements/3.2/ issued by TNEB. The electricity invoices record /3.3/ provided by the PP were checked and found acceptable. The monthly Joint Meter Reading statements /3.2/, monthly electricity Bills /invoices record /3.3/was checked and found acceptable.
	In case project participants have temporarily not monitored the parameter, has either i) a deviation been approved by the CDM EB or ii) has the parameter been estimated as stipulated by Appendix 1 to the CDM Project Standard?	No such issues.
Findings	CAR#1 and CL#1 raised and resolved successfully	
Conclusion	<p>ESPL confirms that the actual monitoring activities observed on site are in compliance with the approved monitoring plan and the same is in line with the monitoring methodology /2.3/.</p> <p>The applicable parameter stated in the approved revised monitoring plan 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 PDD/1.2/. 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/1.9/ have been correctly reported and confirmed. Hence, the requirement of CDM-VVS for v03.0 §§ 360-364 have been met.</p>	

E.6.3. Implementation of sampling plan

Means of verification	Not Applicable
Findings	Not Applicable
Conclusion	Not Applicable

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

Means of verification	<p>All the monitoring parameters have been monitored and the monitoring results are consistently recorded as per the frequency mentioned under the approved revised monitoring plan. Accuracy of all equipment has been observed to be maintained within the specified limits.</p> <p>The metering equipment for electricity measurement mainly consists of a main meter and a check energy meter (tri-vector type) which are used to monitor the quantity of net electricity export and import by the project activity. All the meters are 0.2s accuracy class. The calibration was done by qualified and authorised personnel from TNSEB. 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>																																											
	<table border="1"> <thead> <tr> <th>Owner</th><th>HTSC no</th><th>Meter Serial No.</th><th>Accuracy Class</th><th>Commissioning Date</th><th>Validity</th><th>Calibration Date</th><th>Validity</th></tr> </thead> <tbody> <tr> <td rowspan="2">BASML</td><td rowspan="2">U-1853</td><td rowspan="2">HT2160884</td><td rowspan="2">0.2s</td><td rowspan="2">21-04-2010</td><td rowspan="2">20-04-2011</td><td>15-02-2017</td><td>14-02-2018</td></tr> <tr> <td>15-02-2021</td><td>14-02-2022</td></tr> <tr> <td rowspan="2">BASML</td><td rowspan="2">U-1859</td><td rowspan="2">HT2160882</td><td rowspan="2">0.2s</td><td rowspan="2">25-05-2010</td><td rowspan="2">24-05-2011</td><td>15-02-2017</td><td>14-02-2018</td></tr> <tr> <td>15-02-2021</td><td>14-02-2022</td></tr> <tr> <td rowspan="2">BASML</td><td rowspan="2">U-1861</td><td rowspan="2">HT2160883</td><td rowspan="2">0.2s</td><td rowspan="2">25-05-2010</td><td rowspan="2">24-05-2011</td><td>15-02-2017</td><td>14-02-2018</td></tr> <tr> <td>15-02-2021</td><td>14-02-2022</td></tr> </tbody> </table>							Owner	HTSC no	Meter Serial No.	Accuracy Class	Commissioning Date	Validity	Calibration Date	Validity	BASML	U-1853	HT2160884	0.2s	21-04-2010	20-04-2011	15-02-2017	14-02-2018	15-02-2021	14-02-2022	BASML	U-1859	HT2160882	0.2s	25-05-2010	24-05-2011	15-02-2017	14-02-2018	15-02-2021	14-02-2022	BASML	U-1861	HT2160883	0.2s	25-05-2010	24-05-2011	15-02-2017	14-02-2018	15-02-2021
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						15-02-2021	14-02-2022																																					

Shiva	U-1854	HT2160232	0.2s	21-04-2010	20-04-2011	16-02-2017	15-02-2018
Shiva	U-1858	HT2160878	0.2s	20-05-2010	19-05-2011	16-02-2021	15-02-2022
Shiva	U-1860	HT2160879	0.2s	20-05-2010	19-05-2011	15-02-2017	14-02-2018
						18-02-2021	17-02-2022
						15-02-2021	14-02-2022

The above meter details have been verified through the following means:

- Physical inspection of the meters during the site visit
- Interviewing the staff at the sub-station
- The CMS of the O&M service provider located at the site
- Calibration certificates

The installation and working condition of the meters were checked during the on-site inspection and it was found to be satisfactory.

Assessment on delay in calibration

Since the delay in the calibration of the meters was observed during the current monitoring period, hence the PP has adjusted the export and import values for the delayed calibration period applying maximum permissible errors as per para 366 (a) of VVS for PA V03.

HTSC No	Delay Period consider under current Monitoring Period	The approach followed to address the delay (as per Para 366 (a) of VVS for PA V03)
U-1853	Sep-13 to Mar-17 and Feb-18 to Aug-18	An error factor of -0.2% is applied to export readings and +0.2% to import readings. Furthermore, the latest calibration was done in the Month of Feb 2021 (the date falls after the end of the monitoring period) and calibration certificates have been provided by the PP. The latest calibration certificate for respective energy meters was reviewed and verified as the results from calibration shows that the Energy Meters are working properly at the time of calibration and certificates clearly stated that energy meters are performing within the permissible limit. Since this calibration was done after the end date of the monitoring period, so DOE assessment team confirm that energy meters were working properly during the delay period even the due date of calibration has been expired. Hence, accepted
U-1859	Sep-13 to Mar-17 and Feb-18 to Aug-18	
U-1861	Sep-13 to Mar-17 and Feb-18 to Aug-18	
U-1854	Sep-13 to Mar-17 and Feb-18 to Aug-18	
U-1858	Sep-13 to Mar-17 and Feb-18 to Aug-18	
U-1860	Sep-13 to Mar-17 and Feb-18 to Aug-18	

Note: First part of delayed calibration period from 23/09/2013 to 14/02/2017 billing cycle for the month Feb -2017 was 09/02/2017 to 09/03/2017. Hence the PP has applied the error factor for entire billing period following conservative approach

Similarly the calibration was further delayed from 15/02/2018 to 31/08/2018, but the PP has applied the error factor from 09/01/2018 to 31/08/2018 because the billing cycle for Feb-2018 was start from 09/01/2018. Since the approach followed by the PP is found to

	<p>conservative hence accepted.</p> <p>The verification team has checked the latest calibration certificates of energy meters and confirmed that the meter was working satisfactorily and the error was found to be within the permissible limits. These meters are duly approved, installed, tested, sealed and in the custody of the state utility.</p> <p>PP has considered calibration frequency of energy meter as once in a year as per TNEB prevailing practice at the time of project registration. Nevertheless, PP has explained in registered PDD that calibration of monitoring equipment is solely under control of TNEB and the project will adhere to all the mandatory regulatory and statutory requirements at the state as well as national level.</p> <p>However, PP has followed the frequency mentioned in the registered PDD i.e. at least once a year and applied the maximum permissible error of 0.2% to Export & Import values for the delayed period as per Para 366 (a) of VVS for PA V03.</p> <p>During the current monitoring period, it is verified that the calibration of energy meters is not carried out as per the frequency mentioned in the registered PDD/1.2/. The PP has adjusted the export and import values for the delayed calibration period applying a maximum permissible error of 0.2% as Para 366 (a) of VVS for PA V03. It is confirmed that the data recorded through the main meter only is used for the calculation of emission reductions during the current monitoring period.</p>
Findings	CL#1 , CAR#1 and CAR#3 were raised and resolved.
Conclusion	<p>The assessment team has confirmed that the calibration is not conducted at the frequency as per the monitoring plan contained in the registered PDD /1.2/ and delayed calibration results were available. Therefore, following the requirements of paragraph 366(a) of CDM-VVS for PAs, version 03.0, the error factor is applied to the monitoring parameters.</p> <p>In line with the paragraph 367 of CDM-VVS for PAs, version 03.0, the assessment team also confirm that the error has been applied:</p> <p>(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;</p> <p>(b) For all measured values taken during the period between the scheduled date of calibration and the actual date of calibration.</p>

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 version 04 /4.5/ of final Monitoring Report version 05 /1.9/. 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 version 04/4.5/ of final Monitoring Report version 05/1.9/ 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 registered PDD/1.2/ and therefore it has not been applied.
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	<p>g) There is no pro-rata 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> <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. The baseline emission factor is calculated as a combined margin, consisting of a combination of operating margin (OM) and build margin (BM) factors.</p> $BE_y = EG_y * EF_{CO_2, grid, y}$ <p>Where: BE_y: Baseline Emissions in year y; t CO₂ EG_y = Quantity of net electricity displaced as a result of the implementation of the CDM project activity in year y (MWh)</p> $= BE_{Bannari Amman Spinning Mills Ltd.} + BE_{ShivaTexyarn Ltd.}$ <p>EF_{CO_2} = CO₂ emission factor of the grid in year y = 0.9442 tCO₂/MWh (Fixed Ex-ante)</p> <p>As per the registered PDD/1.2/, the combined margin emission factor is 0.89 tCO₂/MWh. Hence the baseline emissions for the project activity for the current monitoring period are as follows.</p> $BE_y = 100,858 \text{ MWh} \times 0.9442 \text{ tCO}_{2e}/\text{MWh}$ $= 95,229 \text{ tCO}_{2e}$ <p>Note:</p> <ol style="list-style-type: none"> 1. The current monitoring period starts from 23/09/2013, however the JMR (Spet - 2013) provides the value of net electricity supplied to the grid for the period from 07/09/2013 to 07/10/2013 as per the billing cycle period. Hence the PP has apportioned the JMR data for the period from 23/09/2013 to 07/10/2013 using standard apportioning procedure/4.5/ and the apportioned value is compared with the LCS data for the equivalent period/4.6/ & lower value is used for ER calculations. This approach is found to be appropriate and conservative, hence accepted. 2. The current monitoring period ends on 31/08/2018 but the however the JMR (August -2018) provides the value of net electricity supplied to the grid for the period from 09/08/2018 to 10/09/2018 as per the billing cycle period. Hence the PP has apportioned the JMR data for the period from 09/08/2018 to 31/08/2018 using standard apportioning procedure/4.5/ and the apportioned value is compared with the LCS data for the equivalent period & lower value is used for ER calculations. This approach is found to be appropriate and conservative, hence accepted. 3. The billing cycle is determined solely by the state utility and the PP has no control over the same.
Findings	No non-conformability was observed during assessment for this monitored parameter. Therefore, no finding was raised.
Conclusion	<p>ESPL confirms that the requirement outlined under CDM-VVS for v03.0 §§ 373 have been met as:</p> <ul style="list-style-type: none"> • A complete set of data for the monitoring period is available and is duly reported. As indicated above, the description with regard to cross-check of reported data is included under respective parameter (refer Section E.6.2 of this report); • 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.

	<ul style="list-style-type: none"> Appropriate emission factors and other reference values were correctly applied.
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E.8.2. Calculation of project GHG emissions or actual net anthropogenic GHG removals by sinks

Means of verification	The registered PDD 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.
Findings	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 registered PDD 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	No leakage emissions were required to be calculated.

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

Means of verification	<p>The verification team has reviewed the calculation of GHG emission reductions as elaborated above, the entire emission reductions from the project activity were based on baseline emissions as per the registered PDD /1.2/ and the applied methodology /2.3/. The calculations presented in this regard in the final monitoring report version 05 /1.9/ and corresponding ER calculation sheet version 04/4.5/ were found appropriate and comply with the provisions prescribed in the registered monitoring plan of registered PDD/1.2/ and applied methodology/2.3/.</p> <p>As per the applicable methodology AMS I.D. Version 17: The emission reduction is calculated as</p> $ER_y = BE_y - PE_y - LE_y$ $ER_y = 95,229 \text{ tCO}_2\text{e}$ <p>The assessment team verified that the ER excel spreadsheet version 04 /4.5/, the ER for each month has been calculated. The sum of the ER for each month has been rounded down to arrive at the total ER for the current monitoring period. Therefore, the PP has considered the conservative ER value as 95,229 tCO₂e.</p>
Findings	CL#1 , CAR#4 and CAR#5 were raised and resolved
Conclusion	<p>The verification team confirms that:</p> <ol style="list-style-type: none"> The complete data was available and is duly reported; As indicated above, the description with regard to cross-check of reported data is included under respective parameter (refer Section E.6.2 of this report); Appropriate methods and formulae for calculating baseline GHG emissions or baseline net GHG removals, project emissions and leakage emissions were followed; Appropriate emission factors and other reference values were correctly applied. There is no pro-rate approach was applied in the current monitoring period <p>The verification team confirms that: as entire monitoring period falls into period that is after the end of first commitment period of Kyoto Protocol.</p> <p>The total number of ERs achieved during the current monitoring period is 95,229 tCO₂e.</p>

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 version 05/1.9/ and corresponding ER sheet version 04 /4.5/, the actual emission reductions achieved
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	by the project activity in the current monitoring period were found lesser than (-20.90% lower) the estimated quantity in the registered PDD/1.2/ for the comparable period. The total nos. of days included in this mentoring period (i.e. 23/09/2013 to 31/08/2018, inclusive of both the days) =1804 The detailed calculation has been provided in ER calculation sheet Version 4.0 /4.5/.				
	<table> <tr> <th>Estimated ERs for comparable period as per registered PDD (tCO₂e)</th><th>Actual ERs achieved in the current monitoring period (tCO₂e)</th></tr> <tr> <td>120,398 tCO₂e</td><td>95,229 tCO₂e</td></tr> </table>	Estimated ERs for comparable period as per registered PDD (tCO ₂ e)	Actual ERs achieved in the current monitoring period (tCO ₂ e)	120,398 tCO ₂ e	95,229 tCO ₂ e
Estimated ERs for comparable period as per registered PDD (tCO ₂ e)	Actual ERs achieved in the current monitoring period (tCO ₂ e)				
120,398 tCO ₂ e	95,229 tCO ₂ e				
Findings	No finding was raised.				
Conclusion	ESPL confirms that the requirement outlined under CDM-PS for PA v03.0 §§ 268 have been met 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 PDD /1.2/ has been provided in the Monitoring Report version 05/1.9/. The verification team confirms that the calculation of the comparison is correct. 				

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

Means of verification	The verification team has assessed the cause of variation in the actual GHG emission reductions achieved during the current monitoring period by reviewing the monitoring report version 05 /1.9/. There is a decrease of 20.90% in the actual emission reductions achieved during the current monitoring period from that stated in the registered CDM-PDD. The variation is mainly due to low PLF during the current monitoring period and correspondingly decrease in electricity generation compared to expected or estimate in registered PDD /1.2/. The breakdown and outage of the plant were verified by the assessment team and found to be appropriate, hence accepted.
Findings	No finding was raised.
Conclusion	The actual emission reductions achieved by the project activity are lower than the estimated quantity of ERs in the registered PDD/1.2/. Accordingly, it was accepted by the verification team.

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	Based on the assessment done in section E.8.1 to E.8.6, the verification team certify that the emission reductions from the CDM project activity 9487 “9.9 MW Bundled Wind Power Project in Tirupur, Tamilnadu” in India during the period 23/09/2013 to 31/08/2018 (including both dates) is 95,229 tCO ₂ e.		
		First commitment period (up to 31 Dec 2012) (tCO ₂ e)	Second commitment period (From 01 Jan 2013 onwards) (tCO ₂ e)
	Emission Reductions	Nil	95,229
	(Note: Current Monitoring period i.e 23/09/2013 to 31/08/2018 is not fall under first commitment period, therefore GHG emission reductions up to 31/12/2012 is Not Applicable)		
Findings	No finding was raised.		
Conclusion	ESPL confirms that the actual GHG emission reductions achieved during period starting from 1st January 2013 onwards was verified to be 95.229 tCO ₂ e.		

E.9. Assessment of reported sustainable development co-benefits

Means of verification	Not applicable
Findings	Not applicable
Conclusion	Not applicable

E.10. Global stakeholder consultation

Means of verification	There are no comments received during the publication period of the monitoring report, this is verified through the project view page.
Findings	No findings
Conclusion	The assessment team can confirm that the stakeholder consultation conducted after the publication of the first monitoring report was in line with the requirements as outlined under paragraphs 391-392 of VVS PAs version 03.0 and no comments were received.

SECTION F. Internal quality control

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

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

SECTION G. Verification opinion

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Earthood Services Private Limited (ESPL) has been contracted by M/s Vestas Wind Technology India Private Limited to perform the verification of the emission reductions reported for the CDM project "9.9 MW Bundled Wind Power Project in Tirupur, Tamilnadu" in the period 23/09/2013 – 31/08/2018 (including both dates) as reported in the Monitoring Report (public) Version 01.0 dated - 26/11/2018. The "9.9 MW Bundled Wind Power Project in Tirupur, Tamilnadu" is responsible for the collection of data in accordance with the monitoring plan and the reporting of GHG emissions reductions from the project activity.

ESPL commenced the verification on the basis of the baseline and monitoring methodology AMS I.D Version 17.0.0, the monitoring plan contained in the registered PDD Version 4.1 dated 20/09/2013 and Monitoring Report (public) Version 01 dated 26/11/2018.

ESPL confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements. This verification report has been prepared using the latest available template specified by UNFCCC and complies with the instructions to follow as per para 22 and 23 of CDM VVS for PAs Version 03.0.

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

The verification team confirms that:

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

SECTION H. Certification statement

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Earthood Services Private Limited (ESPL), contracted by M/s Vestas Wind Technology India Private Limited, has performed the independent verification of the emission reductions for the CDM project activity '9.9 MW Bundled Wind Power Project in Tirupur, Tamilnadu' (UNFCCC Ref. No. 9487) in India for the monitoring

period: 23/09/2013-31/08/2018 (dates) as reported in the Monitoring Report (Final) Version 05.0 dated 15/12/2021.

M/s Vestas Wind Technology India Private Limited is responsible for the collection of data in accordance with the monitoring plan in the registered PDD /1.2/ (Version 04.1, 20/09/2013) and the applied methodology AMS-I.D. Version 17/2.3/ and the reporting of GHG emissions reductions from the project activity. It is our responsibility to express an independent verification statement on the reported GHG emission reductions from the project activity .

ESPL verification approach is based on the requirements as defined under the Kyoto Protocol, Marrakesh accord, as well as those defined by the CDM Executive Board.

The verification can confirm that:

- the project is operated as planned and described in the project design document approved by the EB;
- the approved 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 on the understanding of the risks associated with reporting of GHG emission data and the controls in place to mitigate these. ESPL planned and performed the verification by obtaining evidence and other information and explanations that ESPL considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

On the basis of above discussion Earthood Services Private Limited (ESPL) is able to certify, the GHG emission reductions for 'M/s Vestas Wind Technology India Private Ltd.' for the monitoring period 23/09/2013 – 31/08/2018 as reported in Monitoring Report Version 05.0/1.9/, prepared on the basis of the project's Monitoring Plan are fairly stated and amounts to 95,229 tCO₂e.

Verified and certified emission reductions as per commitment period:

Leakage emissions	0 tCO ₂ equivalents
Project emissions	0 tCO ₂ equivalents
Baseline emissions	95,229 tCO ₂ equivalents
Emission reductions in this monitoring period (i.e. 23/09/2013 – 31/08/2018)	95,229 tCO ₂ equivalents
Emission reductions achieved during the period from 1 January 2013 onwards. (i.e. 23/09/2013 – 31/08/2018)	95,229 tCO ₂ equivalents

Appendix 1. Abbreviations

Abbreviations	Full texts
VESTAS WIND	M/s Vestas Wind Technology India Private Limited
AMS	Approved Methodology Small-scale
BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CEA	Central Electricity Authority
CER	Certified Emission Reductions
CICPL	C & I systems Private Limited
CL	Clarification Request
CM	Combined Margin
CO ₂ e	Carbon Dioxide equivalent
CoP/MoP/CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
DNA	Designated National Authority
DOE	Designated Operational Entity
EB	CDM Executive Board
EF	Emission Factor
ER	Emission Reductions
GCV	Gross Calorific Value
GHG	Greenhouse Gas(es)
GPS	Global Positioning System
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organisation for Standardisation
KWh	Kilowatt hour
MP	Monitoring Plan
MR	Monitoring Report
MW/MWh	Megawatt/ Megawatt hour
NEWNE	North East West and North-East
NCV	Net Calorific Value
OM	Operating Margin
PDD	Project Design Document
PP	Project Participant
PPA	Power Purchase Agreement
PLF	Plant Load Factor
PS	Project Standard
QMS	Quality Management System
TNSEB	Tamil Nadu State Electricity Board
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Validation and Verification Standard

Appendix 2. Competence of team members and technical reviewers

Competence Statement	
Name	Ravi Kant Soni
Country	India
Education	B. Tech. (Mechanical Engineering)

	M. Tech. (Energy Management)		
Experience	8 Years +		
Field	Energy and Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS-I.D., AMS-I.C., ACM0002		
Local expert	YES (India)		
Financial Expert	No		
Technical Reviewer	No		
TA Expert	YES (TA 1.2)		
Reviewed by	Shreya Garg	Date	04/06/2019
Approved by	Anshika Gupta	Date	04/06/2019

Competence Statement			
Name	Shreya Garg		
Country	India		
Education	M.Sc. (Climate Science & Policy), TERI University		
Experience	6 Years +		
Field	Climate Change		
Approved Roles			
Team Leader	YES		
Validator	YES		
Verifier	YES		
Methodology Expert	AMS.I.A., AMS.I.C., AMS.I.D., AMS.I.F., AMS.II.D., AMS.II.G., AMS.II.J., AMS.III.AV., ACM0002, ACM0012		
Local expert	YES (India)		
Financial Expert	NO		
Technical Reviewer	YES		
TA Expert	YES (TA 1.2, TA 3.1)		
Reviewed by	Abhishek Mahawar	Date	01/03/2018
Approved by	Ashok Gautam	Date	01/03/2018

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)			
1.1	Vestas Wind	MR for GSC, version 1.0 "9.9 MW Bundled Wind Power Project in Tirupur, Tamilnadu"	26/11/2018	PP
1.2	Vestas Wind	Approved PDD, version 4.1	20/09/2013	PP
1.3	BVC	Validation Report for approved PDD	20/09/2013	Other: DOE
1.4	UNFCCC website	CDM Project activity view page "9.9 MW Bundled Wind Power Project in Tirupur, Tamilnadu" https://cdm.unfccc.int/Projects/DB/BVQI1356958722.27/view	01/10/2013	Other: UNFCCC
1.5	VESTAS WIND	MR, version 2.0 "9.9 MW Bundled Wind Power Project in Tirupur, Tamilnadu"	22/12/2019	PP
1.6	VESTAS WIND	MR, version 2.1 "9.9 MW Bundled Wind Power Project in Tirupur, Tamilnadu"	07/09/2021	PP
1.7	VESTAS WIND	MR, version 3.0 "9.9 MW Bundled Wind Power Project in Tirupur, Tamilnadu"	30/09/2021	PP
1.8	VESTAS WIND	MR, version 4.0 "9.9 MW Bundled Wind Power Project in Tirupur, Tamilnadu"	20/10/2021	PP
1.9	VESTAS WIND	MR, version 5.0 "9.9 MW Bundled Wind Power Project in Tirupur, Tamilnadu"	15/12/2021	PP
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 03.0 as per EB 111, Annex 2	Dated 09/09/2021	Other: UNFCCC
2.2	UNFCCC website	CDM Project Standard for Project Activity (CDM-PS for PA), version 03.0 as per EB 111, Annex 1	Dated 09/09/2021	Other: UNFCCC
2.3	UNFCCC website	AMS-I.D. (version 17.0.0): "Grid connected renewable electricity generation"	Dated 03/06/2011	Other: UNFCCC
2.4	UNFCCC website	Guidance to Complete "Monitoring Report Form (CDM-MR-FORM), Version 09.0" as accordance with the Attachment "Instructions for filling out the monitoring report form"	Dated 08/10/2021	Other: UNFCCC
2.5	UNFCCC website	Tool to calculate project or leakage CO2 emissions from fossil fuel combustion (Version 02)	02/08/2008	Other: UNFCCC
2.6	IPCC	IPCC Guidelines Vol. 2	Year 2006	Other: IPCC
2.7	UNFCCC website	Guidance to Complete "Project Design Document Report Form (CDM-PDD-FORM), Version 11.0" as accordance with the Attachment "Instructions for filling out the Project Design Document report form"	Dated 31/05/2019	Other: UNFCCC
2.8	UNFCCC website	CDM Project Cycle Procedure for Project Activity (CDM-PCP for PA), version 03.0 as per EB 111, Annex 10	Dated 09/09/2021	Other: UNFCCC
3.	Project implementation information			
3.1	TNSEB	Commissioning Certificate for the project activity	21/04/2010 & 25/05/2020	
3.2	TNSEB	Monthly Joint Meter Reports (JMRs) issued by TNSEB	23/09/2013 to	Other:

			31/08/2018	TNSEB
3.3	VESTA S WIND	Monthly Invoices	23/09/2013 to 31/08/2018	PP
3.4	TNSEB	Power Purchase Agreement with TNEB	-	Other: TNSEB
4.	ER calculation and cross checking issue			
4.1	VESTA S WIND	Emission reduction calculation sheet version 1.0	26/11/2018	PP
4.2	VESTA S WIND	Emission reduction calculation sheet version 2.0	22/12/2019	PP
4.3	VESTA S WIND	Emission reduction calculation sheet version 2.1	07/09/2021	PP
4.4	VESTA S WIND	Emission reduction calculation sheet version 3.0	30/09/2021	PP
4.5	VESTA S WIND	Emission reduction calculation sheet version 4.0	15/12/2021	PP
4.6	VESTA S WIND	LCS generation data for the period from 07/09/2013 to 07/10/2013 LCS generation data for the period from 09/08/2018 to 10/09/2018	-	PP
5.	Calibration issues			
5.1	TNSEB	Energy meter testing report for Main energy meters	23/09/2013 to 31/08/2018	Other: TNSEB
6.	Others			
6.1	ESPL	Site Visit Attendance Sheet	Dated 27/07/2019	-
6.2	ESPL	Site Visit Photograph	Dated 27/07/2019	-
6.3	CEA	CEA database version 6.0		Other: CEA
6.4	VESTA S WIND	CDM-MOC-FORM Annex 2, version 3		PP

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

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

FAR ID	xx	Section no.	-	Date:DD/MM/YYYY
Description of FAR				
None				
Project participant response				Date:DD/MM/YYYY
Documentation provided by project participant				
DOE assessment				
				Date:DD/MM/YYYY

Table 2. CL from this verification

CL ID	01	Section no.	E.7 & E.8.4	Date :25/07/2019
Description of CL				

<p>The PP is requested to provide following documents:</p> <ul style="list-style-type: none"> a. Monthly electricity generation statement b. TNEB Invoices c. Calibration Certificate of Energy Meters d. Commissioning certificate of plant e. Emission reduction calculation sheet 	
Project participant response	Date :22/12/2019
<p>PP hereby submitting the requisite documents:</p> <ul style="list-style-type: none"> a. Monthly electricity generation statement b. TNEB Invoices c. Calibration Certificate of Energy Meters d. Commissioning certificate of plant e. Emission reduction calculation sheet 	
Documentation provided by project participant	
<ul style="list-style-type: none"> a. Monthly electricity generation statement b. TNEB Invoices c. Calibration Certificate of Energy Meters d. Commissioning certificate of plant e. Emission reduction calculation sheet 	
DOE assessment	Date:14/01/2020
<p>Verification team confirm that all documents are inline with the requirement, hence CL closed satisfactory.</p> <p>CL#1 Closed</p>	

Table 3.CAR from this verification

CAR ID	01	Section no.	E.1 & E.7	Date : 25/07/2019
Description of CAR				
<ol style="list-style-type: none"> 1. PP not applied latest version 7 of "Monitoring report form for CDM project activity". Please clarify? 2. PP requested to update the footnote 1 and clarify how estimated ex-ante emission reduction achieved for the current monitoring period. 3. PP requested to provide the UNFCCC link of "Tool to calculate the emission factor for an electricity system version 2.2.1 as mentioned in registered PDD. 4. PP is requested to change the salient features of technology description into text from image. 5. PP requested to clarify how meter calibration validity 3 year is valid whereas in the registered PDD and TNEB guideline it's 1 year. 				
Project participant response				Date :22/12/2019
<ol style="list-style-type: none"> 1. PP has revised MR to apply latest version 7 of "Monitoring report form for CDM project activity". 2. PP has provided the reference of relevant section E.5.1 of MR in footnote 2 for ready reference to discuss estimated ex-ante emission reduction achieved for the current monitoring period. 3. PP has revised MR to provide the UNFCCC link of "Tool to calculate the emission factor for an electricity system version 2.2.1 as mentioned in registered PDD. 4. PP has revised MR to change the salient features of technology description into text from image. 5. PP would like to clarify that "the calibration frequency of monitoring equipment was defined in the monitoring plan of the registered PDD" as once in a year. PP has deliberately explained in registered PDD & MR that calibration of monitoring equipment is solely under control of TNEB and the project will adhere to all the mandatory regulatory and statutory requirements at the state as well as national level. <p>Furthermore, PP would like to comply with the Project standard version 2 para 81(C), "...If neither the applied methodologies, the applied standardized baselines, the other applied methodological regulatory documents, nor the Board's guidance specify any requirements for calibration frequency for measuring equipment, the project participants shall ensure that the equipment is calibrated either in accordance with the local/national standards or the manufacturer's specifications. If local/national standards or the manufacturer's specifications are not available, international standards may be used."</p> <p>As per the notification of Central Electricity Authority, dated 17th Mar 2006 (http://powermin.nic.in/whats_new/pdf/Metering_Regulations.pdf), Para 18 (1) (b), all interface meters shall be tested at least once in 5 years. Therefore, TNEB is following the statutory guideline for meter calibration. However, PP has considered once in once in a year as per the calibration frequency mentioned in the registered PDD and revised MR to correctly report the calibration frequency of energy meter and the calibration validity i.e. once in a year.</p> <p>PP has considered the delay in meter calibration as per once in a year validity and identified the delay period during the current monitoring period and applied maximum permissible error of 0.2% to the export & import values of the delayed period.</p>				
Documentation provided by project participant				
MR Version 2 ER Version 1				
DOE assessment				Date:14/01/2020

1. Assessment team confirm that PP has applied latest version 7 of "Monitoring report form for CDM project activity" and updated revised MR. (Furthermore , the PP has updated the MR as per latest CDM-MR-Template version 09, same was checked and found to be accepted)
2. Assessment team confirm that PP has updated the footnote 1 and clarified ex-ante estimation emission reduction achieved for the current monitoring period in revised MR.
3. Assessment team confirm that PP has provided the UNFCCC link of "Tool to calculate the emission factor for an electricity system version 2.2.1 in revised MR.
4. Assessment team confirm that PP has updated the salient features of technology description into text from image in revised MR.
5. Assessment team accepted PP response and calibration frequency 1 year.
CAR#1 Closed

CAR ID	02	Section no.	E.1	Date : 07/09/2021
Description of CAR				
The PP is requested to update the MR as per latest MR template available on UNFCCC web site.				
Project participant response				Date :07/09/2021
The MR has been updated with the latest available template on UNFCCC website.				
Documentation provided by project participant				
Updated MR. V2.1 07/09/2021				
DOE assessment				Date: 13/09/2021
The PP has submitted the updated MR as per latest MR template. The PP requested to clarify the below:				
1. The PP is requested to update the MR's version and date on page 1 of the MR.				
2. The PP is requested to provide the information on the implementation and actual operation of the project activity, including relevant dates (e.g. construction, commissioning, start of operation).				
3. The PP is requested to provide the line diagrams showing all relevant monitoring points in section C of the MR as mentioned in section B.3 of the PDD.				
Project participant response				Date : 14/09/2021
1. MR version and date is updated on page 1 of the MR.				
2. Commissioning-dates are mentioned to provide information about the actual date of operation.				
3. The Line diagram as mentioned in section B.3 of the registered PDD is now incorporated in section C of the revised MR.				
Documentation provided by project participant				
Updated MR V3 13/09/2021				
DOE assessment				Date: 19/10/2021
The PP has submitted the revised MR and same has been verified and found that page 1 is corrected, also calibration details are provided and also line diagram incorporated in MR.				
Further, the PP is requested to update the MR on latest version 09 available on UNFCCC.				
Project participant response				Date : 20/10/2021
The MR has been updated with the latest available template on UNFCCC website.				
Documentation provided by project participant				
Updated MR V4 20/10/2021				
DOE assessment				Date: 20/10/2021
The PP has updated the MR as per latest MR Template version 09 and same is found to be correct, hence accepted. CAR#2 is closed.				

CAR ID	03	Section no.	E.7	Date : 07/09/2021
Description of CAR				

The PP is requested to provide further information on the calibration date after February 2018 and its result to justify the application of maximum permissible error of 0.2% which is applied to all delayed calibration periods in accordance to the requirement of paragraph 366 and 368 of VVS-PA Version 2.0. (Please note, the requested CDM requirement is the same mentioned in paragraphs 366 and 368 of VVS-PA Version 3.0, therefore, there is no impact on verification assessment due to change of documents VVS-PA Version 2.0. to VVS-PA Version 3.0.)

Project participant response	Date : 07/09/2021
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The maximum permissible error of 0.2% is applied for delayed calibration-period as the meters are of 0.2S class, in line with para 366 of VVS-PA Version 02.0. Further because of pandemic, the calibration had got concluded in 15/02/2021, and all meters are in permissible limits; in line with para 368 of VVS-PA Version 02.0. (Please note, the requested CDM requirement is the same mentioned in the paragraphs 366 and 368 of VVS-PA Version 3.0, therefore, there is no impact on verification assessment due to change of documents VVS-PA Version 2.0. to VVS-PA Version 3.0.)

Documentation provided by project participant
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<i>Calibration-Reports.</i>

DOE assessment	Date: 13/09/2021
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The PP has submitted the calibration reports for year 2021 for all 6 energy meters. The PP is requested to clarify followings:

1. The PP is requested to provide the details of latest calibration of the Energy Meters in Table mentioned in section C of the MR.
2. The PP is requested to further more transparently elaborate in the table of delay Period in this MP in section C of the MR. In order clarify why the two different delay period considered in current monitoring period.

Project participant response	Date : 14/09/2021
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1. Details of latest calibration of the Energy Meters in Table mentioned in section C of the MR are now provided.
2. Detailed clarification is provided to explain the reason for considering the two different delay period in the current monitoring period.

Documentation provided by project participant
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<i>Updated MR V3 13/09/2021</i>

DOE assessment	Date: 30/09/2021
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The PP has submitted the revised MR, the MR has been verified and found that the PP has provided details of calibration in section C and also provided the justification for delayed period in the MR. The same is found to be corrected, hence accepted. CAR#3 is closed.

(Please note, during the assessment of MR and ER sheet, VVS-PA Version 2.0. to VVS-PA Version 3.0. was applicable and later on the latest version VVS-PA Version 3.0. available on UNFCCC website, the DOE team has checked and confirmed that there is no impact on verification assessment due to change of documents VVS-PA Version 2.0. to VVS-PA Version 3.0.)

CAR ID	04	Section no.	E. 8.4	Date : 07/09/2021
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Description of CAR

The PP is requested to clarify why the export values under generation data for May2018 show an addition of two values for U-1853, U-1859 and U-1861 as shown in the ER sheet.

Project participant response	Date : 07/09/2021
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For the month May 2018, there were JMR for (09/04/2018 - 12/04/2018) and (12/04/2018 - 08/05/2018), released by TENGEDCO during this phase. Hence the two values from these JMR are captured in ER-sheet for U-1853, U-1859 and U-1861 for the month May'18- billing period from 09/04/2018 to 08/05/2018. However, all the JMRs had already been submitted for verification,

Documentation provided by project participant
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<i>May-2018 JMR and ER sheet V2.1 07/09/2021</i>
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DOE assessment	Date: 13/09/2021
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1. The PP has provided justification on value provided in ER sheet for Month May 2018. The same is found to be correct. The PP is requested to incorporate the same justification in ER sheet and there is no information provided in ER sheet for this calculation.
2. The baseline formula mentioned the section E.1 of the MR is not consistent with the PDD. Please clarify

Project participant response	Date :14/09/2021
<ol style="list-style-type: none"> 1. Justification is provided in ER sheet for month May 2018 calculation in Green Highlight color. 2. The baseline formula mentioned the section E.1 of the MR is now consistent with the PDD. 	
Documentation provided by project participant	
<i>Updated MR V3 13/09/2021 & Updated ER sheet. V3 13/09/2021</i>	
DOE assessment	Date: 30/09/2021
The PP has submitted the revised MR and ER sheet and same has been verified that the PP has provided the justification in ER sheet and baseline formula corrected in MR, hence accepted. CAR#4 is closed.	

CAR ID	05	Section no.	E. 8.4	Date : 06/12/2021
Description of CAR				
Please is requested to clarify the followings:				
<ol style="list-style-type: none"> 1. Section C of the monitoring report and the ER spreadsheet mention that there was a delay in calibration from September 2013 to February 2017 and accordingly an error factor of 0.2% has been applied to the period with delayed calibration. However, as per the ER spreadsheet, the delay in calibration has been applied from 23/09/2013 to 09/02/2017 while the meters were calibrated only on 15/02/2017 and 16/02/2017 (for U-1854). The PP is therefore requested to clarify how it has confirmed that the error has been applied to all measured values taken during the period between the scheduled date of calibration and the actual date of calibration. 2. As per the ER spreadsheet, for 09/2013 and 08/2018, the total generation has been divided equally for all days to get the net units for monitored period in these months. The PP requested to further elaborate how it can be cross-checked the net unit values for these months that are apportioned based on the applicable number of days with other sources (e.g. daily figure from controller meter as applicable). 				
Project participant response				Date :15/12/2021
<ol style="list-style-type: none"> 1. The ER-spreadsheet has now been updated with application of error-factor for the entire billing-period of 09/02/2017 to 09/03/2017; addressing the delay in the scheduled date of calibration for all the WTG. The Monitoring-report has also been updated accordingly. 2. The apportioned values for the period 23/09/2013 to 07/10/2013 and 09/08/2018 to 31/08/2018; has been compared with daily figure from controller meter as well. However, the values that are derived on pro rata basis from the total generation for 09/2013 and 08/2018, are conservative and so considered for Emission-Reduction calculation. <p>The compared-values are part of the Emission-Reduction sheet.</p>				
Documentation provided by project participant				
<ol style="list-style-type: none"> 1. <i>Updated ER Sheet.</i> 2. <i>Updated Monitoring Report.</i> 				
DOE assessment				Date: 22/12/2021
<p>The PP has submitted updated MR and ER sheet; following information has been verified:</p> <ol style="list-style-type: none"> 1. The PP has applied error-factor for the entire billing-period of 09/02/2017 to 09/03/2017 in revised ER sheet for delay period, same has been found to be correct and accepted. 2. The PP has provided ER sheet and LCS data in ER sheet for comparison of apportioned values for the period 23/09/2013 to 07/10/2013 and 09/08/2018 to 31/08/2018; the PP has applied conservative approach for estimation of value for total generation for 09/2013 and 08/2018. Same is found to be correct, hence accepted. <p>Based on review above responses and revised ER sheet and MR, the PP has satisfactorily address all the above issue, hence CAR#5 has been closed.</p>				

Table 4. FAR from this verification

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

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Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
04.0	6 April 2021	Revision to: <ul style="list-style-type: none"> Reflect the “Clarification: Regulatory requirements under temporary measures for post-2020 cases” (CDM-EB109-A01-CLAR).
03.0	31 May 2019	Revision to: <ul style="list-style-type: none"> Ensure consistency with version 02.0 of the “CDM validation and verification standard for project activities” (CDM-EB93-A05-STAN); Make structural and editorial improvements.
02.1	11 January 2018	Editorial revision to correct the numbering of appendices in the instructions.
02.0	31 October 2017	Revision to align with the requirements of the “CDM validation and verification standard for project activities” (version 01.0).
01.0	23 March 2015	Initial publication.
Decision Class: Regulatory Document Type: Form Business Function: Issuance Keywords: project activities, verifying and certifying		