



THEPARAK WIND IN THAILAND



Document Prepared By 4K Earth Science Private Limited

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Summary:

4K Earth Science Private Limited (4KES) has performed the verification of the project “THEPARAK WIND IN THAILAND” VCS ID 2002, against VCS Standard Version 4.4. The project involves installing of 30 Wind Turbine Generators (WTGs), each with a capacity of 3.0 MW, resulting in a total capacity of 90 MW for the wind power project in Thailand. The project is developed by Theparak Wind Co., Ltd. The electricity generated by the project activity displaces the grid electricity and there by avoid associated CO₂ emission.

During the current monitoring period, project activity undergoes continued operation since their commissioning and no major breakdown had taken place

The proposed project is a voluntary action being undertaken by Theparak Wind Co., Ltd. The Kosher Climate India Private limited (hereafter referred as “Kosher Climate”) is acting as the other party for this project activity.

The scope of verification includes confirming the implementation of the monitoring plan of the registered VCS PD (Version 2.1, Dated 16-December-2019) and the application of the monitoring methodology “ACM0002: Grid-connected electricity generation from renewable sources” Version 19.

This is the 4th monitoring period of first crediting period from 01-August -2022 to 31-May-2023 (including both the days).

The verification is consisted of three phases: i) desk review of the project; ii) interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final verification report and opinion. The overall verification, from Contract Review to Verification Report & Opinion, was conducted following 4KES internal quality procedures.

During the verification process 01 CARs, 02 CLs and 00 FARs were raised. All the findings have been closed satisfactorily and the same has been discussed in Appendix II.

4KES confirms that the monitoring system is in place and the emission reductions are calculated without material misstatements. The emission reductions from the project activity “THEPARAK WIND IN THAILAND” in

India during the period 01-August -2022 to 31-May-2023 (including both the days) amount to 1,24,587 tonnes of CO₂e.

The management of the 'Kosher Climate India Private Limited' responsible for the preparation of the GHG emissions data and the reported GHG emissions reductions on the basis set out within the project final monitoring report Version 03 dated 14/02/2024. The development and maintenance of records and reporting procedures are in accordance with the Monitoring Report Version 03 dated 14/02/2024.

It is our responsibility to express an independent GHG verification opinion on the GHG emissions and on the calculation of GHG emission reductions from the project for the period 01- August -2022 to 31-May -2023 based on the reported emission reductions in the final Monitoring Report Version 03 dated 14/02/2024 for the same period.

Based on an understanding of the risks associated with reporting GHG emissions data and the controls in place to mitigate these, 4KES planned and performed our work to obtain the information and explanations that we considered necessary to provide sufficient evidence for us to give reasonable assurance that this reported amount of GHG emission reductions for the period is fairly stated.

Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
2022	64,684	0	0	64,684
2023	59,032	0	0	59,032
Total	1,24,587	0	0	1,24,587

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1 INTRODUCTION

1.1 Objective

Kosher Climate India Private limited has contracted 4K Earth Science Pvt. Ltd (4KES) to perform VCS Verification of the 'THEPARAK WIND IN THAILAND' in Thailand (hereafter called project). This project has already been registered as a VCS project (VCS ID 2002). The objective of this verification is a thorough and independent assessment of registered project activities against the applicable VCS requirement by the DOE. The verification process shall determine whether the proposed project activity complies with the requirements of latest VCS guidelines, applicability conditions of the selected methodology, relevant host country regulations and guidance issued by the VCS Board.

1.2 Scope and Criteria

The verification scope is given as an independent and objective review of the project design and monitoring plan which is included in the MR and other relevant supporting documents.

The scope of work covered in the verification is described below:

- To verify whether the project activity meets the requirements of VCS Standard Version 4.4/09/ and VCS program guide 4.3/10/ including additionality and compliance with local laws.
- To evaluate whether the baseline and monitoring plan are in conformance with the applied methodology from the VCS approved GHG program.
- To confirm that the information presented are completed, consistent, transparent and free of omission or material error.
- Background investigation and follow up interviews.

The information in the MR is reviewed against the criteria of VCS Standard 4.4/09/, VCS Program Guide 4.3/10/ and the approved baseline and monitoring CDM methodology ACM0002: Grid-connected electricity generation from renewable sources, version 19.0/8/

4KES has performed validation based on a risk-based approach focusing mainly on the significant risks to meet the qualification criteria and the ability to generate Verified Carbon Units (VCUs).

The scope of verification is to assess the claims and assumptions made in the MR against the VCS criteria, including but not limited to, VCS standard, applied methodology and other relevant rules and requirements established for VCS project activities.

1.3 Level of Assurance

The verification report is based on MR /01/, Monitoring plan, supporting documents made available to the verifier and information collected through performing interviews during the on-site audit. Based on the process and procedures conducted, 4KES states with a reasonable level of assurance that information in the MR:

- is materially correct and is a fair representation of the actual project details, and
- is prepared in accordance with VCS requirements and the applied CDM methodology for information pertaining to additionality, GHG qualification, monitoring and reporting.

The verification work is carried out as per this requirement and the verification opinion is assured provided the credibility of all above. Details are presented in the Validation & Verification statement in section 4 below.

The verification team verified the complete monitoring data and for the monitoring parameter of the monitoring plan MR /01/, ER Calculation sheet /02/ and confirms that the reported emission reductions are free from any type of material errors. On-site audit was also conducted to verify the implementation and monitoring plan of the project activity. The implementation of the project activity (i.e., major equipment and the metering arrangement) was verified during the interview and found in accordance with the MR /01/. Verification team has also verified the technical details of the project equipment and metering arrangement with the supportive documents and found correct. Therefore, 4KES confirms that the verification is conducted with reasonable level of assurance.

1.4 Summary Description of the Project

The main purpose of this project activity is to generate clean form of electricity through renewable wind energy sources. The project activity aims to harness wind energy through installation of wind power plant with total installed capacity of 90 MW.

The project activity involves the installation of Wind Turbine Generators (WTG) in Nakhon Ratchasima of Thailand (T1 Wind farm). The project is developed by Theparak Wind Co., Ltd, Thailand. Theparak Wind Co., Ltd is a subsidiary of Wind Energy Holding Co., Ltd. The project consists of 30 wind turbine generators (WTGs), each with a capacity of 3MW. The project WTGs are installed in the Nongwang, Bueng Prue and Samnaktakhro sub-districts of Thepharak District, Nakhonratchasima Province in Thailand. As per MR, the electricity generated from the project is supplied to grid which is confirmed form approved VCS PD/4/, verification of PPA, interview with PP.

The geographical coordinates of the WTGs are given below:

S.No	WTG ID	Latitude (° N)	Longitude (° E)	Sub-District	District
1	T1-001	15.242054	101.460692	Nongwang	Thepharak
2	T1-002	15.246658	101.456607	Nongwang	Thepharak
3	T1-003	15.256905	101.452232	Nongwang	Thepharak
4	T1-005	15.254707	101.455412	Nongwang	Thepharak
5	T1-006	15.258259	101.463981	Nongwang	Thepharak
6	T1-008	15.263423	101.451656	Nongwang	Thepharak
7	T1-009	15.260403	101.452248	Nongwang	Thepharak
8	T1-010	15.266278	101.450251	Nongwang	Thepharak
9	T1-012	15.269408	101.449759	Nongwang	Thepharak
10	T1-014	15.277282	101.452011	Bueng Prue	Thepharak
11	T1-015	15.271481	101.470777	Nongwang	Thepharak
12	T1-016	15.27439	101.466817	Nongwang	Thepharak
13	T1-017	15.280839	101.450052	Bueng Prue	Thepharak
14	T1-020	15.26096	101.463356	Nongwang	Thepharak
15	T1-021	15.29131	101.452738	Bueng Prue	Thepharak
16	T1-022	15.287584	101.454698	Bueng Prue	Thepharak
17	T1-101	15.254172	101.468782	Nongwang	Thepharak
18	T1-102	15.250278	101.454386	Nongwang	Thepharak
19	T1-103	15.283807	101.489087	Bueng Prue	Thepharak
20	T1-104	15.285599	101.485604	Bueng Prue	Thepharak
21	T1-106	15.283887	101.473835	Bueng Prue	Thepharak
22	T1-108	15.305588	101.483107	Bueng Prue	Thepharak
23	T1-109	15.3008	101.484177	Bueng Prue	Thepharak
24	T1-110	15.297277	101.484846	Bueng Prue	Thepharak
25	T1-111	15.300758	101.479076	Bueng Prue	Thepharak
26	T1-112	15.297185	101.502467	Samnaktakhro	Thepharak
27	T1-113	15.293929	101.501811	Bueng Prue	Thepharak
28	T1-114	15.289313	101.50348	Samnaktakhro	Thepharak
29	T1-115	15.283835	101.50148	Samnaktakhro	Thepharak
30	T1-119	15.308079	101.492939	Bueng Prue	Thepharak

Location of the project was verified through Google Map (<https://maps.google.com/maps>) and found consistent with the data provided in the registered PD/4/.

All the WTGs of the project activity were commissioned on 27-November-2018. The commissioning date of the project is verified against the commissioning certificates/7/. The WTGs are operational continuously since commissioning without any major outages.

The electricity generated by the project is exported to the Thailand National grid. The project activity will therefore displace an equivalent amount of electricity which would have otherwise

been generated by fossil fuel dominant electricity grid. Since wind power is Greenhouse Gas (GHG) emissions free, the power generated will prevent the anthropogenic gas emissions generated by fossil fuel based thermal power stations comprising coal, natural gas, diesel, and bunker oil.

As per registered PD, the project activity results in replacing anthropogenic emissions of greenhouse gases (GHG's) estimated to be approximately 156,167 tCO₂e per year.

During the monitoring period from 01-August -2022 to 31-May-2023 (including both days), the project replaced 1,24,587 tones of CO₂e by displacing the 218,881 MWh electricity.

2 VERIFICATION PROCESS

The registered VCS project is undergoing Fourth verification under VCS (1st Crediting period), the approach adopted to ensure the quality of emission reductions is described in the following sections.

2.1 Method and Criteria

4KES assessed and determined whether the proposed implementation and operation of the project activity, and the steps taken to report emission reductions comply with the criteria and relevant guidance provided by the VCS Board. The validation/verification process consists of the following phases;

- The desk review of documents and evidences submitted by the project proponent in context of the reference VCS rules and guidelines,
- Undertaking on-site audit, interview or interactions with the representative of the project proponent,
- Reporting audit findings with respect to clarifications and non-conformities and the closure of the findings, as appropriate.
- Preparing a draft verification report
- Resolution of outstanding issues and the issuance of final validation and verification report and opinion
- The prepared validation & verification report and other supporting documents then undergo an internal quality control before being submitted to the Verra Secretariat for registration & issuance of credits as per VCS standard version 4.4 /09/
- In order to ensure transparency, a validation & verification protocol was prepared for the project according to the VVS for PAs version 03.0 validation & verification requirements and VCS Standard version 4.4/09/. The Clarification Requests (CL) were issued where additional information was needed to clarify issues, and Forward Action Requests (FAR) for issues relating to project implementation that required review during the next verification of the project activity.
- 4KES assessed and determined whether the proposed implementation and operation of the project activity, and the steps taken to report emission reductions comply with the criteria and relevant guidance provided by the VCS Board.

The prepared verification report and other supporting documents then undergo an internal quality control before being submitted to the VCS executive board for issuance of credits as per VCS standard version 4.4.

2.2 Document Review

The verification is performed primarily as a document review of the approved VCS PD, previous MR and Verification report and associated documents as stated in detail in appendix 1 of this document. The assessment is performed by a verification team using a protocol. The cross checks between information provided in the Monitoring report, VCS PD and information from sources other than those used, if available, the team's sectoral or local expertise and, if necessary, independent background investigations.

2.3 Interviews

As a part of verification, the on-site assessment was performed by assessment team on 25th July 2023. During site visit, the verification team interviewed representative of PP and O&M team who is responsible for monitoring of the project activity. Kindly find below names of the persons interviewed.

Sr. No	Name of the person	Role/Designation
1	Nojeng Thansirikoon	Site In charge
2	Narong Songpan	Site O&M Manager
3	Wissanu Punmaha,	Project Engineer

2.4 Site Visits

As a part of verification, the on-site assessment was performed by assessment team on 25th July 2023. No sampling procedures were adopted in document verification and all the document were cross checked to ensure conservative estimation of emission reduction. The details of the site visit are given below:

Duration of on-site inspection: 25/07/2023				
No.	Activity performed on-site	Site location	Date	Team member
1.	Opening Meeting	Site office	25/07/2023	M P Kanal Praveen
2	Site visit	Project site	25/07/2023	
3	Verification of monitoring records, interviews and database inspection	Site office	25/07/2023	
4	Closing meeting	Site office	25/07/2023	

2.5 Resolution of Findings

The objective of this step is to identify, discuss and conclude on the issues related to the monitoring, implementation and operations of the registered project activity that could impair the capacity of the registered project activity to achieve emission reductions or influence the monitoring and reporting of emission reductions. This is done based on the desk review and onsite assessment. The verification team prepares and/or updates a verification protocol (internal document) that records the conformities and non-conformities, which may be of following types;

CAR (Corrective Action Request) is raised if one of the following occurs:

- Non-compliance with the monitoring plan, the methodology or the standardized baseline are found in monitoring and reporting and has not been sufficiently documented by the project participants, or if the evidence provided to prove conformity is insufficient;
- Modifications to the implementation, operation and monitoring of the registered project activity has not been sufficiently documented by the project participants;
- Mistakes have been made in applying assumptions, data or calculations of emission reductions that will impact the quantity of emission reductions;
- Issues identified in a FAR during validation to be verified during verification or previous verification(s) have not been resolved by the project participants.

Clarification request (CL) is raised if information is insufficient or not clear enough to determine whether the applicable CDM requirements have been met. All CARs and CLs raised by the 4KES during verification shall be resolved prior to submitting a request for issuance.

During the Verification process, total 01 CAR and 02 CLs were raised and resolved satisfactorily. No FAR has been raised in the verification. The list of CARs/CLs/FARs raised and the response provided, the mean of validation, reasons for their closure and references to correction in the relevant documents are provided in Appendix II of this report.

2.5.1 Forward Action Requests

The project activity is undergoing fourth verification of 1stcrediting period under VCS; there were no FARs raised during the validation or previous verification.

2.6 Eligibility for Validation Activities

The Validation and verification body holds accreditation to carry out both validation and verification activities. The accreditation scope can be checked from the link:

<http://cdm.unfccc.int/DOE/list/DOE.html?entityCode=E-0069>

3 VALIDATION FINDINGS

3.1 Participation under Other GHG Programs

The assessment team checked registries of other carbon mechanism such as CDM & Gold Standard Global Carbon Council and confirmed the project is not registered under any other GHG programs. The project is seeking registration only in VCS program. PP has also provided a declaration/16/ that the PP will not claim emission reduction from any other GHG program for the reported monitoring period.

The project is not registered under any other emissions trading program or any other mechanism that includes GHG allowance trading PP also confirms that net GHG emission reductions or removals generated during this monitoring period shall not be used for compliance under any such programs or mechanisms. This was confirmed through a declaration/16/ submitted by the PP and hence accepted by the assessment team.

3.2 Methodology Deviations

There is no methodology deviation applied during the current monitoring period.

3.3 Project Description Deviations

No deviation from the project description is applied during the correction monitoring period.

3.4 Grouped Project

Not applicable. The project activity is not a grouped project.

4 VERIFICATION FINDINGS

4.1 Project Implementation Status

The project activity is installation 90 MW Wind power project promoted by Theparak Wind Co., Ltd. The purpose of the project activity is to generate clean electricity with utilization of wind energy. The project location and commissioning details are given below:

Project Investors' Name	Theparak Wind Co., Ltd
Grouped Capacity in MW	90
Commissioning Date	27-November-2018
Location	Nongwang, Bueng Prue and Samnaktakhro sub-districts of Thepharak District, Nakhonratchasima Province in Thailand
Geographical Coordinates	Refer section 1.4 above

Starting date of the operation of the project activity is 27-November-2018 which is the date of commissioning/commercial operation of the wind plant.

The wind power plant comprises a wind turbine, generator, transformer, SCADA system, substation, and various relays. It was verified with the PD. The technical specification/6/ of equipment has been verified during the on-site visit and found in order /. The commissioning has also been duly validated in the VCS validation report of the project activity/04/. There was no major breakdown or shutdowns during the monitoring period which might affect the applicability of methodology or might cause material errors in emission reductions.

The assessment team confirmed that there is no proposed or actual change to the project design during this monitoring period. There was no major breakdown or shutdown during the monitoring period which might affect the applicability of methodology or might cause material error in emission reduction.

The organisational role and responsibility as mentioned in the registered VCS PD & monitoring report is followed onsite. All the monitoring equipment was calibrated as per the specified interval in the registered VCS PD & monitoring report. It is observed that the Calibration for the current monitoring period is not valid for the period 21/02/2023 to 31/05/2023. All the emergency preparedness as mentioned in the registered VCS PD & monitoring report is followed onsite and no discrepancies were found regarding the same.

It was also observed during the verification process that project is not rejected by any other GHG program around the world. Declaration in that effect is also provided by PP.

The assessment team found that the project is in line with the registered VCS PD, hence no deviation is mentioned in the monitoring report. No other deviation on project design or monitoring plan is observed.

Assessment team concludes the following:

- There are no material discrepancies between project implementation and the project description provided in the registered PD/04/.
- The monitoring plan is implemented completely and monitoring system (i.e., process and schedule for obtaining, recording, compiling and analysing the monitored data and parameters) is appropriate.
- There are no material discrepancies between the actual monitoring system, and the monitoring plan set out in the project description and the applied methodology/08/.
- The GHG emission reductions or removals generated by the project have not included in an emissions trading program or any other mechanism that includes GHG allowance trading/16/.
- The project has not received or sought any other form of environmental credit, or has become eligible to do so since validation or previous verification.

In view of the information's as verified above the assessment team is able to conclude that the project has been implemented as described in the project description.

4.2 Safeguards

4.2.1 No Net Harm

The project is a wind power project which is a cleaner source of power generation. The wind power project does not emit any GHG or any other toxic gases. Hence, wind power plant has no significant negative impact on the environmental and socio-economic activities

4.2.2 Local Stakeholder Consultation

As per the section 2.2 of the MR, the projects have continuous feedback mechanism and kept a grievance register to receive any feedback/grievances from stakeholder.

The stakeholder consultation meeting took place at the site office on 2nd September 2019. Invitation notices were put up in the local government offices at least a week in advance of the consultations. In the introductory speech, the representatives of developer welcomed the gathering and informed the stakeholders about the project activity; project's associated benefits with respect to CO2 emission reductions and explained the purpose of conducting the stakeholder meeting in order to gather the views and comments of the local stakeholders on the project activity. Subsequent to the introductory speech, comments were received from the stakeholders.

4.3 Specific Safeguards

Not Applicable.

4.4 Accuracy of GHG Emission Reduction and Removal Calculations

The verification team assessed whether the data and calculations of GHG emission reductions achieved resulting from the MR. The verification team has checked whether calculations of baseline GHG emissions, project GHG emissions and leakage GHG emissions have been carried out in accordance with the formulae and methods described in the monitoring plan of the VCS PD and MR.

In detail the following has been verified:

Transparency: It has been checked whether the calculation of baseline emissions is fully traceable and, where used, the Excel calculation provides all calculation formulae.

Parameter consistency: It has been checked whether all internal and external parameters and data used for the calculation are applied consistently in the monitoring report and the calculation spreadsheet.

Correctness: It has been checked whether the applied formulae and methods for calculating baseline emissions are in accordance with the monitoring plan and the approved methodology.

Completeness: It has been checked whether all calculations are complete and without omissions

Baseline emission: The baseline Emissions for a given year is calculated by multiplying the energy baseline (EB) with the regional grid emission factor.

Parameters not monitored/ex-ante:

Operating margin CO2 emission factor of Thailand National Grid

	Discussion and verification assessment
Purpose of data	Calculation of baseline emissions
Verified value	0. 5719
Source of value	Validated ex-ante.
Justification	Values are checked from registered PD and VCS validation report

Build margin CO2 emission factor of Thailand National grid

	Discussion and verification assessment
Purpose of data	Calculation of baseline emissions
Verified value	0.5609
Source of value	Validated ex-ante.
Justification	Values are checked from registered VCS PD and validation report

Combined margin CO₂ emission factor of Thailand National grid

	Discussion and verification assessment
Purpose of data	Calculation of baseline emissions
Verified value	0.5692 tCO ₂ /MWh
Source of value	Validated ex-ante
Justification	Values are checked from registered VCS PD and VCS validation report

In the opinion of assessment team, the assumptions, emission factors and default values that were applied in the calculations have been justified.

Formula Used:-

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

Where;

BE_y : Baseline emissions in year y (tCO_{2e}/yr)

$EG_{PJ,y}$: Quantity of net electricity generation that is produced and fed into the grid as a result of the implementation of the project activity in year y (MWh/yr)

$EF_{grid,CM,y}$: Combined margin CO₂ emission factor for grid connected power generation in year y calculated using the latest version of the “Tool to calculate the emission factor for an electricity system” (tCO₂/MWh)

$EG_{PJ,y}$: The verification team has checked the entire monthly JMR/credit reports and invoices applicable for the monitoring period as per the project activity applied for verifications and found all the parameters are monitored and recorded as per the monitoring plan in the approved PD.

The verification team has crosschecked the emission reduction sheet and monitoring report data with the JMR sheet and invoice bills and found all the values are matching.

$EF_{grid,CM,y}$ - As verified from the registered PD the Combined margin CO₂ emission factor for grid is 0.5692 tCO₂/MWh which is fixed ex-ante

Project Emission:

Since the project is a greenfield renewable energy generation facility (wind), $PE_y = 0$.

Leakage: As per methodology and registered VCS PD the leakage is zero. $LE_y = 0$.

Emission Reduction:

Emission reduction is calculated as below:

$$ER_y = BE_y - PE_y - LE_y$$

PP has submitted emission reduction calculation in the excel sheet/2/. The emission reduction calculation in the excel sheet is checked whether the calculation is in accordance with the formula given in the approved PD/4/ and the selected methodologies/8/.

The calculations of emission reduction have been carried out in accordance with the equations and methods described in the registered monitoring plan and applied methodology.

The emission factor applied is an ex-ante value valid for the fixed crediting period.

Any assumptions used in emission or removal calculations have been justified.

Appropriate emission factor and other reference values have been correctly applied. It can be confirmed that the emission reduction calculation is overall correct.

The ER calculation sheet provided is clear, transparent and the calculations provided in the sheet are reproducible.

Hence, the emission reduction reported in the monitoring report for the monitoring period is verified to be correct.

4.5 Quality of Evidence to Determine GHG Emission Reductions and Removals

The only monitoring parameter in the project activity is “Quantity of net electricity generation supplied by the project plant/unit to the grid in year” (**EG PJ, y**). This parameter is monitored through energy meters installed at the project substation. The project has dedicated energy meter at high voltage level and the export and import reading are recorded every month. The EGAT will record the export, import and net electricity (as difference between export & import).

The export, and import & net energy generated will be reported in monthly energy meter reading statement which is the source for the parameter “Quantity of net electricity generation supplied by the project plant/unit to the grid in year” (**EG PJ, y**).

The monthly net export is recorded in monthly energy meter reading statement which is signed by EGAT and PP. The appropriateness of reading is assessed as below:

Criteria/Requirements	Assessment/Observation
Measuring /Reading /Recording frequency	The electricity exported to the grid is determined through static meter reading and bulk energy meter installed at government sub-station. The electricity exported is measured on continuous basis and reported monthly.
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 approved PD/04/ and monitoring methodology/8/.
Monitoring equipment	Energy meters (main & Check) installed at substation.
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 energy meters are two-way tri-vector meters of accuracy class 0.2s. Accuracy of the monitoring equipment's is in accordance with the monitoring plan as outlined in the PD.
Is the accuracy valid for the entire measuring range or do different accuracy levels apply to different measuring ranges?	Yes, the accuracy valid for the entire measuring range.
Calibration frequency /interval:	1 year
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
Is the calibration of measuring equipment carried out by an accredited person or institution?	Calibration of the measuring equipment's is carried out by an accredited entity.

Is(are) calibration(s) valid for the whole reporting period?	No, the calibration is not valid for the period 21/02/2023 to 31/05/2023. Hence, PP adjusted Feb 2023 to May 2023 export & import reading are adjusted with maximum possible error as described below: Adjusted Export = Recorded Export* (1-0.2%) Adjusted Import = Recorded Import *(1+0.2%)
Is the calibration carried out for a measuring range comparable with the range for which measurements have been carried out?	Yes, calibration carried out for a measuring range comparable with the range for which measurements have been carried.
How were the values in the monitoring report verified?	Reported values of this parameter have been verified with monthly joint meter readings/ /12/. Value of this parameter for the current monitoring period are verified and the values is 218,881 MWh Furthermore, monthly values of this parameter are reported in the ER calculation sheet/02/ are also verified with the MR/01/ and found to be consistent.
If applicable, has the reported data been cross-checked with other available data?	The monthly reported values of this parameter were further cross checked with the monthly invoices raised by the PP /13/ 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?	Yes, the adequate QA/QC procedures were implemented by all the stakeholders, namely, the Grid Authority, the PP and the O&M team. The Net electricity exported to the grid is cross checked against the invoice raised by the PP towards the EGAT and found to be correct.

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.
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Parameter fixed ex-ante:

EF_{grid,OM,y}; tCO₂e/MWh: it is the Operating Margin emission factor for Thailand National Grid fixed at the time of project registration and mentioned value of 0. 5719 tCO₂e/MWh is consistent with the registered VCS PD/04/.

EF_{grid,BM,y}; tCO₂e/MWh: it is the Build Margin emission factor for Thailand National grid fixed at the time of project registration and mentioned value of 0.5609 tCO₂e/MWh is consistent with the registered VCS PD/04/.

EF_{grid,CM,y}; tCO₂e/MWh: it is the Combined Margin emission factor for Thailand National grid fixed at the time of project registration and mentioned value 0.5692 tCO₂e/MWh is consistent with the registered VCS PD/04/.

Calibration of meters: During the verification assessment of the project activity, accuracy of all the metering have been checked and found appropriate. The bulk energy meters installed at the substation are at the control of EGAT and are regularly calculated by EGAT. Details of meter calibration are provided in below table:

Details	Calibration date	Calibration due date
Main Meter Mt.No:51515191	15/03/2020	14/03/2021
	22/03/2021	21/03/2022
	21/02/2022	20/02/2023
Backup Meter Mt.No:51515192	15/03/2020	14/03/2021
	22/03/2021	21/03/2022
	21/02/2022	20/02/2023

The energy meter calibration certificates/14/ are checked and found that the calibration details provided in the MR is correct. It is found that energy meters are calibrated as per the required frequency (ie,1 years) except for the period of 21/02/2023 to 31/05/2023. Hence PP applied maximum possible error of 0.2% for both export & import for the entire month of Feb 2023 to May 2023.

The assessment team has verified the monthly joint meter reading report issued by respective state utility and confirmed that only the data recorded through main meters is used to calculate net electricity supplied to the grid by the projects belongs to particular developer and consequently for ER

calculations. As verified through the calibration certificates, that meters were working satisfactorily during the current monitoring period.

In view of the above discussion the assessment team able to confirm that evidence used to determine the GHG reductions and removals are sufficient and appropriate with respect to quality and quantity.

GHG Calculations

The emission reduction as per the applied methodology equals the baseline emissions (project emissions and leakage emissions for such project activities is considered zero). The formula provided for the calculation of baseline emissions is:

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

Year	EG _{PJ,y} (MWh)	EF _{grid,CM,y} (tCO ₂ /MWh)	BE _y (tCO ₂)*
2022	1,13,641	0.5692	64,684
2023	1,05,240	0.5692	59,903
Total	2,18,881	0.5692	1,24,587

Since project emission and leakage are zero, baseline emission is equal to emission reduction.

$$ER_y = BE_y$$

The emission reduction for each month is provided in ER calculation sheet, and the summary of emission reduction is as below:

Year	Baseline emissions or removals* (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
2022	64,684	0	0	64,684
2023	59,903	0	0	59,903
Total	1,24,587	0	0	1,24,587

The verification team confirms that appropriate methods and formulae for calculating baseline emissions have been followed. The assumptions, emission factors and default values that were applied in the calculations are justified. All the data were made available and have monitored as per required monitoring frequency. The means of verification for the values of parameters, used for baseline emission calculation, is described above.

However, verification team has observed that the actual ER achieved during the current monitoring period is 4.21% lower than the estimated ER as per registered PD for the comparable period. Since the emission reduction is less than the estimated emission reduction, no further justification is required

4.6 Non-Permanence Risk Analysis

Not applicable.

5 VERIFICATION OPINION

4K Earth Science Pvt. Ltd (4KES), contracted by Kosher Climate India Private limited, has performed the independent verification of the emission reductions for the VCS project activity “THEPARAK WIND IN THAILAND” (VCS ID- 2002) in Thailand for the monitoring period 01-August -2022 to 31-May-2023 as reported in the Monitoring Report Version 03 dated 14 February 2024. The Kosher Climate India Private limited and the project proponent are responsible for the collection of data in accordance with the monitoring plan 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

4KES commenced the verification on the basis of the baseline and monitoring methodology ACM0002, Version 19., the monitoring plan contained in the registered VCS PD (Dated 16-December-2019 and VCS guidelines version 4.3 Monitoring Report (Version 03 dated 14 February 2024) as per the process described under Section 2 of this report.

4KES 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. 4KES planned and performed the verification by obtaining evidence and other information and explanations that 4KES considered necessary to give reasonable assurance that reported GHG emission reductions are fairly stated.

In our opinion the GHG emissions reductions reported for the project activity for the period 01-August -2022 to 31-May-2023 are fairly stated in the Monitoring Report Version 03 dated 14 February 2024. The GHG emission reductions were calculated correctly on the basis of the approved baseline and monitoring methodology ACM0002, Version 19, and the VCS standard.

Verification period: From 01-August -2022 to 31-May-2023

Verified GHG emission reductions and removals in the above verification period, broken down by calendar year:

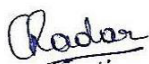
Year	Baseline emissions or removals (tCO ₂ e)	Project emissions or removals (tCO ₂ e)	Leakage emissions (tCO ₂ e)	Net GHG emission reductions or removals (tCO ₂ e)
2022	64,684	0	0	64,684
2023	59,903	0	0	59,903
Total	1,24,587	0	0	1,24,587

:

Approved by

Chandrakala R.

Managing Director



4K Earth Science Private Limited

Date: 26/02/2024

Place: Bangalore, India

APPENDIX 1: LIST OF DOCUMENTS

Ref. No	Title of Document	Version	Date
1	Monitoring Report	1.0	10/07/2023
		2.0	12/09/2023
		3.0	14/02/2024
2	Emission Reductions Calculation Spread sheet	1.0	10/07/2023
		2.0	12/09/2023
		3.0	14/02/2024
3	VCS Project page: https://registry.terra.org/app/projectDetail/VCS/2002	-	-
	Registered VCS Project Description	2.1	16/12/2019
	VCS Verification Report	1	17/12/2019
5	Previous Monitoring Report (3 rd Monitoring)	3	03/03/2021
	Previous Verification Report (3 rd Verification)	1	30/09/2022
6	Technical specifications of the project plant		
7	Commissioning certificates of the wind power plant	-	-
8	CDM Methodology: ACM0002: Grid-connected electricity generation from renewable sources	Version 19	-
9	VCS Standard	Version 4.4	17/01/2023
	VCS Program Guide	Version 4.3	17/01/2023
10	Clean Development Mechanism Validation and Verification Standard	03.0	09/09/2021
11	Grievances Registers	-	-
12	Monthly energy meter reading statement of project for the monitoring period	-	-
13	Invoices for the electricity sold for the monitoring period	-	-
14	Energy meter Calibration Certificates		
15	Break down details of the complete monitoring period	-	-
16	Declaration regarding no participation in other GHG program for the concerned monitoring period	-	-

APPENDIX II: VERIFICATION FINDINGS

Table 1: FAR from validation and/or previous verification

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

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Table 2: Clarification Requests

CL ID	01	Section no.	1.11	Date : 19/07/2023
Description of CL				
The proof for all the SDG contributions mentioned here are to be provided.				
Project Owner's response				Date : 22/09/2023
The CSR activities are submitted already.				
Documentation provided by Project Owner's				
DOE assessment				Date: 22/09/2023
The above clarification has found to be acceptable and ok. Thus CL 01 is closed.				

CL ID	02	Section no.	5.1,5.4,Appenmdix I	Date : 19/07/2023
Description of CL				
PO is to clarify the reason for the inconsistency in the total ER value as some places it is shown to be 1,24,586tCO ₂ and 1,24,587tCO ₂ . This should be made consistent throughout the MR.				
Project Owner's response				Date : 22/09/2023
The calculated ER value is 1,24,586tCO ₂ . The same have been update in the MR.				
Documentation provided by Project Owner's				
Revised MR				
DOE assessment				Date: 22/09/2023
In section 5.4 of Net GHG Emission Reductions and Removals, The total emission reduction is inconsistent with ER sheet and MR. Kindly rectify and send the updated MR.				
CL 02 is open				
Project Owner's response				Date: 22/09/2023

Section 5.4 of Net GHG Emission Reductions and Removals :the total emission reduction is correct and is consistent with ER sheet.	
Documentation provided by Project Owner's	
Revised MR	
DOE assessment	Date: 22/09/2023
The GHG Emission Reduction value has been revised and found to be ok. CL 02 is closed.	

Table 3: Corrective Action Requests

CAR	01	Section no.	ER Sheet.	Date : 19/07/2023
Description of CAR				
It is observed that for the months of February 23 and April 23 the value of the electricity generation has been rounded up from the generation report. Please revise this and use round down values.				
Project Owner's response				Date : 22/09/2023
<i>The round up have been removed for these months</i>				
Documentation provided by Project Owner's				
<i>ER sheet attached</i>				
DOE assessment				Date: 22/09/2023
For February 23 and April 23, the value of the electricity generation has been rounded up and found to be ok. Thus CAR 01 is closed				

APPENDIX III: TEAM COMPETENCE

<u>Certificate of Competence</u>		
Name	☒ Mr. ☐ Ms.	Ma Paa Puratchikkanal

Qualification Procedure	Fulfil the requirement as per the appointment of personnel procedure of 4KES for Validation and Verification of CDM/VCS/GS/GHG Projects.					
Appointed to work as:						
	CDM Validator/Verifier	Team Leader	Team Member	Technical Expert	Technical Reviewer	Financial Expert
Appointed	Yes	Yes	Yes	Yes	Yes	Yes
Appointed Date	15-07-2023					
Authorized to work as Technical Expert for:						
Authorized Technical Area	Sectoral Scope		TA Code	Technical Area within the scope		
	Energy industries (renewable - / non-renewable sources)		1.1	Thermal energy generation		
	Energy industries (renewable - / non-renewable sources)		1.2	Renewables		
	Energy demand		3.1	Energy demand		
	Construction		6.1	Construction		
	Waste handling and disposal		13.1	Solid waste and wastewater		
	Waste handling and disposal		13.2	Manure		
	Agriculture		15.1	Agriculture		
Authorized to work as Local Expert for:						
Country/Countries	India and Sri Lanka					
Compliance check by: Anand S. R.						

<u>Certificate of Competence</u>		
Name	☒ Mr.	Praveen Babu S

	☐ Ms.					
Qualification Procedure	Fulfil the requirement as per the appointment of personnel procedure of 4KES for Validation and Verification of CDM/VCS/GS/GCC/GHG Projects.					
Appointed to work as:						
	CDM Validator/Verifier	Team Leader	Team Member	Technical Expert	Technical Reviewer	Financial Expert
<i>Appointed</i>	No	No	Yes	Yes	No	No
<i>Appointed Date</i>	15/07/2023					
Authorized to work as Technical Expert for:						
<i>Authorized Technical Area</i>	Sectoral Scope	TA Code	Technical Area within the scope			
	Energy industries (renewable - / non-renewable sources)	1.2	Renewables			
Authorized to work as Local Expert for:						
<i>Country/Countries</i>	India					
Compliance check by: Anand S. R.						

<u>Certificate of Competence</u>						
Name	☒ Mr. ☐ Ms.	Rohit Badaya				
Qualification Procedure	Fulfil the requirement as per the appointment of personnel procedure of 4KES for Validation and Verification of CDM/VCS/GS/GHG Projects.					
Appointed to work as:						
	CDM Validator/Verifier	Team Leader	Team Member	Technical Expert	Technical Reviewer	Financial Expert
<i>Appointed</i>	Yes	Yes	Yes	Yes	Yes	No
<i>Appointed Date</i>	15-07-2023					

Authorized to work as Technical Expert for:			
Authorized Technical Area	Sectoral Scope	TA Code	Technical Area within the scope
	Energy industries (renewable - / non-renewable sources)	1.1	Thermal energy generation
	Energy industries (renewable - / non-renewable sources)	1.2	Renewables
	Energy distribution	2.1	Energy distribution
	Energy demand	3.1	Energy demand
	Waste handling and disposal	13.1	Solid waste and wastewater
	Waste handling and disposal	13.2	Manure
Authorized to work as Local Expert for:			
Country/Countries	India		
Compliance check by: Anand S. R.			

APPENDIX IV: ABBREVIATIONS

BM	Build Margin
CAR	Corrective Action Request
CDM	Clean Development Mechanism
CL	Clarification Request
DPR	Detailed Project Report
EB	Executive Board
EIA	Environmental Impact Assessment
ER	Emission Reductions
FAR	Forward Action Request
GHG	Greenhouse Gases
IPCC	Intergovernmental Panel for Climate Change
JMR	Joint Meter Readings

LCS	Local Controller System
MP	Monitoring Period
MR	Monitoring Report
MW	Mega Watt
MWh	MegaWatt hour
OM	Operating Margin
O&M	Operation & Maintenance
PD	Project Description
PP	Project proponent
PPA	Power Purchase Agreement
QA/QC	Quality Assurance/Quality Control
tCO ₂	Tonnes of Carbon Dioxide
UNFCCC	United Nations Framework Convention on Climate Change
VCS	Verified Carbon Standard
VCSA	Verified Carbon Standard Association
VCU	Verified Carbon Unit