



**Verified Carbon
Standard**

50 MW TSETSII WIND FARM IN MONGOLIA



Document Prepared by EKI Energy Services Limited

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1 PROJECT DETAILS

1.1 Summary Description of the Implementation Status of the Project

The project activity generate clean form of electricity through renewable wind energy source. The project owner is Clean Energy Asia LLC (CEA). 50 MW Tsetsii Wind Farm in Mongolia (hereafter referred to as the Project) is located in Tsogttsetsii Soum, in the South Gobi region of Mongolia. The project has a total installed capacity of 50.0 MW consisting of 25 wind turbines with unit capacity of 2.0 MW. The project involves Vestas make V110-2.0MW WTG model (25 WTGs) of make 2.0 MW each WTGs. The power generated has been delivered to the National Power Transmission Grid (NTPG) Limited under a power purchase agreement.

The project started construction on 14-September-2016 and starts commercial operation on 27-November-2017 and fully operation on 08-May-2018.

During the Current Monitoring Period from 01-April-2021 to 31-March-2022 (First and last date included) the project activity has supplied 170,923.86 MWh of electricity,

The emission reduction during this monitoring period from 01-April-2021 to 31-March-2022 is 148,874 tCO₂e.

1.2 Sectoral Scope and Project Type

The project activity falls under the following Sectoral scope and Project Type:

Sectoral Scope : 01 - Energy industries (renewable / non-renewable sources)

Project Type : I - Renewable Energy Projects

Project Category : Grid-connected electricity generation from renewable sources
ACM0002- Version 19.0

More information on the methodology and tools listed above is available at the following

website: <http://cdm.unfccc.int/methodologies/index.html>

The project is not a grouped project activity.

1.3 Project Proponent

Organization name	Clean Energy Asia LLC
Contact person	Turbold Enkhtuvshin

Title	PP Representative
Address	10F, Naiman Zovkhis Building, 21 Seoul Street, Ulaanbaatar, 14251, Mongolia
Telephone	Tel: +976 11 31383, +967 11 311967
Email	Turbold@cea.mn

1.4 Other Entities Involved in the Project

Organization name	EKI Energy Services Limited
Role in the Project	Project Consultant
Contact person	Anjali Rao
Title	Project Manager
Address	Office No 201, Plot No 48, Scheme 78, Part 2, Vijay Nagar, Indore-452010, Madhya Pradesh, India
Telephone	7489924003
Email	registry@enkingint.org

1.5 Project Start Date

Start date of the project activity is the earliest date of interconnection with the grid i.e. 27-November-2017 which is project started operational date.

1.6 Project Crediting Period

Crediting Period Start date: 27-November-2017

Crediting Period End date: 26-November-2027

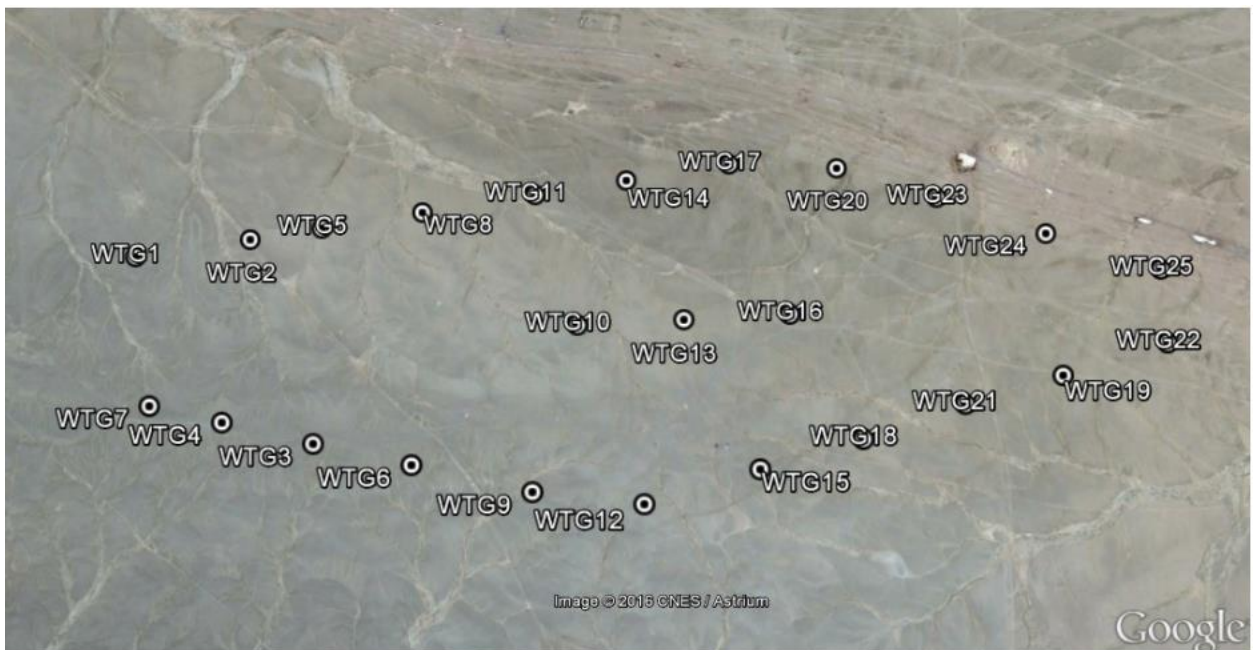
Total number of years: 10 years

The project activity adopts renewable crediting period of 10 years period which can be renewed for maximum 2 times.

1.7 Project Location

The project is located Tsogttsetsii Soum, South Gobi, Mongolia. The coordinates of the proposed project location are 43°33'6.904" to 43°33'58.186" North latitude and 105°34'50.16" to 105°38'28.0176" East longitude. The site is 1,587-1,597m above sea level.

Fig. 1 shows the location of the project.



1.8 Title and Reference of Methodology

Title : Grid-connected electricity generation from renewable sources

Reference : The project activity meets the eligibility criteria of large scale project as it is more than 15 MW

Methodology : ACM0002: Grid-connected electricity generation from renewable sources -Version 19.0

Type I : Energy industries (renewable / non-renewable sources)

Category : Approved Consolidated Methodology (ACM0002)

Tools referred with above methodology and applicable for project activity are:

- Tool to calculate the emission factor for an electricity system³³ - Version 07.0 (EB 100, Annex 04)
- Methodological Tool- Tool for the demonstration and assessment of additionality - Version 07.0.0 (EB 70, Annex 08)

1.9 Participation under other GHG Programs

The project has neither been registered nor seeking registration under any other GHG programs. The project is seeking registration only in VCS program.

1.10 Other Forms of Credit

Include the following information, as applicable:

- Emission Trading Programs and Other Binding Limits: The PP has not applied this project in any Emission Trading Programs and other Binding Limits.
- Other Forms of Environmental Credit: The PP has not applied this project in any other form of environmental credits or for REC benefits. PP not participating for REC benefits can be verified from this link-
https://www.recregistryindia.nic.in/index.php/publics/accredited_regens

1.11 Sustainable Development Contributions

The project activity has beneficial effect on the local environment and employment in the nearby region. Clean Electricity generation through Wind energy result in avoidance of consumption of fossil fuels which results in contribution to SDG 7. The emission avoidance through these activities results in contribution to SDG 13. All the workers at site are trained which results in increase of skills, which contributes to SDG 4. Detailed indicators are mentioned in table 1. This is a voluntary project activity doesn't contribute to achieving any nationally stated sustainable development priorities. There is no compliance for monitoring and reporting the emission reduction and SDG contribution from the project activity.

Table 1: Sustainable Development Contributions¹

Row number	SDG Target	SDG Indicator	Net Impact on SDG Indicator	Current Project Contributions	Contributions Over Project Lifetime
1	7.2	7.2.1: Renewable energy share in the total final energy consumption	Implemented activities to increase	About 170,923.86 MWh renewable electricity has been supplied to grid during the reported period that helps to increase the renewable energy share in the energy mix.	Overall 170,923.86 MWh renewable electricity has been supplied to grid till now that helps to increase the renewable energy share in the energy mix.
2	4.4	4.4.1 Proportion of youth and adults with information and communications technology (ICT) skills, by type of skill	Implemented activities to increase	Together with the technology supplier, the Project organize 7 training during current monitoring period. Training related to soft and technical skills.	Overall, 8 trainings are provided during over project lifetime.

¹ “Contributions (7.2.1, 4.4.1) in this table have been updated, [and (12.2.1, 8.6.1) removed,] compared to previous reporting periods, to more accurately reflect the project’s contributions to the Sustainable Development Goals”

3)	13.2	13.2.1 Number of countries that have communicated the establishment or Operationalization of an integrated policy/strategy/plan which increases their ability to adapt to the adverse impacts of climate change, and foster climate resilience and low greenhouse gas emissions development in a manner that does not threaten food production (including a national adaptation plan, nationally determined contribution, national communication, biennial update report or other)	In its intended Nationally Determined Contributions (iNDC) of 2015, Mongolia pledged an economy-wide reduction of greenhouse gas (GHG) emissions of 14 per cent below a business-as-usual (BAU) scenario by 2030. The project contributes towards reducing the emission of CO₂ and other pollutants when compared with fossil fuel-fired thermal power plant	148,874 Emission reduction removals in the monitoring period of 01-04-2021 to 31-03-2022	Overall prevented the release of 148,874 tonnes CO₂e into the atmosphere since project commissioning.
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2 SAFEGUARDS

2.1 No Net Harm

The project activity does not involve any major construction activity. It primarily requires the installation of the wind turbines interfacing the generators with the Electricity Grid by setting up HT transmission lines and installation of other accessories.

The Environmental Impact Assessment (EIA) Report for the proposed project was compiled by General Directory of Sunny Trade LLC Consulting company in Mongolia. The EIA Report for the proposed project has been approved by the General expert of Ministry of Environment and Green Development. According to the approval comments of the EIA Report by the General expert of Ministry of Environment and Green Development, the environmental impacts likely to be caused by the proposed project are analyzed.

Thus there are no any significant impacts due to implementation of project activity on air, water, soil quality and ambience are envisaged due to the project activity. Also, since The project activity involves electricity generation from wind energy. Thus, there is no negative environmental and socio-economic impact.

2.2 Local Stakeholder Consultation

As a part of continual improvement process, feedback from the associated stakeholders is vital, therefore a dedicated Visitor register cum grievance register has been placed at the project site which is accessible to stakeholders to provide their feedback on the project. It is appropriate publicly accessible location at which local stakeholders can provide their feedback on the project. This location is also conducive to continuous and regular checks for stakeholder comments.

The stakeholders are requested to share their experiences and grievances on continuous basis. Registers is used to records the grievances and feedback. During the current monitoring period, positive feedbacks had been received regarding site operation. No any grievances received during the current monitoring period. Therefore, no any mitigation measures were required. In case of grievances, the nature of probable resolution is discussed with the plant head office and implemented by the site in charge

2.3 AFOLU-Specific Safeguards

Not Applicable as it is non-AFOLU project.

3 IMPLEMENTATION STATUS

3.1 Implementation Status of the Project Activity

The Project started commissioning on 27-November-2017.

The project involves the installation of 25 sets of 2 MW wind turbines. The total installed capacity of the project is 50 MW. There are no changes compared to the project design.

During this monitoring period (from 01-April-2021 to 31-March-2022), the Project is operated and implemented well. All the electricity meters are pre-calibrated/ factory tested as per the NTPG guidance. All the data were recorded and checked by the leader of project monitoring team. And all materials are well kept. The equipment and production activities were supervised by the production technician. No emergencies (including of overhaul times, downtimes of equipment, exchange of equipment, etc.) happened in this monitoring period i.e. 01-April-2021 to 31-march-2022.

Technical parameters of the wind turbines employed by the Project are illustrated in Table below.

Table. Technical parameters of the wind turbines

Technical Specification of Wind Turbines	
Rated capacity	2.0 MW
Impeller diameter	110 m
Swept Area	9503 m ²
Cut-in wind speed	3 m/s
Re cut- in wind speed	18 m/s
Cut-out wind speed	20 m/s
Generator type	4-pole (50 Hz)/6-pole (60 Hz) doubly fed generator, slip rings
Tower type	tubular steel tower
Manufacturer	Vestas

Designed Lifetime	20 Years
Tower Hub Height	80 mtrs

Each turbine will be equipped with one transformer. The power to be generated by the turbines will be delivered to the 110kV on-site substation by 35kV transmission lines. The on-site substation will increase the voltage of the electricity generated from 35 kV to 110 kV, where it will be transported to the grid connection point at Tavan Tolgoi Substation via a 34 km transmission line. A monitoring point will be set within plant where electricity meter is installed to measure the net power supply of the proposed project.

3.2 Deviations

3.2.1 Methodology Deviations

Not Applicable

3.2.2 Project Description Deviations

Not Applicable.

3.3 Grouped Projects

The project activity is not a grouped project.

4 DATA AND PARAMETERS

4.1 Data and Parameters Available at Validation

Data / Parameter	EF _{grid,CM,y}
Data unit	tCO ₂ /MWh
Description	Combined Margin CO ₂ emission factor in year y
Source of data	Standardized baseline :Grid emission factor for Mongolia's national electricity grid https://cdm.unfccc.int/methodologies/standard_base/2015/sb99.htm
Value applied	0.871
Justification of choice of data or description of measurement	The combined grid emission factor of the grid for Mongolia is determined ex-ante for the ten years crediting period as per default emission factor of the country to be 0.871 tCO ₂ e/MWh which is as per UNFCCC approved Grid emission factor for Mongolia's national electricity grid.

methods and procedures applied	
Purpose of Data	For the calculation of the Baseline Emission
Comments	This parameter is fixed ex-ante for the entire crediting period.

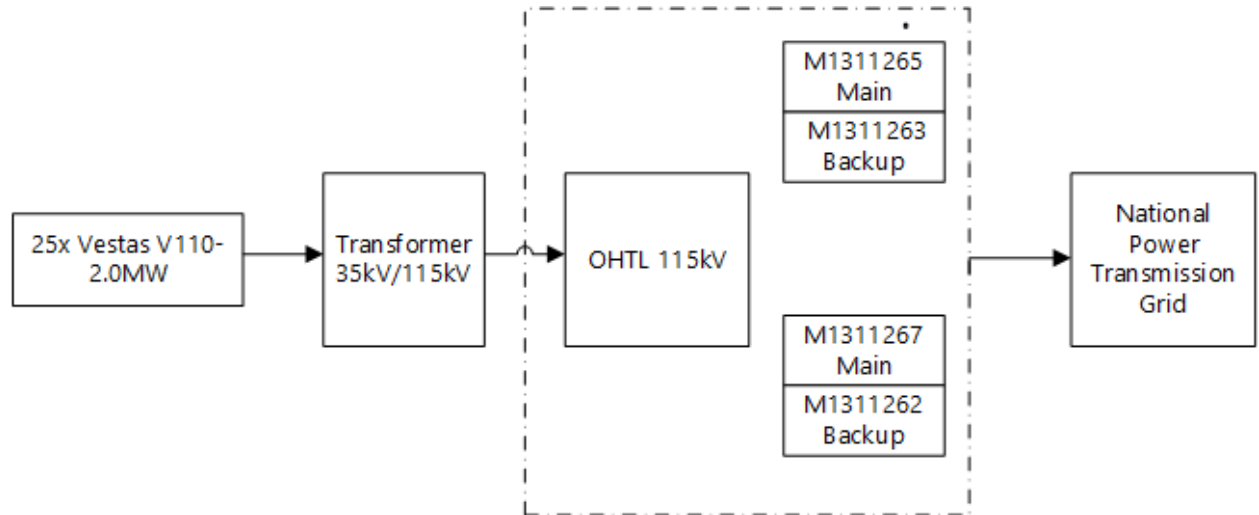
4.2 Data and Parameters Monitored

Data / Parameter	EG _{facility,y}					
Data unit	MWh					
Description	Quantity of net electricity generation supplied by the project plant to the grid in year y					
Source of data	Joint monthly electricity generation report between CEA & NTPG grid					
Description of measurement methods and procedures to be applied	Grid-connected electricity generated by the proposed project will be monitored through the electricity meter(s) with accuracy of 0.2S at the project activity site and recorded monthly.					
Frequency of monitoring/recording	The data were measured continuously, recorded hourly and monthly aggregated.					
Value monitored	170,923.86					
Monitoring equipment	Electricity meter(s) with accuracy of 0.2S					
	Meters name	Meter Type	Meter serial number	Date of calibration	Calibration certificate no	Date of next calibration
	Main export/import meter at Tavantolgoi substation No 1	A1802R AL-P4GB-DW-4	1311267	19-July-2017	Mongolian Agency for Standardization and Metrology 54520	18-July-2025

	Main export/import meter at Tavantolgoi substation No 2	A1802R AL-P4GB-DW-4	13112 65	19-July-2017	Mongolian Agency for Standardization and Metrology 54524	18-July-2025
	Backup export/import meter at Tavantolgoi substation no1	A1805R AL-P4GB-DW-4	13112 63	19-July-2017	Mongolian Agency for Standardization and Metrology 54519	18-July-2025
	Backup export/import meter at Tavantolgoi substation no 2	A1805R AL-P4GB-DW-4	13112 62	19-July-2017	Mongolian Agency for Standardization and Metrology 54522	18-July-2025
QA/QC procedures to be applied	According to national standard, meter(s) will be calibrated after 8 years as per Mongolian standard. Data measured by meter(s) has been cross-checked with the sales record.					
Purpose of the data	Calculation of baseline emissions					
Calculation method	Measured directly by electricity meter. The exact data were the electricity delivered to the power grid minus the electricity supplied by the power grid. The data were measured continuously, recorded hourly and monthly aggregated. Electricity export – 171,092.38 MWh Electricity import – 168.52 MWh Net Electricity export – Electricity export – Electricity import = 171,092.38 – 168.52 = 170,923 MWh (Rounddown value)					
Comments	N/A					

4.3 Monitoring Plan

The monitoring plan, implemented by the Project owner, is made to ensure that the emission reductions is monitored transparently and clearly in the crediting period. The location of energy meters for this project activity is shown in the following diagram:-



1. Monitoring objective

The objective of this monitoring plan is to ensure the complete, consistent, clear, and accurate monitoring and calculation of the project emission reductions during the entire crediting period. The project owner is responsible for the implementation of the monitoring plan, and the grid company cooperates with the project owner.

2. Monitoring institution

The Project owner has set up a VCS team, the VCS manager of which is assigned accordingly. The VCS team is charge of collecting, monitoring and verifying the data, while the VCS manager is assisted by the VCS consultant company. The operational and management structure is as follows:

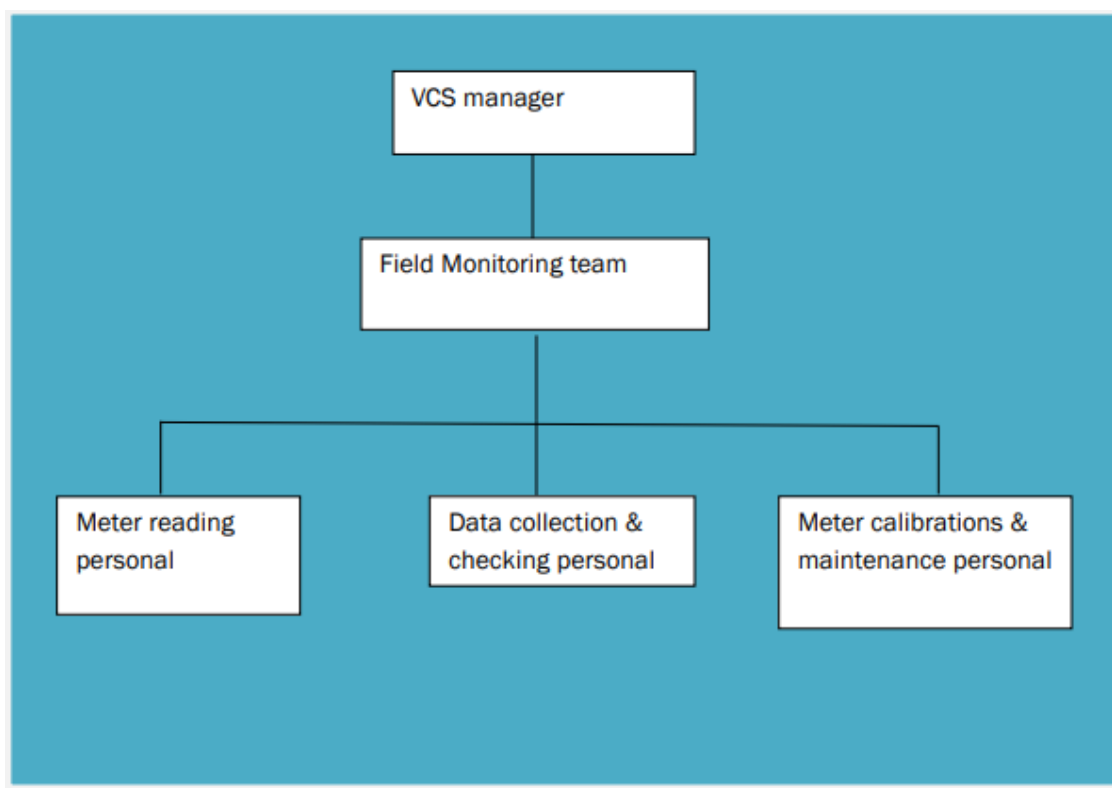


Figure 1. Structure of monitoring personnel

3. The monitoring method and equipments installation

Power generated by the project is feed into the NTPG through transmission line. Bi-directional electricity meters has been installed on the transform substation to directly and continuously measure the feed-in and down-load electricity by the project activity. The accuracy of monitoring meter(s) is 0.2s.

This measuring method is more conservative and has not affect the additionality of the proposed project. Therefore, the net power supplied to grid by the proposed project is calculated as “EGfacility,y= EGexport,y - EGimport,y” during the monitoring period, which should has been monitored.

4. Quality Assurance and Quality Control (QA/QC)

QA/QC is to ensure the accuracy of data collected through measures including periodic calibration of monitoring meters, corrective actions, and internal audits.

4.1 Calibration

The electric meters are calibrated by an accredited calibration agency. According to national standard, meter(s) will be calibrated in 8 year time interval.

4.2 Corrective actions

If problems which can affect the quality of data occur, the QA/QC department will initiate and supervise the implementation of corrective actions. No such thing happens in the current MP.

4.3. Internal audit

Internal audit is independent. Firstly, the monitoring system has been checked on whether the monitoring system runs properly and whether the monitored results are correct. Secondly, spot check of daily/monthly data report has been undertaken.

5 QUANTIFICATION OF GHG EMISSION REDUCTIONS AND REMOVALS

5.1 Baseline Emissions

As per the approved consolidated Methodology ACM0002 (Version 19.0) para 42:

Baseline emissions include only CO₂ emissions from electricity generation in fossil fuel fired power plants that are displaced due to the project activity. The methodology assumes that all project electricity generation above baseline levels would have been generated by existing grid-connected power plants and the addition of new grid-connected power plants. The baseline emissions are to be calculated as follows:

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

Where:

BE_y = Baseline emissions in year y (tCO₂/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 CDM 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)

Calculation of $EG_{PJ,y}$

The calculation of $EG_{PJ,y}$ is different for (a) greenfield plants, (b) retrofits and replacements, and (c) capacity additions. The project activity is the installation of a new grid-connected renewable power plant/unit at a site where no renewable power plant was operated prior to the implementation of the project activity, then:

$$EG_{PJ,y} = EG_{facility,y}$$

Where:

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

$EG_{facility,y}$ = Quantity of net electricity generation supplied by the project plant/unit to the grid in year y (MWh/yr)

$$EF_{grid,CM,y} = 0.871 \text{ tCO}_2/\text{GWh}$$

Therefore:

$$\begin{aligned} BE_y &= EG_{PJ,y} \times EF_{grid,CM,y} - EG_{facility,y} \times EF_{grid,CM,y} \\ &= 170,923 \text{ MWh} \times 0.871 \text{ tCO}_2\text{e/MWh} - 148,874 \text{ tCO}_2\text{e} \end{aligned}$$

Baseline emissions during this monitoring period are shown in the Table below:

The emission reductions ER for the project :

From	To	Electricity export to grid, MWh (EGexport,y)	Electricity import from grid, MWh(EGimport,y)	Net electricity export, MWh(EGfacility,y)
01-April-2021	30-April-2021	18,996	11.4	18,984.293
01-May-2021	31-May-2021	20,826	6.2	20,819.480
01-June-2021	30-June-2021	13,227	11.5	13,215.488
01-July-2021	31-July-2021	8,791	23.3	8,767.968
01-August-2021	31-August-2021	13,000	16.7	12,982.992
01-September-2021	30-September-2021	11,306	11.6	11,293.920
01-October-2021	31-October-2021	12,264	20.2	12,243.528
01-November-2021	30-November-2021	17,892	4.5	17,887.496
01-December-2021	31-December-2021	16,267	8.4	16,258.792
01-January-2022	31-January-2022	11,513	26.3	11,486.728
01-February-2022	28-February-2022	9,481	13.3	9,468.184
01-March-2022	31-March-2022	17,530	14.9	17,514.992

5.2 Project Emissions

As the project activity is the installation of a new grid-connected Wind Power plant and does not involve any project emissions from fossil fuel, operation of dry, flash steam or binary geothermal power plants, and from water reservoirs of hydro power plants. Therefore $PE_{FF,y}$, $PE_{GP,y}$, $PE_{HP,y}$ are equal to zero and thus, $PE_y = 0$.

5.3 Leakage

No other leakage emissions are considered. The emissions potentially arising due to activities such as power plant construction and upstream emissions from fossil fuel use (e.g. extraction, processing, transport etc.) are neglected.

5.4 Net GHG Emission Reductions and Removals

Reductions are calculated as follows:

$$ER_y = BE_y - PE_y$$

Where:

ER_y = Emission reductions in year y (tCO₂e/yr)

BE_y = Baseline emissions in year y (tCO₂/yr)

PE_y = Project emissions in year y (tCO₂e/yr)

Therefore, Net GHG Emission Reductions and Removals are calculated as follows:

$$ER_y = BE_y - PE_y$$

Quantify the net GHG emission reductions and removals, summarizing the key results using the table below. Specify breakdown of GHG emission reductions and removals by vintages where the intent is to issue each vintage separately in the Verra Registry.

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)
Year 2021 (01-April-2021 to 31-December-2021)	115,367	0	0	115,367
Year 2022 (01-January-2022 to 31-March-2022)	33,507	0	0	33,507

Total	148,874	0	0	148,874
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The actual GHG avoided during the current monitoring period is 148,874 tCO₂e. Considering the annual average emission reductions as per the registered Joint PD & MR which is 175,767 tCO₂e per year, the number of days covered during the current monitoring period comes out to be 365 days, based upon which the estimated emission reductions attributed to this monitoring period comes out to be 175,767 tCO₂e. The actual VER is 15.30% lower than the estimated VER. This variation is majorly due to the variations in wind flow pattern, grid availability and other parameters which are not in the control of PP.

APPENDIX I: MAJOR BREAKDOWN DETAILS

From (DD-Month-YYYY, Hrs:Min:sec)	To (DD-Month-YYYY, Hrs:Min:sec)	Breakdown Hrs. (DD-Month-YYYY, Hrs:Min:sec)	Break-down Remark	Turbine no.
02-April-2021, 19:20:00	03-April-2021, 19:50:00	24:30:06	Unscheduled maintenance	WTG22
02-February-2022, 19:20:00	27-February-2022, 10:37:00	591:17:00	Unscheduled maintenance	WTG10
02-January-2022, 19:30:00	28-February-2022, 16:30:00	644:40:00	Unscheduled maintenance	WTG03